Society for Social Studies of Science

and

European Association for the Study of Science and Technology

Copenhagen, Denmark

October 17-20, 2012

Preliminary Program

(September 18, 2012)

WEDNESDAY, OCTOBER 17

001. Art and exhibitions
12:00 to 8:00 pm
Solbjerg Plads: Main Hall
ILLUTRON is a collaborative, interactive art studio residing on an old tugboat at the South Harbor of Copenhagen. For the conference, Illutron has collaborated with the Copenhagen Municipalities, from whom they get data on the bicycle flow in Copenhagen. The data is translated into abstract expression, through color-coded water flowing within 1000 meters of plastic tubing— in order to find the artwork, look up! HARTMUT STOCTER is a German artist living and working on his boat in Copenhagen. His low-tech sculptures are designed as a 'day trippers' equipment, turning a walk through a backyard, a park, or a brownfield site into an exploratory expedition. Through his subtle sculptures, one can engage with the urban landscape in creative, playful ways and his art invites us to reflect upon the nature of the city and on functionality of the tools through which one experiences one's surroundings. NEW NORDIC KITCHEN: BEYOND GASTRONOMY AND THE CULINARY ARTS During the past 5-10 years, The New Nordic Kitchen has radically altered Copenhagen's ability to stage itself as an innovative and gastronomically creative city. Across agendas like public health, regional development, environmental sustainability and children's education, key issues are now being cast in New Nordic terms – spurring both enthusiasm and conflicts among experts, politicians and citizens. The exhibition explores the effects of New Nordic Food both through a set of digital maps and through a tableau of representations from the OPUS research project, detailing how the scientisation of the culinary and its social ambitions are taking form. NEGOTIATING THE BICYCLE – NEGOTIATING THE CITY The bicycle is an old technology dating back to the 19th century. First used as a toy for the few and wealthy, now a key player in discussions about sustainable cities with less pollution, less noise and more 'livable cities'. Copenhagen is perceived a frontrunner in this regard, especially due to the commonality of bicycling that ensures high mobility with limited negative consequences for the city. Based on research, this exhibition addresses the question of how an old technology like the bicycle can become the centre of innovative and sustainable urban development. DESIGNING/DISPLACING THE HABOUR(NORDHAVN) Our concepts of tomorrow's cities are continually displaced and redesigned to fit changing climates, rising populations, and other ecological issues. "Nordhavnen" is a future neighbourhood in Copenhagen that is taking form on the fringe of an old mixed neighbourhood of workers and well-to-do's in the Northern part of Copenhagen. The new part of town has the ambitious goal of being CO2 neutral. But diverse knowledge forms, conflicting expectations about city life and specific building designs need to be assembled in successful ways in order to construct a living (and perhaps sustainable) neighbourhood. This exhibition seeks to map out the many conflicts and connections surrounding the construction of a future part of Copenhagen. WELFAIRYTALES: THE EXPO FILMS Three short films about Danish city life produced by Martin de Thurah will be on display during the conference. The films were produced for the Danish EXPO Pavillion in Shanghai 2010, which presented Denmark to a Chinese Audience through the notion of "Welfairytales". They are named "Water City," "Bicycle City," and "Family City". The films offer an impressionistic painting of Denmark through atmospheric vignettes of rush hour bicycle traffic, children playing pirates in front of Danish architecture, and elderly people swimming in the harbor bath. Apart from their artistic value, the films allow an insight into how the Danish authorities brand Copenhagen as a city that combines "sustainability and growth"; "urban development and welfare solutions" with a "high quality of life." The Danish EXPO office, located in the Danish Business Authority (Erhvervsstyrelsen), has kindly lent the EXPO films for display during this year's 4S/EASST. Main conference hall 17-19 Wednesday HERBS AND SOIL: TASTINGS FROM THE NEW NORDIC KITCHEN

002. The Design Mailboat
2:00 to 3:00 pm

Solbjerg Plads: SPs01
Messages in a bottle, messages caught in bits of undersea light. Mailboats are message-sized vessels designed to carry words on the tide from one beach to another, to send questions and receive floating replies. The Design Mailboat is one such word-bearing ship. We have been sending it back and forth between three coasts with a passion for design and its futures. The Design Mailboat has floated from the Orkney Islands off the north east coast of Scotland, through the Øresund between Denmark and Sweden, to the Silicon Valley on the west coast of the United States. Silicon Valley is the mythic origin of the design of the mouse, the graphical user interface, the big green button on the photocopier. Copenhagen is a mythic centre of Scandinavian Design, origins of 'the white style,' beautiful functional objects, but maybe also the Thing and its agonistic collectives. Orkney Islands are a mythic origin for wave and tidal renewable energy, and for the design of monumental stone circles, built over five thousand years ago. We have been asking each other what 'design' is in these various places, from our locations as the Future Archaeologist, the Collective Designer and the Anthropologist of Technoscience. In this presentation we share our mailboat messages with you, and send off one final Design Mailboat from the shores of Copenhagen.
Panel Members:
Laura Watts, IT University of Copenhagen
Lucy Suchman, Lancaster University
Pelle Ehn, School of Arts and Communication, Malmö University, Sweden

003. Designing/Displacing future Copenhagen
3:30 to 4:30 pm
Solbjerg Plads: SPs01
Today more than 50% of the world's population lives in cities, which means that cities use 70% of the world's resources and are responsible for 80% of the CO2 emissions. The modernist and industrialist city is no longer sustainable nor a desirable model for future cities. Worldwide, sustainable cities are being imagined and made. But what shape will those sustainable cities take? What will be different? Which natures will move into the city? What will city life look like in the future? With an ambitious city development project in the old, industrial North Habour, Copenhagen aims at becoming a forerunner leading the way for sustainable city development. Sociologist Anders Blok will engage in a dialogue with Rune Boserup from COBE architects, the designers of the new North Harbour, on how future, sustainable cities will take form, and the diverse challenges that are involved. The North Harbour project will also be visually presented at the exhibition space.
Panel Members:
Anders Blok, Copenhagen University
Rune Boserup, COBE Architects

004. The Future of Science & Technology Studies
5:00 to 6:00 pm
Solbjerg Plads: SPs01
New Nordic food. A clever invention it is, that links up vital needs with markets and health with household labour, while moving cuisine across the globe. An excellent case for a talk about the issues that present day Science & Technology Studies would do well to address. Such as: where are we with questions about the ways in which 'science' helps to govern society – now that the sciences are being paid to assure profits for local industries? What about the various technologies that subjects (of knowledge, of the state) are encouraged to mobilise, so as to save, if not the world, then at least their own bodies? How to put to work notions such as 'multiplicity' and 'becoming' in contentious, inescapable, global arenas? And where to go, amidst all this turbulence, with the study of mundane cases – such as that of food and its textures, and eaters and their tastes, not in general, of course, but in specific, situated practices?
Panel Member:
Annemarie Mol, University of Amsterdam

THURSDAY, OCTOBER, 18

005. Biomedicine at local/global nexuses

9:00 to 10:30 am
Kilen: K143

One of the features of the relatively new field of 'global health' is that it addresses issues that transcend limitations posed by national public health governance. In this panel we explore ways in which global biomedicine displaces modes of drug development, forms of biomedical intervention and ways of storing and using biological samples. The papers pay close attention to specific bioscientific enterprises in particular places outside the Global North to consider broader questions of local-global nexuses of biomedicine. In each location, globalized policies, discourses and practices have complicated relationships with (postcolonial) social justice claims and are transformed as they come to be mobilised within particular assemblages.

Chair:

Anne Pollock, Georgia Tech

Participants:

How does it matter who makes pharmaceutical knowledge and where?: Postcolonial contexts and global networks of South African drug discovery. *Anne Pollock, Georgia Tech*

Debates about neglected disease research have long been framed in terms a failure to meet the needs of the other: drug companies in the Global North not investing in research toward treatments of diseases of the Global South. Advocacy for change has often been articulated along the lines of "medicine for people, not for profit." Yet many new initiatives have sought to align those two goals. This paper draws on ethnographic research at a small South African startup pharmaceutical company with an elite international scientific board, which focuses on drug discovery for neglected infectious diseases. It explores how the location of the scientific knowledge component of pharmaceuticals – rather than their production, licensing, or distribution – matters. Pharmaceutical knowledge production in South Africa is both postcolonial and global, and scientists involved in drug discovery there speak of it as offering both "African solutions for African problems" and a way for African scientists to participate in the global networks of innovative science. The ethical stakes of science in the service of the people are inextricable from the epistemological and financial stakes of creating novel intellectual property. The promise of drugs affordable to Africans and relevant to their needs jostles with the promise of global prestige for African scientists. South African drug discovery provides a rich site for STS analysis of science in the Global South, foregrounding both enduring global inequality in science and in health, and emerging reconfigurations of global financial and scientific networks of big pharma, philanthropy, and academic science.

Enacting 'combination prevention': how prehensions matter in approaches to HIV/AIDS. *Kane Race, University of Sydney*

In November 2011, US Secretary of State Hilary Clinton outlined the US state's proposed course to an 'AIDS-free generation'. Incorporating new emphases within international HIV scientific discourse on biomedical prevention, the course was said to consist of three principal strategies: ending mother-to-child transmissions; expanding voluntary medical male circumcision; and scaling up treatment for people already living with HIV/AIDS in order better to realise the preventative effects of antiretroviral treatment. Each of these strategies is conspicuous for its emphasis on biomedical solutions to the dynamics of the epidemic. Also conspicuous was the failure to address the ways in which dynamics of stigma and shame impact the vulnerability of key affected populations to infection, and interfere with biomedically-focused strategies. This paper analyses how HIV biomedical prevention is legitimated within international HIV policy discourse, focusing in particular on the discourse of 'combination prevention.' It goes on to consider critiques of biomedical prevention that take it to task for neglecting the 'structural' dimensions of the epidemic. It finds that within both the discourse on biomedical prevention and these critical responses, the Œstructural¹ and the Œbiomedical¹ are produced as independent and autonomous domains that sit alongside each other like just so many prevention Œoptions'. I use the work of A.N. Whitehead (in particular his concept of 'prehension') to consider the challenges of HIV biomedical prevention among key stigmatised populations. I argue that theories of biomedical 'enactment' may be extended by engaging with theories of prehension and affect, in ways that are especially productive for approaches to HIV/AIDS.

HIV probes: some loose thoughts on releasing the biomedical grip on prevention possibilities in HIV. *Marsha Rosengarten, Goldsmiths, University of London*

In this paper I want to consider what may be afforded by rendering biomedical objects as not so much objects of study but, as Mike Michael (2012) argues, part of the empirical process of engagement that constitutes the field of study. If objects such as pills, condoms, information etc are viewed as active in making the field that they are more usually enacted as within and problematically so, is it possible to begin to rethink the design work of the object as it is active in constituting the very problem it is intended to address/resolve? My focus is the field of HIV prevention and the longstanding pursuit of a 'biomedical fix' to prevent the transmission of HIV. The pursuit has drawn many thousands of human participants and many millions of dollars into 'offshore' randomised controlled trials to, at best, offer a set of prevention tools bearing complicated social, economic and medical challenges. Here I will suggest that the complicated nature of prevention arises from a field that recognises becoming HIV infected as an emergent event achieved through the forging of a particular relation between a specific surface of the body open to an otherwise fragile viral entity yet, at same time, frames its response according to a series of bifurcations. Apparent is the subject/body, social/biological and, especially worrying in this instance, a potentially efficacious object whose effectiveness relies then on its user being with rather than becoming with it. By reviewing some of the details in an otherwise confounding set of bio-social data from recent multi-site HIV biomedical prevention RCTs, I will offer some preliminary thoughts on how biomedical objects might function as 'probes' to demonstrate a more open and potentially inventive response to the movement of HIV.

Banking vitality – reproduction and the sperm crisis in China. *Ayo Wahlberg, University of Copenhagen*

Since the 1980s, reproductive politics in China have for the most part gravitated around logics of prevention and restriction, although an imperative to improve population quality has also informed various family planning and educational policies and practices. In this paper, I ask in which ways we might situate the, in many ways explosive, expansion in the development and use of reproductive technologies within such politics. I will in particular focus on the practice of sperm banking, asking how this form of banking vitality is organized and practiced in an urban context in China. How do national population policies combine with international sperm quality standards and global Good Laboratory and Clinical Practice guidelines? How has this form of reproductive technology - sperm donation, donor insemination/IVF - come to be (dis)placed within a complex juridico-socio-economic assemblage in China?

006. (25) To cross a widening gulf: new patterns and practices of science for sustainability - I

9:00 to 10:30 am
Kilen: K146

Chairs:

Edward Hackett, Arizona State University

Stephen Zehr, University of Southern Indiana
Wesley Shrum, Louisiana State University

Participants:

Leveraging Local Knowledge for Climate Adaptation. *Sharon Harlan, Arizona State University*; *Tommy Bleasdale, Arizona State University*; *Juan Declet-Barreto, Arizona State University*; *Tiffany Halperin, Arizona State University*; *Katelyn Parady, Arizona State University*

Many policymakers are concerned about the actions they need to take in order to protect vulnerable communities from the effects of climate change, which may come in the form of slow-moving disruptions or sudden disasters. Expert knowledge about adaptive strategies is produced by a scholarly community that reaches across the UN, major national climate centers, and universities. The generic vulnerability prevention "model" calls for government action on behalf of local communities to reduce exposure to hazards and sensitivity to their effects, while increasing adaptive capacity through better systems of emergency preparedness, improved infrastructure, and so forth. As part of the community outreach component of a large study on urban vulnerability to climate change in Phoenix, Arizona, funded by a grant from the National Science Foundation, a group of students and faculty in an Environmental Social Science Ph.D. program at Arizona State University is developing an inclusive, participatory model of community adaptation. Students are partnering with local residents and community organizers on three collaborative projects that were locally initiated in a low-income neighborhood: restoring a public park, revitalizing a faltering community gardening program, and creating a museum exhibit on neighborhood environmental history that uses residents' personal photos and documents. These activities share several distinctive characteristics: they are tangible, material instantiations of adaptation principles; they integrate academic and local expertise; leadership in each is balanced and fluid. By collaborating with residents and community leaders on a variety of professional and personal levels, in both leadership and supportive positions, the local implications of vulnerability research are changing the social organization, landscape, and prospects of this urban neighborhood.

Constructing trampolines – unpicking locks? Spaces for design activism in community energy in the UK. *Sabine Hielscher, University of Sussex*; *Adrian Smith, University of Sussex*

DESIS (Design for Social Innovation and Sustainability) and other networks are developing visions, principles, knowledge, tools and spaces for reflection aimed at inserting designers and design in a critical intermediating position in transitions to sustainability. Working with a plurality of actors, designers co-construct open processes of socio-technical innovation whose growth, spread and scaling-up (in)forms the possibilities for transitions. Ezio Manzini argues these approaches can turn contexts into a 'trampoline for action'. Strategic niche management is also optimistic about the transformative possibilities of sustainable socio-technical innovation. But contexts are more problematic: incumbent socio-technical 'regimes' effectively 'lock-out' sustainable innovation. Whilst processes akin to reflexive and participatory design are advocated, especially social learning, they take place in 'protective spaces' where contexts are held at bay until alternative socio-technical configurations can be developed to a degree where the innovation can unlock and transform regimes. We use detailed empirical research into community energy in the UK to explore both approaches. We focus on the multiple, design-relevant roles of intermediary actors supporting innovation processes in and across community energy projects and advocating decentralised transitions. Our analysis identifies three context-related dilemmas: attending to local specificities whilst simultaneously seeking wide-scale diffusion and influence; being appropriate to existing situations that one

ultimately seeks to transform; and, working with project-based solutions to goals (of sustainability) that require structural change. Reflecting on these dilemmas, we argue both approaches need to extend beyond the contents of design and attend to the politics of unsettling contexts and expanding spaces for sustainable innovation.

Sustainable realities. *Maria Eidenskog, Linköpings University*

Organizations of all kinds have an important part in the transition towards the sustainable society and the reduction of carbon emissions. Small and mediums sized companies have enormous energy efficiency potential according to the proposed Directive on energy efficiency (EED) from the European Union. In my study I explore how employers in small and medium sized companies view their responsibility for environmental issues and how knowledge is created in organizations. My research focus is on understanding the different realities that are enacted in small organizations that actively work with sustainable development. The aim in this paper is to find useful analytical tools to explore the importance of the different realities and how they can be understood. The concept of multiple realities comes from Annemarie Mol and her study of how a disease was enacted in different ways by different people and devices (Mol 2002). Furthermore, Latour (2004) argue that there are several ways to understand the idea of "nature" and instead uses the concept of multinaturalism. In this paper I will explore how different realities and views of nature are presented in a medium sized company in Sweden. I will use the concept of multiple realities in order to analyze who's reality prevails when deciding on investments. I will also discuss what views of nature are outcomes of practices and accounting systems and what practices are outcomes of different views of nature.

'Futuring' in transdisciplinary sustainability research in Austria. *Thomas Voelker, University of Vienna*

In recent years there has been an ongoing debate in STS about changing modes of knowledge production. Traditional modes of knowledge production are framed as no longer capable of providing solutions for the most pressing societal issues. In this narration science needs to open up towards society and produce a new sort of knowledge able to address the growing complexity of contemporary problems. This debate was from the outset closely related to issues of sustainability as e.g. global warming or the scarcity of resources. Sustainability research therefore provides an interesting site to empirically observe the production of knowledge, which is supposed to deal with such complex phenomena and in doing so to narrow the widening gulf between knowledge and action. In this paper I aim at exploring how knowledge for sustainable development is actually produced in participatory research practices. I will thereby especially focus on the role of the 'future' and ask how scientists produce knowledge about the future – e.g. scenarios, predictions, models and so forth – together with so-called extra-scientific actors in an Austrian research-funding program that explicitly aims at fostering transdisciplinary sustainability research. Thus I will look at 'futuring' as a socio-material practice and ask (1) how scientists produce futures together with their extra-scientific partners and simultaneously (2) which futures are created for 'epistemic things'. This work is supposed to contribute to the overarching question of what it actually means to produce knowledge for sustainable development in participatory research settings both for the knowledge that is produced and for the actors that are involved in its production. Doing this analysis I draw on material gathered within the project 'Transdisciplinarity as Culture and Practice' that is currently conducted at the Department of Social Studies of Science at the University of Vienna.

Cultural Discourse: Policy Stories on Adapting to Climate Change in Tonle Sap Lake of Cambodia. *Vikrom Mathur, Stockholm Environment Institute*

Supporting adaptation to potential climate change in remote

resource dependent communities like those living around the Tonle Sap Lake in Cambodia is central to international sustainability agenda. In this study, methods including ethnographic interviews, document analysis and participant observation in workshops have been used to study the diffusion and uptake of data and knowledge related to impacts of climate change on the 'hydrodynamics' of the Lake and proximate vulnerabilities in institutional decision making on adaptation. Cultural Theory framed analysis demonstrates that resource management institutions 'filter out' knowledge that is deconstructive of their social commitments and accompanying epistemologies. Four different policy stories on adaptation framed by varying nature-myths, spatial and temporal commitments and socially maintained ignorance, characteristic of different social solidarities emerge in the national discourse. These are: Mainstreaming (hierarchy); Entitlements (egalitarian); Resource Abundance (markets) and Après nous le deluge (fatalist). Institutions, conditioned by their solidarities, select, block out, and bring to the foreground or background scientific knowledge in order to articulate their positions on economic growth, technology, infrastructure, institutions and equity in relation to adaptation policies and strategies. A complex terrain of agreements, disagreements and mutual rejections on adaptation policies, linked to control and access over fisheries resources, emerges in the national discourse. In the absence of deliberative decision-making processes, contradictory and competing institutional certitudes become barriers to collective actions and the hierarchical strategies of mainstreaming become hegemonic. This paper contributes to STS literature on the dynamics of science and policy in the search for sustainability.

007. Domestic devices: Homes, dwellings and politics indoors - I
9:00 to 10:30 am
Kilen: K150

This session explores domestic settings as devices for participation. We will focus on the socio-material, socio-political composition of 'the domestic' and how these sites are involved in the co-articulation of the relations between collectivities, issues and 'everyday life'. These participatory practices may involve a scrambling of conventional oppositions (for example, public/private, inside/outside, household/community, citizens/consumers, global/local, economic production/leisure time); in some instances they render people's entanglements with political issues visible (Marres 2008) and in others they entail specifically 'anti-political' effects (Barry 2002). The session is thus interested in how domestic sites themselves, or technologies, knowledges and practices inserted into those sites, may be designed so as to foster participation and to create participants – whether as the subjects or objects of governance. Homes and dwellings provide many stages for such processes, ranging from thresholds, to doors, to windows, to gardens (Candea and Da Col forthcoming). Design may thus involve either the recomposition of dwelling spaces, or be oriented towards the objects that populate such sites, or be deployed by outside actors seeking to insert themselves into domestic spaces and routines. Further, by focusing on the domestic as a site of participation, rather than, say, a context in which technologies or policies are socialised, we see a potential to highlight blindspots amongst work within and influenced by STS. Our case studies will explore the liveliness of the public at home, including reflections upon the affective dimensions and scalar qualities of domestic spaces and their relationship to other spatialised entities (e.g. communities or nations).

Chair:

Joe Deville, Goldsmiths, University of London

Participants:

Experimental huts: Hosts, traps and domestic camouflage. *Ann Kelly, London School of Hygiene and Tropical Medicine*
Because their hosts tend to sleep indoors, anophelese gambiae are highly domestic. Experimental huts are classic instruments of entomological research to study the behaviour of this home-bound vector: constructed in the fashion of indigenous homes (complete with villagers, paid to spend the night) they are structurally modified to render mosquito behaviours visible (including window traps and raised platforms to prevent ants from removing dead or dying mosquitoes before they could be collected). This methodological balance between collection and simulation makes for an uncanny domicile: "lethal parodies of the animal's umwelt" (Gell 1996), these traps sediment the complex aims and relations between humans, animals and their environment. This paper examines the peculiar affordance of this domestic camouflage. It begins by detailing the materials, techniques and logics of experimental hut design so as to understand how the hut's architectural vernacular is manipulated to engineer an investigative encounter between humans, mosquitoes and parasites. It then elaborates how those efforts to model malaria on the scale of the household shape the behaviours of its inhabitants and the social ambivalences these quasi-domestic spaces can generate. Finally, it suggests how experimental hut provides the setting for multiple, and reciprocal, hostings: between parasite, mosquito and man, and between villagers, volunteers and scientists. It concludes by exploring the valences of hospitality when the 'home' becomes a site of experimentation, and the cosmopoltian encounters these experiments entail.

Giving shelter or 'helping people help themselves': Standardized emergency tents, shelter kits and participation in humanitarian relief. *Aurora Fredriksen, Columbia University*
As the number of people living in situations of protracted displacement around the globe continues to grow – over seven million in 2010 – the emergency shelters deployed by the transnational humanitarian community increasingly matter not only in their capacity to offer temporary relief from the elements when 'normal' domestic sites are lost or left behind, but, increasingly, as the domestic sites of everyday life for those who inhabit them. In this paper I explore how two of the most commonly deployed emergency shelter devices – the standardized emergency tent and the shelter kit – carry in their material forms different normative claims about the appropriate role and aims of humanitarian aid. The material form of the emergency tent precludes participation from those who will inhabit it: it arrives complete and ready to assemble and once assembled is ready for immediate habitation, attaching humanitarian aid to a traditional notion of charitable giving. By contrast, the material form of the shelter kit – a collection of tools, fixings and plastic sheeting distributed to displaced households for use in repairing damaged housing or building new emergency shelters – attaches humanitarian aid to a currently fashionable notion of 'helping people help themselves' in which the participation of a shelter's inhabitants is not only possible, but specifically required. I consider how this requirement for participation intentionally (if partially) blurs the line between the givers and receivers of aid, extending the meaning of what it is to do emergency sheltering.

Health promotion, housekeeping, and 'home inspections' in rural Malawi. *Anna West, Stanford University*
This paper investigates two intersecting trends in global health: the expanding role and number of low-skilled community health workers who implement essential health services in 'developing' countries, and the increasing centrality of the home as a privileged site for the production and policing of health. In Malawi, government-supported Health Surveillance Assistants (HSAs) provide health education and basic curative care, collect demographic data, and conduct disease surveillance. Under the rubric of quarterly 'home inspections,' they also monitor domestic spaces and hygiene practices, recalling the medicalization of housekeeping observed in colonial public health paradigms (Hunt 1999). HSAs' entry and intervention into rural homes creates spaces of intimate encounter between the

state and the domestic sphere, through which material practices and subjective experiences of participation in a larger project of the health of the nation are cultivated and contested. Through 'home inspections' and the use of housekeeping checklists, HSAs engage in a project of normalizing and standardizing the physical architecture of (and modes of inhabiting) rural homes, latrines, kitchens, and yards. Conversations between HSAs and the mostly female residents present during these inspections point to tensions between the supportive and surveillance aspects of their roles. Likewise, rural Malawians interpret these incursions into domestic spaces alternately as a form of care on the part of the state, as a call to assume responsibility for 'producing health' within the family and domestic unit, and as a recurring practice through which their relative ability or inability to mold their homes into 'model' or desirable domestic forms is assessed, recorded, and judged. In this paper, I argue that household-level surveillance by government-supported outreach workers in Malawi operates not only as a method of data extraction, but rather enables multiple modes of participation that link domestic practices with notions of national well-being.

Discussant:

Noortje S Marres, Goldsmiths, University of London

008. (37) Design and displacement in energy system transitions: pasts, futures and presents - I

9:00 to 10:30 am
Kilen: Ks43

Chair:

Nick Pidgeon, Cardiff University

Participants:

The 'everyman' of zero carbon housing: codified materiality and the imagined practices of future dwelling. *Gordon Walker, Lancaster University; Ralf Brand, The University of Manchester; Andrew Karvonen, University of Manchester; Simon Guy, Manchester University*

In 2006, the UK Government introduced regulations that require all new houses in England to be 'zero carbon' as of 2016. The definition of zero carbon in the Government's Code for Sustainable Homes has been revised in subsequent years, but it continues to represent an aggressive regulatory intervention in the built form of future domestic life. Zero carbonness has been codified in sets of standards of dwelling performance, to be assessed at particular points in time in the design and construction process. However the goal of emission reduction (necessarily) extends far beyond this into the lived-in lifetime of the home in which energy and other resources are consumed. In this paper we position the home as a key common infrastructure in the constitution of many forms of everyday environmentally-significant practice, in order to examine the forms of future dwelling which are embedded within zero carbon codes and imagined within their realization in housing developments. We examine how the design and delivery of zero carbon homes embodies expectations of how futures lives will be led, of who is leading these lives and consider to what extent the 'scripting' of everyday practices is an integral part of expectations of zero carbon performance.

Shared and contested elements in Danish climate plans and their roles in contemporary climate initiatives. *Michael Soegaard Joergensen, Department of Management Engineering, Technical University of Denmark*

A governmental statement in 2006 about Denmark as society independent of fossil energy in 2050 initiated the development of both governmental and civil society based energy and climate action plans during 2009-2010 with visions and measures in a 30-40 year time perspective of energy production and consumption in Denmark. The paper analyses shared and

contested elements in these plans and the roles they seem to play in recent governmental, corporate and civil society initiatives. The analysis shows that plans building upon the same overall vision can have substantial differences in technical, social and regulatory changes proposed for realising the vision. This includes differences in overall energy system structure, roles of areas like wind energy, bio-energy and energy savings, and roles of technological efficiency and governmental regulation. The analyses contributes to STS-based analyses of climate change mitigation by showing how visions and plans need to de-constructed in order to identify their pre-requisites and how visions and plans might be enrolled by stakeholders as both positive and negative visions in their attempts to develop support for other plans, policy initiatives etc. As part of a historical framing of the climate plans, the paper compares the climate plans with the tradition for both governmental and non-governmental energy plans in Denmark since 1970s and the roles of these earlier plans in energy policy and energy sector development. The analyses are conducted as part of a research project about transitions towards a Danish low carbon society, which include both desk research and action research.

Designing Futures? The role of scenarios in energy system change. *Catherine Butler, Cardiff University; Nick Pidgeon, Cardiff University; Karen Parkhill, Cardiff University*

Scenarios have become increasingly important in energy system transition discourse, policy and research. In recent years multiple groups, organisations and institutions have created and documented scenarios, ranging from specified scenario visions to open access tools that offer a basis for the creation of scenarios. Though scenarios have long been utilised in energy system planning, recent developments are characterised by their uptake in the redesign of systems for decarbonisation and greater socio-environmental sustainability. In this context, different scenarios increasingly embody varying and often competing visions of the future. These developments mean that it is timely to reflect on the roles that such scenarios play in contemporary energy system transitions. In this paper we draw on interviews with key stakeholders in energy system change to examine multiple aspects of their significance in the energy field. We develop an analysis that will contribute to STS by building insights into the roles that scenarios play in debates about and processes of energy system development. In particular, we will examine the extent to which we can characterise scenarios as designs of futures, and explore both their power and limitations as they were articulated from the differing perspectives of our interviewees.

Meeting a Grand Challenge? Design and Displacement in Germany's Envisioned Energy System Transition. *Daniel Barben, RWTH Aachen University*

In a bold and very surprising move, in the aftermath of the Fukushima catastrophe the German government under Chancellor Merkel decided on a radical U-turn in energy policy. For, just half a year earlier, it had decided to reverse the previous government's (a coalition of Social Democrats and Greens) decision to phase out nuclear power, by significantly extending the running time of Germany's nuclear reactors. In the spring and summer of 2011, the executive and legislative branches of government agreed upon an ambitious plan for a sustainable energy system transition (commonly referred to as "Energiewende") that would meet both challenges concerning climate change and sustainable energy. Key aims are to phase out nuclear power altogether by 2022, to increase the market share of renewable energy to 35% by 2020 and to 80% by 2050 and to cut the use of primary energy by half until 2050. In this paper, I will analyze the societal context in which the plan for a sustainable energy system transition was implemented, together with the challenges, opportunities and displacements which have been articulated from various perspectives in order to support or undermine the rationality and legitimacy of this "grand project." I will focus on the interrelationships in the technological,

political, economic, and socio-cultural configuration of the future energy system planned for Germany (in its European context). My analysis will draw on case studies concerning network expansion and smart grids, onshore and offshore wind energy, and CCS (Carbon Capture and Storage)—and be conducted from the perspective of anticipatory and reflexive governance.

Constructing a Clean Energy Future for British Columbia, Canada. *Nichole Dusyk, University of British Columbia*

In 2010 the government of British Columbia passed a new Clean Energy Act. This was the culmination of three years of discourse and policy that sought to integrate a climate change mitigation agenda into provincial energy policy. However, despite being imbedded within a climate change agenda, the Clean Energy Act served as a tool to reframe rather than reorient provincial energy policy with the future envisioned by the Act remaining remarkably consistent with historical energy narratives and policies. The policy reframing was accomplished, in part, by foregrounding specific energy sources and technologies and backgrounding others. In particular, the new clean energy discourse repositioned large-scale hydroelectric development from a historical but no-longer-feasible energy legacy to the basis of its proposed clean energy future. This paper uses discourse analysis to examine the provincial-level reframing of hydroelectricity and considers how, via clean energy discourse and policy, energy histories and futures are being actively shaped. It then contrasts this with the histories and alternative futures being developed in a project-affected community. The findings suggest that the competing histories not only have a bearing on current energy controversies but also have the potential to influence how sustainable energy futures are conceived and enacted in province energy policy and infrastructure. The analysis discusses the rhetorical and technological design of desirable energy futures and suggests some of the practical effects that locally-based participatory politics might have on transitioning energy networks.

009. Indigenous and feminist approaches to technoscience: Decolonizing landscapes, waterscapes, and labscapes
9:00 to 10:30 am
Kilen: Ks48

The production of modern technological identities, and the institutions, enterprises, and nation-states they inhabit, has rested in part on inhibiting indigenous peoples' uses or control of their traditional lands, disrupting indigenous land-based identities. But the appropriation of indigenous lands is often interwoven with techno-scientific control over indigenous peoples' bones, blood, and DNA, which turns these things into biological resources valuable for research. Further, technoscientific language, imagery, and practices - culturally privileged and even sometimes legally protected - both reflect and shape power relations that favor the modern nation state, de-emphasizing indigenous rights to traditional land-, water- and body-scapes. From the material to the semiotic and back again, through lands, waters, and bodies, technoscience has often weighed heavily on indigenous peoples. This panel brings together scholars from Sweden and the U.S. who couple indigenous and feminist approaches to understanding technoscience. We argue that technoscientific knowledge production needs to be decolonized, that is, democratized and made less hierarchical. Technoscience must include indigenous standpoints, whether from groups that resist technoscientific projects, or from indigenous people who would work within technoscientific fields to shape science and technology in ways that assist indigenous flourishing, rather than perpetuating the notion that indigenous peoples and their lands and waters are but the raw materials upon which technoscientific production draws. This panel pays special attention to methodological approaches by indigenous and feminist technoscientific studies scholars who work across multiple disciplines and through supra-disciplinary collaborations.

Chair:

Kimberly TallBear, University of California, Berkeley

Participants:

Techno fantasies of a Sámi cyborg: re-claiming Sámi body-, land- and waterscapes after a century of colonial exploitations in Sápmi. *May-Britt Ohman, Centre for Gender Research Uppsala University*

The state-led hydropower constructions, along with other natural resource exploitations, conducted during the last century within the Sámi traditional territory – Sápmi – in Sweden have seriously disrupted culture, economy and internal relations between inhabitants. Departing from ongoing research and earlier literature, this paper presents a critical analysis of the designs of modern large scale technical systems leading to the displacement of indigenous traditional practices, knowledges and cultures. It draws particularly on feminist technoscience approaches, including Donna Haraway and Sandra Harding's notions of feminist objectivity that seek to make objectivity non-synonymous with neutrality and distance. Rather both scholars and their followers suggest clear analyses of how knowledge production is situated within particular histories and in closer relation to the needs and desires of some in our societies, often western men. In addition, methods of feminist objectivity would suggest increasing the array of standpoints from which knowledge is produced in order to maximize or produce "strong objectivity." In this paper the author, herself being Sámi, discusses how her own heritage – in terms of situated knowledges and understandings - form part of her academic research in regard to these designs and their impacts on Sámi culture and contexts. The paper is based on research within the project "Situated perspectives on the hydropower exploitation in Sápmi: Swedish technological expansion in the 20th century and its impact on the indigenous population" (Swedish Research Council, 2009-2010) and is to be published within the forthcoming anthology "Ill-disciplined Gender: Nature/Culture Transgressive encounters", the Centre for Gender Research, Uppsala University.

Challenging colonial design of landscapes: Norwegian nation state ideals versus Sámi understandings. *Åsa Virdi Kroik, Department of Theology, History of Religions and The Social Sciences of Religion, Uppsala University*

This paper deconstructs mythologies created about Sámi people in relation to the mountain Tjåhkere in Nord-Tröndelag, the Norwegian part of Sápmi. The mythology developed among non-Sámi inhabitants in the area during the 1930s - available in both newspaper articles and local history books published by folklore societies - speaks of Sámi killing their elders, and also contains stories of Sámi cannibalism and other religious sacrifices. Through interviews with Sámi people and investigation of historical sources - earlier ethnographic work among Sámi in the region as well as archeological investigations - this paper discusses possible reasons to why this mythology has come to life and why it still remains alive today. The paper departs from decolonizing theories (Homi Babha, Gayartri Spivak) challenging the othering of indigenous peoples within science and combines these with feminist technoscience perspectives (Donna Haraway, Sandra Harding) in regard to the criticism of scientific objectivity and the recurrent creation of dichotomies between human-animal, as well as divisions between human-nature. One possible interpretation of the mythology around Tjåhkere is that the depiction of Sámi as cannibals and even non-humans formed a part of a Norwegian nation state building in a time where racism and Nazi mythology were influential. Furthermore, this depiction of the Sámi as the other, the non-human, served to lay the grounds for an ideal of colonizing and making use of the Sámi traditional reindeer grazing territories for what was considered to be modernity, i.e. the extraction of natural resources for power production and mining.

Designing dam safeties: decolonizing perspectives on large scale hydropower. *Annika Idenfors, Department of Political*

Studies, Umeå University; Camilla Sandström, Department of Political Studies, Umeå University; May-Britt Ohman, Centre for Gender Research Uppsala University

While social scientists commonly criticize technico-scientific for being too narrow in their approaches to risk in technical designs, this paper departs from the argument that the actual challenge is bridging the gap between the multitude of different actors– engineers/operators, users, political decision makers -   in order to generate new understandings and new methodologies to deal with risk, safety and security. In the paper, the intra-actions (Karen Barad) between the socio-cultural contexts, the humans and their doings, and technoscience; artifacts, nature and machines, are at the forefront, focusing on values, power and control. (Donna Haraway, Sandra Harding) Analyzing the intra-actions between political decision makers, the river and the hydropower designs, this paper presents results from interviews with local authorities along two regulated rivers in Västerbotten, Sápmi, Sweden, as well as a literature review of technical reports and rescue plans in regard to the concept of dam safety. The analysis indicates a biased focus on technological constructions where Sámi communities are made invisible and their knowledge about the river and its behavior are little valued or considered. Although both people and animals (reindeer, for example) are repeatedly killed or injured as they fall into the water due to weak ices or in strong flows of spill water, these accidents are not analyzed in relation to regulation of rivers and the concept of dam safety. The research is performed within the project "DAMMED: Security, risk and resilience around the dams of Sub-Arctica," Swedish Research Council 2010-2012.

Constituting knowledge across cultures of expertise and tradition: indigenous bio-scientists in the U.S. and Canada. *Kimberly TallBear, University of California, Berkeley*

This paper draws on ethnographic and archival research to investigate the roles of indigenous bioscientists and their collaborators in the U.S. and Canada as agents in the "democratization" of bio-scientific fields. Democratization in this case is defined in relation to both feminist concepts of objectivity and in relation to collaborative research methods developed recently in the U.S. and Canada within genome and other health research fields and with indigenous communities. Specifically, "democratization" of research means three related things: 1) that the research priorities and rights of subjects are privileged along with those of researchers. Such rights include indigenous jurisdiction or "sovereignty" over research on indigenous lands and regarding indigenous knowledges. 2) Second, that diverse knowledges and ethical practices inform bio-scientific research questions, methods, and ethics, thus making the sciences more multi-cultural. 3) Third, that we seek greater "distributive justice" in research, meaning that both subjects and diverse scientists access a fairer share of the benefits of scientific knowledge production, often (re)defining what counts as research benefit. The central hypothesis in this work is that diverse scientists, in this case Native Americans, will democratize the bio-sciences. The alternative hypothesis is that greater Native American inclusion in scientific fields will result simply in a "browning of the laboratory," with no real change in concepts and approaches. Ultimately, this research disrupts an entrenched conceptual binary, that of "indigenous" or "traditional knowledge" versus "science." It shows that indigenous people and scientists possess and cultivate knowledges that cannot be adequately understood within such a dualism. This ultimately has implications for how we define what counts as good science.

Discussant:
Charis Thompson, Gender & Women's Studies

010. (19) Entanglement, affect and transformation in, and with, life - I
9:00 to 10:30 am

Kilen: Ks54

Chairs:
Rebecca Ellis, Lancaster University
Claire Waterton, Centre for the Study of Environmental Change (CSEC), Department of Sociology, Lancaster University

Participants:

The Affects of Material Agency: Subjectivity, Ethico-Aesthetics and Ontological Blurring through a Living Machine. *Christopher Salter, Concordia University; Oron Catts, SymbioticA, The university of Western Australia; Ionat Zurr, SymbioticA, University of Western Australia*

Discussions of material agency in STS (Callon; Latour and Johnson; Pickering; Collins and Yearley; Casper; Herzig) have traditionally privileged the domain of scientific practice and the scientific laboratory as the site for such discourse. As valuable as this work has been in critiquing anthropocentrically driven narratives of scientific knowledge production, with few exceptions (Pickering), it has rarely examined the affective registers and transformation of human bodies and subjectivity that take place through the encounter with such agencies. Recent artistic and design practices involving novel "techno-science" (Hottois) situated biotechnical and responsive materials thus create a new study object for STS through both their blurring of ontological categories (live/not live, mechanistic/organic) and through their involvement with ways of thinking about the "ethico-aesthetic" (Guattari) production of new forms of subjectivity in both makers and spectators. We discuss a current project in development at SymbioticA: The Center for Excellence in Biological Arts and entitled "Tissue Cultured Muscle Actuators as Evocative Cultural Objects": a living machine consisting of an in vitro, tissue cultured muscle grown inside a custom designed bioreactor that "performs" (i.e., exerts itself) before a public in order to directly materialize and vitalize the discussion of material agency. The project has dual purposes: it acts as an aesthetic event challenging the distinction between living and nonliving matter while simultaneously, conveys this ontological blurring through a kind of Artaudian "theater of cruelty" by way of its staging - an evocation of visceral reactions towards an entity that is "semi-living" (Catts and Zurr), twitching and in need of articulation by the spectator.

Thinking, feeling and hesitating with blue-green algae. *Claire Waterton, Centre for the Study of Environmental Change (CSEC), Department of Sociology, Lancaster University*

A political experiment in which 'blue-green algae' are core participants is on-going in a Cumbrian village, Loweswater. The village is scattered around a lake of the same name which has been host, in the last 10 years or so, to increasingly frequent 'blooms' of these potentially toxic algae. The algae inspired the aforementioned experiment and many connections and activities spring forth in their name. It is possible to see this experiment as conjoined human-nonhuman participation taking place within a new 'ecology of practices' (Stengers 1996-7, Latour 2004, Haraway 2008). The humans involved are ''attached' to something that none of them can appropriate or identify with – a non-human – but that causes them to think, feel and hesitate' (Stengers 1996-7, 2010). The paper describes ways in which it is possible to consider humans and algae as 'in politics' together, troubling ideas of human exceptionalism, fabulously enlarging the time-frame of politics, engaging in creative new collaborations involving living, material and literary technologies. Within this new collective there are also incongruities, weak links between phenomena and representation, incommensurabilities. The autecologies of the algae and humans involved are out of sync, each species seems to belong to a different register of time, the flourishing of one involves the death of the other. The new collective is novel, somewhat

disruptive, possibly even upsetting in the north Cumbrian Lake District. I describe thinking, feeling and hesitating together, a posthuman politics taking some of us by surprise, and giving us fleeting glimpses of an alternative ethics in play.

Field experiments: Reordering fieldwork relations in behavioural ecology and social anthropology. *Matei Candea, Anthropology, Durham University, UK*

This paper starts from an ethnography of behavioural biologists who study the social lives of meerkats in the Kalahari desert. These biologists have set up a careful protocol of habituation in order to be able to observe the animals' behaviour in the most 'natural' conditions possible. However, in recent years, the researchers have been making increasing use of 'field experiments' which transform the meerkats' sociality and reproductive histories. The sense in which the resulting meerkat population and individuals are still in a 'natural' state is up for discussion and respecification, as are the changing responsibilities which tie the researchers to the animals. The paper examines these changing social, epistemic and ethical relations between the meerkats and 'their' researchers, and asks what these can tell us recursively, about changing relations between between the researchers and 'their' anthropologist.

Bio-Logics: Life, Agency and Technology in a Swazi Sawmill and a UK Health Research Project. *Vito Laterza, Centre for Health and Clinical Research - Bristol UWE; Bob Forrester, Swaziland National Trust Commission*

Recent discussions in the STS literature about the rediscovery of life as a productive force in human-technology interactions are closely related to questions surrounding agency, action and subject-object relations. Conceiving and remaking the BIO should be linked to the actual movements of life within specific configurations of human and non-human flows and materials. In critical dialogue with Tim Ingold's phenomenology of becomings, Karen Barad's agential realism, Lucy Suchman's exploration of agency at the human-machine interface, Don Ihde's postphenomenological mediations, and Jane Bennett's vibrant materialism, this paper explores the processes of interaction, overlap and differentiation of linear and non-linear logics in the emergence, production and containment of life in two complex systems. The first case is based on ethnographic fieldwork in a sawmill in Swaziland, where operations clearly defied linear conceptions of design and implementation in assembly line production. The second is a UK qualitative multi-disciplinary project studying public involvement in research in health sciences, where stated goals of capturing real life dynamics through iterative linear theoretical models were constantly displaced by the non-linear movements of human-technology configurations; this is explored through the lead author's auto-ethnographic engagement as project researcher. The two cases present significant differences – related to historical, political, cultural and material contingencies – but also numerous resonances. These distinctions and overlaps enable the reflexive fieldworker to develop an intercultural engaged epistemological framework for STS that avoids excessive particularism, while rejecting abstract universal notions of life that erase productive and ethical difference.

Dangerous species: tangled nature-cultures in the plastisphere. *Kim De Wolff, University of California, San Diego*

A jellyfish surrounds a plastic fragment, merging the synthetic material with its body; a water agency poster warns of dangerous plastic bottle 'fish' in the Mediterranean; marine microorganisms eat plastic waste at sea. These are the denizens of a growing realm marine ecologists call the 'plastisphere,' where sea life and plastics meet. Building upon STS interrogations of nature/culture divides and the practical work of classification, this paper investigates how diverse entanglements of plastics and marine life challenge understandings of human relationships with the ocean. First, I document attempts to untangle assemblages of nature-culture, drawing on participant-observation at a nonprofit marine institute laboratory in California. Here volunteers measure samples of vast oceans in teaspoons, sorting tiny plastic bits from animal ones under the microscope, deciding what gets counted as life (not plastic) and what does not (plastic). Second, I briefly consider recent media coverage of plastic pollution and science, paying particular attention to assumptions about whether and when these plastic species should or should not meet. I argue that the life forms of the plastisphere are 'dangerous' for both the sea, and for the very categories used to understand the ocean's relationships with humans. The struggles of sorting out plastics in the lab and the impossibility of cleaning them from the sea confound assumptions of a pristine nature-without-humans. Marine plastic pollution demands alternate imaginings of the interrelations between human products and material worlds.

011. (75+76) Design values - the materialization of building design/Digital models in technology and construction - I

9:00 to 10:30 am
Kilen: Floor Ground floor - Ks71
Chairs:
Jennifer Whyte, University of Reading
Reijo Miettinen, University of Helsinki
Participants:

Combined uses of building information models in building design. *Sami Paavola, CRADLE, University of Helsinki; Hannele Kerosuo, University of Helsinki, CRADLE*

Building information modeling (BIM) refers to a family of three-dimensional virtual model sofware to which data of the building elements are integrated. A major promise of BIM is that it helps in eliminating design errors and detecting conflicts between different models done by the architects, structural engineers, and HPAC engineers. There are technical challenges involved caused by different software, but implementation of the promise is especially a challenge for coordination and cooperation. In our paper we analyze the coordinative and cooperative aspects of the use of BIM technologies in a lifecycle project in Finland based on interviews and observation of planning meetings. We analyze three ways of combining models in the project: 1) using clash detection lists produced by "composite models" in which separate models of different partners are integrated, 2) using other partners' models as resources while doing one's own modeling, and 3) using models in collaborative problem solving in face to face planning meetings. Our analysis shows that even though the composite model was emphasized by the project management and by the BIM experts, it was not much used by the designers and engineers. The more loose sense of combining models was, however, more central for the project partners in their daily work. The importance of combined models enhancing collaborative problems solving was clear in some of the planning meetings. The observations highlight the challenges of distributed building design.

Asynchronous memory: The usage of memory by diverse practitioners over time. *Carmel Lindkvist, University of Reading; Jennifer Whyte, University of Reading*

There has been insufficient theoretical attention to knowledge sharing between professional practices that are asynchronous. We examine this phenomenon within the perspective of organizational memory using the example of knowledge sharing of digital data across the construction industry. In project delivery, digital repositories are increasingly used to generate data that will add value to project clients. The nature of knowledge held within these digital repositories are temporal separated as a project progresses over years and the data is handed over to the project clients. Usage of this data becomes complex due to the loss of personnel who created it and the loss

of memory that they attributed to it as memory is often remembered within social or cultural groupings. Drawing on semi-structured interviews with infrastructure operators and with design, engineering and construction firms, this paper examines the hand-over of digital data from project delivery teams to client operators and users at the end of the project. The practices that created the memory embedded in the data, rather than constructing a sense of the past, create a future sense of the past as the data was not to be used for looking back but for feeding into future decisions. Our empirical work shows how clients' facilities management professionals use digital repositories extensively to manage their assets, but face significant challenges in reusing data obtained from projects. This paper contributes to STS literature by developing our understanding of knowledge sharing of digital data by different practices through asynchronous memory.

Digital modeling and shaping of design practices. *Satu Reijonen, Copenhagen Business School*

This paper focuses on the role of digital modeling in shaping coordinative practices between architects and energy engineers in construction design. The paper presents a case study of the use of an energy performance calculation programme, a numeric digital modeling tool, that not only enables coordination between the two communities but also shapes coordinative practices around the emerging building. The paper draws on two interlinked strands of literature that have engaged in the role of material artefacts in the social: the entanglement of technology in organizing and management (Orlikowski 2000, 2010), and the socio-material constructivist studies of technology (Akrich 1992, Akrich et al. 2000, Latour 1991). The programme influences the coordinative practices in following ways: it shapes the modus of interaction between energy engineers and architects and enforces particular jurisdictional boundaries and related sequences of working. It also creates a 'third space' through which a distanced intervention across professional boundaries becomes possible. Furthermore, the programme defines the focus of shared inquiries by referring to a particular version of energy performance. The results of this study suggest that generative potential of digital modeling tools such as the calculation programme resides in their ability to restrictively define the possible roles in, focus of and sequence of working. In addition, digital modeling provides a separate medium with the help of which the design object may be re-enacted and restructured over and over again. In the case at hand, this enabled a 'trial and error' type of intervention practice by energy engineers.

Digital Materiality and Design Collaboration. *Laura Forlano, Illinois Institute of Technology*; *Ingrid Erickson, Rutgers University*

This presentation will discuss the notion of the sociomateriality of technologies and information systems in the context of the work of designers and, in particular, design collaboration. Specifically, drawing on actor-network theory, I argue that technologies must be considered as participating in networks of human and non-human actors. By describing the sociotechnical arrangements in design collaborations, I introduce a new set of technological actors, both physical and digital, to networks composed of human and non-human entities. Specifically, these tools include physical artifacts such as Post-it Notes, sketches and models as well as digital artifacts produced in Adobe Photoshop, InDesign and Flash. Furthermore, I argue that it is necessary to consider the appearance, disappearance and reappearance of technologies in these networks over time. As such, technologies can be understood to perform different roles and take on different characteristics, including physical and digital, among a network of people, technologies and organizations engaged in design processes that unfold over time. This research focuses on a wide range of designers and design educators including architects, interaction designers, graphic designers, product designers, industrial designers, service

designers and strategic designers based in a range of organizational settings including private-sector design consultancies, architecture firms, universities and non-profit design practices. Using empirical examples from a year-long qualitative study of design collaboration, which includes interviews with designers in New York, Toronto, Barcelona and Brisbane, this presentation attempts to expand our understanding of digital materiality in important ways as well as to apply it to new realms of organizing and work.

012. Edibles and edibility in STS - I

9:00 to 10:30 am
Radisson Hotel: Radisson A

Edibility signals a close, intimate and transgressing connectivity between humans and their material environments. Virtually any decomposable object could in the widest sense of the word be considered a potential edible, a fact which opens up an interesting space of inquiry around the precarious bounds delineating the human body from the stuff which is, presumably, environing it. While relatively little attention has so far been paid to edibles and edibility in STS, a number of current research agendas around bodily registers and political matter are perhaps signalling a potential shift here. Bringing together scholars who address this theme, this panel promises to gather papers that approach edibles from a wide range of backgrounds and perspectives within STS. Edibles are gaining interest in social sciences for all sorts of reasons. Environmental, ethical, political, medical, technological and social issues to do with edibility come to the fore not only at dinner tables and in supermarkets, but also in controversies about GMO food, in concerns about health care (e.g. through "the obesity epidemic"), in debates surrounding the future of food and sustainability (the "protein problem"), or through the growing problem of organic waste. But in addition to this, to turn something edible into something that is digestible, let alone enjoyable, all sorts of techniques and technologies – e.g. cooking, cutting, cooling, transportation, law and safety regulations, controlled trials, experiments in labs – are drawn upon to transform objects or "stuff" into edibles.

Chairs:

Sebastian Abrahamsson, Department of Sociology and Anthropology, University of Amsterdam
Anders Kristian Munk, Section for Innovation and Sustainability, the Technical University of Denmark
Sebastian Abrahamsson, Department of Sociology and Anthropology, University of Amsterdam

Participants:

Designing's of the New Nordic Diet: Exploring displacements of the New Nordic Diet within the OPUS Research Center in Denmark. *Arun Micheelsen, OPUS Center, Copenhagen University, Faculty of Science, Institute of Food and Resource Economics, Denmark.*

The Danish multi-disciplinary research project OPUS (2009-2013) aims to promote dietary change among the Danish population by designing and launching a new diet which transfers principles from New Nordic gastronomy to a novel everyday cuisine, i.e. the New Nordic Diet (NND) (http://www.foodoflife.dk/Opus/English.aspx). The NND is unique in that it seeks to combine the aims of promoting healthy local Nordic food, protecting the environment and combating climate change on a basis that is economically feasible as well as gastronomically accessible for all segments of the Danish population. Delineating the ongoing formulations of the NNDs within the OPUS Center, an exploratory qualitative study was conducted investigating the different epistemic practices involved in developing, investigating and disseminating the NND among key participants in OPUS from 2009 to 2012 (N=28). Following a pragmatic analysis (Carlile 2002), results elucidate how the NND initially fluctuate between being a 'partially existing object' (Bruun Jensen 2010; Latour 1999/2000) and a 'boundary object' (Star 1989) influenced by different disciplinary outlooks

and interdisciplinary negotiations, finally to gain consistency and standardization by OPUS' organizational set-up (Fujimura 1992), presenting a seemingly singular, scientific legitimate and healthy New Nordic Diet for the Danish people (Law 2004).

Making Nutrients Edible: The Design of Insects and Taste in the Face of Global Hunger. *Emily Yates-Doerr, Department of Sociology and Anthropology, University of Amsterdam*

Scientists in The Netherlands are cultivating edible insects to address concerns of international food insecurity. When accounting for climate change and resource optimization much about this makes sense; compared to other meats, insects can be an efficient, safe, and low-impact source of nutrients. Additionally, in many sites with endemic malnutrition, people find insects tasty. The problem the scientists are grappling with, however, is that insects easily mass-produced are not typically insects people want to eat. This paper examines the design strategies that scientists are undertaking in their quest to transform nutrients into food to explore the malleability of (in)edibility. The researchers I worked with were convinced that edibility was not simply in the eye (or mouth) of the beholder but could be engineered on a global scale through strategies of aesthetic and economic presentation. And yet, despite their broad aims, the scientists encountered difficulty getting their insects to travel. I draw attention to where the crafting of global edibility breaks down, to suggest that not just what is good but what is possible to eat shifts with different contexts. The scientists were aware that what is "good to eat" in the laboratory doesn't flow seamlessly into the designs of government permits, public health policies, marketing campaigns, and everyday life but must be continuously negotiated. My interest in how and when shifts in edibility take places raises broader concerns for the field of STS about how our own research designs can account for diverse and constantly moving registers of scientific practice.

Edible North: Metabolizing the Scandinavian issuescape through turnips and terroirs. *Anders Kristian Munk, Section for Innovation and Sustainability, the Technical University of Denmark*

With the publication of the Manifesto for a New Nordic Cuisine in 2004, the gastronomic potentials of the Scandinavian flora and fauna became the basis for a social innovation project with ambitions far beyond fine dining and select produce. Since then New Nordic Food has become a key platform for articulating concerns about (and discuss solutions for) more divisive or contentious topics like the lack of development in peripheral Scandinavia, the relationship between diet and disease, or the sustainability of our food production system. From an STS perspective it is interesting to contemplate how the 'bodily registers' (Latour 2004, Despret 2004) of these issues change as they become, quite literally, digestible and 'metabolized' (Whatmore & Stassart 2004) through their partial mergers with the New Nordic Food agenda. Like so many other contemporary concerns, New Nordic Food brings to the fore our relationship with both the natural and the bodily, except here as a promising and comforting rather than a threatening and uncertain liaison. When the Nordic landscapes and their flora and fauna become in this way 'the stuff of politics' (Braun & Whatmore 2010), it warrants an exploration of both their co-constitutive role in the formation of publics (Marres 2007) and the ways in which they are themselves reconfigured as 'matters of concern' (Latour 2003) in this process. I draw on digital cartographies and fieldwork carried out under the Carlsberg funded project Edible North: Mapping the 'New Nordic Food' phenomenon, its diffusion, development and socio-technical variation.

Discerning Drinkabilities: Elaboration and Translation in Australian Wine Production". *Jeremy Brice, School of Geography and the Environment, Oxford University*

In this paper, I will examine the techniques through which the potential edibilities, of 'objects or stuff' come to be known, and acted upon, when the material properties of that stuff are themselves unstable. I will draw on material from my ethnographic research among Australian wine producers to examine what is at stake in transforming materials to cultivate particular kinds of edibility, in this case specifically 'drinkability', as solidly edible grapes become a fluid with intoxicating capabilities. I will focus on how winemakers address the crucial question: 'What kind of wine are these materials suitable for?'. This is an important question in commercial wineries, which produce a range of wine products with different tastes and target markets – settings in which a range of different 'drinkables and drinkabilities' are in play. I will suggest that the process of eliciting different drinkabilities involves techniques of both elaboration and translation. Elaboration because materials-becoming-wine are regularly subjected to 'trials of strength' (following Latour, 1999, 2004) intended to express and define their properties. But also translation because winemakers infer the properties (and therefore 'drinkabilities') of finished wines from the results of these trials. Winemaking trials do not, therefore, simply elaborate a substance but construct relations between different materials – albeit only tentatively since the properties of winemaking materials, and so their potential drinkabilities, change (sometimes surprisingly) during the production process. As such, I will explore the elicitation and differentiation of drinkabilities as a process of negotiation through which present and future edibles become related to, and act upon, each other.

Discussant:
rebeca ibanez martin, philosophy instute, csic, madrid

013. E-f(r)iction: Technological and social innovation in the public sector

9:00 to 10:30 am
Radisson Hotel: Radisson B

One of the biggest challenges, both for policy and practice, is how to investigate and design the complex interactions among technological, social and organizational aspects of open innovation in emerging fields, such as ICT-based public sector transformation (e-government). The theme of our session focuses on the lack of appropriate interfaces between the technological, social and organizational issues, which turn out to be the crucial design and displacement caveats of most innovation processes. For example, the assessment of the United Nations e-Government Survey 2010 revealed that even highly-ranked countries in terms of e-government development continue to focus on online and mobile dissemination of information rather than expansion of interactive services – often because of the expense and complexity of rethinking systems, procedures underlying organizational arrangements and staff / talent management behind the scenes. Furthermore, there is obviously a disconnect between e-government supply and demand, with user communities continuously preferring 'rich' face to face interactions. Citizens seem neither aware of the existence of e-government services, nor prefer to use them. For this session, we have asked for papers on: - The interfaces between technological and social innovation in public sector transformation - The role and importance of certain actors for ICT-based transformation of the public sector - The role of communities of practice in public sector innovation - The underlying ideas of ICT-based public sector transformation: the technology-savvy citizen and the boost for democratisation - Institutional and cultural difficulties for e-government from a comparative, international perspective

Participants:

The Role of Network Innovation Intermediaries in health-enabling Technologies. *Catherine Agamis, Capgemini Consulting; Dimitris Assimakopoulos, Grenoble Ecole de Management, LINC Lab*

There is a vital need for Europe to improve health systems through the deployment of cost-effective policies for enabling digital technologies addressing growing societal challenges. E-health could potentially contribute in renovating public health

systems and improving health provision given the breadth of opportunities along the value chain in prevention, early detection, diagnosis, treatment and monitoring, of say, elderly patients at home. However, cross-disciplinarity, heterogeneity and complexity of networks among an array of actors – from the public sector, including hospitals, public health authorities, national health insurance companies; private sector, large "Pharma" players, as well as new entrants, for example, ICT companies; and civil society including patients' associations, NGOs, etc – construct (mis-)aligned innovation networks, that we argue need intermediaries, circumventing central actors such as clinicians, to facilitate their emergence and orchestration. To understand such an emerging innovation process in e-health, there is a need to explore through selective cases how and why heterogeneous and differentiated networks of innovators, and intermediaries, shape the dynamics and productivity of emerging e-care networks. How intermediaries trigger and drive successful convergence? And why e-care intermediaries contribute to successful health enabling technologies? As an illustrative case, we study the role played by a leading association to promote the living lab approach in the healthcare sector, through the e-care lab initiative. The e-care lab is mandated to design innovative and integrated healthcare solutions through a co-creation online platform. We suggest that innovation intermediaries can take an active part in the identification, buy-in, coordination of the multiple actors involved thus resulting in the speeding up and orchestration of innovation.

Modelling Renewable Energy Innovation Policies. *Bei Gao, University College Dublin*; *Petra Ahrweiler, University College Dublin*

Energy infrastructure and security of supply is the backbone of society and economic development, fundamental for daily life, and in many countries allocated to the responsibility of the public sector. Facing the scarcity of fossil fuels and the effects of severe environmental pollution caused by the combustion of conventional energy, we currently witness a massive launch of renewable energy technologies worldwide. Making cleaner energy supply sustainable and affordable, robust control of energy industry by governments is a commonly observed phenomenon. However, industry control is not the only governmental function, which is asked for in this inevitable transition process. Innovating energy systems towards more eco-friendly approaches is a challenging public and environmental policy task, where policy strategies have to address both, technological innovation in the area of emerging renewable energy technologies, and social innovation, where citizens, NGOs, companies, and many other actors have to find new ways to deal with energy-related routines, behaviours and institutions. In this paper, we will present an agent-based model for impact assessment and ex-ante evaluation of such complex policy functions, where we will explicitly look at the role of the civil society agents to identify the participatory and cooperative elements in public-sector driven system transition, for which energy infrastructure and supply is an example par excellence. Expected outcomes consist of selected scenarios for reconfiguring energy systems influenced by innovation policy and interaction of different players.

A Platform for assessing social Awareness. *Harold Paredes-Frigolett, Diego Portales University, Santiago de Chile*

Public-sector organizations often misunderstand innovation as the process of introducing "new measures or policies" without first validating the importance of the needs they address and the quality of the value proposition they entail. This process requires "intelligence information" hidden in networks located outside the organization. Interestingly, public sector organizations are much better positioned than private sector organizations to unlock this intelligence information. In a way, public sector organizations have already a "contingent audience" of potentially millions of online users waiting to join. This audience "will be there"

contingent upon public sector organizations: (i) assessing and validating important needs, (ii) characterizing compelling value proposition for the communities they serve, and (iii) facilitating the delivery of such value to them. In this presentation, we make a contribution in this area by presenting a social media platform for assessing "social awareness" as one of the key inputs required to identify and validate high-value creation and innovation opportunities for public sector organizations. The platform instantiates a special kind of ``metacontent'' distributed through so-called "sentiment channels." This metacontent represents the actual sentiment about the topic associated with that channel uttered by a referent or a group of referents in online communities. Our work constitutes a first step towards building social media platforms for the characterization and validation of public sector innovation agendas.

014. (68) Civil society organisations in research governance - I
9:00 to 10:30 am
Solbjerg Plads: SP112
Chair:
> **Bernd Carsten Stahl**, De Montfort University

Participants:
> Evaluation of CSO Involvement in Research Governance.
> *Bernd Carsten Stahl, De Montfort University*
>
> The discussion of the involvement of Civil Society Organisations (CSOs) in policy decisions has a long history. Perceived advantages include the increase of legitimacy of policies and the broadening of the knowledge base of decisions. Despite substantial investment in research and high expectations with regards to the societal impact of research, relatively little research has been done on the role of CSO involvement in research governance. While there are numerous examples of CSO involvement in research, there is currently no theoretical or empirical basis on which to compare their different roles or evaluate the success of such engagement. This research in progress paper will contribute to the STS literature by outlining two interdependent areas of relevance that need to be understood in order to come to robust and rigorous evaluations of CSO participation in research governance: o Criteria of Success of CSO Engagement in Research Governance. Which criteria are currently applied for CSO engagement? o How are success criteria defined and by whom? o What assumptions / conditions are implied in such criteria? o Do they differ in any way from success criteria more of participative activities more widely? 2. Negotiation of Expectations of CSO Engagement. o What are the stakeholders and what are their expectations in CSO participation in research? o What are the conditions under which such expectations can be communicated and met? o What mechanisms exist that would allow the communication and negotiation of such expectations?

> Legitimacy and success of civil society organizations' participation in research governance. Lessons from biomedicine and nanotechnology. *Peter Wehling, University of Augsburg*
>
> In recent years, a wide range of efforts to foster public participation in research governance have resulted in a great variety of more or less institutionalized participatory exercises. Following a distinction introduced by Brian Wynne the paper will focus on the „uninvited" participation of civil society organizations (CSOs) such as patient associations, environmental and consumer organizations in research and research politics, i.e. on „spontaneous" engagement with and involvement in processes of knowledge production. Drawing on current research at the University of Augsburg on participatory governance of biomedical research and nanotechnologies, some empirical examples of these forms of CSO participation will be given.

Unsurprisingly, however, such „uninvited" engagement is raising questions of both its (political and scientific) legitimacy and success. Regarding the former, different sources of legitimacy will be considered; in addition to the input of (experiential) knowledge, the paper will draw attention to the importance of CSOs for addressing knowledge gaps and „undone science" (Frickel et al. 2010), introducing new perspectives, or representing the needs and interests of disadvantaged social groups (as many patient associations do). As regards success, there is wide range of criteria beyond immediate policy outcomes or new scientific discoveries that should be taken into consideration, e.g. the stimulation of scientific controversies, greater public awareness of hitherto neglected issues or more general cultural effects such as the destigmatization of social groups. As a result, established conceptions and justifications of legitimate participation in research and research governance have to be rethought.

The formation of knowledge-based civil society organisations: Cases in Vietnam. *Quy-Hanh Nguyen, Center for Development Research (ZEF), University of Bonn, Germany; Ngoc-Khanh-Van Nguyen, Foreign Relations Service Centre, Thua Thien Hue Department of Foreign Affairs, Vietnam*

The debate on civil society in Vietnam, under either realms- or activity-based approaches, highlights a central focus on the autonomous status and performance of civil society organisations (CSOs) within the authoritarian one-party state. Empirical research has largely demonstrated that civil society with party-sponsored mass organisations, state-led community-based organisations, quasi and government-organised NGOs, media, universities and research institutes sustains and backs up political establishment and formal structures, and thus basically maintains "embedded" advocacy. Exception is the work by Fforde (2008) who argues for the autonomous energies of informal farmers' groups. Nevertheless, the engagement of CSOs in knowledge generation and diffusion for development is far under-researched. Taking these viewpoints forward, this research explores the formation and operation of knowledge-based CSOs in the field of rural community development. Knowledge work is analysed as organisational or network outcomes and within the interactions between the government and governed. Geography- and typology-diversified study cases include Vietnamese NGOs, research centers and informal networks of farmers. Data used in this paper were selected from one-year field-research in the Mekong Delta combined with added interviews conducted with purposive organisations. This paper argues that studied CSOs work independently beyond the formal structures and spheres in glocalising and globalising local knowledge for rural development and thus not all of their organisation and products are recognised. CSOs create spaces of knowledge production autonomy that are significant for the local state and international donors to engage with and scale up. Further research therefore can look into inter-realms knowledge integration and governance.

The NanoCap Project: NGO Participation in the EU nano debate. *Anna Lamprou, RPI*

This paper examines how efforts to facilitate public participation in debates surrounding nanotechnology have affected policy development in the European Union. In recent decades governments have encouraged and created the space needed for public participation in discussions about regulatory policy development for new technologies: usually through the development of consensus conferences and other forums. STS scholars have explored and discussed the limitations and potentials of such projects (for e.g. Bowman et al., 2007; Powell & Kleinman, 2008), and the fact that even though the deliberative experiments have many benefits, they often have a limited impact in policy making (Kleinman, 2000; Hess, 2011). In 2006, five NGOs, five Trade Unions, and five Universities formed a consortium through a European Union funded project called NanoCap. The project lasted 3 years, and through structured discussions enabled environmental NGOs and trade unions to participate in a debate on nanotechnology at European level, and to formulate positions on the issue. The NanoCap seems to have been a very successful project, it seems to have achieved its goals, and it seems that actually it enable its participants to influence nanotechnology policy making. This paper will explore the NanoCap project and its impact in the discussions and developments of regulatory policy for nanomaterials in the EU. Through interviews and documents analysis, this research will show that certain types of participatory projects combined with certain types of political structures can have an impact in policy making for new technologies.

015. Postphenomenological research: Conceptualizing human-technology relations

9:00 to 10:30 am
Solbjerg Plads: SP113

Over the past decade, the 'postphenomenological' approach to science and technology has come to play an ever growing role in science and technology studies. As it developed out of a fruitful interaction between philosophy and STS, it has come to inspire both philosophers of technology and scholars working on empirical studies of science, technology, and society. By articulating notions that can be used and further developed both in empirical studies and in theoretical work – like mediation, multistability, and human-technology relations – postphenomenology is increasingly adding helpful perspectives to other approaches in STS. The four panels we propose each focus on a different aspect of the postphenomenological approach, in order to explore its methods and its possible implications for STS and empirical philosophy of technology. Panel 1 focuses on theoretical contributions; panel 2 on empirical perspectives; panel 3 on new human-technology relations; and panel 4 on philosophical implications.

Chair:

Don Ihde, Stony Brook University

Participants:

Robotic Embodiment. *Kirk Besmer, Gonzaga University*

Background: In the Phenomenology of Perception, Merleau-Ponty uses the example of the blind man's cane to describe how instruments, habitually taken up, can become elements in a unified "body schema." Such instruments become functioning elements of one's bodily intentionality. This example is often cited in post-phenomenological studies (and elsewhere) to describe how technological objects can become embodied and, thus, extend one's powers and enlarge the scope of one's agency in the world. Theoretical Perspective: In this paper, I will examine the effectiveness of this example and the account of technological embodiment based on it by examining remote robotic technologies such as telesurgery. In telesurgery, we witness a double technological embodiment. The surgeon embodies (i) the control interface instruments and (ii) the remote arms of the robot. Since there is little or no tactile feedback from the arms of the robot to the hands of the surgeon, embodiment of the robotic arms cannot be based on touch; hence, there is a significant dis-analogy to the example of the blind-man's cane, the embodiment of which depends on touch. I will use the concept of "visual proprioception," to give an account of the sense that the surgeon has that the robotic arms are extensions of her natal embodiment to become functional elements in her "body schema." Significance to the Field: Recognizing the importance of visual proprioception in the process of embodying remote robotic technologies introduces a crucial distinction into post-phenomenological discussions of emerging technologies. It also suggests a way to understand what might be called "virtual embodiment," which occurs in the playing of video games and participating in online worlds in which one designs and deploys an avatar.

Technology and the subject: on the technical constitution of the

subject in post-phenomenology. *Mithun Bantwal Rao, Wageningen University*; *Pieter Lemmens, Wageningen University*

How do technical artifacts constitute subjectivity? How do social relations constitute technical artifacts? And what is the relation between these two questions? Can we understand the former without taking into account the latter? This paper develops the argument that if the theory of technically mediated subjectivity, as exhibited in the post-phenomenological approaches of Ihde and Verbeek, is applied normatively, it should take the politico-economic context of this mediation – or as we would like to rephrase it: of this conditioning - critically into account as well. Subject constitution takes place primarily at work, i.e., on the terrain of production and in everyday life, which is characterized predominantly by consumption in contemporary societies. Both are ruled by the commodity. Theorizing the mediating or conditioning role of technical artifacts or 'dispostifs' (as Foucault called them), remains deficient unless its material determination by the real dynamics of production and consumption is implicated in the analysis as well. Concretely, this means that 'technical mediation' should be analyzed in the context of today's 'societies of control' (Deleuze) and the struggles and resistances it permanently provokes. What we want to show is that post-phenomenology, by failing to shake off the reductive methodological principles of classical phenomenology, remains blind to the socio-economic relations of power underlying the production of technical artifacts. As such, it fails to stand up to recent post-Marxist and Foucault-inspired theories of power, subject-constitution and ethics as resistance. Ultimately, the paper argues for a less phenomenologically reductive and more politico-economically informed approach, so as to attain a more comprehensive understanding of the phenomenon of technical constitution of subjectivity. Methodologically, the paper is informed by post-phenomenology, critical theory of technology, post-Marxist critique of political economy and the Foucauldian analysis of power. Key words: post-phenomenology, subjectivity, mediation, power, political economy

Making Humanness with Technology – Dialoguing with Postphenomenology. *Lucie Dalibert, University of Twente*

In this presentation rooted in empirical philosophy (Mol, 2002), and feminist materialism (Alaimo and Hekman, 2008), and postphenomenology (Ihde 1990), I intend to interrogate which and whose bodies materialise – that is, both come to existence and come to count (Barad, 2007) – as human, nonhuman, other-than-human, less-than-human in the fields of spinal cord stimulation, prosthetics and tissue engineering, the three domains in which I am conducting fieldwork. More precisely, it is via the analysis and mapping of the interferences of the material-discursive practices that are enacted not only on the laboratory floor but also within the lived experience of the users of these technologies and through which bodies get defined and delineated, that I will sketch what matters as proper humanness. In this endeavour, I will also open a generative dialogue between Karen Barad's agential realism (Ibid.), Bruno Latour's affective compositions (e.g., Latour, 2004) and Don Ihde's embodiment relation (Ihde 1990) as it is my contention that reading them through one another can contribute not only to strengthen understandings of bodies and technologies, but also to better account for and be accountable to the affective shaping of bodies within technoscience, a pressing and pivotal ethical (and political) issue in our highly technological times. References: Alaimo, S. and S. Hekman (2008). 'Introduction: Emerging Models of Materiality in Feminist Theory.' Material Feminisms. Bloomington: Indiana University Press, 1-19. Barad, K. (2007). Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning. Durham and London: Duke University Press. Ihde, Don (1990) Technology and the Lifeworld: From Garden to Earth. Bloomington: Indiana University Press Latour, B. (2004). 'How to Talk About the

Body? The Normative Dimension of Science Studies.' Body & Society, 10(2-3), 205-229. Mol, A. (2002). The Body Multiple: Ontology in Medical Practice. Durham and London: Duke University Press. Sloterdijk, P. (2009). 'Rules for the Human Zoo: A Response to the Letter on Humanism.' Environment and Planning D: Society and Space, 27(1), 12-28.

Postphenomenology and brain technologies: from posthumanism to metahumanism. *Peter-Paul Verbeek, University of Twente*

Postphenomenology can be characterized as a non-modern approach. Closely related to both phenomenology and actor-network theory, it refuses to take the modernist separation of subject and object as a starting point, and focuses on the relations between subjects and objects. Yet, postphenomenology does not embrace the radical symmetry that comes with the amodernism of actor-network theory. While giving up the separation between humans and nonhumans, it does not give us the distinction between them. In this paper, I will further investigate the specific character of the postphenomenological way out of modernism, by developing the concept of metamodernism. The concept of metamodernism indicates that postphenomenology is a specific way of dealing with the distinctness of subjects and objects in our experience, rather than a denial of it. By studying the impact of brain implants on people's actions and experiences and their sense of subjectivity I will further develop this notion of metamodernism. On the basis of this, I will explore how this metamodern position will make it possible to enrich the discussion between humanists and posthumanists with a metahuman position. Not the move beyond the human, or its conservation, is central in this approach, but the specific ways of developing a theoretical and practical relation to humanness.

016. (87) Ignorance by design. rethinking knowledge, anti-knowledge and the unknown in STS - I

9:00 to 10:30 am
Solbjerg Plads: SP114
Chairs:

Matthias Gross, Helmholtz Centre for Environmental Research - UFZ

Linsey McGoey, University of Essex

Participants:

Important and Unimportant Ignorance and Environmental Decision Making. *Alena Bleicher, Helmholtz Centre for Environmental Research – UFZ, Leipzig*

Cleaning up contaminated areas is an important issue of environmental management in all industrialized countries. Since the 1980's much efforts have to be taken to develop technologies and approaches to investigate soil and groundwater and to assess risk by using specific models. Based on those information remediation is carried out to avoid and to reduce negative impacts on ecosystems and human health. Although risk assessments are conducted in advance actors regularly are confronted with unexpected findings of contaminations. Thus the promise of modern society which has been resolving problems and predicting future developments based on well-grounded scientific knowledge is challenged. However experts in remediation consider those situations often as normal. They are aware of the limitations of their knowledge (here called nonknowledge) and expect the unexpected. Within this presentation I will take the examples of two remediation processes and discuss different types of ignorance which are relevant in decision making for cleaning up a site. Based on data from qualitative interviews I will show how actors deal with unknowns in their decision making. Communication about the unknown seems to be an important strategy. By employing the terminology of ignorance and nonknowledge I will discuss under which conditions actors consider ignorance as important and take

it into account in decisions and which strategies they employ to deal with consequences of decision making under ignorance. The presentation contributes to the discussion on the limits of scientific knowledge and on strategies beyond the classical methodologies of risk assessment that enables dealing with ignorance.

Co-producing ignorance: The scientific frontier in public and practice. *Marija Uzunova, Maastricht University*

Multiple forms of non-knowledge as direct products of knowledge production processes have recently captured the attention of the STS community. Studies have shown that ignorance is not a definitive placeholder for future knowledge, but an active domain that expands together with the scientific frontier, and can be leveraged to different ends. This paper makes a theoretical case for the co-production of ignorance and tests it empirically through the case of the epigenetics. It argues that ignorance, like its twin knowledge, is similarly co-produced between the scientific and social domains. The dynamics of this co- production are examined by looking at how ignorance is conceptualized within scientific circles, and communicated to the public and policy- makers. These three communities constitute different epistemic cultures with discrepant assessments of the state of uncertainty in a given public debate over emerging scientific knowledge. Scrutinizing the rhetorics of ignorance helps both reveal the dynamics of boundary-work between science and society, as well as disentangle the co-production processes between scientific non-knowledge and public uncertainty. The co- production idiom is applied to issues of ignorance in epigenetics for personal and policy decision-making. Examined is how the abounding uncertainties and ambiguities in the emerging fields of epigenetics and epigenomics are factored in communications of their implications for personal health decisions and public health policy.

The co-production of uncertainty in evidence-based guidelines. *Esther van Loon, Erasmus University Rotterdam*

There is a vast amount of literature pointing at inherent uncertainties in scientific knowledge. Uncertainties such as partiality, inconsistencies or gaps are becoming more visible when scientific knowledge is deployed as a source in (complex) decision-making. The role of science in decision-making practices is intensifying, and this is given form in all sorts of evidence-based initiatives in fields as medicine, management and policymaking. The shared aim of these evidence-based initiatives is to bring across effective or 'proven' interventions, preferably derived from a sound knowledge base, to practitioners as a guide for decision-making. Evidence-based interventions are often criticized for not accounting enough for the uncertainties and complexities of practice. Yet less often studied is the question how these evidence-based claims are actually produced and how uncertainties are dealt with in their production. The question I explored is therefore how do guideline developers deal with uncertainties in knowledge in the construction of evidence-based guidelines? Interviews with guideline developers pointed at several strategies, such as the influence of study designs on the robustness of claims in the guideline and the struggle to reliably include knowledge from more variable sources as patient experiences and organization of care in guidelines. These tensions point out that uncertainty of knowledge is co-produced in evidence-based guidelines and should be given more explicit acknowledgement by their developers. The insights of this paper aim to contribute to a better empirical understanding of the role of uncertainty in the translation of knowledge into support for decision-making.

(Un)Successul Sound Design: A Chinese Experimental Musician's Practice. *Basile Zimmermann, University of Geneva*

This paper presents the compositional activity of Lao Li, a Chinese experimental musician observed in Beijing in 2004. It discusses how the artist managed to create a personal 'theory of sound' that enabled him to create highly original works, while at the same time preventing him from reaching his goal to produce music that could be listened to on compact discs. It shows how his production was characterized by the use of a very uncommon technique known among sound engineers as "parallel compression", which the artist conceptualized as the "piling up of flows". The methodology used during the field work is based on grounded theory. The argument is that STS can rely on insights from the sociology of art (Howard Becker's Art Worlds) and from anthropology (Philippe Descola's Par-delà nature et culture) to analyze situations where software and hardware objects coming from different parts of the world are used to produce mashups. It discusses how the concepts of culture and agency relate to each other within these different theoretical frameworks, and how the conceptualisation can be improved to include "ignorance" as an asset.

017. (01) Clinical research in post-genomic medicine - I

9:00 to 10:30 am
Solbjerg Plads: SP207
Chairs:
Alberto Cambrosio, McGill University
Peter Keating, University of Quebec, Montreal
Participants:

Valuations of Experimental Designs in Proteomic Biomarker Experiments and Traditional RCTs. *Francis Lee, Linköping University*; *Claes-Fredrik Helgesson, Linköping University*

What biomedical knowledge is worth pursuing? The very act of establishing an experimental design manifests that certain knowledge is considered valuable and possible to realize. A finished research design embodies a valuation of a particular research direction in relation to other contemplated designs. This paper provides early reflections from the project Trials of Value. The purpose of the overall project is to study valuations in research design in proteomic biomarker experiments and traditional RCTs. An important point of departure is that different types of valuation (economic, medical, or scientific) are seen as intertwined facets of establishing value in research design. Thus, we wish contribute to the discussion on how to examine the intertwining of the economic and the epistemic in the conduct of biomedical experiments. In this paper we examine valuations in experimental design drawing on scholarly discussions, textbooks, and preliminary interviews in order to explore similarities and contrasts between the design of traditional RCTs and proteomic biomarker experiments. Through the study of emerging design-practices in a biomarkerized (Cf. Metzler, 2010) biomedical research landscape we explore emerging patterns of valuation in the postgenomic era. Metzler, I. 2010. Biomarkers and their consequences for the biomedical profession: a social science perspective. Personalized Medicine 7(4): 407-420.

BRCAness: Redefining BRCA genes in the era of postgenomic medicine. *Pascale Bourret, Aix-Marseille Université*; *Alberto Cambrosio, McGill University*

The development of BRCA research during the last few decades has led to the establishment of a new kind of clinical practice centered on the management of cancer risk. The emergence of the notion of 'BRCAness', and its therapeutic counterpart, 'synthetic lethality', has once again redefined the relations between BRCA genes and breast cancer, resulting, in particular, in a transition from a domain exclusively focused on the hereditary dimension of BRCA genes to a domain that encompasses sporadic cancers. Disproving early social science criticism of BRCA research as concentrated entirely on very small subset of breast cancers, BRCA research has provided

valuable insights into breast cancer as a whole. In order to account for these recent developments, the paper examines the emerging intersection of three distinct lines of research: the redefinition of breast cancer as consisting of several molecular subtypes, each with a different prognosis and requiring a specific therapy, a shift in therapeutic strategies from a focus on massive cell kill to the selective blocking of molecular pathways, and the existence of a class of drugs (known as PARP inhibitors) looking for a disease. BRCAness has redefined the links between BRCA mutations and patients, and thus the clinical value and utility of BRCA testing. 'BRCA' is thus better understood as a network defined by its multiple associations with other entities and processes, and by fluid research practices that shift pre-existing boundaries, connect previously unconnected elements and lead to novel configurations.

Blending Genetics and Oncology. *William H McKellin, Dept. of Anthropology, University of British Columbia*
Following the discovery of genetic mutations for hereditary breast, ovarian, and colon cancers oncologists, geneticists, and pathologists collaborated in new multidisciplinary research and clinical units that challenged and displaced their specialties' understandings of disease, diagnosis, and treatment. Consequently, hereditary cancer programs have spurred the emergence of genomic medicine. Additionally, the development more rapid and less expensive "Next Generation" genetic sequencing platforms has helped to create new models of disease that lay the foundation for "personalized' genomic medicine. Based on interviews and with clinicians and researchers in hereditary cancer care, and participant observation, this paper examines the displacement of oncological and genetic understandings of familial cancers, and traces the re-conceptualization of hereditary cancer care as it has moved from disparate, yet interconnected research programs into collaboratively designed national clinical care protocols and new cross-disease research. This paper will examine these developments in genomic medicine though the theoretical lenses of Activity Theory and Conceptual Integration or Blending Theory. While Activity Theory has developed a compelling means of representing the social interaction of joint cognitive enterprises, it is less successful in explicating the cognitive processes and products of joint innovation. Conceptual Integration or Blending Theory, developed in Cognitive Linguistics to understand metaphors and analogical reasoning, provides a useful tool to elucidate how multiple knowledge structures produce new conceptual models. Together these two theoretical approaches provide a framework to understand the social and cognitive collaboration that has produced new approaches to hereditary cancers and innovative conceptual models for genomic medicine.

Post-genomic cancer research: trajectories of convergence and innovation. *alessandro blasimme, UMR1027 INSERM-Université de Toulouse, Paul Sabatier, equipe 4; Anne Cambon-Thomsen, UMR U 1027, Inserm, Université de Toulouse 3 - Paul Sabatier Epidémiologie et analyses en santé publique*
Genomic approaches to cancer treatment are already informing a number of clinical trials in oncology (e.g. microarray-based cancer signatures trials). This is animating powerful visions about the development of increasingly personalised and effective cancer therapies. However, in this paper we show that next-generation high-throughput technologies, offering an unprecedented level of genomic resolution, are likely to steer the emergent sociotechnical phenomenon of cancer genomics even further into as yet uncharted territories. Our paper will draw on the authors' direct engagement with an International Cancer Genome Consortium project (CAncer GEnome of the KIDney - CAGEKID) and a number of other European projects in the field of high-throughput genomics. We will provide first-hand

ethnographic analyses of the anticipatory orientations of early actants in cancer post-genomics. What are the traces of this imagined future in present day practices of cancer post-genomic research? What sociotechnical relationships are being reconfigured, and how? What material practices, biomedical platforms and actor-networks are being mobilized to design the future of post-genomic clinical oncology? Adopting a co-productive interpretative framework, we will track the emergence of social and epistemic devices that articulate the envisaged role of future users in post-genomic oncology. Our inventory will reconstruct the assemblage of a sociotechnical infrastructure made of new actors, circulating samples, shared databases, collaborative projects, but also of restructured ordering tools such as new informed consent forms and feedback practices. Our paper will thus be a contribution to the growing scholarly interest of STS in post-genomic medicine and in the emergence of new styles of practice in cancer research and clinical oncology.

From Clinical to Bioclinical Work in Cancer Clinical Research. *Nicole Nelson, McGill University; Peter Keating, University of Quebec, Montreal*
This paper focuses on the emergence of the so-called "biomarker-driven" trial designs, one of the many ways in which genomics is transforming clinical research in oncology. Drawing on interviews with investigators from several high-profile biomarker trials and ethnographic participant-observation in an ongoing North American trial, we look for recurring themes in the actors' descriptions of the rationales for these new trials designs and the challenges of running them. Oncologists describe biomarker trials as a key component of "personalized medicine," but despite the general agreement that such "paradigm-shifting" trials are necessary to the progress of the field, many questions remain both about their design and related logistics. For example, biomarker trials have routinely encountered problems with how to biopsy patients' tumors and difficulties due to rapid changes in technology platforms used for tumor analysis. Several large-scale biomarker studies have led to papers that announce simply that the running of such trials is indeed feasible. We argue that these recurring feasibility problems can be seen as symptoms of essential tensions arising from a transition from studies that are designed to answer clinical questions about the efficacy of different treatments and towards studies that ask clinically relevant questions about cancer biology—in other words, a transition from clinical to bioclinical work. While cancer clinical trials have never been merely testing devices, with the incorporation of loosely stabilized genomic entities—such as molecular classifications, technology platforms, and biological pathways—clinical trials in oncology have begun even more strongly to look and behave like experimental systems.

018. (10) Care and its dis/placing moves - I
9:00 to 10:30 am
Solbjerg Plads: SP208
Chairs:
Peter Lutz, IT University of Copenhagen
Sarah Pinto, Tufts University
Participants:
Informationalizing healthcare: Knowledge production in a mobile health project in rural India. *Brittany Fiore-Silfvast, University of Washington*
Informationalization is increasingly a driving force in healthcare. As such, health information technologies are often at the center of proposed solutions to economic and social healthcare problems. While the body, patient, and population are increasingly defined in terms of information, healthcare work is transformed into information-processing activities that are represented in algorithms or programmed into technological interfaces. How are informational networks (Keller, 1995) being

reconfigured within clinical, organizational, and institutional arrangements? As STS scholars demonstrate, knowledge in healthcare, as in other scientific endeavors, is produced through relationships and practices and embedded in sociocultural contexts. Examining the practices and relationships around information reveals the multiple organizational and social lives of information and, from that, multiple strands of knowledge production (Mol, 2002; Mol and Law, 2002; Suchman, 2005). The following is an empirical ethnographic study of a mobile health pilot project aimed at informationalizing a post-natal care program in rural Rajasthan. I traced the project design process, occurring mostly on U.S.-based university and global health NGO campuses, through its implementation in India. Project data includes a year of multi-sited ethnographic fieldwork and interviews with project stakeholders. This paper demonstrates the multiplicity of patient information as it is designed, produced, and enacted across clinical, organizational, and institutional arrangements and its implications for knowledge production among care-providers, supervisors, researchers, designers, and funders. Multiple enactments of patient information aligned, overlapped, diverged, and even conflicted at times throughout the project process. The work required to hold these enactments together became notably absent, making visible the multiplicity of the project itself in unexpected ways.

Moving Health Records from Paper to Computers: Rhetoric, Practices and Paradoxes. *Karin Garrety, Wollongong University*; *Ian McLoughlin, Department of management, Monash University, Victoria, Australia*; *Robert Wilson, University of Newcastle-Upon-Tyne*

Patient records have long been viewed essential to healthcare, supplementing the imperfect memories of care providers and furnishing a documentary trail of treatment decisions for later reference . Until recently, such records were invariably produced, stored and circulated using paper. For the past two decades, considerable efforts have been made to computerise this information. Electronic health records (EHR), proponents claim, can overcome the limits of time and place, delivering 'seamless' healthcare by electronic provision of the 'right' information precisely when and where it is needed. The success of the move to computer-based records has been vigorously contested, however. While the possibilities afforded by information technology are powerfully seductive, they are also dangerous, as clinicians and citizens fear losing control over intimate medical information. In this paper, we explore debates surrounding EHR, drawing on a range of documents promoting diverse views. The debates are examined in terms of the (sometimes fantastical) logics deployed (that is, claims about envisaged improvements to healthcare, and challenges to those claims) and the ethics of placing medical information online. The logics and ethics of EHR draw on and revolve around notions of completeness, incompleteness, memory, forgetting, disclosure, disjuncture, privacy and concealment. While many proponents of EHR gloss over tensions and paradoxes, viewing information as homogeneous 'stuff' that is unequivocally 'good' (the more the better), others offer more nuanced, contextualised perspectives. This paper contributes to contextualisation and nuancing, as part of a maturation of the sociotechnical relations through which healthcare is being re-shaped in the 21st century.

The Book as a Medical Technology: Bibliotherapy and the Medicalization of Reading in United States Hospitals, 1930-1940. *Monique Dufour, Virginia Tech*

Bibliotherapy entails the use of books and reading to promote healing, health, and well-being. The notion that reading can affect one's mind, body and spirit traces back at least to the ancient Library at Thebes—over its doors was carved "the medicine chest of the soul." However, in the United States during the 1930s, bibliotherapy had a specific meaning and historical instantiation, as it became a prevalent, contested therapeutic

method practiced in veterans' hospitals, private hospitals and mental health facilities. In this paper, I tell a story about bibliotherapy in the 1930's U.S., and, as I do so, I argue that bibliotherapy is a significant site for exploring the intersections between the history of the book and the history of technology and scientific medicine. First, I demonstrate that, in the early 1930's, books came to be defined as "prescriptions." On what basis, practitioners and skeptics alike wondered, would prescribers negotiate among available books, and select texts for potential treatment? And, on what basis would texts be "prescribed" for individual patients? I explore the ways that practitioners negotiated these questions. Second, I trace the contestations over medical authority that ensued over the control of bibliotherapy. Who should "prescribe" books? Was it librarians, nurses, or doctors? The approach to books as medical treatment raised questions about the rightful authority of medical practitioners, about gender and medical authority, and the roles of extra-medical/cultural authorities and taste in medical environments. Third, I will describe and analyze the ensuing attempts to define, apply and evaluate bibliotherapy scientifically. By 1935, some doctors, researchers and librarians expressed concern about the scientific basis of bibliotherapeutic practices and claims. Titles of articles asked questions such as "Is Reading Therapy?" and "Can There Be A Science of Bibliotherapy?" I argue that these negotiations shed light on fundamental conceptions of the patient, the nature and meaning of "care," the stakes of standardization, and the shifting boundaries between medicine and culture.

Traveling Care: Reworking Arrangements through an HIV/AIDS Program in South Africa. *Abigail Baim-Lance, Roosevelt Academy Honors College, Utrecht University*

Support has grown for interventions using 'home and community-based care' to stem the impact of HIV/AIDS in resource-constrained settings. Originally developed to help people comfortably die, more recent iterations turn caregivers towards biomedical technologies to distribute antiretroviral and other life-saving therapies. In a rural area of KwaZulu-Natal Province, South Africa, one multinational pharmaceutical company's philanthropic foundation funded what it called a 'community-supported treatment model,' directing caregivers to guide HIV positive individuals to access treatment, and then monitor use. Ethnographic research conducted between 2007-2008 with the program and a variety of stakeholders, including with 10 caregivers, shows how the promoted techniques configured arrangements of support in ways that did not register at the level of the program, given the single-minded treatment access focus. Rather, caregivers mediated program tasks while simultaneously seeking to avoid blame for misfortunes, given prevailing uncertainties in health and the inevitable close relations forged between caregivers, patients, and families around biomedical issues. Clinical interfaces particularly intensified caregivers' unsteadiness, given an existing health system dogged by fragmentation and unequal power relations. As such, an intervention intending to be essentially additive re-cast relations between persons, and between notions of vulnerability and opportunity. This paper contributes to STS by attending to global biomedical technology's work on local notions of the social, thereby reconfiguring the facets of care in consequential ways.

Placement and Displacement in Pergamon's Asklepieion. *Ece Okay, University of California Los Angeles*

This paper takes the Asklepieion of Pergamon, a Greco-Roman healing sanctuary located in Asia Minor, as a case-study to analyze the relationship between movement/placement, and healing/caring. Analyzing archaeological, literary and architectural evidence, my paper's aim is to achieve a phenomenological understanding of movement in ancient medicinal spaces and its effects on Roman healing practices. It first considers the placement of the sanctuary itself within the

urban landscape. Due to their association with disease, asklepieia were isolated from cities, functioning as autonomous, self-sufficient curing facilities. Pergamon's Asklepieion abided by this rule, demarcating its ritual boundary with a colonnaded street and a surrounding wall. The patients would thus have been informed of the milieu they are entering, adapting their behaviors and movements accordingly. The paper then focuses on the numerous and disparate areas of the Asklepieion, from a library to a healing center used for surgical procedures, which had different regulating effects on the patients' movements. Within each of these different medicinal spaces, the manner in which sick pilgrims travelled from one to the other was planned and controlled meticulously on a daily basis. For instance, to reach the healing center for surgical procedures, patients were obliged to enter and exit an underground tunnel called the cryptoporticus from the sanctuary's central courtyard. Thus, such architectural details would emphasize and curate the movements of patients, placing and displacing them in precise calculated ways, in an effort to facilitate their curing and their care.

019. (77) Urban assemblages and cosmopolitics: contributions for an ongoing debate - I

9:00 to 10:30 am
Solbjerg Plads: SP210
Chairs:

Ignacio Farias, Social Science Research Center Berlin
Anders Blok, Copenhagen University

Participants:

Worlding cities through their climate projects? On eco-housing assemblages, cosmopolitics and comparisons. *Anders Blok, Copenhagen University*

With the importance of cities rising on climate governance agendas, STS must join others in analyzing the knowledge politics of urban sustainability 'experiments' and low-carbon 'transitions' worldwide. In this paper, I suggest that STS work on urban climate governance stands to gain from deepening its analytical engagement with assemblage urbanism, inspired by actor-network theory (ANT). Assemblage urbanism highlights themes of knowledge practices, multiplicity, materiality, and place-making in the analysis of urban change. Amongst other things, this analytics suggests that – rather than read urban sustainability experiments within a 'wider' political economy of globalization – we should analyze how heterogeneous trans-local relations are already integral to forging specific urban sites as spaces of low-carbon commitments. This paper draws on assemblage thinking to interpret on-going, multi-sited ethnographic work on municipal climate planning projects in the built environment sectors of three cities – Copenhagen (Denmark), Kyoto (Japan) and Surat (India) – arguing that each manifest the contested emergence of new site-specific eco-housing assemblages. In each of the three cities, I show, eco-housing is assembled through very different eco-socio-technical relations, materializing a 'worldly' set of knowledges that intermingle 'global' climatic risks into situated matters of urban concern. Throughout, I stress how eco-housing projects make for important sites of urban cosmopolitics, the politics of forging viable human and non-human co-habitations, allowing us to map different world-conjuring projects. In the context of sustainability transitions, the paper ends by stressing the importance, and the difficulties, of comparison as a modality of urban knowledge-making, in STS and beyond.

Waste(d) connections? Global cities and the multiscalar politics of garbage. *Michele Acuto, Institute for Science, Innovation and Society, University of Oxford*

Why does my trash can matter for global politics? Isn't it just a marginal actant of everyday city life? By relying on notions of assemblage urbanism, this paper seeks to recuperate garbage as a serious 'wicked' problem in social thought. The present demographic and urbanization rates, coupled with the endemic consumerism of our society, are extending the relevance of trash at unprecedented scales. The paper takes waste management as a point of entry to disentangle the analysis of the global environmental politics. It deals with a large scale issue such as sustainability and demonstrates its embeddedness in the micro dimensions of everyday city life. It does so by unpacking the 'power-geometries' that shape garbage politics through ANT. At present, there is very little scholarship providing an overview of the international dimensions of city agency in global governance, while the analysis of waste management across the multiple scales of world politics is also extremely limited in terms of linking international affairs and urban planning. To redress these limits the paper investigates the case study of Sydney. In particular, it focuses its ANT analysis the role of Mayors as obligatory passage points to two interconnected networks: the local structures of waste management in Sydney and the global networks of transnational partnership and city diplomacy of Sydney. Offering a critical urbanist rejoinder on the emerging urban assemblages debate, the paper seeks to make two preliminary contributions: it promotes a multiscalar and cross-disciplinary advancement in this scholarship that is rooted on everyday challenges, and in doing so it pushes towards a better understanding of the the links between urban and international politics in contemporary metropolises.

The moose are protesting: conceptualizing urban politics beyond the human/non-human divide. *Jonathan Metzger, KTH Royal Institute of Technology*

The purpose of the paper is to investigate a notion which to some may seem simply ridiculous and to other completely morally outrageous: that also non-humans, such as animals, may act politically – and that we should not only learn to hear them as legitimate voices in urban policy processes, but also actually engage in concrete negotiations with them to the same extent that we would do with any concerned human party for instance in relation to a infrastructural development project. Proceeding from an empirical study of human/animal relations in Swedish road management the paper opens up discussions on three related issues: How can we think of political behavior beyond the human/non-human divide? How can we find ways to develop participatory practices in urban policy processes beyond the human/non-human divide? And finally, how can we find ways to negotiate with non-humans beyond anthropocentric discourse? To discuss these three interrelated questions the paper mainly draws upon the political-ecological thinking of Bruno Latour, the political philosophy of Jacques Rancière and the 'more-than-humanist' strand of philosophy and geography developed by scholars as Donna Haraway and Sarah Whatmore.

Re-storying Nature - rethinking approaches to Urban Nature in Cape Town South Africa. *Tania Hanni Isobel Katzschner, University of Cape Town*

Persuasive talk about environmental problems and solutions misleads by conveying the impression that these challenges are merely problems that can be quickly solved by technological fixes without addressing the larger structure of ideas, philosophies, assumptions, and paradigms. Our existing compartmentalised sciences and epistemologies appear utterly unable to describe and transcend the current complexities in working towards a more liveable and just world. The author sees this current moment as an opportunity and opening for knowledge diversity and knowledge practices. The paper explores the Cape Town 'Cape Flats Nature' project which works towards unconventional ways of thinking about urban nature. 'Cape Flats Nature' asked how we look after important biodiversity conservation sites in a context of urban poverty and inequity, a context of ecological, social and institutional fragmentation. The author will look at some of the more specific practices and discourses that are presently working to 're-story'

urban nature. The paper is concerned with the politics, practices and poetics of conservation within urban contexts. The paper aims to show how to consider urban infrastructures differently, as complex assemblages that bring all manner of human, non-human and natural agents into a multitude of continuous liaisons across geographic space and how all relate together and gain agency alongside a myriad of social and cultural practices. By bringing an ecological awareness to social process, and a social sensibility to environmental concerns the author wants to show how 'Cape Flats Nature' worked towards a more integrated whole and multiplied the talents of everybody involved.

Following engineers and architects through slums: history, policies, urban poor populations and the technoscience of slum intervention in the Portuguese-speaking landscape. *Antonio Eduardo Ascensão, King's College London and Centro de Estudos Geográficos, University of Lisbon*

This presentation draws on an enlarged view of the history of state intervention in informal settlements and poor built environments throughout the 20th century, in cities such as Lisbon, Porto, Luanda, Maputo or Macao; as well as on ethnographic research with experts from the National Laboratory of Civil Engineering (LNEC) during the scientific assessment of informal dwellings in the neighbourhood of Cova da Moura, Lisbon, made with a view to rehabilitate them; to discuss some political and socio-technical complexities of slum intervention. At the centre of the complex arrangements between engineering, architectural and social knowledge is the will of the central government and municipal authorities to grant the population of the settlement their 'right to the city' – in the sense of the in situ rehabilitation of substandard dwellings instead of directing people to social housing elsewhere, i.e. displacement. I use insights from STS applied to the built environment (Gieryn 2002, Jacobs 2006, Hommels 2009) to show how the current 'unbuilding' and 'reconfiguration' of the dwellings in Cova da Moura not only is based on the adaptation of scientific knowledge from formal housing, (namely through a 'laboratorisation' of the dwelling); but that it is dependent on the intense, subjective-objective and embodied experience of the experts that evaluate the dwellings; i.e. it is dependent on people as scientific instruments (Derksen 2010).

020. (69) Changing research landscapes - I

9:00 to 10:30 am
Solbjerg Plads: SP212

Chair:

Seppo Poutanen, University of Turku

Participants:

On the journey towards Mode 2: the case of agricultural science in Brazil. *Patricia Rocha Bello Bertin, Loughborough University*; *Jenny Fry, Loughborough University*; *Gillian Ragsdell, Loughborough University*

The science system is evolving to cope with the current rapidly changing, complex, and uncertain world. Notions such as Mode-2 knowledge production, Strategic Research, and Post-normal Science represent different attempts to conceptualise the changes science has undergone in the last decades. These theorisations were produced in countries with highly developed economies – particularly the USA, UK, Germany, and Australia. A gap in the literature is evident, however, when it comes to analysing and interpreting recent changes in developing countries' science systems. The objective of this research is to investigate the dynamics of a developing country science system from the perspective of a public research institute, as the locus of scientific knowledge production. To achieve that, a case-study was developed involving an agricultural research institute in Brazil. The qualitative analysis is based on 24 in-depth interviews. Evidence was found that Brazilian agricultural science is moving

towards a Mode-2 knowledge production, characterised by: greater reflexivity and orientation of research towards societal audiences; increasing focus on research steering and priorities definition; growing emphasis on technology generation, innovation and intellectual property issues; increasing efforts on research assessment and quality control; and greater complexity of research through multidisciplinary, inter- and intra-organisational projects. Considered altogether, these elements indicate that Brazilian agricultural science is undergoing a heterogeneous transition to the new mode of knowledge production, differentiated according to sub-disciplines and specific geographic locations. Relevant aspects of this transition and how it influences the lived experiences of researchers and their knowledge creation practices are discussed in this paper.

The Perfect Match? - Academic Capitalism and the Rise of a Highly Concentrated Biotechnological Seed Sector. *Barbara Maria Brandl, University of Munich (LMU), Department of Sociology*

In their well known study about the development of the university based research in the US-American context: 'Academic Capitalism' the sociologists Gary Rhoades and Sheila Slaughter describe an ongoing process in which the public research is increasingly subsumed under a capitalist regime of competitiveness. To say it more theoretically, a knowledge based economy is reliant on a set of intellectual property policies and practices, which enable the conversion of advanced knowledge into raw material for commercialized products and services. In my paper I will examine the interconnection between the changes in the governance of intellectual property rights and the transformation of public research in the special case of the plant breeding sector. I will argue that the scientification of the plant breeding sector, which means at the one hand the growing reliance on basic research and on the other hand the degradation of hand craft skills together with the breakdown of public funding in this area, leads to the performance of a highly concentrated life science industry. Especially I will point out that the possibility which arise through the molecular biology - to identify individual gens and provide special property rights (patents) to this gens - accelerates this trend of the transformation from small and medium – sized plant breeding businesses into huge life science companies. Empirically I support my arguments with the analyses of different sources. For example with a case study about the success of herbicide tolerant plants (GMO) on the basis of the US- American patent statistic, the concentration process in the seed sector in Germany in comparison to the USA, e.g. on the basis of the data set of the German Federal Plant Variety Office [Bundessortenamt].

Coordinating university research. *Laurens Hessels, Rathenau Instituut*

The European research landscape is witnessing the rise of intermediary organizations with a coordinating mission: European Networks of Excellence, national task forces and various forms of public-private partnerships. These intermediaries are typically hybrid organizations, with a complex combination of tasks. Besides conducting research, many intermediary organizations also allocate funding and negotiate with society about subsidies and legitimacy. In spite of this rising trend, the current understanding of the functioning of these intermediary organizations and their effects on the content and conduct of university research is limited. This paper reports on a two-year project aiming to contribute to the understanding of research coordination by a comparison of various coordinating intermediaries in the Netherlands: temporary task forces, virtual research institutes and large-scale research programs. The case studies are based on document analysis, bibliometrics and interviews with researchers, program managers, industrial representatives and other knowledge users. In my analysis I take stock of the active forms of coordination, and characterize them systematically in terms of a limited set of coordination processes.

Next I explore for each process how it affects university research in terms of research agendas, collaborations, publication behaviour and knowledge transfer. Taking into account various limitations, risks and costs of coordination, I conclude with recommendations for research governance.

The changing governance of Portuguese universities: opening up or narrowing down? *Tiago Santos Pereira, University of Coimbra*

After decades of relative institutional stability in the governance of Portuguese universities, following an important consensus on the importance of the autonomy of the university system, which had been reflected, in the 1980s, in a dedicated Law of University Autonomy and in a new higher education career statutes, the Government decided to review the legal foundations of the higher education system. Central to the main objectives of this reform was the need to open up the universities to the wider society by changing the main governance structures. By implementing a governance system where decision-making was less distributed throughout the academic community and more centred on the Rector, together with a General Council, formed not only by academics, but also by representatives of the wider society, academia was expected to come down from its ivory tower, and to open up to society. The new legislation implied significant organisational changes throughout the system, and was followed by a review of the higher education career statutes, promoting more stringent quality requirements, greater transparency in career progression and greater concerns with socio-economic impacts. With five years since the initial changes, it is possible to better understand some of the directions that the new legal regime has promoted. In particular, while it is clear that the debate around the reform has accelerated internal changes with a focus on the increased global university competition, some doubts remain as to whether the new regime has effectively opened up universities to society, or whether this opening up was not, instead, a particular form of narrowing down the strategic directions of universities and of its research objectives.

Conditions for scientific innovations. *Jochen Glaser, TU Berlin*; *Grit Laudel, University of Twente*

The aim of this paper is to identify promoting and hindering conditions for scientific innovations – research findings that potentially affect the practices of many researchers in one or more fields. This question links science policy studies, which are concerned with institutionally defined conditions for research, to the sociology of science, which is concerned with the links between conditions and outcomes of the social construction of scientific knowledge. Our discussion draws on an investigation of the European Research Council's funding schemes and a comparative study of conditions for intellectual innovations in four European countries. We identify two conditions for intellectual innovation, namely a 'protected space' (the autonomous planning horizon for which a researcher can apply his or her capabilities to a self-assigned task) and 'ease of access to resources' (the speed at which resources can be mobilised for a change of lines of research, and to the likelihood of success of such a mobilisation). The comparison demonstrates that a) ERC grants support planned innovations because of their duration, the amount and flexible use of resources, and the explicit invitation to applicants to submit risky and unusual research projects; b) national science systems differ in the 'volume' of protected space they can provide, in the numbers of researchers for which protected space is provided, and in the career stages at which that happens; and c) that many innovations are serendipitous, and are possible only when researchers have a minimum amount of protected space in which they can exercise 'free play'.

021. (81) Expectations and innovative technologies - I
9:00 to 10:30 am

Solbjerg Plads: SP213
Chair:
Alan Robert Petersen, Monash University
Participants:

A Colonization of Imagination: Future-setting Strategies for Information Infrastructures. *Gordon Haywood, University of Edinburgh Business School*

The Sociology of Expectations provides scholars with much analytical insight into the future-setting work carried out in technological fields. In essence, it has served to foreground the performative nature of technology visions. This paper seeks to extend the body of empirical literature by unravelling something of the variegated nature of expectations, and point the way to more nuanced and taxonomic anatomies of expectations. Broadly, it is concerned with the nature of the 'Cloud Computing' vision, and asks how it apparently entered technology parlance quite so dramatically circa 2008 and along which paths, in practice, the organizing field is moving. Such visions can be considered as both public (normative; vague) and private (plural; specific) in a way which appropriates the account of a management fashion as satisfying the duality of identity and alterity. This will go some way to understanding how suppliers and user intermediaries co-shape future states, and how an entire industry can make step-changes collectively, without overt forms of control. The research focuses on innovation discourse analysis, combined with several years' worth of field work investigating events in the UK corporate ICT arena, namely IBM User Groups and Conferences and a major user implementation at BSkyB, which while failing in one respect indirectly helped to catalyse an alternative journey. The approach is a multi-method ethnography under the banner of a Biography of Artefects making use of narrative analysis, participant observation, and selective interviewing, with a particular focus on naturally occurring data.

Expectations, Experimentation and Transnationality. *Sébastien Dalgalarrondo, CNRS/EHESS*; *Boris Hauray, National Institute for Health and Medical Research/IRIS*

The utility of a sociology of expectations to describe the process of technological innovation is now widely recognized. Building on the example of development of the anti-aging medicine in France, through the figure of the prototypical molecule DHEA, we want to combine a classic analysis of the institutionalization of promise, with a decoding of the content of that promise to instruct the contemporary relationship between medicine and society. We want to show that the performativity of these promises is closely linked, in our case, to normative changes in the field of medicine. Expectations and Experimentation: while the benefits associated with DHEA were highly controversial from the start, this molecule was, however, widely consumed. The story of DHEA thus shows that when expectations are high, this drug was regularly described in the media as a fountain of youth, the consumer may be part of an experimental approach breaking with the normative framework of a classical medical prescription. Expectations and Transnationality: the international career of DHEA is marked by the development, in parallel, of the Internet network. The ambiguous legal status of this product, a dietary supplement in the U.S. versus a drug in France, meant to offer to the French consumers a new distribution channel where the risks associated with this "medicine" were overlooked. The analysis of this story gives us the opportunity to assess how the transnational circulation of information and expectations changed the consumption of health goods.

When expectations meet: tensions by aiming for social relevance. *Meggie Pijnappel, Radboud University Nijmegen/ ISIS*

Expectations play a crucial role in the innovation process by guiding activities, providing structure and legitimation, attracting

interest and fostering investments (e.g. Borup, Brown et al, 2006). Failure to deliver technologies or the development of a technology in an unanticipated way may have severe personal and social implications, such as despair among patients or the widespread loss of support for future technologies (Petersen, 2009). Expectations are often raised generically building on ill-defined social agenda's, such as stimulating health or achieving safety. The difficulties arise when those generic expectations have to be translated into concrete activities, for instance at the funding or scientific practice. This paper studies three Dutch practices where various levels of expectations on alternatives to animal testing meet: the policy practice, the funding practice and the scientific practice. Situated along the science-policy interface, expectations on the social level interact with technical expectations, thereby co-constructing the meaning of the social value of alternatives. Drawing on interviews, document analysis and participant observations, I describe how each of those practices interpreters the concept of alternatives in a different manner and hence leads to tensions when those practices and expectations meet, for instance in grand proposals or public statements. By providing insight into the complex nature of each of the practices, I aim to stimulate the discussion of developing alternatives for animal testing as a social value. Furthermore, the case study provides new empirical insights for the ongoing debate on the social implications and ethics of expectations, especially along the science-policy interface.

Enviropig™ a greener food for the future? Ambivalence and entrapment in the public perception of transgenic modification of pigs. *Mara Miele, Cardiff University*; *Karolina Rucinska, Cardiff University*

Enviropig™ is the name given to a new generation of pigs obtained via transgenic technique and patented by Guelph University. It has been argued that this improved pig will produce 'greener' manure (i.e. containing less phosphorous), it will be less expensive to rear and that its meat will be safe for human consumption. Current studies of public understanding of Enviropig™ are based on a 'deficit knowledge model' approach and they suggest that skepticism or worries about this innovation are linked to 'lack of knowledge' (Castle et al 2005). We conducted an exploratory study about the public perception of this innovation and, adopting a material semiotic approach (Law, 2007), we addressed the embodied dimensions of the public's concerns in a series of focus group discussions with members of the public with different socio-economic characteristics and level of formal education. From this research it emerged that - contrary to studies focusing on 'explicit knowledge' and the role of 'information', but in line with perspectives addressing situated and embodied knowledges (Haraway 1995; Probyn, 2000; Evans and Miele, 2012) in STS literature – the members of the public use complex ways of knowing in order to evaluate and make sense of such innovation. The findings point to ambivalence and entrapment among the participants, due to the tensions between individual anxieties for the embodied risks associated with the consumption of the transgenic pig meat and the stated rationality and promises of a greener food achievable via biotechnologies and transgenic techniques.

022. (60) Crime, technology, and policing - I
9:00 to 10:30 am
Solbjerg Plads: SP214
Chair:
Peter Lauritsen, Aarhus University
Participants:

Criminals at risk? Prisoners' perceptions of police biosurveillance and investigation practices. *Helena Machado, University of Minho*; *Susana Silva, University of Porto, Portugal*

State concerns with crime control and the securitisation have led police agencies to invest in a variety of new bio-information technologies to investigate crime. Chief amongst these new bio-information technologies has been DNA profiling, frequently described as the greatest breakthrough in forensic science since fingerprinting, creating the so-called "truth machine" myth – the idea that this technology is basically foolproof to identify a person who committed a crime. The incorporation of DNA technology in police surveillance and investigation practices creates new categories of suspicion - on the basis of the construction of 'genetic suspects' – and new questions are raised about the judicial failures, which continue to arise due to the alleged faulty use of forensic science or to erroneous interpretation of forensic evidence. In this paper we explore the epistemology of risk in the use of DNA evidence from the point of view of convicted offenders on the basis of interviews carried out with 31 prisoners in Portugal. The prisoners' views on the exculpatory potential of DNA profiling and also their assessment of the factors that may contribute towards wrongful conviction – mainly directed to errors and misuses of technology by the police - constitute a foundation to foster the ethical responsibility that is needed in all criminal investigation procedures and trial actions. Therefore we intent to make a contribution to some critical pronouncements that have been developed to argue for the improvement in the commitment to quality control, regulation and training related to the police use of DNA technology.

Displacements at the street corner. *Vlad Niculescu-Dinca, Zuyd University*

Place and crime have long been associated in criminology (Shaw & McKay 1931, 1942), and in particular in studying juvenile crime. These studies were concerned with, for instance, the adequate geographical unit of analysis in the production of crime (Eck and Weisburd 1995; Sherman 1995; Weisburd and Braga 2006) or the role of geographic technologies (GIS) in mapping and analyzing crime (Ratcliffe 2004). The widespread adoption of social media among youth may displace and/or transform traditional crime and consequently challenge policing strategies, practices, and technologies. Drawing on interviews and ethnographic research performed at a police station in a major Dutch city, the paper describes the challenges practitioners face doing policing work in relation to these places (e.g. Twitter, Hyves, Pingfriend, Habbo Hotel). Steering away from both instrumentalist and determinist views on technology (Akrich 1992, Latour 1988), the paper describes both changes in policing technologies and displacements induced in policing practices. It examines the ways their geographic information system is set to connect identities produced within social media with more traditionally produced identifications of groups of youth. In addition, the paper looks at how internet surveillance technologies afford the police to perform social media monitoring for suspicious behavior and for following suspects. The paper suggests that these technologically-mediated practices produce new kinds of police knowledge, entail (re)constructions of the notion of suspicion, and seem to be also related to a growing concern over privacy protection among police practitioners themselves.

Negotiating ambiguity: Notions of competence in Crime Scene Investigation. *David Wyatt, University of Exeter*

For the UK Crime Scene Investigator (CSI), the use of discretion, understood through notions of competence and accountability, is a terrain riddled with ambiguities and tensions which must be traversed in day-to-day practice. This is made more difficult when situated in the ever-changing legal, scientific and institutional requirements of forensic artefact collection. This paper focuses on one, key site of ambiguity - the tension between ideas of best and competent practice, and how these differences are negotiated in their everyday work - and adds to the growing STS literature on the dynamics and micro-practices of criminal investigation. I will use data from participant observation at the

National Policing Improvement Agency's Forensic Centre (the UK's main CSI training centre), a UK police force, interviews with trainee CSIs and official documents. The paper considers how the scope for the interpretation of evidence identification and recovery imperatives coupled with broader institutional pressures of working for the police (e.g. limited time per scene, administrative burdens), places the CSI in a precarious position. I will argue that CSI training both concentrates on ideas of best practice and facilitates the routine compartmentalisation of contradictions and ambiguity by simultaneously acknowledging and blackboxing competing understandings of suitable CSI action through the notion of competent practice. As such, competent practice enables the CSI to meet institutional and scientific requirements satisfactorily. However, this becomes problematic when practices are questioned and the work of the individually accountable CSI is assessed against the abstract, evolving guidelines of best practice.

Oleoresin Capsicum Aerosol and Technical Distance. *Matthew Greaves, Applied Communication and Technology Laboratory, Simon Fraser University*

On 18 November 2011, University of California at Davis lieutenant John Pike used an aerosol canister filled with oleoresin capsicum (OC) on a group of Occupy students protesters. Tents had been erected on the public university's quad the night before, challenging UC Davis' policy on encampment. After instruction was given to take down the tents, the protest moved to a campus walkway students then occupied. The confrontation between campus police and protestors reached its climax here, immortalized in the image of Lt. Pike, in a casual gait, using the OC aerosol. This paper considers the social and technical relations involved in this incident and the development of OC aerosol as a law enforcement technology. I draw from phenomenological and constructivist approaches. First used by postal carriers to incapacitate aggressive dogs, the development of OC in the United States dates to 1973. When the FBI authorized its limited use on humans in 1989, the political context of use shifted, as did its development. Through mutual construction, officers come to relate to the equipment in an operationalized frame. With its routinization in training, the technology withdraws from awareness at the moment of dispersal, distancing the user while drawing in the object. I close by contending that OC aerosols also act as a means to increase political distance. As a technology designed to incapacitate, OC ends corporeal autonomy by encouraging acquiescence. In this way, it translates a style of protest policing Patrick Gillham refers to as 'strategic incapacitation' and values of order.

The Dangers of Privacy in Times of Smart CCTV. *Heiner Koch, IZEW Tübingen*

In the context of MuViT we identify ethical problems of smart CCTV. Because pattern recognition by smart CCTV does not need to make individual persons identifiable, privacy can be extended. Only suspicious behaviour will be reported to real persons or will lead to recording the video. Only at this point the involved persons will de identifiable and privacy will be intruded. Because privacy can be enhanced by smart CCTV an expansion of surveillance could be justified. But this ignores that also other values are concerned and that the new technology gives also rise to new problems: (i) Smart CCTV recognizes suspicious behaviour either by statistical deviance from normality or by explicitly defined patterns. In this way a technological implemented normality in behaviour is expected of persons. This normalization can be very suppressive. (ii) People don't know what behaviour is expected. The reaction of the technology on "real life" is not fully know and even if, it's hard for the monitored people to understand it. This could lead to a fear to behave suspicious and liberty will suffer even more. (iii) Even if not intended (and often it is intended), there is a danger that pattern recognition will be combined with face recognition and further data so that even greater privacy problems will occur.

(iv) Political protest can be easily surpressed. (iv) If surveillance expands because it has less privacy problems, the other problems will intensify. Only in the light of these problems privacy enhancing pattern recognition can be justified.

023. (66) On states, stateness and STS: government(ality) with a small "g"? - I
9:00 to 10:30 am
Solbjerg Plads: SP216
Chair:
Jan-Hendrik Passoth, Bielefeld University
Participants:

Designing the Sustainable State: the Small (g}overnance of China's Big "Ecological Civilization." *Erich W Schienke, Penn State*

On November 11th of 2011, the inaugural meeting of the Chinese Ecological Civilization Research and Promotion Association (CECRPA) was held in the Great Hall of the People in Beijing. In a summary of a meeting, the leaders of the Central government stated that, "to develop ecological civilization is a task of strategic significance to advancing the socialism cause with Chinese characteristics, and a definite requirement and major move to achieve science-based development; it is of relevance to the improvement of people's living standards, sustainable development, and the development of the Chinese nation in the long run." While such large and all encompassing imaginaries such as "ecological civilization" present aligning narratives for big "G" Government, this paper evaluates three cases exemplifying the small "g" governmental efforts in China to envision, define, measure, and performatively stage itself as an "ecological civilization." The cases look at examples in the details of planning a small sector of a low-carbon city, the minutia of ecosystem services, and the early formation of the concept ecological civilization in specific labs. Three cases are analyzed for how the governing mentality embedded in "ecological civilization" is performed in the micro/nano practices. This paper also continues the development of an historical ontology of "ecological civilization." which suggests that it is designed as an epistemological, political, and ethical design directive towards achieving what the Central Government, local governments, various research institutes, and non-governmental entities consider to be China's future -- as one of a sustainable State.

Locating the state? Infrastructure, scale and the technologies of governing, a Colombian case. *Kathryn Furlong, Université de Montréal*

In the North, many authors have noted the passage from government to governance; that is from centralized and hierarchical to more diffuse and inclusive forms of decision-making (Jessop 1998; Peters and Savoie 1995). Infrastructure networks have experienced similar shifts, from the exclusive "black box" to more malleable and participatory systems (Furlong 2011). Yet, in many contexts in the Global South, including Colombia, neither the government, nor infrastructure managed to cover the whole of the state territory. By examining such a case, this essay seeks to add relief to some broadly held conceptualizations about the state, infrastructure and governmentality. One of these is in relation to scale. Drawing on critiques of scale (e.g. Marston et al. 2005), the essay questions where to locate the state in relation to issues of infrastructure and governing. Where the state has clearly not been omnipresent, it is easier to see how the assumed hierarchy of state scale breaks down. This is exemplified through the case of regulatory attempts to create a uniform infrastructure sector, which have yielded perhaps as much change in regulation as they have in service delivery. Moreover, where infrastructure has not been omnipresent, rather than imposing a new "black box", managers

may have to compete with a variety of pre-existing technical and social practices resulting in new forms of hybrid infrastructures. As such, just as new technologies create shifts in governing (e.g. the internet), the introduction of absent technology can yield shifts in both governing and how the technology is traditionally conceived.

Acting from a distance: States, scales, spatiality and STS. *Govind Gopakumar, Concordia University*

How do states act or exert their presence from a distance, especially when targets of action are separated by diverse and nested milieus of stateness? In addressing this question, the paper will draw centrally upon scholarship in three domains – governance of science and technology, anthropology of the state especially in postcolonial environments, and actor network theorizing of the state – to develop a conceptually grounded explanation. While a common concern across these domains has been to interpret the co-production of science/technology, society and state through concepts such as "boundary organization," "state spatiality," and "scaling devices," one related theme that has attracted far less attention within these fields has been to understand how states act and make their presence felt at a distance across scale and space. This direction of inquiry is particularly intriguing when such actions intersect multiple and imbricated ontologies of stateness that exist at national, regional, provincial, and urban levels. Drawing from these literatures, in this paper I will use the example of a recent policy project in India as a case. NURM (or the Jawaharlal Nehru National Urban Renewal Mission) is a vast national policy exercise launched in 2005 that seeks to transform governance of technical infrastructures in 65 major cities in India by emplacing a host of new mechanisms, venues and devices to reconfigure state-society relations. Empirically investigating NURM, this study will situate and extend our understanding of how postcolonial states operate at a distance and across different scales from the national to the urban.

Territorializing, Calculating and Governing. *Peter Miller, London School of Economics and Political Science*

Territorializing and calculating are intrinsically linked, and are central to the 'governmentalisation of the state' that Foucault and others have done much to draw attention to. But territorializing is not confined to states and statehood. Territory is more than merely land, and it is important to attend to the links among the triptych formed between modes of calculating, governing, and territorializing. This is of particular importance, given the still increasing attempts to economize the entire social field. This presentation focuses on three aspects of this phenomenon. First, territorializing that takes place by making physical spaces calculable, whether this means a factory floor, a hospital ward, an office, a shop, or whatever. Second, territorializing that operates by making abstract spaces calculable, which can mean the 'division' of a firm', a 'profit centre' or 'cost centre' of an organization, or even an idea such as failure or public service. Third, territorializing that operates at the level of the person, as individuals are encouraged increasingly to know themselves through the calculations that are performed on and by themselves. This is very much a case of governmentality with a small 'g', for central to an exploration of the links between territorializing, calculating and governing are the linkages and affiliations between the local and the non-local, the 'macro' and the 'micro'. To the extent that modes of governing constantly come into contact with the heterogeneous and impure world of every-day life, populated as it is by a myriad of aspirations, association, alliances and activities, it is important to understand how such multiplicities operate, how they are composed, opposed and superposed.

"Towards a Common Future": On How a Diplomatic Training Programme Socialises States into the International Society. *Tobias Wille, Goethe University Frankfurt*

In this paper, I give an ethnographic account of how diplomacy is taught to young diplomats from the seven states of the Western Balkans at the German Federal Foreign Office (FFO) in Berlin. Drawing on material collected through participant observation, ethnographic interviews, and a complementary analysis of documents, I trace how the knowledge and practical skills are transferred that allow diplomats to successfully represent their state internationally. To make sense of my observations, I bring together theory from International Relations (IR) and Science and Technology Studies (STS). To the question of how the international society of states expands, which was first formulated by the English School of International Relations in the 1980s, I give an answer which is inspired by the material semiotics of Bruno Latour, Michel Callon, and John Law. I propose to view the state as a network of heterogeneous materials and that to represent it diplomatically means to orchestrate its various elements. The FFO contributes to the 'socialisation' of young and fragile states into the international society by transferring the necessary knowledge and embodied skills which enable those states to gain coherent agency in the field of international politics.

024. (103) Ethics and technoscience governance - I
9:00 to 10:30 am
Solbjerg Plads: SPs03
Chairs:
Luigi Pellizzoni, University of Trieste, Italy
Marja Ylönen, University of Jyväskylä
Participants:

Interdisciplinary research in practical ethics: challenges at the interface with social sciences. *Gaia Barazzetti, University of Lausanne; Lazare Benaroyo, University of Lausanne*

Interdisciplinary approach is essential to address practical ethical issues raised by advances in biomedicine and technology. Collaboration with empirical social studies can improve ethical analysis in several ways: showing the role of power relationships, vested interests, cultural forces, processes of legitimation and institutionalization in constructing moral issues, and increasing the perceptiveness of normative analysis by situating ethical deliberation in the social context. Contextualization does not mean to incorporate facts or assertions about the real world in a way that they fit with normative assumptions. When ethical considerations are framed to suit moral theories the complexities of the context and their relevancy for addressing moral issues are ignored. However, interdisciplinary research where ethical reflection is informed by social science is not without problems. Challenges may be due to differences between ethics and social sciences. Sociological and anthropological approaches have the capacity to overlap with other disciplines and to descend into detail, to encounter the particular, the circumstantial. Normative approaches are traditionally less permeable and less equipped to address the complex entanglement between the universal and the particular. Moreover, "navigating intersections" between disciplines involves profound challenges to disciplinary and institutional recognition, and necessitates a process of self-reflection on one's methodological tools and research objectives that is not straightforward. We address critical issues of interdisciplinary work in practical ethics by presenting ongoing research at the Ethos – Interdisciplinary ethics platform. In particular, we explore interdisciplinary challenges in research on new genomic technologies, reproductive technologies and prenatal genetic testing, transplantation, dual-use dilemma in engineering research.

Ethics and Participatory Technology Assessment - A Reflective Ethical Mapping Approach. *Matthew David Cotton, University of Leeds*

The assessment of ethical issues is an important aspect of the

governance of controversial technology projects that can potentially harm human and non-human life and wellbeing. Increasingly the governance of risk-bearing and ethically contentious technologies takes place within the context of participatory decision-making; involving the negotiation of multiple stakeholder values and judgements. I present a theoretical and practical model of participatory-deliberative decision-making that encourages stakeholder actors to consider a range of different 'actants', ethical principles and personal moral judgements in making ethically informed decisions about contentious technology projects. This model, termed 'Reflective Ethical Mapping' - draws upon Actor Network Theory and John Rawls's reflective equilibrium approach to ethics. Practical case examples are shown, drawn from deliberative public workshops where participants discuss and evaluate the ethical issues surrounding the decommissioning of nuclear facilities and the long-term management of long-lived radioactive wastes.

The impact of the new emerging technologies on the changing role of the ethical advisory boards. *Franc Mali, University of Ljubljana (Faculty of Social Sciences)*

Because of the tremendous progress of the new emerging technologies, (bio)ethics as scientific support of S&T policy decision making exceeds the bounds of the individual ethics of responsibility and actualises the social level of responsibility. In Europe, the institutionalization of (bio)ethics at social level of responsibility does represent the whole network of ethical advisory boards. Their task is to formulate the advices for the policy decision-makers on ethical issues of technoscientific progress, primarily in regard to the new technosciences. Our analysis will be focused on the functioning of national ethic committees in Europe. In the last times, the main challenge for the work of these institutions is the question what should be their role in the context of incerased demand to come to democratic S&T policy, where participation of citizens should replace the previous technocratic approaches. In the contribution, there will be highlighted some aspects of cooperation between national ethic committees and policy decision makers (i.e., formal/ informal impact of advice on politics, »soft«/ »hard« forms of regulation of technologies, etc.) on the one hand, and some aspects of inclusion of citizenship in work of national ethic committees on the other hand. The explanation will be based on the results of the qualitative and quantitative empirical research among national ethic committees in 25 European countries which have been executed in the context of 7 FP EPOCH project. The paper will add some new insights in the complex issues of (bio)ethics, expert advice for policy decision making and scinetific citizenship.

Politics of ethics, counterfactual nature. Some problems of the recent debate on techno-science and (post-)humanity. *Luigi Pellizzoni, University of Trieste, Italy*

Advancements in techno-science open up an expanding space at academic and policy level for discourses about the 'overcoming' of human (self-)characterization. Readings of such overcoming, however, diverge according to their building on either reiterations of the modern notion of subjectivity or post-modernist accounts of subject decentring. The post-structuralist inflections of much STS scholarship entail a greater sympathy for the latter reading, yet strong criticisms against post-humanism come from scholars, like Habermas and Fukuyama, who remain faithful to the tenets of (political) modernity. The governmentality framework highlights the rationalities that drive current techno-scientific change, sometimes professing agnosticism as regards its socio-political implications, other times, joining on this some post-Marxist perspectives, stressing the crucial relevance of capital and neoliberalism. Overall, however, ethics is increasingly regarded as pivotal to the governance of technoscience and (post-)humanity, while a number of scholars seem in search of something 'solid' about human nature upon which a resistance against domination can be

built, without falling back to a traditional naturalism. Two questions, then, emerge. First: can ethics represent a valid category for doing politics in post-humanist times? How is one to understand the genitive of the expression 'government of ethics'? Second: does the last generation of 'naturalistic' accounts of human nature, working on counterfactual categories like 'common', 'pre-individual', 'biological invariant', offer new critical leverage, or does it reiterate classical philosophical tropes of 'absence'? The paper will present some steps in an ongoing programme of research, mainly working on the heritage of the late Foucault and on post-Marxist contributions.

025. (93) Neuroscience as a science of the social? - I

9:00 to 10:30 am
Solbjerg Plads: SPs05
Chairs:
Svenja Matusall, ETH Zurich
Johannes Bruder, eikones NCCR Iconic Criticism
Participants:

The social in neuroscience: Plastic research and connected researchers. *Johannes Bruder, eikones NCCR Iconic Criticism*

In their session proposal, the researchers referred to the new brain sciences as an endeavour to find the missing link between observable social behaviour and hidden biochemical states in the brain. The social is therefore transformed into brain states and brain states are defined by numbers and correlations of numbers in a rigorous process of formalisation. The transformation is a very technical process requiring a lot of mathetical skills. Nevertheless, or maybe for that very reason, the neuroscience explanations for social behaviour gain more and more authority. The question whether the social sciences should criticise or co-operate in order to prevent to be ruled out by the neurosciences in the realm of the social remains open. In this paper, I do not want to give an answer to this question. Rather, I will provide a perspective that highlights the social in neuroscience. In my study, I analyse the social economies at work in institutes for imaging neuroscience. What are the local driving forces that determine the experimental cultures in imaging neuroscience? How does this experimental culture look and in how far does it determine the ›image‹ of the brain that structures the public imagination of social life? My paper builds on a variety of ethnographic interviews with researchers in leading institutes neuroscience in Switzerland and the UK.

Imaging the Social in the Brain – Pure Voodoo? *Svenja Matusall, ETH Zurich*

This paper discusses the experimental and methodological frame of social neuroscience. Doing so it focuses on two issues, the social conditions of experimental settings and methods of locating sociality in the brain. Social neuroscience is a newly emerging research field investigating neural correlates of social behaviour and locating it in a bigger evolutionary perspective. While the field employs an array of methods, this paper concentrates on imaging studies with normal human subjects. Building on the presenter's ethnographic fieldwork, the complexity of social in social neuroscience experimentation is discussed, guided by two hypotheses: 1) the experimental situation is at the same time an unsocial and a social situation. While the participant is isolated in the scanner and a research object generating data, she is also entangled in complex social relations. The interaction between experimenter(s) and participant(s) is a vital feature for performing an experiment but it is neglected in interpreting results and designing an experiment. 2) The social is reduced to a psychological process within the individual brain for which the context is only relevant as an additional parameter but not meaningful in itself. Consequently, the social is located within the body and defined

as a mere effect of biological processes. A final section of the paper discusses whether social neuroscience could develop into a new science of the social and how the notion of social would look like if it did.

Agency, in the brain, the lab and the field. *Christian Kordt Højbjerg, Institute of Culture and Society, Aarhus University, Denmark*; *Andreas Roepstorff, Institute of Culture and Society, Aarhus University, Denmark*

Within the cognitive neurosciences, a new understanding of the sense of agency is emerging. It focuses on whether outcome of actions matches predictions, and it is claiming some universality, also outside the boundaries of the experimental setting. Based on participant observation, both in laboratory settings and in politically unstable field situations, we argue that the lab and the field may provide very different possibilities for exerting agency, in terms of the time perspective, the existential importance, the structure of the response space, and the putative markers of agency. This difference may, we claim, have important implications for how agency becomes theorized in the different settings, and, ultimately, for how on one may translate notions of agency between contexts. If particular understandings of agency are folded into the experimental design itself, it may have implications for understanding some limits of current neuroscientific understandings of agency and social cognition.

Narratives of Foundation: Constructing neuroscience as a "firmer basis" for human sociality. *Maurizio Meloni, University of Nottingham*

From primatology to moral psychology and social neuroscience, recent years have seen the proliferation of discourses about the possibility of "firmly grounding" (de Waal2006) morality and prosocial behaviours at the biological level, making human sociality a natural outgrowth of humans' neurobiological endowment. This approach has received renewed emphasis in the newborn discipline of the neuroscience of morality where the brain is often said to be "ethical" (Gazzaniga), have "a natural sense of fairness" (Moll), possess "moral buttons" (Greene), and even "a congenital neurobiological wisdom" (Damasio). Morality and human sociality are seen in this perspective like a tower (de Waal2006), whose solid foundation is guaranteed by the mind's neurobiological architecture. In my paper I will offer a skeptical view of the increasing importation of this narrative into the writings of social and political scientists (from neuropolitics to neurosociology) who are anxious to find new sources of inspiration (and legitimation) for their disciplines. My aim is to show how the prevailing vocabulary of current research into the neuroscientific bases of sociality/morality largely depends on a set of highly questionable epistemological assumptions, whose credibility and metaphors are increasingly contested today by a growing body of research from the life-sciences themselves (Oyama2000; Oyama&al.2001; Dupre2001, 2002; Robert2004; Griffiths2009; Linquist&al.2011; Mameli&Bateson2011; Prinz2012). In conclusion, I will explore the paradox whereby a certain narrative of the brain as a foundation of the social/moral seems to be more attractive today to the social-political disciplines than it is to a large number of epistemologists and (epistemologically sophisticated) biologists themselves.

026. Design, STS and cosmopolitics: From intervention to emergence in participation and sustainability - I

9:00 to 10:30 am
Solbjerg Plads: SPs07

The shift toward public engagement with science and technology (including environmental issues) has primarily been mediated by social scientific techniques. Design, however, also has many traditions that engage with publics or users that, along with STS approaches, have placed emphasis on intervening in order to 'empower' the voice and identity of particular, often tacit, versions of publics or users. This panel will interrogate some of the implicit parameters through which publics or users are enacted, and it will also explore the sociotechnical and cosmopolitical dynamics of specific forms of design practice (e.g. critical, speculative, participatory) through which novel or unexpected versions of publics and users, and the issues with which they are associated, may emerge. Bringing together a series of case studies within the broad area of sustainability, design practice and technology, this closed panel will begin to examine the role that both design and STS can play in enriching each discipline's methodological palate and enlarging each others' cosmopolitical resources. In doing so, the panel will re-addresses the processuality, ontological multiplicity, and performativity of their empirical and interventionist engagements. As such, the panel will examine the following substantive areas: the comparison of Design and STS forms of engagement with issues of technology and sustainability; variations in the making and understanding the cosmopolitical; perspectives on the complex co-emergence of user/publics and designer/STS practitioners.

Chairs:

Alex Wilkie, Goldsmiths, University of London
Mike Michael, Goldsmiths, University of London, University of Sydney
Tobie Kerridge, Goldsmiths, University of London
William Gaver, Goldsmiths, University of London
Liliana Ovalle, Goldsmiths, University of London
Carl DiSalvo, Georgia Institute of Technology
Jennifer Gabrys, Goldsmiths, University of London

Participants:

Assemblages of Interdisciplinarity: Design, STS and Sustainable Participation. *Mike Michael, Goldsmiths, University of London, University of Sydney*

This presentation examines various issues generated by interdisciplinary collaborations between design and STS scholars who are interested in engaging with the role of participation in sustainability (and in particular, energy demand reduction). Examples are provided of the methods and means by which 'speculative' design provides tools for exploring how engagement processes might 'open out' – that is, develop in unexpected and inventive ways that serve dramatically to re-articulate the issues at stake (such as energy demand reduction). This is done through developing and implementing prototypes that are ambiguous, playful, and, indeed, 'idiotic' to enable participants to 'do' engagement in potentially new ways. It is suggested that 'speculative' design practice tacitly draws on a model of the engagement event as constitutively incomplete or open. This echoes Deleuzian accounts of the event as immanent – opening out onto the possible or the 'virtual'. The implications of this analysis for STS thinking on the 'engagement event' as process are discussed, and the implications of the 'ontological logic' of interdisciplinary STS-design collaborations – or rather, assemblages – is elaborated.

From Deficit To Entanglement: Re-Scripting 'Smart' Monitors and Energy Users. *Tobie Kerridge, Goldsmiths, University of London*; *Liliana Ovalle, Goldsmiths, University of London*

In the drive towards a sustainable society, and in particular, the reduction of energy use, the role of the 'smart' electricity monitor is central. As a means for informing the householder of their energy consumption, the monitor is designed to enable them to make informed decisions about their energy use. While this deficit model of the rational 'energy user' underpins the rollout of monitors in the UK both the connection between energy demand reduction and the link between monitors and information and behavior change have been questioned. Moreover, there is now an appreciable shift from literacy to doability, engagement and material effect. Drawing inspiration from Akrich's notion of the script, this paper introduces a design-led methodology – 'rescripting devices' – that considers the ways in which monitors construct versions of their user and how their energy scripts

become entangled in everyday household practices. We will show how monitors interpolate a number of domestic, individual, material and computational capacities that are often, and in some cases rarely, attainable. In conclusion we address the implications of these assumptions and draw out the wider issues in terms of the formulation of behavior change and the value of interdisciplinarity.

Cosmos and taxis in the architectural design thought in Japan. *Masato Fukushima, The University of Tokyo*

In view of the wide currency of a co-productionist approach in STS research (Jasanoff ed. 2006), this paper investigates how the analytical concepts of social science can be translated into the practice of architectural design. I take up Hayek's (1982) distinction of the organization of society into cosmos, or spontaneous order by the gradual development through the free transaction of people, and taxis, or organizational order made by the intentional design by a selected few. Hayek's (1955) criticism of rationalist constructivism is related to the latter. Toyo Ito, one of the most influential contemporary architects in Japan, has, just like Hayek, repeatedly criticized the arbitrary nature of architectural design. His proposed concepts like the "ephemerality" of architecture and his reliance on algorithmic designing indicate his efforts to eliminate architecture of both the imposing materiality of buildings and the architect's arbitrary assumption about users' behaviors. However, he gradually problematized the growing hiatus between his approach and the response from the clients and users, while winning international reputation. His new idea of constructing a communal house in the area stricken by the March 11 earthquake and tsunami in Japan symbolizes the change in his stance. By analyzing Ito's written works and interviews, I scrutinize the interface between social theory like the cosmos–taxis distinction and the multiple possibilities of translating it into designing practice. I also propose the need to analyze the designers' tacit assumption of the social that determines which versions they adapt.

What a Palaver: Design and STS 'in the Presence' of' Energy Communities. *Alex Wilkie, Goldsmiths, University of London*

In its endeavours towards tackling climate change, energy security and fuel poverty the Department of Environment and Climate Change (DECC) has mobilised 'energy communities' as another instrument, alongside the rational energy consumer, to localise the issue of energy sustainability in the UK. Reflecting on a DECC funded project involving a collaboration between designers and social scientists, this presentation considers a cosmopolitical notion of 'community' as a way of exploring, understanding and intervening in the energy practices of humans and non-humans. This presentation explores different instances of doing interdisciplinary research – a community-engagement workshop, a project blog, device workshop, cultural probes and design workbooks – to illustrate how different 'energy assemblages' are brought together and redistributed by way of inventive design and STS engagements. In so doing, the design process is likened to Stengers notion of a 'palaver' where a cosmopolitical form of action-research (cf. Callén et al, 2009) takes place 'in the presence' of energy communities. Here, diverse and heterogeneous actors are actualised and allowed to enter into novel arrangements, giving rise to new ontological propositions – where the interests, identity, competency and roles of participants are redistributed in the staging of energy issues.

027. (32) Environmental infrastructures: STS's anthropology of nature-cultures - I: Monitoring Tech

9:00 to 10:30 am
Solbjerg Plads: SPs08
Chairs:

Atsuro Morita, Osaka University
Casper Bruun Jensen, IT University of Copenhagen
Anders Blok, Copenhagen University
Brit Ross Winthereik, IT University of Copenhagen

Participants:

New environmental policy, new infrastructures & new actor relations: Case of a global forest initiative (REDD-plus) to tackle climate change. *Moeko Saito-Jensen, Forest & Landscape, University of Copenhagen*

During the last decades, numerous global level environmental policy initiatives have emerged to tackle the mounting threats of climate change caused by increased greenhouse gasses (GHG) emissions. One of such initiatives is "REDD-plus" that aims to reduce GHG emissions in the forest sector by tackling deforestation and forest degradation. Based on a case study of this new policy, REDD-plus, and its implementation in Nepal, this paper aims to exemplify (i) types of new environmental infrastructures (EI) a global environmental policy introduces at both global and national levels, and (ii) how these EIs come to rearrange human and non-human relations. This paper further examines both intended and unintended social and political consequences of these newly constructed actor relations. To do so, the paper looks at (i) how a global REDD-plus policy discourse frames human and non-human objects concerning the topics of forests and climate change; (ii) how this discursive framing of REDD-plus structures choices of specific EIs to be used for REDD implementation in developing countries, and (iii) how a developing country such as Nepal utilizes new EIs in the effort of reducing GHG emissions from its forest sector as well as in constructing certain knowledge about the country's forests and people.

Deforestation, climate change and remote sensing technology in Brazil. *Marko Alves Monteiro, State University of Campinas*

This paper discusses Amazonian deforestation politics, focusing on Brazil, addressing how it has shifted recently in relation to climate change and monitoring technologies (i.e. remote sensing). This paper is based on an ongoing ethnography of remote sensing knowledge practices in Brazil, and is also based on extensive research with scientific knowledge on deforestation. More specifically, the paper will address how technological and scientific advances in climate change research, are transforming the perception and management of deforestation, including how it is monitored and how it is addressed as a broader social and environmental problem. Such knowledge, focused on the economy of carbon emissions and sequestration, along with remote sensing monitoring of deforestation constrains the meanings and practices surrounding deforestation, translating that problem into the specific terms of green house gases (GHG) emissions. Remote sensing also allows such GHG metrics to be implemented as a policy internally, while at the same time connecting Brazilian science and policy internationally to the global discourses on climate change. Thus, these monitoring technologies are a crucial node in the shifting relations established between actors as disparate as scientists, politicians and technical staff in research institutes (INPE, Embrapa, etc.). In conclusion, the paper suggests that this shift towards technological monitoring of deforestation is part of larger shifts in environmental knowledge and science policy and that demand further investigation and consideration. It also argues for the value of bridging ethnographic traditions within anthropology and STS towards building richer analyses of current science and technology.

Natures inhabiting energy consumption. *Lea Schick, IT University*

Where natures have been mostly absent in 'modern' energy infrastructures, lack of fossil fuels and rising CO2 concentration is introducing certain versions of natures, in the form of

renewable energy sources, into future electricity infrastructures. Based on STS perceptions on natures as always mediated and technological nature-culture I will explore which kinds of natures will inhabit future energy consumption and how electricity consumers are imagined to relate to such reconfigured natures. As many other countries Denmark endeavor to leave fossil fuels behind and instead be powered solely by renewable energy sources. The problem, however, with 'nature' is that it is uncontrollable. There is no up-and-down button to the wind, which can't be adjusted to peak hours. Since electricity cannot be stored, future energy consumption has to be adjusted to production and not the other way around. In the future we will be consuming energy 'as the wind blows'[1]. Both grid and consumers will be made flexible through awareness and automation technologies. Visions of energy futures are often conceptualized as 'intelligent smart grids'. Looking to (partially) existing, and envisioned technological interfaces to natures as they perform in smart grid visions and practices, I will ask: How are natures reinvented through smart grid technologies? How will natures look like? Which role will natures play? How does such socio-technical settings allow for new ways of perceiving, inhabiting and acting upon natures? And how are humans and natures being reconfigured through smart grid technologies? [1]Denmark Opts for Smart Grid: http://energinet.dk/SiteCollectionDocuments/Engelske%20doku menter/Forskning/SmartGrid%20in%20English.pdf

Civic Environmental Infrastructures of Emergency: Ad-hoc Networking among Radiation-monitoring Posts during the Fukushima Disaster. *Shuhei Kimura, Fuji Tokoha University*

Ways of evaluating natural environments are inseparably embedded in knowledge practices mediated by large-scale techno-scientific information infrastructures. This presentation discusses the real-time formation of radiation monitoring networks, based on ad-hoc collaboration among public information technologies and citizens' measurement practices, in the midst of confusion generated by the 2011 Fukushima nuclear power plant disaster. Amidst rising public concern over radioactive materials emitted by the nuclear reactors, which ran into uncontrollable states following the devastating earthquake and tsunami, several Japanese citizens owning Geiger counters started monitoring radiation levels in their home locations. Some broadcast radiation figures via live-streaming Web-media (such as Ustream), while others began regularly updating radiation level information on private homepages. On March 13, two days after the earthquake, a video production company in central Japan released a Google Map hyper-linking various monitoring posts, including both individual and public agency data sources. In very little time, an environmental infrastructure of emergency was thus taking shape. Coupled with scientists' media exposition of possible future reactor scenarios, we argue that this map, and its underlying data infrastructures, may have served as a practical tool for people to make difficult decisions in the midst of massive confusion over as-yet unknowable risks. While some media sources, particularly of foreign origin, would express apocalyptic prospects—showing little trust in the malfunctioning Japanese government efforts—the map came to symbolise a sense of control in the emergency, embedded in the value of practical knowledge generated on-the-spot by a scientifically literate citizenry.

Topology of Environment: Phenomenological Insight into Making Black-Box. *Sho Morishita, Japan Society for the Promotion of Science*

Geodesy, a discipline of geophysics which researches the shape and the gravitational field of the earth, has provided other measurement sciences with various kinds of instruments and analytic methods as infrastructure. For example, gravity measurement method is applied to the analysis of magmatic activities in volcano studies and of glacial displacement in glaciology, while GPS measurement became a major tools to analyze earthquakes. Such Infrastructures are usually thought as 'black box', but laboratory studies and ANT made us realize that they are also constructed by human and non-human actants. Moreover, recent studies give thought-provoking insights to think these constructing processes; Annemarie Mol and John Law argues that relationships among actants are topologically heterogeneous, while Don Ihde compares semiotic approaches to phenomenological findings and emphasize the importance of the structural relationship between experiencing being and environment. In this paper, I will try to expand the topological notions in phenomenological way through ethnographic descriptions on making process of geodetic infrastructures. I will explain the state of 'encounter' and 'conflict', which strongly affects human intentions and even the goal of scientific researches. To understand these states, I will suggest that Euclidian topology should be taken seriously as well as the real-time characteristics of practice that Pickering emphasizes. In other words, when Euclidian topology is seen as "Topology of Environment", it will guarantee to enrich the understandings both of scientific activities and human-environment relations.

028. (42) Technologically domesticated: identity & the Internet Online & IRL

9:00 to 10:30 am
Solbjerg Plads: SPs12
Chair:

Kristen Karlberg, Purchase College, State University of New York

Participants:

Online identity and communication as narrative practice. *Anne-Mette Albrechtslund, Aalborg University*

Digital technologies have offered not only new possibilities for communicating but also new challenges for the way we express and represent ourselves and our lives through this communication. This paper explores the forms of communication and self-expression observable online, and especially studies the construction of identities through the narratives that emerge from the mediated communication through examples of user-created narrative texts on the Internet drawn from a case study on an online community of World of Warcraft players. Inspired by Paul Ricoeur's thoughts on identity as something continually constructed and reconstructed by narrative configurations, the paper argues that we can see these user-created narrative texts as material traces of the continuing work on our narrative identity. This dynamic, constructivist notion of identity is echoed in much of the humanist conceptualizing of technologically mediated or online identity, e.g. Turkle's observation that because communication in online settings is always dependent on some form of symbolic mediation, usually text, it is clear that identity on the Internet needs to be "composed". However, while most studies on online communication tend to draw on sociological methods, this paper focuses attention on the mediated interpersonal communication as texts. By introducing a closer narrative analysis of such texts, the paper thus also aims to demonstrate that including analytical models and concepts taken from narrative theory and literary studies in the study of online identity and communication can lead to new insights into the way social media influence our ways of representing and understanding ourselves.

Mobile communication as permanent presentation of self. *Steffen Eisentraut, Bergische Universität Wuppertal*

Mobile phones today are an integral part of life and taken for granted. Especially younger generations perceive mobile communication as something 'natural' in their everyday practices. Giving private space and opportunities to escape parental control as well as facilitating access to peer groups, the technology bears significant functions for socialization processes

and formation of identity – the phone becomes "a tool in the emancipation of teens" (Richard Ling, 2009). When researching media related practices of adolescents one can distinguish between instrumental and expressive use of mobile phones. The latter is associated with practices of self-presentation, e.g. the choice of an 'individual' ring tone and desktop picture or showing private photos and videos to and sharing them with friends, which becomes even easier with internet capable 'Smart Phones'. As Gitte Stald (2008) states, this kind of exchange in peers supports formation of identity by testing cultural, social and individual codes and social comparison with others. An interesting aspect is that these practices of mobile communication are not necessarily deterritorialized anymore but are (re-)attached to certain places and face-to-face situations. Based on empirical data of a current PhD thesis which inquires the adoption of mobile phones by adolescents, the paper will outline which meanings are ascribed to expressive use of mobile phones both in mediatized communication and in real life by respondents. On the basis of the material, it is discussed in which way the possibility of 'permanent self-presentation' affects the understanding of the self and 'the other' in relation to mobile communication.

"#IGoToASchool Where Life Revolves Around Twitter": Teens, Twitter, and Public Participation. *Alice Marwick, Microsoft Research*; *danah m boyd, Microsoft Research*

While early users of the popular microblogging site Twitter were primarily adults, teenage use of Twitter has doubled in the last two years. Much attention has been paid to young people's use of social network sites like Facebook, but there is little research on how American teenagers use or think about Twitter. This mixed-methods paper combines ethnographic fieldwork with content analysis and survey material to examine three models of teenage Twitter use. Like adults, teens use Twitter to connect with celebrities and as a place of intimacy where they can chat with close friends. We use the February 2012 trending topic "#IGoToASchool" as a case study to examine the third model, teenage participation in networked publics. Trending topics are lists of popular subjects on Twitter. While many trending topics reflect news and current events, we focus on #hashtag memes, which often function as public, verbal games and jokes. Due to the subject matter, the participants in #IGoToASchool were primarily high school students. We examine trending topic memes through analysis of a corpus of 122,000 #IGoToASchool-tagged tweets and survey material gathered from some of the most prolific participators. The paper discusses motivations for participation in hashtag memes, the relationship between "online" and "offline" social relationships, and what teenagers believe to be acceptable use of Twitter and Facebook. By examining the tweets, candid observations of teen life, we discuss the difference between "performance" and "participation" and how it impacts adolescent Twitter use.

The Technologies Made Me Do It? Cyber-and IRL Infidelities. *Kristen Karlberg, Purchase College, State University of New York*

Embracing Baym's reframing of "domesticated technology" in relation to social networking sites (SNS) and other connective communication technologies like texting, cell phones and email, this paper considers the roles of technologies in the creation of new identities. I posit that communicative connective technologies have become domesticated technologies: taken for granted, so much so that we cannot imagine life without them. The domestication of social networking and communication technologies plays at least two roles: (1) the innovation of social norms of immediacy and accessibility to others; and (2) the creation of new mechanisms for self-disclosure enabling intimacy in interactions in unprecedented ways. This paper explores, through survey and interview data, the emergence of online (cyber) infidelity (which often leads to physical, in-real-life (IRL) infidelity). Further, this paper engages questions about

evolving identities of married people seeking other partners, i.e. "attached male seeking female," and shifting institutional boundaries of marriage in relation to the evolution of SNS and communication technologies. Are the boundaries of marriage and relationships becoming more mutable and fluid because of the availability of these technologies, or are the technologies enabling the broader interpretations of cheating/infidelity and encouraging the weakening of traditional institutional constraints of marriage and long-term relationships?

Considering Users' Located Accountabilities in Sexual-Social Media: Grindr and Use Incongruency. *Bryce Renninger, Rutgers University*

The imagined users of mobile sex apps affects both design and use in ways that normalize "public" sex. The (queer) sex facilitated by apps like Grindr and by similar sex websites like Manhunt and Adam4Adam is public in ways quite different than the public sex valorized in Samuel Delany's (1999) Times Square Red, Times Square Blue, whose institutions and spaces Michael Warner (1999) laments as victims of neoliberal clean-up campaigns. By using sex mobile apps or websites, users are semi-publicly broadcasting a desire to participate in a meat market, yet the quick contact and consistent spaces of encounter have been replaced by a private encounter space, usually a residence with only a pair engaged in sexual acts within the space. New semi-public digital spaces for negotiating sexual transaction are designed and thus marketed with imagined users and imagined patterns of use. Over time, users develop netiquette standards and media ideologies (Gershon 2010) for how to approach these technologies. Individual users' standards and ideologies are affected by conventional identity intersectionality around the vectors of race, class, and age, but their approach to these technologies is also informed by their affiliation or sympathy to various normativities -- hetero-, homo-, "vanilla" sexual practices. Through interviews with Grindr users, I hope to develop an understanding of Grindr use that respects the located accountabilities (Suchman 2000), an understanding of use that anticipates a variety of approaches, desires, and practices of users. In so doing, I hope to highlight encounters of contradictory normativities and approaches, noting instances of frustrations and affective productivity along the way. A perspective that respects located accountabilities will recognize that users come to the technology with different protocols and desires, and it will emphasize quests for a productive and/or non-destructive ecology of use and mediated interaction between users over a "correct" standardized prescription for use. This approach will necessarily need to consider the constructive possibilities of users' self-reported affiliation to various normativities, which runs counter to much post-Warner (1993) queer studies literature, which often discounts all aspirations to the normative.

029. Legitimizing ESS I: the birth and death of large-scale facilities
9:00 to 10:30 am
Solbjerg Plads: SPs13

The purpose of this session is to study the present efforts to build one of the currently most exciting new scientific facilities, the European Spallation Source (ESS), as a joint international responsibility of seventeen partner countries to be realized in Lund, Sweden. The decision to locate ESS in Lund was taken 2009, and the negotiations about financing will come to a close in 2013 (the cost estimate is 1,5 billion euros). The design process is well underway, the first neutrons are to be produced in 2019 and the facility should be fully operational 2025. The ESS is a major large scale facility promised to produce multi-disciplinary science in the context of the modern globalized knowledge economy, attempting to live up to intensified social demands and contribute on the path to the sustainable society. This session specifically focuses on the life-histories of large-scale facilities such as ESS. The complex political and economic processes during the

history leading up to ESS in the European policy context are analyzed, as are the design decisions, involving a whole range of questions centred on instrument design, and the epistemological issues actualized in large-scale science. The policy and practice of shutting down large-scale facilities is also touched upon in a session that aims to grasp large-scale facilities from design to decommissioning.

Chair:

Tomas Hellström, Department of Business Administration, Lund University

Participants:

European Neutrons from Parasitic Research to Global Strategy: Plans for a transnational research facility in the wake of the cold war. *Thomas Kaiserfeld, Lund University*

This is a story of a decade of planning and arguing about a transnational European large-scale research facility, the European Spallation Source (ESS) for neutron research in southern Sweden, which still has not materialized. In this background sketch, the different interests and parties supporting ESS as well as the obstacles that appeared during its first decade, from grudging American colleagues to national priorities of involved European states, will be brought together in order to shed light on its long and winding design process. What were the arguments presented in scientific and political circles to build a new neutron source and what were the main fears among those who opposed this endeavour? That is the simple empirical question that the following paper will dwell on. Using ESS as a litmus test for European cooperation regarding large research facilities in the wake of the Cold War, the changing arguments show how indeterminate and plastic these attempts to design a pan-European facility for neutron research were. ESS was certainly not a conscious programme to counter American hegemony in Western science, at least not from the outset. Instead, it was way to mobilize resources wherever they could be found.

Designing for the future: making instruments for European Spallation Source. *Kerstin Sandell, Dept of Gender Studies, Lund University*

In this paper I will discuss some central tensions in the design of the instruments for the European Spallation Source. The main will be the ambition of designing instruments that are to be world leading and where science is in 10-20 years' time, suggesting innovation, new thinking, high risk but also high gain. How is this task tackled by the instrument scientists, and what tensions in relation to deliver both on time (first instruments should be up in 2019) and in terms of functionality and reliability – demands that would call for low risk. Adding to this I will incorporate a discussion of the mobilization of users in this process, user communities that the ESS now are working to attract, and many of whom are not even using neutron science currently. The paper is based on fieldwork at ESS, interviews with instruments scientists and relevant documents. I will work with the theoretical framework of Hans-Jörg Reinberger's experimental systems, where designing the instruments is at the heart. ESS is aiming to be cutting edge, and thus is truly made to be machines for making the future, in terms of what we will be able to know, and according to Rheinberger more importantly, what we will be able to ask. The challenge at the ESS is that technical objects, the instruments, by necessity are built on what we do know at present, while are asked to be able to be vehicles for materializing future questions.

Epistemic Migrations: Joint Conditions in the Humanities and the Techno Sciences. *Victoria Höög, Dept of Philosophy, Lund University*

The talk aims to explore what conceptual resources history can provide a workable epistemological vocabulary for computational science pictures with examples from structural molecular biology. The visual turn in the sciences has renewed the relevance of a certain aspect of post-positivistic

epistemology, namely the relation between fact and representation. In the contemporary history- and philosophy of science distinct treatises exist, not enclosed in formal and technical languages that can enrich the prevalent discussion about scientific visualism with clarifying conceptual tools. The visual computational turn has altered the working conditions for various sciences. If theory in classic science was regarded as determining the facts, now the pictorial fact defines the representation. The picture emerges regardless of any theoretical approach. Rather than theoretical competence, the interpretative experience is the preferred professional virtue. An essential question to discuss is whether the assumed experiential holistic concept of representation is a shared feature for the visualized molecular biology and the humanities, and hence can be a starting point for a shared vocabulary. A proposal is that a concept of representation inspired by history writing can provide a start for a technological literacy that is helpful to illuminate general aspects of technoscience.

The momentum of maturity: shutting down large-scale facilities. *Gustav Holmberg, Research Policy Institute, Lund University, Sweden*

Discussions about large scientific facilities, such as the ESS, the European Spallation Source to be constructed in the coming decade, is often about facilities that are either new or still in the planning stages; such discourse is often future-oriented and expectations-driven. Building them sometimes entails the shutdown of 'old' facilities, so as to concentrate resources to the next generation. However, shutting down large facilities is not always a simple process. This paper looks into the politics and practice of shutting down large-scale scientific infrastructure. By discussing a number of cases, mostly from the history of modern astronomy, it will highlight some of the processes that are relevant as large science facilities reach maturity. They are, just like new and future machinery, contested sites with debates as to their funding and environmental impact. They can be said to have a social momentum in that they support user bases of sometimes considerable size, or have large extra-mural support after decades of successful outreach activities. They most surely have a momentum in the material sense: they are big, and dismantling them is a non-trivial exercise involving environmental impact assessments as well as costly decommissioning work. The lightness of expectations meets the momentum of existing installations, as it were.

Discussant:

Sharon Traweek, UCLA

030. (54) Disasters - redesigning collective orders - I
9:00 to 10:30 am
Solbjerg Plads: SPs14

Chairs:

Zuzana Hrdlickova, Goldsmiths, University of London
Manuel Tironi, Pontificia Unversidad Catolica de Chile
Israel Rodríguez-Giralt, Universitat Oberta de Catalunya

Participants:

Science, Risk Communication, and Manslaughter: the 2009 L'Aquila earthquake. *Andrew Stroffolino, Rutgers University*

Six men currently face charges of manslaughter. Prosecutors argue that they were largely responsible for the deaths of 308 men, women, and children. The crime occurred on March 31, 2009 when these men, government-appointed seismologists, failed to adequately communicate the probability that a major earthquake would strike. During a press conference, a public official (also on trial) told the citizens of L'Aquila that recent tremors were "certainly normal" and posed "no danger." A 6.3 magnitude earthquake struck the city six days later. Though manslaughter charges might seem extreme, the plaintiffs argue

that the scientists did great harm to the people of L'Aquila. Using journalistic reports, I show how various scientific and political concerns shaped what was said at the press conference. In addition, using public statements in defense of the accused seismologists, I highlight variation in how scientists feel they ought to communicate risk. Many scientists fear that the trial will have a "chilling effect," making some scientists reluctant to reach out to the public in crisis situations. The paper will reflect up-to-date coverage of the trial.

Indian Disaster Management Bodies: Changing Conceptualization of Civilians and Expertise. *Zuzana Hrdlickova, Goldsmiths, University of London*

Disasters are moments when states attempt to reorder societies producing an encounter between civil protection as a state organisation and the population. Motives for the existence of civil protection organizations, and the ways they conceive and interact with the public vary across the world and are in fact statements of deeper concepts of governance. Based on the Disaster Management Act (2005), India has recently fundamentally transformed its civil protection structure and created a number of new disaster management institutions such as the NDMA, the NDRF and the NIDM. These organizations were designed within a new specific framework of ideas about expertise and civilians. My fieldwork shows the early life of these organizations when concepts are turned into operational structures and the original design meets multiple challenges. Has India really moved from earlier concepts about expertise? How is knowledge about disaster management gained and distributed? Which disasters do these organizations prepare for and why? My paper will also examine the ways in which these organizations conceive preparedness and response training along with the role of civilians. By drawing on STS and the sociology of expertise, I analyse the particular models of social organisation and knowledge that are being assumed and enacted in the distribution of materials and expertise.

Preparing for disaster yet to come: natural resource development and the politics of anticipation. *Gisa Weszkalnys, University of Exeter*

What political forms and objects are generated by disasters in the making? This paper considers people's attempts to anticipate and prevent economic and social disaster in the context of natural resource development. Specifically, I examine the case of São Tomé and Príncipe, located in the Gulf of Guinea, which since the early 2000s has been awaiting the exploitation of its supposed vast offshore oil resources. Even though there is no oil yet, preparations to avoid a 'resource curse' have been well under way in the small island state. Adequate legislation has been put into place, oversight commissions have been installed, and STP's civil society has been called upon to ensure the proper governance of future oil revenues. The paper reveals how oil becomes a politicised object in this context, but its politicisation, I argue remains, ultimately unrealized due to the dominance of technical solutions on offer.

On Operational Risk. *Ryan Hagen, Columbia University, GSAS, Sociology*

Over the last decade corporate risk management has increasingly concerned itself with "operational risk": controlling losses from organization failure or external physical shock, as explicitly distinguished from market risk. Tellingly, a key tenet of operational risk management is to focus not on the distinction between natural and technological disaster, but on identifying which processes are most critical for business operations, and then working to prevent their disruption. This has important implications for a globalizing economy in which daily life is progressively contingent upon the continuous function of a network of socio-technical systems. STS has long recognized that technological disasters are produced by identifiable social processes, and some recent work suggests that the lessons of control and failure the field has developed from the study of falling airplanes and supercritical nuclear reactors should be applied to other complex human systems, such as financial markets. This article furthers that work by considering the implications of the emergence of the operational risk management field, and the application of its principles to the global economy. The paper draws on interviews with risk management practitioners as well as extensive archival research.

031. (72) (Re)designing public engagement: innovation in practice and analysis - I

9:00 to 10:30 am
Solbjerg Plads: SPs16
Chair:
Sarah Davies, Arizona State University
Participants:

A pragmatist perspective on the politicisation of science and technology. *Alain Bovet, Manchester Institute of Innovation Research*

In the last decade, a number of STS studies have claimed to contribute to, or at least be inspired by, a pragmatist perspective (Brown 2009, Latour 2007, Marres 2007). On the one hand, they rightly emphasized the relation that John Dewey established between an issue and a political public. Rather than a stable character of the democratic play, the public is "sparked into being" by a particular issue. On the other hand, these scholars neglected the relationship between Dewey's take on the political public and the rest of his thought, most notably his pragmatist philosophy of experience and learning, summed up in Logic: the Theory of Inquiry. For Dewey, the political public is the correlate of a social inquiry, which should be free (based on the model of scientific inquiry) and the results of which should be widely communicated (Zask 1999, Quéré 2002, Bovet 2006). Dewey's theory of inquiry may offer an alternative to both sides of the recent debate opposing the "third wave of STS" (Collins and Evans 2002, 2007) and the "upstream engagement" tenors (Jasanoff 2003, Wynne 2003). Dewey's approach focuses on experience as a transaction between an organism and an environment which results in a modification of both. As such, it opposes both the objectivist trend of the former and the relativist inclination of the latter (Durant 2011). From this discussion, the conclusion will sketch the main lines of a tempered pragmatism for STS, grounded on the process of politicisation through the conduct of social inquiries.

A Review of UK Beacons for Public Engagement Projects on the theme of Environmental Sustainability. *Audley Genus, Kingston University*

The paper sets the emergence of 'co-inquiry' approaches to public engagement in the context of the apparent inability of conventional governance arrangements to facilitate the transition to environmental sustainability. It explicates characteristics of 'co-inquiry', comparing and contrasting them with those of 'upstream' approaches for public engagement. Examining documentary sources the paper identifies and critically reviews projects funded by the UK Beacons for public engagement on the topic of environment and sustainability, evaluating them against criteria drawn from critical reading of relevant work on the concept and practice of co-inquiry. The conclusion highlights the factors limiting the capacity of the Beacon initiative – and possibly that of similar national initiatives undertaken in the future - to attain stated objectives relating to increasing engagement of the public and hence to contribute to democratising the governance of science and technology.

Designing engagements: public experiments and exhibition in practice. *Laurie Waller, Goldsmiths College, University of London*

This paper will look at how the format of exhibition is used as a technique for doing public engagement. The paper will present an ethnographic study of the making of an exhibition about the history of electronic music in the UK's Science Museum. The making of this exhibition involved the participation of a series of external groups (including musicians, performers, and writers) and this experimental process of curating is itself on display in the exhibition. Though recent STS literature has drawn parallels between the formats of experiment and exhibition, it has left open the questions of publicity relating to these two formats. These questions become particularly important when exhibition and experiment are used in combination. For example, how well does an experimental public engagement translate into an object of innovation in exhibition? If an experiment is put on display, where are the faithful witnesses? And, how does the exhibition bring together these newly engaged groups with the Museum's historical public collection? The answers, I demonstrate in this paper, cannot be thought independent of the exhibition's focus on the history of electronic music. The paper will look at how the displays of electronic music are brought into relation with the display of this experimental public engagement. The paper will show that in the electronic music displays we find the same questions about public display and engagement techniques which concern designers of public engagement today. Through a discussion of this exhibition, the paper will therefore ask what the format exhibition can offer designers of public engagement.

Designed dialogue? – Expert-youth interaction in a climate change discussion event. *Sampsa Ville Aleksanteri Saikkonen, University of Helsinki (Palmenia Centre for Continuing Education)*

This paper investigates an informal discussion event about climate change aimed for youth, which took place in 2011 at The Science Forum in Helsinki. The supposedly interactive event was designed to combine virtual and face-to-face discussions. Many difficulties, but also positive individual effects, have been highlighted in previous studies on public engagement with science. However, relatively little focus has been put on a) analysis of interaction in events where experts discuss with youth, and b) design, staging and facilitation of informal discussion events about science. This paper contributes to a better understanding of these two themes by using discourse analysis and content analysis to analyze manifold observational and survey data gathered during and after the event. The interrelation of interaction and event design are considered under the notion of duality of structure. This paper makes explicit how during the discussion there exists an interesting interplay between the life-world of the youth and the empiricist reality of the experts. Consequentially consumerist framing of climate change becomes dominant and expert knowledge communicated is mainly of advisory nature. This paper argues further that to create dialogue the affective and agonistic elements should be cultivated in order to open up dialogue, rather than downplayed in order to keep the discussion rational and consensual. The enabling interactive elements of the event design should also be utilized more effectively in practice, if interactivity is a priority. In the case analyzed, especially better integration of the virtual and face-to-face discussions would have been potentially beneficial.

Stuff and nonsense: Public engagement as material practice. *Sarah Davies, Arizona State University*

In this paper I argue that, within both the practice and analysis of public engagement with science, STS has tended to focus on the purely discursive to the exclusion of the material and affective. Scholars have, for instance, planned engagement events and deliberative activities that focus on enabling the equitable exchange of reasoned arguments, and have analysed these events with an eye to the talk that appears within them – looking at the ways that science, publics or citizenship are constituted, or at the subject roles that participants take up. My argument is that this misses important dimensions of the practice of public participation: public engagement with science – of all types and varieties – is constituted not only by the interplay of particular discourses, but by embodied experience, objects, and emotions. STS scholarship should be attentive, in other words, to both the material 'stuff' of public engagement activities and to the 'nonsense' of disruptive rationalities and emotional tone. I illustrate these points with reference to both the political science and social theory literatures and to two empirical case studies: a hackerspace in Phoenix, Arizona, in which lay people engage in cutting edge technological interventions; and to the set of foresight activities carried out at Arizona State University's 'Emerge' conference, which sought to consider the future of mundane technologies in innovative ways.

032. (91) Mutual exchanges of concepts and practices
11:00 to 12:30 pm
Kilen: K143
Chairs:
> **Milena D. Bister**, Institute for European Ethnology, Humboldt-Universität zu Berlin
> **Emily Kuria**, Humboldt-Universität Zu Berlin

Participants:

Accountability practices: On knowing and acting in healthcare. *Sonja Jerak-Zuiderent, Erasmus University*

No matter how different accountability procedures and tools such as performance indicators, but also critical incident reporting or guidelines may appear in the first instance, they are all based on the same assumption: that information on the quality of care can be framed univocally and statically as an outcome. However, healthcare and accountability are both highly relational and circumstantial notions and it is not that clear-cut who and what cares or accounts for what and who and how. This paper, based on a recently finished Ph.D, relates to an old problem within STS studies in general, and ethnomethodology in particular: it problematises the underlying assumptions and conceptualisations of representation and action ("knowing and acting") when 'worlding' (Haraway 2011) accountability in healthcare. Through ethnographic observations of quality and accountability initiatives at play in hospitals, primary care, mental care and nursing homes, such as performance indicators, critical incident reporting or guideline developments, I explore the 'silent' (Star 1991), 'unspoken' (Hirschauer 2006) and embodied instantiations of "doing accountability" and how they relate to notions of 'good care' (Pols 2004). This research avoids perpetuating dichotomies between 'objective / mechanical formal knowledge and subjective / personal judgement and private wisdom' (Bowker 2005), between visible and invisible, rational and irrational, human and non-human dimensions of doing care and accountability. I rather research accountability practices as deeply and inherently relational, by exploring how doing 'humanness' (Foucault 2002) is 'relentlessly about becoming with' (Haraway 2011).

Landscapes in pictures, vegetations in words: ambiguous interactions between geography and ecology. *Chunglin Kwa, University of Amsterdam*

Digital imagery of the Earth obtained by remote sensing technologies has become indispensable in many Earth sciences. The current 'pixelization' of large areas is hardly challenged. In this paper I investigate the remote ancestor of this picturing technology: air photography of the landscape. This practice came to fruition in an interdisciplinary trading zone of geography and ecology . Between 1923 and 1939, a number of geographers and ecologists made the multiple discovery of the "smallest unit of landscape". The discovery was made from the air, from aereal photographs, depicting the landscape at scales between 1:10,000 and 1:25,000. A fragmented landscape appeared on the

photographs. The German geographer Carl Troll became the champion of the fragmented vision of the landscape. It was he who coined the word 'ecotope' and who, in the 1950s, established a field around him called 'landscape ecology'. For a geographer, this primacy of the visual may come as no surprise. But for a vegetational scientist, this was less self-evident. Troll's core specialty was vegetational mapping. Here Troll encountered the French-Swiss school of plant sociology. Troll was always in uneasy tension with plant sociology. The methodology of the French-Swiss school is the relevé, the list of plants, drawn up at a number of quadrats selected randomly. No visual units of whatever kind are assumed a priori. Units are identified and maps may be produced, but on the basis of a computation of the data coming from the relevé's.

Enacting the "chronically ill": a study of classification practices in psychiatry. *Milena D. Bister, Institute for European Ethnology, Humboldt-Universität zu Berlin*

Historically, chronicity is a blurry term that refers to illness and disease in the Western medical encounter. Likewise, in psychiatry chronicity does not relate to a clear cut diagnosis. In Germany, many professional health care workers rather question the classification themselves. This is especially the case since the reforms of the mental health care system in the second half of the 20th century. When professionals refer to a mental health care receiver as "chronically ill" today, this expression is charged with a range of different meanings such as a very severe condition or a sustained absence of rehabilitation. Drawing from ethnographic research in a psychiatric day hospital (1) in Berlin, I will approach chronicity differently, namely as a socio-material activity of classifying people. Starting with few examples on how those who classify may understand the meaning of chronicity, this analysis will move to an empirically informed focus on the very practices of classification and the subjects-objects those practices create. By investigating the new meanings of chronicity in practice, this paper contributes to the discussion of how concepts and practices interrelate and coexist in the clinical workplace. (1) "Day hospital" means that patients spend the day in hospital, weekends included, but return to their homes in the evening.

The Role of Time in Weight-Loss and Dieting Practices. *Kay Felder, University of Vienna*

"It takes three hours to digest proteins. It's four with carbs. It can take you up to 16 hours to digest a mixed diet. When is your body really empty? So, what exactly are hunger or appetite?" This quote by a lay participant from a focus group on obesity exemplifies how tightly practices of eating and dieting are connected to concepts of temporalities and bodily time. Yet, as Barbara Adam has argued time often forms an unquestioned "deep structure of taken-for-granted assumptions" (Adam 2003: 60). Investigating how time interpenetrates and permeates daily live means to address the multiple unquestioned temporal concepts and their role in ordering the very fabric of our lives. Against this background and drawing on a multi-method ethnography (using focus-groups, narrative interviews, blogs, etc.) this paper explores the temporalities of eating and dieting and their role for understanding our bodies. It will investigate concepts of time (moments, frequency, duration...) that are embedded in and give shape to bodily practices. Furthermore different technologies like time-tables, online tools or fasting will be analyzed for their role in temporalizing eating and dieting. We can observe here how abstract concepts of time manifest themselves within daily practices and become stable and unstable at the same time as they are challenged through personal experiences. In bringing these different aspects together, the paper argues that temporal orders matter in how people deal with their bodies - and understanding these orders is essential in grasping the complexities of everyday dieting and eating practices.

Health as Learning? Health Literacies Revisited. *Joao Arriscado Nunes, CES University of Coimbra; Claudia Vieira de Souza, Institute for Clinical Research Evandro Chagas (IPEC), Fiocruz; Michele Meirelles, Institute for Clinical Research Evandro Chagas (IPEC), Fiocruz; Eloisa Hora, Institute for Clinical Research Evandro Chagas (IPEC), Fiocruz; Odilio Lino, Institute for Clinical Research Evandro Chagas (IPEC), Fiocruz*

The recognition of the existence of forms of literacy beyond those sanctioned by academic and scientific institutions, and the overcoming of the reliance on a "deficit model" approach to these literacies are key issues for a critical assessment of initiatives in health education and health promotion. Within dominant conceptions of health promotion, health literacy is anchored in biomedical information and in the responsibility of the citizen-patient for searching for and assimilating that information, with a view to the adoption of a healthy lifestyle and regular medical surveillance. Challenges to this approach consider the situated forms of activity and the communities of practice through which literacies related to health are configured from a range of different resources, vocabularies, practices and experiences - including biomedical and epidemiological knowledge. Lave and Wenger's (1991) approach to situated learning, activity theory and the field of Latin American popular education on health provide useful tools to elucidate the making of health literacies building on what people can do, rather than on what they ignore. This paper reports on research based on an experiment in health education and promotion with patients with infectious diseases (namely HIV-AIDS) at a health unit in Brazil, to explore subjects' conceptions of health and the centrality of learning as a way of speaking about what health means and how it should be promoted. It draws upon observation of health education and promotion activities, focus groups and illness narrative interviews to open up scrutiny of how health is "made up" through situated practices.

Discussant:
Vicky Singleton, Lancaster University

033. (25) To cross a widening gulf: new patterns and practices of science for sustainability - II
11:00 to 12:30 pm
Kilen: K146
Chairs:
Edward Hackett, Arizona State University
Stephen Zehr, University of Southern Indiana
Wesley Shrum, Louisiana State University
Participants:

The art of translating environmental knowledge: lessons learned from a Finnish home economics NGO. *Maria Akerman, University of Tampere*

A considerable amount of resources is directed in modern societies to develop different kinds of indicators, guidelines and instructions to guide citizen-consumers to take environment as part of their consumption preferences. The rationalistic assumption that more knowledge automatically means better choices has been, however, criticized a lot. The linkages between environmental knowledge and peoples' consumption patterns and lifestyle choices has been a much discussed issue in STS literature. Different barriers to environmental action has been named, among them individual circumstances and socio-material conditions etc. Common for all these views is an understanding that scientific knowledge as such does not affect individual choices. To induce agency environmental concerns need to be connected to peoples' understanding of their own experimental environments. This paper focuses on how a particular professional group translates abstract environmental knowledge

to families in diverse socio-material positions. The studied professionals are extension specialists of a Finnish home economics NGO. The main target of the NGO is to support the well-beeing of families. Consequently, environmental knowledge needs to be interpreted through the lenses of the daily life of families. Knowledge thus cannot be mediated, it needs to be translated (Callon, Latour, Mol etc.).The focus of analysis is on this translation process, firstly on strategies to make environmental knowledge plausible for different audiences and secondly, on the role of affects and social networks in this process. The data constitutes of the interviews of extension workers, observation of the NGO activities and education material.

Bridging the Gulf: New Practices in Environmental Policy Studies. *Sharon D. Moran, SUNY - Environemental Science and Forestry*

To help meet sustainability goals, better practices are needed, especially those that help shrink the distance between knowledge and action. The conference theme suggests that the "design' of the social arrangements producing scientific and technical knowledge is an important way to reconsider alternative practices. This paper examines the professional education and training of policy specialists and administrators who handle environmental policies, including sustainability initiatives. Environmental policy professionals typically enter the field in one of two ways: through a technical route, or through the policy route (usually master's degree in public policy/public administration degree program). Unfortunately, neither of these trajectories ensures exposure to STS approaches to environmental policy, and in their absence, more technocratic approaches are likely to prevail. Some universities (e.g. ASU) already approach environmental policy using a nuanced STS framework. However, this paper seeks to extend the benefits of the STS approach to a larger proportion of the population of students of environmental policy. One way to bridge the gulf between knowledge and action might involve getting more policy students exposed to the STS approaches during their academic careers. The paper argues that it is possible to construct case studies that use comparative cross national policy analysis to showcase the value in STS frameworks. Like other papers exploring the benefits of utilizing a STS approach (e.g. in connection with engineering ethics), this paper makes specific claims about the values inherent in a more carefully designed curriculum.

Meat consumption trends and discourses: Learning from the past. *Minna Kanerva, The Research Center for Sustainability Studies (artec) - University of Bremen*

Current levels of meat production and consumption have a multitude of negative impacts on the environment and on human and animal welfare. This paper is a follow-up of an analysis of production and consumption trends over the past 50 years in a number of European countries, and presents first results of a media discourse analysis for relevant countries. The aim is to learn about the difficulties of reducing meat consumption, and about possibilities for chance towards sustainability. In general, Joy (2010) argues that the media often supports the status quo in meat consumption, while Halkier (2010) claims that discourses about problematic food consumption are in fact framed so that through 'challenged consumption' the consumers themselves are made responsible for solving the problems by changing their consumption habits. These and other framings may be found for media discourses around meat in different countries (bottom-up method). The discourses can also be studied in terms of the risks arising from intensive animal agriculture (top-down method), and people's perception of these risks. Perceived benefits and perceived risks seem to have an inverse relationship (Fischoff et al, 1978; Lorenzoni and Pidgeon, 2006), while the familiarity or distance of a technology can play a role in risk perception as well (Rip and Talma, 1998). Meat production involves a more distant technology with more perceived risks and fewer benefits, while meat consumption is a familiar everyday practice with fewer perceived risks, and more benefits. Since the production and consumption of meat are disconnected (e.g. Gouveia and Juska, 2002), the knowledge-action gap on unsustainable meat may be more challenging to overcome than with other areas, such as mobility or energy. Using these two methods, the study analyses textual data from major daily newspapers comparing a number of years over the past two decades.

Making a better coffee: The sustainability through the co-production between traditional and scientific knowledge. *Derly Yohanna Sánchez Vargas, Universidad Nacional de Colombia*

Colombian Coffee Growers Federation is the biggest association of coffee producers in Colombia. As part of its mission, a research centre on Coffee production CENICAFE has been created since the early years of the federation. CENICAFE was found in 1938 and the Federation was in 1927. The centre has been a very important reference point of knowledge and innovation for the Federation. The centre in the last decades has made a turn from a traditional perspective –linked to Green Revolution- to the discourse of the sustainability. The world awareness around sustainability has allowed in the federation the promotion of sustainability as a social, economic, political and environmental goal. CENICAFE has been a key actor in the consolidation of this process. CENICAFE has made a big effort in order to develop strategies for reduce the gap between knowledge, action and sustainability trough the development of technologies (artefacts), education and technology transfer programmes. This paper will describe the main strategies of the Federation in alliance with CENICAFE for achieving the sustainability in the coffee production through the creation and distribution of knowledge and technology. This action has involved the work with communities of farmers and small coffee growers groups in the country. I will analyse how has been co-produced technology, expertise and trust, as well as, the frequently negotiation between traditional knowledge and practices in this process. This presentation discusses the implications of this assemblage of traditional and scientific practices and knowledge in the development of strategies for sustainability.

Towards Sustainable Sanitation? *Ragna Zeiss, Maastricht University*

While much attention has been devoted to sanitation in the global South, in Europe sanitation also needs to be re-addressed to respond to the challenges of sustainable development such as use of water and energy. Most parts of Europe rely on large technological sanitation systems consisting of pipelines and wastewater treatment plants. This successful approach to sanitation was developed in the late 19th and early 20th century and spread to many parts of the world. The sanitation system has become a critical infrastructure as well as a mundane, taken for granted, invisible system. This has consequences for how is dealt with innovative (sustainable) technologies in terms of e.g. risk taking. Further, the reliance on this large technological system has caused a situation of lock-in and its invisibility does not make it a core issue on the sustainability agenda. To make sanitation more sustainable these issues need to be addressed and knowledge needs to be brokered between different academic disciplines (e.g. engineering, environmental and social sciences) as well as different societal actors (e.g. policy-makers, universities, industry, citizens). On the basis of interview and documentary material, this paper investigates knowledge brokerage around and (non-)adoption processes of sustainable innovation in sanitation in the context of the Netherlands. Despite its criticality, sanitation has hardly been a topic of STS research. Further, the paper contributes to an understanding of 1) the roles of and mechanisms for knowledge brokerage, 2) (sustainable) socio-technical innovation in the public -rather than

private- sector in particular regulatory and national contexts.

034. Domestic devices: Homes, dwellings and politics indoors - II

11:00 to 12:30 pm
Kilen: K150
Chair:

    Ann Kelly, London School of Hygiene and Tropical Medicine

Participants:

Designing the 'man at the door'. *Liz McFall, Open University*

This paper explores how 'home-service', 'field' or doorstep agents were 'designed' as a marketing device that could foster forms of economic participation in domestic settings. Until the 1980s industrial assurance was a mass-market form of life insurance targeted at the poor that relied upon doorstep collection of small weekly or monthly premiums. The mechanism of doorstep collection helped make industrial assurance an extraordinarily successful product design with as many as 70 million policies in existence in the UK at the industry's peak in the 1940s. It also raised a number of challenges. Doorstep agents had a number of affordances that exceeded their initial design as mechanisms for the collection of premiums and sale of policies. Agents also offered a means of discipline and feedback becoming a core element of product persistency and qualification. These affordances however were contingent upon agents' ability to get over the doorstep, to cross the threshold into the domestic setting. The paper explores how companies attempted to cultivate agents' capacities to 'fit' in multiple, diverse domestic settings and become the 'guide, philosopher and friend' whose 'foothold in practically every home in the country' was lamented successively by Gladstone, Lloyd George and Beveridge. This involved balancing the need to oversee agents working in the field and allowing them freedom to negotiate their own, unsupervised way over the threshold. The strategy that developed turned on the bureaucratization of charisma, an almost paradoxical organisational strategy that nevertheless enabled millions of household to participate in long-term saving.

Debt collection: Soliciting domestic economic participation. *Joe Deville, Goldsmiths, University of London*

Defaulting on consumer credit debt is an experience that is both intensely personal(ised) and intensely domestic. Household rhythms and routines becomes punctuated by near daily incursions into the fabric of everyday life, as collections letters drop through letterboxes and the sound of ringing phones – often left unanswered – resonates through the home. This paper explores the ways in which these ostensibly mundane domestic devices – the phone and the letter – become transformed in the collections process into sophisticated mechanisms for attempting to solicit participation. Participation in this context is shown to be operating through as attempts to secure form of (re)attachment between defaulting debtor and credit products. The paper begins by briefly introducing some of the key features of contemporary collections practices and looks at how dwellings are rendered as the key stage for the conduct of this particular form of economic action. This includes a range of increasingly sophisticated experimental practices designed to ascertain which homes and which debtors might most profitably be subject to collections practices. Both the debtor's past and their actions as they move through the present are shown to provide the empirical grounding for a process of repeated affective 'testing', aimed at discovering — and profiting from — minute variations in debtor dispositions. The success of these solicitation attempts, in turn, depends on the ability of a particular collections agency to establishing connections with the emergent, embodied dispositions of debtors, formed out of particular combinations of life history and lived body. In targeting embodied economic agents in this way, the modality through which the domestic becomes operationalised as

a site for participation shifts into empirical registers with which STS has historically struggled to adequately account for, questions which I will explore in conclusion.

A certain convocation of politic worms: Assembling domestic vermiculture and the ecological collective. *James Wilcox, Rensselaer Polytechnic Institute*

In this paper, I investigate the growing trend of urban vermiculture, the practice of composting organic waste with worms, as a multi-sited, political practice, in which collectives are assembled and politics are enacted in domestic spaces, such as backyards and kitchens, as well as through an array of participatory media practices. Informing this inquiry are data drawn from traces of the vermiculture community's discourse via web-based discussion (i.e. vermicomposting blogs, discussion boards, etc.) and Do-It-Yourself (DIY) guides (i.e. online "instructables"), as well as from the larger public and scientific discourse surrounding the practice. In examining the emergence of vermiculture as a "sustainable," designed practice related to waste minimization and local food sourcing, I probe its heterogeneity, as vermicomposting represents a thoroughly "cosmopolitan" assemblage of low- and high-tech artifacts, human and non-human life, embodied and virtual spaces, and a variety of participatory textual artifacts. Most importantly, vermicomposting troubles commonsense distinctions between consumption and production, private and public, human and animal, living and non-living, trash and treasure, and the affective versus the instrumental, provoking a range of questions. How do the everyday ontological characteristics embedded in the design of vermicomposting systems reconfigure these relations within domestic spaces, and in turn, the role of domestic spaces in the politics of sustainability? When interactions between worms and waste are designed into and contained within domestic space, what affective trajectories are enabled, what new dangers and problems emerge, and what frontiers of political engagement are opened (and closed)? In conceptualizing the socio-bio-material design of vermicomposting systems, is a resolution of the tension between an anthropocentric, instrumental conception of vermiculture's actants (including made artifacts and the worms themselves) and an ecological, collective approach possible? Finally, I situate the local, domestic, practical configurations of vermicomposters and the systems they steward within the network of Information and Communication Technologies (ICTs) that support vermicomposting practices. In this context, I explore the ways in which the design and use of ICTs aids in the representation and maintenance of the system's heterogeneous actors and their ontological perspectives. To what extent does the design of DIY participatory media make scalable the political "representation" (in keeping with both Cultural Studies' as well as Latour's overtly political deployment of the term) of the human and non-human actants involved?

DIY Innovation and the Spirit of Homebrewing. *Dave Conz, Arizona State University*

We can learn several crucial lessons from the diverse, creative group of beer homebrewers, and that understanding will allow us to encourage innovation. For some, the main impetus for DIY is that it provides an outlet from their daily grind: Many employees suffer the life of the cubicle-bound "knowledge worker." In his best-selling Shop Class as Soulcraft, Matthew Crawford argues that the elimination of industrial arts and home economics classes from public school curricula has left us dependent on machines that we don't understand and frustrated by the outsourcing and off-shoring of production. We also derive little satisfaction from what we "produce" at work. We've become a nation of shoppers and consumers. DIY is a way to engage the physical things around us and create durable (and drinkable) objects. Based on formal interviews and informal conversations with homebrewers, some of these motivations include self-reliance, community-building, autonomy, independence from monopolies, an

alternative to rampant consumerism, innate curiosity, and the desire to make something cool. Bricolage is a central theme among DIY homebrewers - the art of recombining and repurposing "whatever happens to be lying around" is pervasive in the home-brew community. Home brewers experiment with ingredients and processes, but they also design and fabricate their own equipment. Beer can be made on a stovetop or in a customized, handmade, arduino-controlled, fully automatic, trailer-mounted "brew sculpture." Most all-grain brewers make their own "mash tun" (steeping vessel) out of picnic coolers, copper pipe, and various hoses and valves from the hardware store. Many convert commercial beer kegs into boil kettles that they perch atop turkey fryers (all of which are available dirt-cheap on Craigslist). The old soda kegs that have been phased out by the soft drink industry make for excellent home-brew equipment. Bricolage is important as we face the limits of our landfills because it allows us to reclaim, reuse, and repurpose materials that are otherwise destined to decay. Home brewing is part of a broad spectrum of DIY activities including amateur astronomy, backyard biodiesel brewing, experimental architecture, open-source 3-D printing, even urban farming. These pastimes can lead to new ideas, processes, and apparatus that might not otherwise exist.

Discussant:

Noortje S Marres, Goldsmiths, University of London

035. (37) Design and displacement in energy system transitions: pasts, futures and presents - II

11:00 to 12:30 pm
Kilen: Ks43
Chair:

Nick Pidgeon, Cardiff University

Participants:

Energy, Expectations, and Expertise: the case of Wave Hub. *Marfuga Iskandarova, University of Exeter; Elena Simakova, Exeter University Business School*

In response to the climate change debate, deliberations arose in the UK over preferred low-carbon sources of energy. This qualitative case study, based on face-to-face and phone interviews and documentary data, contributes to the debates in STS concerning technological design and energy systems change. In particular, it unravels complex socio-technical configurations explored as solutions to energy and environmental problems through promotion of marine energy technologies. The study is. The focus of the study is on the emergence and growth of a technological project in renewable energy sector, Wave Hub (Cornwall, UK). Drawing on the concept of a macro-actor, we examine how the shifting of boundaries in controversies over the project's design and trajectories relates to the construction of technical and managerial credibility and its symbolic capital. The politics of expertise around the project involves the production of expectations about Wave Hub as a successful socio-technical system by regional and national authorities, device developers, managers, scientists, as well as various social groups. We will explore the construction of notions of failure and success and the legitimation of possible causes of failure and proposed solutions.

Solar Energy: Disconcertments of Different Presents and Futures? *Heidrun Åm, Centre for Science and Technology Studies, Norwegian University of Science and Technology (NTNU)*

Solar energy has troubles in appearing as successful candidate for energy system transformations in Norway: high costs, low efficiency, and issues of energy storage impact its outreach negatively. What material changes and which political conditions are necessary for solar energy to catch up? This study is situated in a material research laboratory testing new materials for high efficient solar cells. Among the roles of integrated STS scholarship at research sites is to stimulate reflections on decisions taken in the laboratory and to raise awareness for the context of R & D (i.e. Fisher 2007, Schuurbiers 2011). The latter– to bring out the context of solar energy – is in the focus of the proposed paper. What is the context of laboratory work on highly efficient solar cells? Instead of presuming actors, I approach the research field openly by initially asking which actors solar energy assembles around it. Methodologically, I follow the object (Czarniawska 2007:91f) which opens up the classically laboratory-based study. In detail, I examine in this paper Norwegian newspapers for actors, arguments, visions, and things (such as equipment, materials, resources, jobs) gathering (Law 2004) around solar energy. The paper shall map what a bigger picture of solar energy in Norway contains. Media constitute an important site for engagement with new technologies and they can indicate disengagement. The results of the analysis are relevant under the perspective of translations and potential displacements of the material researchers' planned innovation.

Visions of a Sustainable Energy System for the Mediterranean Region. *Sharlissa Moore, Arizona State University*

Energy and sociotechnical systems research often focus on the nation-state as the unit of analysis, which is insensitive to rising energy interdependence among nations and overlooks phenomena and inequities that arise at different governance scales. This research project explores how the vision for a sociotechnical energy system is constructed and negotiated at the regional scale through the case study of the Desertec Industrial Initiative (Dii). Dii is a conglomerate of 55 leading energy companies that aims to build large-scale solar power plants in North Africa and high voltage submarine cables along the rugged Mediterranean seabed to provide renewable energy for both continents. This research site offers a window into the early design phases of a sociotechnical system, where crucial decisions are made that have lasting influence on the shape of the system and its implications for energy justice. Using data from event ethnographies conducted at Dii meetings in Egypt and document analysis of news articles, industry literature, and images, I describe the power disparities that arise in the initial construction and negotiation for this massive system. I argue that Dii's framing of the project as a "win-win" for all countries assumes that low carbon energy is a sufficient criterion for assessing sustainability and, therefore, masks capabilities justice issues relating to the energy services the system would provide (e.g. powering resorts in Majorca versus pumping water in Morocco), as well as the capability of citizens across the Mediterranean to imagine the future of energy systems within their country.

Mass production of solar energy: public images of a scientific and technological object. *Ana Delicado, Institute of Social Sciences Univ Lisbon; Monica Truninger, Institute of Social Sciences, University of Lisbon*

The mass production of electricity through solar power is fairly recent, having taken off in the nineties among concerns with climate change and oil depletion. Unlike wind farms, there seems to be little social controversy regarding solar power plants. However, they are technological artefacts that spring up in rural locations, changing the landscape and the social relations around them. In the south of Portugal lies one of the largest solar power plants in Europe, the biggest in the world at the time of its construction (2008). It has the ability to generate 45.8 MW and covers an area of 250 ha, right next to a small town of 2,500 inhabitants. Its 250 glistening solar trackers of photovoltaic panels occupy land of little agricultural value. Oddly, this is the only such facility in Portugal, a country with an enviable number of hours of sunshine and an extensive use of wind power. This paper will seek to examine the public discourses regarding this solar power plant, in order to understand how this technological artefact is being construed, the impact it has on communities and

the possible obstacles to the development of this source of energy. Pronouncements from decision-makers, scientists, business managers, ENGO representatives and from other civil society organisations, local authorities and stakeholders will be analysed. Source material includes official documents, newspaper and journal articles, websites and blogs, and interviews with relevant actors. This paper is based on a research project concerning socio-technical controversies on renewable energies, funded by the Portuguese Foundation for Science and Technology.

No NIMBY or: How I learned to stop worrying and love the windmill. *Henrik Karlstrøm, Norwegian University of Science and Technology*

The construction of production facilities for renewable energy is often hotly contested, but so far the exact reasons for opposition to for example windmill farms remain largely unexplained. Attempts at explaining it with reference to such factors as proximity to the construction (the Not In My Back Yard, or NIMBY, thesis), the urban/rural divide or theories of knowledge deficits have been found unconvincing by actual empirical investigations of these processes. This paper discusses these issues in the context of several attempts to construct windmill farms in Norway during the last decade, some of whom were welcomed and some who met with fierce resistance. It uses a combination of representative surveys of citizens' attitudes towards new renewables and focus group interviews to discuss in what way opposition to new construction might arise, and how strategies for countering it in the future can be designed. It also discusses whether there are problematic sides to "designing consent" in this way.

036. Critical displacements: brain, feminism and politics + Feminist engagements with brain research designs

11:00 to 12:30 pm
Kilen: Ks48

In the 20th century, the brain has become a symbolic placeholder of humanity in Western culture. With the brain as the cultural organ of choice to describe the human, neuroscience has taken over the leading role amongst sciences as the most promissory site to elucidate the causes and mechanisms of human behavior. This session highlights feminist re-politicizations of the cultural construct of the brain, of neuroscientific practices, and of our scholarly (STS) and activist criticisms or endorsements of brain accounts of the human. The session features feminist perspectives from critical studies of the brain and neurosciences in society. How are neuroscientific accounts of the human gendered, such as in neuroeconomics and in the neuroscience of sexuality? How are gender accounts of the human cerebralized? How do deployed politics of brain sex arguments contribute to re-inforcing or challenging heterosexist, racist, and classist positions? How can we as critical scholars re-politicize our analysis of the brain in society? The critical literature about the contemporary neurosciences addresses the cultural cerebalization of many aspects of human life and human society, but the STS scholarship has been so far leaving out critical angles by letting classical dimensions of power such as sex, sexuality, race and class, be still invisibilized. This session is conceived of as presenting a set of examples of critical angles for re-inscribing gender as one broad axe of power in the critical STS analysis of the brain and neurosciences. + Can there be a feminist neuroscience? In which way do critical, feminist accounts and practices of cerebral matter challenge assumptions at work in mainstream neuroscience? What are the relations between power-critical approaches from within neuroscience and from without? Recent work in feminist neurobiology has attempted to work with biological worldviews, ontologies and epistemologies compatible with feminist theory. This session proposes feminist materialist approaches to the technologies of neurosciences and to brain matter itself, and thereby illustrates and discusses ongoing re-politicizations of the brain. It brings together perspectives from feminist biology and critical STS inquiries on neuroscience's epistemologies and ontologies of brain matter. The session

re-actualizes general feminist STS questions in the case of contemporary neurosciences: If mainstream neuroscience and its epistemology mobilize socially conservative assumptions in the production of neuroscientific facts, what does feminist neurobiology propose instead? How do notions of sex, gender and technologies of difference-making operate in the neurosciences of gender based on neuroimaging? What are the epistemological politics of technologies of visualization in the neurosciences?

Chairs:
Isabelle Dussauge, Center for Gender Research, Uppsala University
Cynthia Kraus, Institute of Social Sciences & University institute for the history of medicine and public health, University of Lausanne

Participants:

Estrogen Receptors in the Brain: A Case for Situational Neuroendocrinology. *Deboleena Roy, Department of Women's, Gender, and Sexuality Studies and Neuroscience and Behavioral Biology, Emory University*

The steroid hormone estrogen was previously believed to indirectly regulate the reproductive axis by activating surrounding estrogen-responsive interneurons that in turn contacted gonadotropin-releasing hormone (GnRH) neurons in the preoptic area of the hypothalamus. Primarily due to the difficulty in studying GnRH neurons in vivo, but also partly due to a gendered perception that questioned the role of estrogen in the brain, the idea of indirect estrogen action in the regulation of the hypothalamic-pituitary-gonadal (HPG) axis was, until recently, the pervading paradigm. In many ways, this neuroscientific account fit nicely into a gendered interpretation of the roles of gonadal steroids in the mediation of sexual differentiation in the brain. During the critical period in mammals for instance, it was believed that testosterone alone was responsible for neuronal cell growth and differentiation, ultimately leading to the "masculinization" of the brain. This gendered account of the activity and influence of testosterone still persists despite the fact that studies in molecular neuroendocrinology have demonstrated that in order to have functional activity in the brain, testosterone must be converted to estrogen via the enzyme aromatase. As a result of this finding, several studies over the last decade have not only demonstrated direct regulation of hormone synthesis and gene expression in neurons by estrogen, but have also reported the existence of multiple types of estrogen receptors (nuclear as well as membrane) in these neurons. This paper follows the trail of the estrogen receptor in the brain and attempts to tell an emerging story of neuroendocrinological flux.

Visualizing Life/Death: Feminist materialism, Alzheimer's disease and the lab. *Tara Mehrabi, Tema Genus, Linköping University*

Molecular imaging technologies are a vital part of contemporary Alzheimer's research, filled with diagnostic and therapeutic promises. As part of an ongoing larger study, the aim here is to explore the visualization of Alzheimer's disease (AD) in bio-chemistry labs in which scientists try to understand the complex toxic mechanisms of miss-folding proteins and neural degeneration to prevent the progress of the disease by inhibiting toxic proteins formation and regenerating neural connectivity via brain plasticity. In this paper I wish to understand the bio-chemical imaging technologies as hallmark of contemporary AD research and as a form of seeing and knowing that is based on bio-chemical manipulation. In conversation with feminist materialist and posthumanist theories, such as Karen Barad's STS work (2003; 2007), such practices are onto-epistemological. Molecular imaging technologies provide, simultaneously, knowledge of, and give shape to the bio-chemistry of AD. The approach also questions the implied ethics and politics in these scientific practices that to a large degree, for instance, rely on the

breeding and exploitation of transgenic "humanized" Drosophila. Therefore I ask, what do these imaging technologies make visible and invisible and by what means? What modes of "in-appropriate/d otherness" (Minh-ha 1987; Haraway 1992) and significant otherness (Haraway 2003; 2008) have been assumed, established and reflected in these biochemical imaging practices? And in relation to this, what is considered viable science, and what is regarded as by-products, artifacts and waste?

Gendered Neuroeconomics: Deciding rational and emotional with socio-political implications. *Sigrid Schmitz, University of Vienna, Fac. of Social Sciences*

Neurosciences build the reference point of neuroeconomics to explain and predict economic decision making by emotional and rational processing in the brain, often associated with unconscious versus conscious processes. I analyse these concepts, their gendered aspects, their relevance and implications on individual, discursive and socio-political levels. The brain is increasingly conceived as an open biological system developing in mutual interchange with experiences (brain plasticity). Such embodying of the social contests the nature-nurture dichotomy as well as binary sex differences. However, the 'modern' concept of neurobiological determinism seeks to fully explain all current behaviourisms, thinking and action on the basis of the brains nature. It does not care whether the individual brain is formed due to innate or plastically shaped processes, but it particularly considers his/her present brain constitution as determining all his/her behavioural properties. Only the perception of such an essential and closed materiality enables manipulation and control. At the same time, the cerebral subject uses and enhances his/her plastic brain within the demands of meritocracy for successfully positioning on the market. I focus on the utilisation of neuroscientific references for manifesting the separation of 'conscious rational control' versus 'unconscious emotional regulation' via methods of brain imaging. In this view, emotions are necessary counterparts in preventing rationality from losing control. Both are separated and allocated to distinct brain areas; and rationality is considered superior to emotions. I question this hierarchy of rational control over emotional regulation with respect to their attributions to gender in particular.

Sex and the neuro-: The lost and found gender of neuroscience. *Isabelle Dussauge, Center for Gender Research, Uppsala University*

This paper addresses the cultural cerebralization of gender and sexuality. Taking the example of contemporary neuroimaging science of sexuality, it asks how neuroscientific accounts of the sexual human are gendered, and how accounts of human sexuality become cerebralized, i.e. talked about and researched as something of the brain. Concretely the paper addresses productions of ideal sexuality in neuroimaging experiments which reproduce not only a binary notion of gender (male/female) and sexual preference (homo/hetero), but also implicit sexological models of what sexual arousal, desire and pleasure are. The disappearance of both subject and objects of desire and the foregrounding of a "cleaned-up", individualized and de-personalized desire are central to the reification of sexuality in neuroimaging-based science. Among others, this paper argues that if the "cerebral subject" is historically specifically modern (cf. Vidal 2009), it is also gendered, sexualized – etc – in specific ways that deserve critical attention. The STS critique of neuroscience therefore needs to attend to the positionings and shapings of the cerebral subject in fields of power. Especially, the paper proposes that STS critique should keep interrogating the cultural appeal of not just the "neuro-" at large, but of more specific reductionist brain accounts – of sexuality, gender and other orders of power. This paper thus also addresses the following questions: How does it matter for cultural understandings of desire, that desire becomes cerebralized and studied with neuroimaging methods? Is neuroscience always conservative of the social and cultural

orders it feeds on?

Discussant:

Deboleena Roy, Department of Women's, Gender, and Sexuality Studies and Neuroscience and Behavioral Biology, Emory University

037. (19) Life's temporal and material frontiers - II

11:00 to 12:30 pm
Kilen: Ks54

Chairs:

Rebecca Ellis, Lancaster University

Claire Waterton, Centre for the Study of Environmental Change (CSEC), Department of Sociology, Lancaster University

Participants:

Out of the Blue? Lives as a productive force and the timing and tweaking of underwater limits. *Kristin Asdal, Centre for technology, innovation and culture (TIK), University of Oslo*

The blue revolution, it is sometimes called, the phenomena that we now, at an increasing extent, globally, harvest, rather than simply catch, what the sea can bring. Aquaculture stands out as the new promised land. The world's future food should come out of the blue; from farmed sea land, it is argued. And to an increasing extent it already does. But definitely not out of the blue in the sense of events that were never strategically planned. Thus "revolution" is not really a timely expression. Rather, as the strategy plans to enable Norwegian sea ranching from the 1980s was named, this is a development that has been pushed: The Push-program, like a series of other strategy plans, is rather about timing such events into happening. This has to do with re-ordering, re-arranging and remaking times; such as market-times, life-times, past times and future times. How to transform the conventional life and growth time, the moves, of the promised the Gadua Morhua, the cod-potential, from a wild into a farmed world-market commodity? This paper argues that timing is integral to this. The paper examines such exercises in timing with a point of departure in strategy and innovation documents. This is not to say that such efforts easily cash in. Repeating non-successes are a crucial part of this story. Hence, rather than speaking about biocapital and the global bioeconomy, this paper suggests to frame this as fragile processes of timing and efforts at biocapitalizing

Making Natural Capital: Biodiversity Research and Biosecurity Practices in Mexico. *Emily Mannix Wanderer, Massachusetts Institute of Technology*

Mexico is highly biodiverse place, one of the twelve countries with the greatest richness and variety of biological diversity, as well as the center of origin for a variety of crop plants. This paper examines the practices through which biologists in Mexico make this biodiversity visible and how they develop corresponding biosecurity practices to protect that biodiversity, ranging from seed banks to geographical denominations of origin to regulations on the use of genetically modified organisms. Scientists produce knowledge about local biology, using ecological research and molecular genetics to classify and quantify the differences among regions. At the same time as they make biological diversity visible, scientists working in conservation in Mexico make claims about the social and cultural conditions required for in situ conservation. Ecologists working in biosecurity projects produce knowledge about the social and economic practices relating to the use and conservation of genetic resources, classifying some practices as protecting Mexico's natural capital and patrimony, and others as dangerous and damaging. Based on ethnographic fieldwork and interviews conducted with scientists in federal agencies, universities, and NGOs in Mexico City, along with analysis of news reports and

governmental reports and strategy documents, this paper addresses questions of interest to scholars of STS and the anthropology of science. How do scientists engaged in biosecurity practices construct boundaries make distinctions among places? How do the ways in which life forms are classified effect economic and social practices? How are these distinctions shaped by questions of national identity, security, and sovereignty?

(Re)Ordering Ordered Life: The Enactment of Botanical Garden Socio-Natures. *Katja Grotzner Neves, Concordia University*

This paper investigates the (re)invention of botanical gardens as contemporary biodiversity conservation agents and the concomitant the (re)ordering of botanic socio-natures in the context of neoliberal governmentality. First, building on Steve Hinchliffe's notion of enacted nature, the paper investigates the ways in which the histories of different botanical gardens around the world (e.g. botanical gardens of empire, botanical gardens of Science, botanical gardens of mass education) affect the ways in which they design and order life, intervene in human-nature entanglements, and engage in life making through different understandings and techniques of life enactment. Second, building on Foucault's later work, it analyses the Ecobiopolitics of botanical gardens as biodiversity conservation actors at a historical juncture of widespread economic and financial crisis. It argues that with the introduction of neoliberalism in the 1980s and 1990s, and the subsequent financial and economic instability of the past decade, the deployment of 'unique approaches to biopower within different governmentalities' at botanical gardens is extremely malleable, heterogenous, and open ended. Nevertheless, it also demonstrates than within this predicament also resides great potential for alternative visions and projects - which do indeed take place. Data supporting these arguments was collected with funds from the Canadian Social Sciences and Humanities Research Council for a project comparing the re-invention of Botanical Gardens from around the world as 'new' biodiversity conservation agents.

Frog Tales. Poison Frogs, Natural Product Research and the Regulation of Biodiversity. *Klaus Angerer, Humboldt Universität zu Berlin*

The paper analyses the Epibatidine case, an instance of bioprospecting frequently mentioned but hardly ever discussed in a detailed manner in the literature on bioprospecting. This case study is used to explore contemporary configurations of bio-objects and regulation in the research on biodiversity and in drug discovery. Epibatidine is an alkaloid originally extracted in the 1970s from the skin secretions of a tiny poison frog from Ecuador. Today it is a major research tool in the development of analgesics, and several Epibatidine-derivatives are promising drug leads. Unsurprisingly, the relationships between the Ecuadorian state and local communities on the one hand and the drug companies on the other have been contested, owing to claims of traditional use concerning the frogs' poison. Although this case can hardly be considered biopiracy, it presents great difficulties in determining whether so-called 'traditional knowledge' has been used, as well as the hardships involved in applying the Access & Benefit-Sharing regulations of the Convention on Biological Diversity which do not appear consonant with the everyday-practices of the investigation and use of biological materials. The paper highlights that research objects like frog poison and drug leads tend to be unstable and subject to continuous modifications, thus undermining the rather static assumptions of legal regimes like the CBD or intellectual property rights and complicating their application in the regulation of the uses of biodiversity. The Epibatidine case is analysed by reviewing the relevant literature (natural product and drug discovery journals) and using results of fieldwork undertaken in Ecuador.

038. (75+76) Design values - the materialization of

building design/Digital models in technology and construction - II
11:00 to 12:30 pm
Kilen: Floor Ground floor - Ks71
Chairs:
> *Satu Reijonen*, Copenhagen Business School
> *Kjell Tryggestad*, Copenhagen Business School

Participants:

Electric vehicle design: Displacement and discovery in the digital-material boundary zone. *Laura Noren, New York University*

Design professionals are increasingly reliant on computer-aided design tools and graphical rendering software. This project investigates collaboration among designers and between designers and their tools at the boundary-zone between digital models and physical prototypes. The paper is based on fieldwork conducted in a design lab during the development of an electric vehicle prototype. The vehicle design lab was one of four field sites constituting a larger study on collaboration among designers. A handful of comparisons are made to the three other field sites - chamber music rehearsals, professional kitchens, and architectural offices - to help contextualize the affordances of digital models with respect to sketches, physical prototypes and embodied demonstrations of ideas in development. Building on Lucy Suchman's concept of sociomaterial and Harvey Molotch's 'lash-ups', this paper provides a thick description of how collaboration between designers and their tools gives rise to interactions at the material-digital divide. Following the organizationally situated work of Wanda Orlikowski (2006, 2007) and Andrew Ross (2002), this project considers professional designers whose actions are both motivated and constrained by the bureaucratic and other organizational parameters in which they work. For the electric vehicle designers in this study, the boundary zone between digital models and physical prototypes generated both exciting and frustrating displacements in the assumption of predictable iteration. As well, navigating the material-digital boundary drew on both cooperative and competitive forms of collaboration and became a site from which claims of expertise and demands for resources arose.

2ooo Watt Society : Constructing sustainable design values in Switzerland. *Srikrishna Bharathi, 1) NTNU, Department of Interdisciplinary Studies of Culture (KULT) 2) The Research Centre on Zero Emission Buildings (ZEB) 3) Erasmus Exchange 2012 - ETH Zurich, Natural and Social Science Interface (NSSI)*

In order to significantly reduce energy consumption in Switzerland, the 2ooo Watt Society initiative has been developed into construction projects and outreach efforts within three regional test sites – Zurich, Basel and Geneva. Following the initiative's project chronology through its own graphics suggests, that over time, preferred implementation and outreach strategies have changed in scope, target and scale. In other words, closer reading of the socio-material process involved in architectural design reveals how programming goals are translated into not only physical constructions, but also serve as visioning documents for subsequent efforts. First, this essay will provide an overview of the Swiss 2ooo Watt Society and efforts in three key regional test sites. Next, a series of projects will be comparatively discussed through their graphics and programming goals. Methodologically, the bridging concept of assemblage – is located in the text at the intersections between Science and Technology Studies (STS), critical urban theory, and assemblage urbanism – and will be discussed in relation to how it has been employed in the construction of the empirical data set and analysis. The paper highlights that in sustainable construction

development, special effort is taken to illustrate innovative technological systems and concludes that the graphics generated from the 2ooo Watt Society's coordinated regional efforts provide a unique paper trail of not only how technical know how can be transferred, but also of visioning documents of future public landscapes. Lastly, the essay discusses that practically, assemblage thinking in its current iterations primarily has methodological potential to improve working connectivity between research and sustainable construction efforts by building upon existing graphic literacy within the construction and design fields.

Design and innovation mangement. *Rebecca Pinheiro Croisel, Mines ParisTech*

This paper explores innovation and social behaviourist theory in relation to sustainable urban projects in the highly institutionalized public sector (towns). We analyze two models of design management. The first consists in sequential task management, rooted in standard design practices, where the aims and the validation protocols are defined in advance. The object is known and the design tools are stable; it is a mechanic design structure (Burns & Stalker, 1966). The second organizational model for collective action emerged from a innovative design process (Le Masson, Hatchuel & Weil 2010) that went through a long phase with no design plan, although it took place in a context in which formal graphic representations are usually a prerequisite of design. Using empirical data from France, we examine the dynamics of a design process in which unexpected practices generated innovative urban design. We show how the fact that the design process did not follow the standard phases of planning meant that the actors redefined themselves in relation to one another. We point out how the absence of urban design plans during a precise phase of an innovative design process drew the actors into a movement of collective action, which presupposed the acquisition of a new identity. Ultimately, our objective is to combine social behaviourist theory and innovation theory and to facilitate innovative design in urban projects.

Turning houses of culture into an urban assemblage of heterogeneous actors using RFID technology. *Valinka Suenson, Aalborg University*

As a part of urban planning strategies, the Danish houses of culture (kulturhuse) are today defined with the purpose of creating a cross-disciplinary growth with political, cultural and social impacts. From this perspective, the Danish houses of culture can be seen as an urban 'acupuncture', whose effects will slowly be spread to the rest of the local community. That generates a variety of different uses, and the focus has changed from function to experiences. By personal experiences, the houses can renew themselves in a dynamic process. The RFID technology is examined as a method to register the social activities that take place in the houses. Based on ANT, the houses of culture are defined by heterogeneous actors which together create an assemblage, wherein the technology itself is included as an actor. Based on the RFID registrations, two maps are produced, showing where the social activities are taking place. The RFID registration of activities in indoor public spaces can be seen as a part of a heterogeneous network, which has an impact on the way data is constructed. The paper works within three fields; architecture, sociology and technology. With a sociological framework the thesis is bridging sociology and architecture. The technological studies are included by employing a sociological theory which emphasizes the technology. Based on ANT the paper casts light on a discussion about how technology-based data is created, rather than focus on what data shows. Thus, the paper has a two-folded contribution; as an architectural-sociological contribution, and as a technological-sociological contribution.

A New Machine to Make Land Pay: Designing the Steel Skeleton Skyscraper. *Maude Pugliese, University of Chicago*

This paper examines the decade long process of technological change (1883-1893) whereby masonry load bearing walls construction was replaced by steel skeleton construction in virtually all tall buildings in Chicago. I ask why most architects and building commissioners in Chicago begun to consider metal frame designs the most rational solution to the problems of commercial building construction during this period. To do this, I use a comparative case, that of New York City, which did not develop nor adopt the new structural scheme until many years later. Using job records, ledgers and drafts of a sample of architectural firms in New York and Chicago between 1883 and 1893, I argue that the distinctive usage of iron and steel implied in metal skeleton designs had particular appeal in Chicago for the management of difficult work relationships with masons, which were on the contrary very fluid in New York City. Further, I also find that the teams of Chicago builders and commissioners found new ways to pool risks associated with skeletal construction, which made this risk palatable and rational for each individual stakeholder in the project. The study contributes to the STS field by documenting how negociation over risk distribution shapes processes of socio-technical change in large infrastructure projects.

039. Edibles and edibility in STS - II
11:00 to 12:30 pm
Radisson Hotel: Radisson A
Chair:

Sebastian Abrahamsson, Department of Sociology and Anthropology, University of Amsterdam

Participants:

Ingestion of edibles as public experimentation and demonstration: notes on von Pettenkorf and Clara Aguilera. *Christian Abrahamsson, Department of Geography, Lund University*; *Sebastian Abrahamsson, Department of Sociology and Anthropology, University of Amsterdam*

In the history of medicine, hygiene and chemistry, the ingestion of edible materials has served two distinct roles. The incorporation of foreign bodies has been used as public demonstration and as scientific experimentation. In this paper we wish to discuss how the ingestion of edibles conjures a particular kind of experimentation and proof by looking at two cases in the history of scientific demonstration: Max von Pettenkorf's demonstration involving the ingestion of water contaminated with cholera, and the more recent example of the E-Coli bacterium that spread via polluted vegetables in the spring of 2011. These two cases illustrate how ingestion is mobilized as public demonstration in the face of contradicting and/or controversial theories of hygiene and contamination. As such they also highlight how the locality of experimentation – i.e. the experimenter's body there and then – is used as a device for translating the local body to a body in general social body of proof: by drinking polluted water and by ingesting cucumber, von Pettenkorf and Aguilera acted as experimental devices to demonstrate the ingestibility of polluted water and cucumber respectively. We use these examples in order to tease out how the ingestion of edibles and the notion of edibility become part of, relate to and are different from other kinds of experimentations and demonstrations that have been studies in science and technology studies such as representation, statistics, control groups, randomized trials etc.

Constructing edibility: silenced materials and ethics of organic wines. *Anna Krzywoszynska, Geography, University of Sheffield*

Scholars in agri-food and STS have begun to think of agri-foods as relationally material, acknowledging the inter-corporeal dependencies they both establish and reproduce (Goodman, D.

1999, Goodman, M. 2010, Whatmore, S. 1997). The ethical questions relating to the world through the body poses to producers and consumers alike have been particularly salient. In this paper, I explore the construction of the material and ethical 'edibility' of agri-foods. I thus contribute to the increasingly urgent ethical and political debate about what kinds of eating habits eating well (Haraway 2007) in an inter-corporeal material world requires. I argue that the ethical decisions about edibility and inedibility are materially linked with the heterogeneous networks of production and marketisation of agri-foods. Crucially, 'alternative' ways of eating can include, indeed depend on, substances which disrupt the ethical narrative constructed in abstraction of the socio-material realities of production. Drawing on my ethnographic research in Italy, I explore the case of sulphur dioxide (SO2), and its material and ethical role in the marketisation (Callon et al 1998) of organic wines. I demonstrate how organic wine markets are constantly threatened by the ethical weight of SO2, while simultaneously depending on it for the marketisation of their products. I further explore what kinds of ideal consumer bodies are cultivated when SO2 is excluded, and the problems of indeterminacy in marketising lively 'natural' wines. Eating well, I show, is more than an abstract act of will. Cultivating ethical ways of eating has to address the issue of dangerous inter-corporeality.

Perspectives on food, refrigeration and sustainability. *Stephen Derrick, Monash University*

An analysis of the consumption of refrigeration services over time and the unintended consequences of technological change sheds light on the complex factors that shape sustainability. Using refrigeration technologies and food as an example, this paper will explore the importance of understanding human ecological 'timeprints' (Adam 2008) and examine how these may shape future sustainability. Refrigeration has become widespread since the early 1800's when Frederic Tudor became known as "The Ice King of the World" (Pearson 1933) and the release of the first commercial household refrigerator in the 1920's. The United Nations estimates that there were more than 1.5 billion domestic refrigerators in the world in 2009 (United Nations 2010). Refrigeration of food is now so pervasive that it influences what we eat and has shaped understandings of 'fresh'. Michel Callon's notion of performativity (1998) is useful in making sense of how refrigeration has shaped our practises and underttandings. The discourse around refrigeration and fresh food is both 'outside of the reality that it describes' and at the same time is a part of the 'construction of the reality of an object by acting on it' (Callon 2006). This paper will explore how refrigeration technologies have influenced approaches to food. "Fresh" food is now a contested term as access is often determined by the processes and timing of global and local refrigerated food chains and subject to 'the forces that create both demands for freshness and doubts about what it means' (Freidberg 2009).

Something from Nothing: Ontologizing zero through technologies of food and the body. *Jessica Mudry, Concordia University*

The packaged food landscape is littered with examples of foods that proclaim to be free of many, presumed bad, components: fat, sodium, carbohydrates or sugars. In one particular case, a company has staked its market share by producing food with no calories. Through the miracles of food chemistry, grocery stores now sell calorie- free chocolate sauce, peanut butter, mayonnaise and salad dressing. The scientific essence of nutritional value, and the marker of many public health policies that dictate the quality of a nation's diet, has been eliminated from these foods. The idea of "zero" has an historical link to food and technologies of the body. Sanctorius Sanctorius' "weighing chair," and Max Rubner and Wilbur Atwater's respiration calorimeters were early demonstrations of how to balance, or "zero" the body by quantifying foods, activities and by-products and equating them

to create the idea of human metabolism. Modern mechanized gym equipment like treadmills and Stairmasters provide programs for users to set the number of calories burned as a goal for a workout. This is, presumably, to "zero" the effects of what the person ate or, indeed, to work towards caloric debt with the hope of losing weight. In this paper, I explore how the idea of "zero" has become constituted in and through technologies of food, eating, and exercise. I argue that through these processes of embodying "zero," we ontologize the idea of nothing, which in turn defines modern food, human metabolism and the goal of exercise. By making something out of nothing, we create a space for an ethics and morality of food, bodies and human metabolism that becomes defined by mathematical equations.

Discussant:

Filippo Bertoni, Universiteit van Amsterdam

040. Changing forms of expert advice and knowledge exchange in marine governance

11:00 to 12:30 pm
Radisson Hotel: Radisson B

STS focused intensely on environmental policy issues including climate change. However, a substantial research agenda on fisheries and wider ocean management has not yet been developed. This seems surprising for at least two reasons: First; the environmental problems resulting from depletion of fish stocks and degradation of marine ecosystems, and second; the transformation of the current hierarchical, science-based policy-making system. This system is increasingly challenged by new modes of governance informed by stakeholder participation and the inclusion of various knowledge sources. Fisheries management is thus an illustrative example of how the modern idea of 'science speaking truth to power' proves profound limitations when dealing with current knowledge-related challenges in policy-making, including scientific uncertainty, socio-economic ambiguity, risk governance and public ignorance. This session will therefore go beyond the idea of a mere 'co-production of science and policy' which has historically resulted in strict demarcations between the institutions of science and policy/politics in fisheries and marine governance. It aims to unfold both theoretical and empirical observations about the changing interactions between different forms of expert advice and knowledge sources for policy. The case studies investigate the changing roles of scientific expertise and other knowledge in fisheries and marine governance. We thus highlight how STS related challenges of 'democratizing science' through including knowledge from various sources for policy impact on the management of fish, wider ocean environments and society.

Chairs:

Sebastian Linke, University of Gothenburg
Petter Holm, University of Tromsø

Participants:

Expertise and knowledge production for mandated science: the case of the Norwegian Reference Fleet. *Maiken Bjørkan, University of Tromsø*

This article is about the changing relationship between science and society and the attempt to organize knowledge production and advisory processes in new ways. In order to explore how expert advice and knowledge exchange can be organized in advisory processes, I turn to the fisheries sector, where the traditional top-down divide between science and other forms of knowledge is obvious. While scientists are clearly defined as the experts with relevant and reliable knowledge for fisheries management, many are now arguing that fisher stakeholders have valuable knowledge and should be included in the advisory process. Some argue that fishers are experience based experts - also referred to as lay experts. But how to include them in a meaningful way in advisory processes, and how they are experts, are issues still open to debate. In Norway, the Institute of Marine Research runs a project called the Norwegian Reference Fleet, where fishers are invited to participate in knowledge production

for advice. The Reference Fleet provides a relevant framework to investigate empirically how to solve dilemmas related to the organization of knowledge production in more open, yet effective ways. This paper is based on ethnographic methods and a lengthy fieldwork with the Reference Fleet, and theoretically it is supported by Science and Technology Studies and Actor Network Theories in particular. It demonstrates that it is possible to include stakeholders in knowledge production for advice, and that lay people can become experts. However, this hinges on participation at the appropriate stages in the process, and that lay people, like scientists, have access to both laboratories and authorization mechanisms in order to be included or be a part of the formal expertise.

Results Based Management: a useful instrument for reconfiguring knowledge and power networks? *Petter Holm, University of Tromsø*; *Kare Nolde Nielsen, University of Tromsø*

Current fisheries management in the EU faces a range of problems. The present management system seems to be an inefficient way to achieve established policy objectives, it is highly costly, and it has a low legitimacy. In such situations involvement of resource users in the practical work of managing has been proposed as a way forward. Main challenges with involving resource users in existing management arrangements relate to that they may lack incentives and capacity. Further, from the perspective of the public authorities, a main question is how one can know that established policy objectives will be achieved once power and responsibility is shifted to resource users. As a response to these interrelated challenges we propose a model of Results Based Management (RBM). Linked to a shift in the burden of evidence, RBM offers resource users incentives for development of self-management capacity. From the perspective of public authorities, RBM represents a way to delegate practical management responsibility while maintaining control over the achievement of policy objectives.

Defining sandbanks on the Dogger Bank: Producing scientific justification for different publics. *Ditte Degnbol, IFM, Copenhagen Institute of Technology, Aalborg University*

Between 2002 and 2011 the UK, The Netherlands and Germany have been working hard to determine where in their respective offshore Exclusive Economic Zones the Dogger Bank begins to be a sandbank. The objective has been to define the boundaries of Natura 2000 marine protected areas for the protection of biodiversity, in particular habitat type 1110 in the EU Habitats Directive: 'sandbanks slightly covered by seawater all the time'. The prospects of protected areas on the Dogger Bank raise concerns. Among other things the world's biggest wind farm has been projected here, and it is an important site for a major fisheries industry. NGO's, on the other hand, hold on to the Habitats Directive as one of few international conservation initiatives in the marine environment. The national scientific advisors are tasked with providing boundaries that are considered scientifically justified by the interested parties as well as the European Commission. By comparing the parallel designation processes on the German and UK part of the Dogger Bank, this study shows the ways in which scientific advisors, while tasked with producing scientific justification for policy, address stakeholders in their decisions about methodology, data and analysis. The study draws on document readings, qualitative interviews with scientists, stakeholders and managers in the UK and Germany and observations of a number of meetings. The analysis draws on STS literature on scientific expertise, public understanding of science, mandated science and laboratory studies. The work is funded by the EU 7th FP project JAKFISH.

Social dimensions of expertise: Challenges of knowledge communication and stakeholder participation in EU fisheries management. *Sebastian Linke, University of Gothenburg*

Establishing a socially robust knowledge base through

stakeholder participation and knowledge inclusion is indispensable for sustainable fisheries management in Europe and elsewhere. However this process is often constrained by conflicting views on science and other knowledge between key stakeholders (e.g. fishermen, scientists, NGOs). To better understand and eventually helping to resolve these conflicts, we need to learn more about the social dimensions of different 'knowledge cultures' and their interaction, i.e. how these cultures communicate with each other as well as about feasible ways of integrating additional knowledge into fisheries management processes like the EU's Common Fisheries Policy (CFP). The CFP has recently established Regional Advisory Councils (RACs) to better address these conflicts, increase knowledge interaction and legitimacy in order to create a more socially robust knowledge base. They are set up to provide forums for stakeholder interaction between and knowledge inclusion from fishermen and other interest groups like NGOs. Using STS' concepts and theories, this paper asks to what extend RACs represent a transition from a hierarchical science-policy relation towards a more open governance framework characterized by stakeholder participation and knowledge inclusion. Using the Baltic Sea RAC as example, interactions between scientific expertise and fisher's (experience based) knowledge is studied empirically through document analysis, interviews and meeting observations. Initial findings show how successful interaction between the different stakeholders depends on appropriate methods and tools for communicating knowledge within and above its social context in order to openly negotiate which kind of expertise is necessary and legitimate for sustainable fisheries management.

Managing knowledge across boundaries. *Kari Stange, University of Wageningen*; *Jan van Tatenhove, University of Wageningen*

Fisheries management in Europe involves many different actors with diverging interests. Fishers, dependent industries, NGOs, scientists, managers and policymakers are challenged to seek a common understanding about the problems that are facing European fisheries and to seek solutions to the problems identified. Collaborative projects such as GAP2 (www.gap2.eu) create opportunities for participatory knowledge production. Efficient communication between actors is a requirement for successful knowledge production in multi-stakeholder settings. This paper discusses an approach for analysing communication and transfer of knowledge across boundaries. The approach is developed by Paul Carlile (Organization Science 2004,15: 555-568) and is inspired by insights from organization theory and science and technology studies. Three boundaries of increasing complexity are described; syntactic, semantic and pragmatic. Management of knowledge across these boundaries requires increasingly complex processes; transfer, translation and transformation. The appropriateness of using this framework to analyse the dynamics of knowledge production in multi-stakeholder settings in the context of European fisheries management will be explored. Cases selected include processes of making long term management plans and fish consumer guides. 'Knowledge production', 'participation' and 'boundaries' are central concepts framing the analysis.

041. (68) Civil society organisations in research governance - II
11:00 to 12:30 pm
Solbjerg Plads: SP112
Chair:
Bernd Carsten Stahl, De Montfort University
Participants:
Civil Society Organization and Scientific Misconduct. *Lian Xinyan, Beijing,China*

Abstract: This article by studying a typical cases of scientific misconduct which happened on China- Chen- jin Event, points out that the civil Society Organization should play what part in prevent and control scientific misconduct . The China Association for Science and Technology (CAST) is the largest national civil society organization of scientific and technological workers in China. Through its member societies - 181 in number - and local branches all over the country, the organization maintains close ties with millions of Chinese scientists, engineers and other people working in the fields of science and technology. CAST as a relatively independent power participation in scientific management is the basic requirement of scientific governance. Self- discipline, independent and autonomy are important conditions of CAST participating in scientific governance and playing an active role. But in the Chenjin Event, CAST didn't play a proper role. The reasons are self- discipline, independence and autonomy shortages which are the main problems of Chinese civil Society Organizations. These problems caused ill effect on prevent and control scientific misconduct. We should resolve these problems from the two aspects of the academic evaluation and spirit temperament and so on.

Norms and Values in Technology Research. *Stephen Rainey, FUNDP, Namur*

Research and technology development increasingly utilise concepts of social acceptability, ethical norms, respect for culture and so forth. This is often motivated by concern for getting public funding (hence with respecting democratic sources of money) or with the intention of having a market-relevant outcome (as the market represents a form of value and desire expression among a population). To the extent that technology development uses these concepts, it could become a pandering force, contributing to a lazy consumerism among a public. Given societal pluralism of values, this can also be a problem of domination. As a liberating force, however, technology's ability to provide edification through enabling a society's self-overcoming can raise concerns over democratic legitimacy or basic human respect. Opening doors to potentialities without care can destabilise worldviews and cause distress. This paper explores these extremes and points to the themes with which technology development ought to be concerned in order to respect democratic legitimcacy, cultural narratives and personal autonomy in an increasingly pluralist society. Drawing upon research finding s from the recent ETICA and EGAIS FP7-funded projects, the idea of significance is used to provide an adaptive procedure for assessing the aims and the ways in which research ought to be effected such that the issues of context, norm and value are deployed in a full-blooded sense."

042. Postphenomenological research: empirical perspectives

11:00 to 12:30 pm
Solbjerg Plads: SP113

Over the past decade, the 'postphenomenological' approach to science and technology has come to play an ever growing role in science and technology studies. As it developed out of a fruitful interaction between philosophy and STS, it has come to inspire both philosophers of technology and scholars working on empirical studies of science, technology, and society. By articulating notions that can be used and further developed both in empirical studies and in theoretical work – like mediation, multistability, and human-technology relations – postphenomenology is increasingly adding helpful perspectives to other approaches in STS. The four panels we propose each focus on a different aspect of the postphenomenological approach, in order to explore its methods and its possible implications for STS and empirical philosophy of technology. Panel 1 focuses on theoretical contributions; panel 2 on empirical perspectives; panel 3 on new human-technology relations; and panel 4 on philosophical implications.

Chair:

Don Ihde, Stony Brook University

Participants:

A Multi-Stable Analysis of Data Mining technology. *Stacey Irwin, Millersville University*

Data mining technology has become one of the newest forms of newsgathering for journalists. This kind of discovery can supplement current journalistic investigations or find data for new stories to report in a wide array of online and traditional publications. This paper explores the role of data mining and its mediated place in the co-construction of our objective and subjective world. Data mining tools like decision trees, graphical inference techniques visualizing clusters and nearest neighbor historical classification techniques will be analyzed in the context of journalistic newsgathering and computer assisted reporting. This analysis of knowledge discovery concepts and tools uses posphenomenological insights of Ihde and Verbeek to interrogate the multistablity of journalistic data mining images and explores embodied cognition, technological mediation, co-constructive intentionality, and multi-stable perception.

Empirical shortcomings of postphenomenology? *Jan Kyrre Berg Olsen Friis, Stony Brook University*

I will in this talk address a pertinent problem within medicine, namely the problem of observer variations in radiology. This problem is complex: there are always at least two or more radiologists looking at and interpreting X-rays and CT-radiology images, the problem is that their interpretations will always vary to some degree, which may have severe consequences for the patient. This is a seemingly unsolvable epistemological problem, which does not have any technological fix – yet. The traditional research done by cognitive scientists and other studying perceptions within the framework of cognitivism, is to apply psycophysical methods to map brain activity, so far this has not found the reason why we interpret differently. The traditional methods of medicine are thoroughly quantitative, many still claim methodological relevance for the empiricist approaches and attitudes of the logical empiricists, where one of the features is to eliminate the subject – thus upholding the Cartesian subject-object dualism. This has led prominent radiologists like Harold L. Kundel to call for "research in the deeper aspects of image perception and in the interface between perception and analysis". Postphenomenology takes a different stand on this. First of all, medicine as a science is inherently hermeneutical, medicine is nothing but a technoscience where material and phenomenological interpretations are key elements. Moreover, postphenomenologists conceive technologies as an extension, and in the radiologists case, of human vision. However, the traditional method of postphenomenology is to apply a series of case-studies in order to describe these multistable variations, taking cultural influences and metaphysical pre-dispositions (the Life-world of the perceiver) into account. My claim is that there is a need to implement into the education of future MD's and radiologists a broader understanding of hermeneutics and the role of the hermeneutic interpreter of images.

Technoscience and Biology – towards an observer-centered phenomenology of life. *Michael Funk, TU Dresden*

In this lecture I'm going to emphasize the following points: 1. Subjectivity and perspectives in scientific observations. Beginning with René Descartes´ "Discours de la methode" modern science started to be discussed in their methodological framework. With respect to Kant, Popper and Kuhn, I'm going to ask, which role the human observer plays in these classical approaches. 2. Technological embedding: technoscience and postphenomenology. Following Don Ihde, Bruno Latour, Donna Haraway, Peter Paul Verbeek and Bernhard Irrgang, I'm going to summarize current perspectives on the technological embedding of modern sciences. Thereby the role of technical instruments, "instrumental realism" and embodiment are important aspects of an observer-centered philosophy of science. 3. Phenomenology of Life: Technoscience and Biology. With respect to the concept

of "autopoiesis" (Varela and Maturana), I´m going to close my trajectory through philosophy of science. Thereby, epistemological aspects of the life-sciences shape my investigation on trans-classical (non-subjectivist) phenomenology. One basic argument is: Classical phenomenology was developed by Edmund Husserl and Martin Heidegger in a time, when physics was the leading science. But today, our understanding of "life" is much stronger shaped by life-sciences, genetics…. Physics, chemistry or astronomy are sciences that reveal phenomena of not autopoietic materiality by handling scientific instruments in a certain embodied relation (Galileo and his telescope…). Does the materiality of autopoietic structures (like investigated in the life-sciences) imply another form of embodiment? Can we understand biological phenomena of life in the trajectory of physics-centered phenomenology? Do we need new concepts of postphenomenology and technoscience to understand the current role of human observers in biological laboratories? 4. I´m going to develop and collect some answers to this questions and looking forward to a fruitful discussion.

Becoming Mobile: The Co-construction of Cellphones and their Users. *Galit Wellner, Bar Ilan University*

Becoming Mobile: The Co-construction of Cellphones and their Users STS and postphenomenology both demonstrate how users and their technologies are co-constructed. Research in both disciplines shows this interplay in specific case studies in well-defined environments, such as a class of students in a certain course in a given semester. In this paper I will attempt to theorize the commonalities in these processes by referring to Deleuze and Guattari's notion of becoming. Becoming, like co-construction, traces the simultaneous change of two parties and how they are transformed into parts of a system, a machine in Deleuzian vocabulary, that operates in the world and on the world. People and their cellphones are a particular example of becoming. The cellphone changes the human bearer from the inside, so that becoming-mobile is a change in the attitude towards the world, where the human takes for granted the ability to connect to everyone anytime, as well as the availability of any data any time. The cellphone is transformed to reflect the bearer's tastes, preferences and habits. It becomes embodied not only to the body but also to the fabric of everydayness, to the context in which the body moves and operates. Additionally, it becomes a hermeneutic tool through which reality is read, as well as a quasi-other with which one maintains alterity relations. In becoming-mobile, our embodiment, hermeneutic and alterity relations change. It is not only our relations to the cellphone that change, but also we are transformed, and the device is adjusted to reflect the specific human that holds it.

A Century on Speed: Postphenomenological Reflections on Vision and Movement in the 20th Century. *Soren Riis, Roskilde University*

In one of his later texts, Friedrich Nietzsche expresses a rather negative thought on the connection between technological catalyzed speed and the human capacity of seeing and thinking: „Bei der ungeheuren Beschleunigung des Lebens wird Geist und Auge an ein halbes oder falsches Sehen und Urteilen gewöhnt, und jedermann gleicht den Reisenden, welche Land und Volk von der Eisenbahn aus kennenlernen" (F. Nietzsche: Menschliches, Allzumenschliches. Nr. 282.)". In this presentation, I will first explain some of the developments Nietzsche is addressing in this text and from here connect his insights to the ideology of futurism with postphenomenlogical tools. Central to the presentation is an unfolding of how new technologies and means of transportation, transformed, distorted and sometimes enhanced ways different peoples modes of seeing and thinking in the beginning of the 20th century.

043. (87) Ignorance by design. rethinking knowledge, anti-knowledge and the unknown in STS - II

11:00 to 12:30 pm
Solbjerg Plads: SP114
Chairs:
  Matthias Gross, Helmholtz Centre for Environmental Research - UFZ
  Linsey McGoey, University of Essex
Participants:
  Overcoming silent evidence: the case of pandemic influenza risk assessment. *Erika Mansnerus, London School of Economics*

  Public health policy-makers face uncertainties in their efforts to control emerging infectious diseases. During a pandemic outbreak, such as (H1N1)v 'swine flu' in 2009, decisions are made urgently. This paper studies the tension that remains in decision-making processes when evidence is weak or silent due to an unpredictable event. The main focus is on "known unknowns" within the pandemic risk assessment processes. How evidence may remain silent? Is evidence made unavailable or is it simply absent, not yet available? Are there moments when evidence is wilfully ignored in the public health decision-making processes? A special focus will be on mathematical modelling methods as tools to overcome or alleviate the challenge of silent evidence in the risk assessment processes. This paper explores how modelling as a technique can contribute to the productivity of ignorance, to the positive side of ignorance, which has been neglected as McGoye emphasises. (Cf. McGoye, 2012). Methodologically, this study analyses documents of the 2009 H1N1 pandemic and related risk assessment and modelling processes and contextualises the use and development of modelling methods in other outbreak events where similar methods have been used (e.g. predicting a measles outbreak in the UK 1994; predictive use of Hib models in Finland). This study contributes to the discourses of the nature and cultures of knowledge and non-knowledge (agnotology) production and its intertwined nature with technical tools (e.g. Callon, 1980; Latour & Woolgar 1982; Knorr Cetina 1999; Proctor & Schiebinger, 2009).

  Revealing by Concealing: How Obscured Expertise Accounts for Itself. *Brian R Rappert, University of Exeter*

  How is disclosure dependent on the withholding of information? In what ways are absences bound up with the production of author(-ity) and expertise? How can overt incompleteness ensure definitiveness? How can awareness of the limits of understanding function as the basis for claims to proficiency? This presentation addresses these questions through an examination of the movements between the seen and the hidden in attempts scientifically ground expertise. More specifically, it considers how disclosing and non-disclosing figure in written self-accounts of though who claim to reveal what is otherwise unknown to general audiences. In doing so it seeks to understand how absences and presences are configured so as to convey a sense of facility and ignorance. This will involve addressing how experts labour to render absences present, the associated criteria offered for assessing knowledge, as well as the metaphors that informed accounts of the known. Empirical cases for examination will include written accounts for locating the essence of art, mapping the emotions in the brain, as well as anonymizing and in social science inquiry. In doing so, this presentation seeks to identify new spaces and opportunities for STS expertise by advancing models for constructing present absences.

  Researching the Unknown Future. *Sascha Dickel, Institute for Science and Technology Studies, University Bielefeld*

  On a fundamental epistemological level it seems evident that the future is not factual because it doesn't exist yet. Hence, the future is by definition a realm of the unknown. Nevertheless the natural sciences can sometimes treat the future as if it is factual by

relying on physical laws and stable extrapolations. Insofar they can ignore their non-knowledge about the future. However, the contingency of social phenomena (and other complex phenomena) reveal that the future is ultimately unknowable. Futures studies (and related fields like foresight and technology assessment) study those complex and barely predictable phenomena and therefore must deal with the unknown future. But when foresight practitioners admit that the future is not factual and that they therefore can't provide factual knowledge about future events their scientific credibility seems to be in danger. The paper explores the boundary work that is done to establish futures studies as a scientific field and how foresight practitioners communicate their non-knowledge about the future. The insight drawn from this case can be relevant to deepen our understanding of the problems that complexity-oriented cultures of non-knowledge (Böschen et al. 2010) face when they must deal with an unknown future. Böschen, Stefan; Kastenhofer, Karen; Rust, Ina; Soentgen, Jens; Wehling, Peter (2010): Scientific Nonknowledge and Its Political Dynamics. The Cases of Agri-biotechnology and Mobile Phoning. In: Science Technology Human Values, 35 (6): 783-811.

Influence of precaution on the treatment of uncertainties and knowledge in food risk assessments. *Eve Feinblat-Meleze, Institut National de la Recherche Agronomique (INRA)*

The aim of this paper is to examine how precaution has shaped the ways uncertainty and knowledge is treated in food risk assessments. Traditionally, risk assessments have sought to minimize uncertainty. Literature on precaution has raised two crucial issues : the identification of uncertainties in the assessment of risks; and the involvement of stakeholders and lay people in the production of knowledge for policy making, in particular to highlight uncertainties which had not been raised before. To explore the evolution of risk assessment practices in a context of uncertainties, a US/EU comparitive analysis of risk assessments for two contaminants, bisphenol A and perchlorate, is carried out. Based on an analysis of the risk assessment methodologies and interviews made with the actors producing the assessments or the knowledge used in them (expert committees, university research laboratories, industries, environmental organizations) the paper shows that the core issue of precaution - take an action despite the uncertainties- and the inputs from other bodies have led the actors involved in risk assessments to explore new hypothesis, reinterpret actual guidelines and adapt their methodologies, in particular concerning which populations where more sensitive and should be protected in priority. According to the decision making context, these choices have been expressed by a qualitative or by a numerical statement. By addressing the question of precaution and investigating risk assessment practices, the paper identifies a new use of uncertainty and adds to the discussion on the place of ignorance and knowledge in the relationships between science and policy-making.

044. Exchange and ownership in human and animal bodies

11:00 to 12:30 pm
Solbjerg Plads: SP205

Typically, what is human cannot be owned, commodified or traded in the same way that entities deemed animal can. Various forms and understandings of property thus play a significant role in keeping humans and non-human animals apart, or disentangled. Recent work in science and technology studies has demonstrated the need to explore the co-constitution of human and animal relationships and distinctions. This has led to the elaboration of approaches that treat the boundary between humans and non-human animals as entanglements, companionships, transpositions and relational becomings. This panel extends these approaches to consider how distinctions (or disentanglements) between human and animal bodies are sustained, particularly through ideas of ownership, property and

transformation. What resources are drawn on in order to maintain the human/animal boundary? What counts as biological property? How do scientific and technological entities acquire, or carry with them, understandings of appropriability? The papers in the panel explore different combinations of legal, social, technical and scientific work that come to constitute particular entities as human or animal. Moving from pandemic flu to ferrets, from the urban to the rural, from human to animal, and from hybrid silk worms to state regulation, the papers in this session explore transformation and ownership in a variety of field sites. In doing so they seek to expand understandings of the human-animal boundary in STS by exploring how entangled relationships are shaped by intellectual, biological and cultural forms of property that underpin distinctions between humans and other animals.

Chair:

Amy Hinterberger, Institute for Science, Innovation and Society, University of Oxford

Participants:

Ferreting things out: Designing pandemic flu in animal models. *Natalie Hannah Porter, Institute for Science, Innovation and Society, University of Oxford*

In January 2012, virologists created a scientific and media frenzy by genetically designing a H5N1 avian influenza strain that transmits easily between ferrets. While advisory boards acknowledge that these animal models may help predict pandemic flu in humans, they are nevertheless restricting publication of this research. Regulators argue that ferrets' biological proximity to humans means that they could be displaced from the realm of science and transformed to foment bioterror. Inasmuch as they reflect the difficulties of disentangling human and animal bodies in transboundary disease contexts, experimental ferrets challenge existing forms of intellectual property and scientific exchange. This paper integrates data from scientific journals, media reports, and interviews with virologists to explore entanglements and disentanglements of human and animal bodies in pandemic flu research. Specifically, it traces how ferrets become enrolled in different regimes of ownership and exchange through their shifting designations as viral carriers, human analogs, technoscientific tools, and biological hazards. I argue that as they move through these categorizations, ferrets' material-discursive relationships with humans determine their status as either circulated objects of knowledge, potential biomedical commodities, or regulated biosecurity breaches. Taking experimental animals as catalysts of scientific and social transformation, this paper extends STS scholarship on human-animal boundaries through a timely investigation of the classification practices that ascribe value to interspecies relationships. In doing so, it reveals the novel forms of appropriation that accompany emerging biosecurity threats and intersecting human-animal bodies.

Materials of consequence: Constituting the human and the animal in life sciences regulation. *Amy Hinterberger, Institute for Science, Innovation and Society, University of Oxford*

Biology has a long standing interest in the overlap, interrelationship and transformation of species demarcation between humans and other animals. Conversely, the institutions that govern over life sciences research have been committed to maintaining a strict separation between humans and other animals through legal, regulatory and legislative practices. These separations are, however, coming under strain through advances in the power of techniques to produce an ever widening range of human and non-human animal mixtures. With greater quantities of genetic sequences being manipulated and advances in embryo and stem cell technologies it has become much more common to replace animal material with human tissues and cells in order to humanise animals for the study of disease. In this paper I

examine these scientific practices in the United Kingdom by exploring the emergence and regulation of entities called 'cybrid embryos', 'human admixed embryos' and 'animals containing human material'. The paper asks: how do scientists, ethicists and regulators decide what is human and what is animal in the face of such biological mixing? For the purposes of regulation, entities need to be either human or animal and they cannot be both at the same time. In order to explore this separation I examine how understandings of the human body, ownership and commodification come to shape the separation between humans and other animals.

Cocoon, Commodified: A hybrid's entangled history of silk and science. *Lisa Onaga, Cornell University*

Charts depicting the growth of raw silk exports from Japan between the late 1870s through the 1930s represent one narrative of the Japanese silk trade and the rise of mechanization and industrialization. Attention to silkworms, the biological source of raw silk, provides another way to understand this transformation. Scientific "hybrid" silkworms grew more prevalent in Japan after 1911 as a means to produce "improved," robust silk cocoons. Exactly how and why this metamorphosis in the manufacture of raw silk took place points to an entanglement of legal, commercial, and scientific developments in imperial Japan at the time. State laws and activities at the level of the Ministry of Agriculture facilitated the categorization of hundreds of silkworm varieties into biological groupings with labels that represented possible national or racial categories just as new biological thought began to alter silkworm breeding practices. This enabled more systematic use of hybrids that were offspring of so-called "Japanese" and "Chinese" silkworm strains, in order to harvest silk cocoons that produced the raw material with the qualities most appropriate for processing on American textile machines. This analysis examines the how social-scientific identities of the lucrative insect and cocoon underwent further obscuration as the imperial government's trust in and protection of the expertise of silk firms, financially vested in the successful exploitation of their own silkworms, facilitated new brandings of the biological that made knowledge of the parentage of hybrids invisible.

The Moral Economy of Danish Research Apes,Placement, Displacement, Replacement. *Lene Koch, University of Copenhagen*; *Mette N Svendsen, University of Copenhagen*

The "Sct. Hans apes" is a group of Central-American capuchins living in a Danish safari-park in the eastern part of Jutland. From the 1980s till today the apes have travelled through a number of spaces. As wild animals in the Middle American jungle they became the prey of human hunters. They were transported to Europe and eventually ended up in the Danish psychiatric hospital of Sct. Hans. Here they spent the next 20 years of their lives as participants in psychiatric research, penned up i small individual cages. In 2003 a massive media campaign orchestrated by the two major animal welfare groups in Denmark resulted in stopping the experiments and to a replacement of the animals in the safari park for "rehabilitation" under more "natural" conditions. Here the remaining animals live in specially designed collective cages accessing specially designed outdoor facilities. Medical companies have taken an interest in this replacement as knowledge of the new life of the apes might inform future use of apes in licensed laboratory outside Denmark. Using the concepts of moral economy and domestication as our starting point the paper aims to contribute to the geography and history of non-human primates in medical research. It investigates the changing configuration of the nature and moral status of the apes as well as their relationship with humans in three consecutive spaces: the wild jungle, the medical laboratory and the designed safari park.

How Do We Remember Animals Sent into Outer-Space? *Jordan Bimm, York University*

During the Cold War, thousands of animals were used in biological experiments to prepare humans for spaceflight. While most of these "living laboratories" died delivering data, and were forgotten, a few survived risky, high-profile experiments, and entered into the public imagination. Building on Haraway's work on Ham, the most famous non-human primate used by NASA (Primate Visions, 1989), this paper explores an earlier American episode in 1959 where two female monkeys became the first animals sent into outer-space to be recovered alive. This paper will argue that surviving the experiment drastically altered the way that American scientists, media, and ordinary citizens viewed these animals. After providing a brief summary of the preceding fatal animal/rocket experiments dating back to 1949—including how these lost animals were regarded—I will turn to scientific reports, popular magazines, and a recent online memorial, to show how the monkeys that finally did survive were seen as having both scientific and cultural value, and were suddenly narrated as having many human characteristics. I will assess the role of the monkeys' female sex in shaping these human-like narratives, look at how the kind of medical attention they received changed, and also describe how users of an online memorial remember/address one of the monkeys as if it was a Christian human. This paper will contribute to histories of animal experimentation, studies of the contested divide between humans and animals, and studies of the public understanding of Cold War space science, and experimental subjects in general.

Discussant:

Carrie Friese, London School of Economics and Political Science

045. (01) Clinical research in post-genomic medicine - II

11:00 to 12:30 pm
Solbjerg Plads: SP207

Chairs:

Alberto Cambrosio, McGill University
Peter Keating, University of Quebec, Montreal

Participants:

Designs for evidence: public and private faces of cardiac surgery research. *Catherine M Will, University of Sussex*; *Piera Morlacchi, University of Sussex*

This paper offers a critical reflection on changes in cardiac surgical research based on empirical work on the development of implantable circulatory support devices over appropriately 20 years to the present. Trials of surgery and implantable devices have received relatively little attention from social science, but offer important comparisons with the pharmacological and organisational trials examined in the literature and in our own previous work. Drawing on journal commentary, trial reports, and policy documents, we focus on the emergence of more adaptive trial designs and the use of registries in the assessment of devices. These very different developments can be viewed as social experiments, shaping new relationships between physicians, manufacturers and regulators (or private and public actors) as well as more or less formal statements about what should count as evidence in the device field. Yet while such agreements increasingly included a public account of the ongoing and improvisational quality of surgical innovation around devices (allowing for patient populations, endpoints or devices themselves to be modified in a single study), they also obscured or bracketed other adaptations which remained informal and private (including changing methods of implantation and the space allowed for surgeons' developing skills and preferences), which we describe with reference to ethnographic data on our case. We conclude with a reflection on the contemporary reach and meaning of the RCT as the dominant mode of knowledge production in medicine.

The Politics of Evidence and Experimentality in Clinical

Research Trials: The Case of Fetal Cell Transplants in the Post Genomic Era. *Paul Just, University of Vienna, Dpt. of Political Science/Life Science Governance (LSG) Research Platform*

Within the fabric of biomedical knowledge production double-blinded randomized clinical trials (RCTs) have constituted the gold standard in medical research and drug development. Yet the paradigm of evidence-based medicine has been increasingly challenged by numerous actants and the practice of biomedicine is constantly redefining patients, researchers, diseases, and treatments alike. Drawing from ethnographic research conducted in the context of my PhD project I will reconstruct the "regenerative history" of Parkinson's disease as a site to interrogate particular truth regimes at play in contemporary clinical research practices. The transplantation of fetal neural cells into the brains of Parkinson's diseased patients constitutes a highly experimental therapy that is currently being developed by a multi-national consortium. In this context, trial participants serve as particular sites of knowledge production that are delicate for epistemological and ethical reasons. Based on my research, I will further elaborate on four tropes that are respectively framing and delineating the overall ethics and truth regimes simultaneously at work in clinical trials: biomedical ethics contested in the case of gene therapy; debates over the placebo effect respectively the contestation(s) of evidence; the trope of a clinical trial as a therapeutic intervention; and the nature of legacy as exemplified in animal models as epistemic assumption at work. My aim is to theorize biomedical research by opening up the epistemology of clinical trials and its inherent experimentality - clinical trials understood as experiments as defined by moment(s) of surprise and their unpredictable character within the knowledge production. Keywords: experimentality, clinical research, evidence, truth regime(s)

Reconfiguring early phase trials in post-genomic oncology. A comparative US-France ethnography. *Sylvain Besle, Paris IV-Sorbonne; Nina Kohli-Laven, McGill University*

The testing and approval of new drugs has traditionally relied on a three-phase clinical trial scheme: Phase 1 trials to evaluate toxicity on a small number of patients, Phase 2 trials, usually not randomized, for an initial efficacy assessment, and large, randomized Phase 3 trials to test for efficacy in comparison with a placebo or, in the case of cancer, standard treatment. The arrival of targeted therapies and molecular biomarkers in the cancer domain has altered this scheme in a number of important ways, redefining the content and rationale of the different phases and blurring the lines between Phase 1 and 2 trials. On the organizational level, these changes have led to the establishment of dedicated 'early phase' units whose implementation, in turn, has led to the reorganization of the clinical trial system within cancer centers. This reorganization has been concurrent with transformations of the relations between researchers and clinicians, and between research and clinical practice, in the conduct of clinical trials. Based on fieldwork in two leading cancer research hospitals, one in the US and one in France, the paper analyzes a number of 'investments in form' associated with the establishment of early phase clinical trials units, using observations and interviews within these units as a point from which to gain insight into several dynamics: the emerging organizational rearrangements in cancer clinical trials; evolving understandings of the role and content of clinical trials as bio-clinical experiments, and the links between these rearrangements and understandings.

'A Hammer-and-Nail Problem': Negotiating Clinical Utility in Postgenomic American Medicine. *Andrew Staver Hoffman, McGill University*

Contemporary biomedicine has been marked by a proliferation of new genomic technologies. These technologies have shifted the routine practice of clinical medicine, and have further challenged

the way in which such tools are regulated (i.e. Bourret 2011; Kohli-Laven 2011). In response, a number of groups, including patients, researchers, clinicians, payers, and regulators have shown increasing concern about the appropriate use of genomic technologies, which are at once costly and, perhaps more importantly, may be of uncertain clinical value. The term 'clinical utility' has been coined to express the standard by which the value of these new technologies should be assessed. This study seeks to investigate what clinical utility means in the context of genomic medicine. It examines transcripts from the Secretary's Advisory Committee on Genomics, Health, and Society meetings between 2007 and 2010. Not surprisingly, the research finds that clinical utility is a very controversial notion. Rather than solving a problem of value outright, it signals the site where various understandings of value are proposed by experts and other concerned groups. Nonetheless, clinical utility is a very important concept because the definitions that manage to stick to this term will continue playing a significant role in the construction of national policies and recommendations vis-à-vis the prioritization of certain types of research that are deemed worthwhile in postgenomic American medicine.

Molecular monopolies: the corporatisation of cervical cancer screening innovation. *Stuart Hogarth, King's College London*

This paper uses cervical cancer screening as a case study to explore the relationship between molecularisation and the corporatisation of biomedical research. I contrast the development of the Pap smear in the first half of the twentieth century with the development of a rival molecular technology in the late twentieth century: DNA diagnostics for Human Papilloma Virus (HPV). I describe how the development and adoption of Pap testing was largely carried out by non-profit organisations and academic researchers. By contrast, HPV testing exemplifies the increasing importance of industry in diagnostic innovation. This change has been largely driven by the creation of intellectual property rights in DNA (and other forms of biomarkers). Gene patenting exemplifies the corporatisation of biomedical research and has particular significance for diagnostics firms, which have traditionally competed on the price/quality of their testing platforms but where biomarker innovation has, in effect, been open source and largely driven by publicly funded academic research. Molecular diagnostics companies have sought to disrupt this traditional model by using DNA patents to create diagnostic monopolies, thus creating a biomarker innovation process in which a single company plays a central role. However, the HPV story illustrates industry's continued reliance on public funding of diagnostic innovation and collaboration with industry can reinforce the authority of the established network of public sector actors,. The paper is based on a mixed method approach, drawing on a wide range of sources including patents, statutory filings by companies, scientific literature and news sources, bibliometrics, as well as interviews.

046. (10) Care and its dis/placing moves - II
11:00 to 12:30 pm
Solbjerg Plads: SP208
Chairs:
Peter Lutz, IT University of Copenhagen
Sarah Pinto, Tufts University
Participants:

Placing Normality and Displacing Madness: Seeing Dementia Care in India. *Bianca Brijnath, Monash University*

This paper, drawn from a critical ethnography which examined how 20 Indian families cared for a relative living with dementia in Delhi, India, describes how families dis/place the interactions between the person with dementia and the outside world. It will be shown that families negotiate between normality and madness

through the performative experience of seeing and showing. Within their homes, families concentrate on maintaining and containing the body of the person with dementia in a bid to downplay the dementia and emphasise the 'normal' difficulties of ageing. They invite outsiders into their homes 'to see' normality; a tactic designed to mitigate the stigma associated with madness/mental illness. However, there are risks associated with 'seeing,' because if too good a job is done to maintain normality and function, the authenticity of the dementia becomes questionable, and a different type of social censorship is brought to bear on families. Moreover as the dementia progresses, seeing and showing normality become increasingly difficult and families displace themselves, and are displaced by others, from their communities and social worlds. Through these processes, care acquires spatio-temporal movement, is linked to bodily function, and becomes a mechanism to displace carers and care recipients from their social worlds.

Choreas and Choreographies of Care for Hysteria in India.
Sarah Pinto, Tufts University

This paper explores pathologies of movement as they appear in psychiatry, and, in particular, as they relate to the historical presence of disorders called, or associated with, hysteria and their associated - and disciplinary - models of care-giving. This paper considers care of hysteria in contemporary north India in the context of the long – and transnational – history of hysteria in South Asia, with particular attention to the writing of Alfred Schofield (on religious fervor and hysterical neuroses) and late 19th and early 20th century contributors to Indian medical journals and their resonance with contemporary systems of therapy. It does so from the perspective of movement, putting bodily motion and its implications for agency and intersubjectivity in productive tension with clinical and scholarly approaches to hysteria in the west that have emphasized hysteria as a crisis in truth, memory and narrative. Drawing on the idea that "hysteria" is as much a structure of knowledge as a system of gender and power, this paper asks how the attentions (clinical, familial, social) that constitute care of and for pathological movement produce knowledge situations by way of motion, and in, not against, movement's inscrutability.

Becoming with Care Moves. *Peter Lutz, IT University of Copenhagen*

This paper is based on an ethnographic study of senior home care practices in the Unites States and Sweden. It suggests that senior home care offers a privileged site for the study of social-technical relations and their movements because it centers analytical attention on the challenges of harnessing technology for care. For instance, while many studies of humans and their technologies assume competent or skilled users, older people often meet with awkward infrastructural arrangements that rub against frail bodies and fading memories. Senior home care thus renders such relations more explicit. These relations are explored as challenges or frictions, which require constant adjustments and tinkering. Here movement is employed as a key analytical frame for this exploration. Care moves may assume violent forms or they may flow with grace. They entangle affects and effects, emotions and motions, spaces and times, aesthetics and politics. Care moves may attend to certain concerns but neglect others. In this way movement offers several avenues for exploring the onto-epistemological and socio-technical emergences of care. In this paper I employ Donna Haraway's notion of "becoming with" to help argue that a relational analysis of senior home care can be based on a study of how human care actors move with their technologies – although sometimes with clumsy or messy outcomes. I wager that this approach compliments more normative notions of care as a purely human or "soft" domain while offering a more fruitful way to account for emergent socio-technical moves in and out care.

Birthing Bodies in the Presence of Technology. *Zehorith Mitz,*

STS graduate Program Bar Ilan University Israel

One of the effects of the emergence of interrelatedness is movement, which could leave marks on bodies. In this paper I experiment with writing and artful writing as means of onto - epistemological research of birthing bodies in the presence of technology. In doing so, I focus, listen to and write from particular moments of the research process. I juxtapose and read through, poems words and phrases with transcripts of Focusing sessions for the purpose of learning something new. My intention is to dwell with particular interrelatedness, rather than analyze or interpret the writings according to a theoretical framework. I'm informed by ANT's (Actor Network Theory) terms and notions and resonate with poetic personal autoethnography as a genre of academic writing. I'm practicing Focusing as a form of a material semiotic attunement to the world which is anchored in physicality. In doing so, a non judgmental witnessing of the intertwinement of ontology and epistemology emerges; a sense of connectedness beyond what poses as boundaries of the individual and the limits of her body comes about. Different actor – networks of birthing bodies arise. Rather than searching for means to expressing self and or representing something, I'm interested in how my approach could in/trans-form the research process and our understanding.

047. (77) Urban assemblages and cosmopolitics: contributions for an ongoing debate - II
11:00 to 12:30 pm
Solbjerg Plads: SP210
Chairs:
Anders Blok, Copenhagen University
Ignacio Farias, Social Science Research Center Berlin
Participants:

Engineering 'historical locations'. The atmospheric performance of ruined urban environments. *Hanna Katharina Göbel, University of Konstanz*

This paper suggests an anti-critical approach to the study of ruins in the urban realm. Departing from studies of gentrification dealing with the reanimation of empty and decaying ruined neighborhoods in inner-city areas, I seek to unravel how preference has been given to the study of the capitalist transformation, drawing attention away from the performance of the built environment itself. I propose a practice theoretical approach (Reckwitz 2008) to examine the atmospheric agency ruins obtain in processes of their refurbishment. To this end, I draw on recent scholarship studying the built environment facilitated by the Actor-Network-Theory (ANT), extending the research methodology towards a heuristics investigating how the „quasi-objective" entity of atmosphere (Böhme 1993) performs in the „cosmopolitics" (Latour 2004) of the urban realm. I call this „Atmospheric-Actor-Networks" (AAN). In order to examine how ruins atmospherically stabilize practices, I present a case study of two ruined environments in Berlin (the E-Werk, and the Café Moskau) involved in processes of gentrification. Drawing on my empirical material conducted, I will follow how those ruined properties, which were sites of subcultural temporary uses in the mystified 1990s, become engineered (Thrift 2008) as so-called 'historical locations'. I will show how the architectural office assigned to refurbish those sites stabilizes the ruinous character as key atmospheric technology. In so doing, I will discuss specifically how the inscription of the building's "Erzähltiefe" (MH) takes place considering how architects excavate atmospheric "Anknüpfungspunkte" (MH) to the biographical past of those objects.

Urban discourses of innovation: How cities cope with disaster. *Anique Hommels, Maastricht University*

This paper focuses on the sociotechnical dynamics in cities in the years after a disaster. If cities fall victim to a disaster, change of

urban structures is sudden, unexpected and often seen as undesirable. At the same time, it is argued that urban disasters can bring about urban innovation and that cities can even benefit from them. This paper discusses how cities cope with vulnerability and disaster. How do cities respond to urban disasters? How can we explain the 'rhetoric of innovation and resilience' in cases of urban disaster? How can sudden destructive events become reframed as positive and even innovative forces in the development of a city? These issues will be discussed in relation to theories of innovation and notions of resilience and vulnerability of sociotechnical systems. Furthermore, some empirical examples of rebuilding processes after an urban disaster will be discussed and compared. Based on interviews with key actors and archival research, post-disaster reconstruction processes will be analyzed. This research contributes to STS research on cities as sociotechnical assemblages (Farias & Bender, 2009) and to a better understanding of the role of vulnerability and disaster in our technological culture (Bijker, 2009) and cities in particular. More specifically, it aims to contribute to the idea that vulnerability is not necessarily something negative, but can also be interpreted as a positive force in processes of sociotechnical change.

The Diplomacy of Urban Ecological Art: Negotiating Science and Politics. *Mrill Ingram, University of Arizona*

Aiming to remediate and restore degraded urban resources and places, many contemporary ecological artists are pursuing participatory and activist projects, characterized by collaborations with scientists, engineers, local businesses, urban planners, and community members. Targeting urban riverfronts as well as secluded marshes, encompassing entire watersheds and coastlines as well as pocket parks, these artist-initiated environmental efforts offer a new model for urban cosmopolitics as well as for ecological restoration. The works exhibit the power of soil, plants, and microorganisms to clean, they educate local people about the ecological metabolism of their city, and they provide diverse groups of people with opportunities to participate. In this presentation I share examples of this practically-oriented art, and suggest that the work of these artists may be understood as what Isabelle Stengers has conceived of as "diplomacy." Negotiating across geographical, institutional, personal, species, and disciplinary contexts and boundaries, ecological artists do not seek to singularly represent the natural world so much as to provide for attachments that "have the power to make practitioners think, feel and hesitate," (Stengers 2010). It is this human thought, Stengers argues, that opens up possibilities for new notions of how we might expand our political and ethical processes to accommodate ecological justice and to include the other-than-humans with which we share our cities (Braun & Whatmore).

Re-Assembling Vancouver's Southeast and Zurich's North: Urban Identity and Sustainability in Industrial Area Conversions. *Monika Maria Kurath, ETH Zurich, Department of Architecture*

Following STS discourses on urban planning 1), I'd like to compare two recent industrial area conversions: Southeast Falls Creek (SEFC) in Vancouver and Zurich Oerlikon North (ZON). Both places were former major industrial production areas and came in the focus of urban planning discourses in the 1990s. As it was fashionable that time, both planning projects aimed at creating a mixed-used urban area, following the notions of new urbanism and sustainable development. Based on an actor-network-theory-oriented approach, I'd like to show in what way assemblages of local politics, discourses and framings of urban planning ideas such as urbanity (in Zurich) and creating a model sustainable community (in Vancouver), led to the emergence of specific patterns, forms and interactions. In Zurich, urban identity was mainly framed through the idea of creating a mixed-usage area, consisting of service companies, residential housing and recreation zones. In Vancouver, sustainability was framed as an

open and rather vague concept, meaning selective intervention projects such as urban farming, rainwater management and an urban sanctuary on an artificial island, but also as being compatible with the area's transformation into the Olympic Village for the 2010 Winter Games. Those framings, together with local political, cultural and social interactions, resulted in two rather different urban areas, with low vacancies and rather unenlivened public ground in Zurich and high vacancies and bustling streets in Vancouver. 1) See eg. the edited volumes by Farìas/Bender & Guggenheim/Söderström, both 2009, Routledge, which is also the type of literature this study aims at contributing to.

The Cosmopolitics of Fractional Objects: Buildings and the Urban Planning Code in Buenos Aires. *Nicholas D'Avella, University of California, Davis*

Buildings are complex sociotechnical assemblages enacted by a multiple communities of practice, including real estate investors, architects, and neighborhood residents. While to some extent these different forms of engaging buildings can coexist (they can at the same time be investments, objects of artistry, and vehicles for living), the desires of each group can and do impinge on one another. In this sense a building is both more than one (it is something different for each group), yet less than many (its various instantiations cannot always exist in harmonious plurality); this is what Law (2002) calls a fractional object, existing in the balance between singularity and plurality. Based on two years of ethnographic fieldwork in Buenos Aires, this paper examines a critical technology through which the politics of singularity and plurality were negotiated between these various groups with interests in buildings: the urban planning code. Different from an urban plan, the code impacts the price of urban land and has complex linkages to the architectural form that buildings eventually take. It was also the primary object of concern for neighborhood groups who aimed to stem the tide of construction during a construction boom in Buenos Aires in the years after Argentina's economic crisis of 2001. In this paper, I analyze the particular means through which the code served to mediate the practices of different groups of actors, utilizing the concept of territorialization as one means through which to understand the code's central role in the cosmopolitics of urban building.

048. (69) Changing research landscapes - II
11:00 to 12:30 pm
Solbjerg Plads: SP212
Chair:
Anne Kristiina Kovalainen, Turku School of Economics
Participants:

Evaluation system interferences in the Third Mission in the Universities. A regional R&D systems case study. *Celia Diaz-Catalan, Fundación Ideas*; *Irene Lopez-Navarro, CCHS-CSIC*

In recent years, the European Commission and the OECD have emphasized the need of a cultural change in universities to foster the so-called Third Mission. Otherwise, different researches have proved a growing role of the regional governments in regional innovation systems in these practices performance (Edler et al. 2003; Cooke et al. 1996; Leydesdorff, L. & Meyer, M., 2007). In addition,innovation becomes the main goal to the regional systems as an important instrument for both, regional development and human capital promotion (González Ramos y González de la Fe, 2004). Although it has been produced an important increase in the mechanisms to foster university-industry cooperation, this still represents low levels, compared with the countries of reference. This paper examines the sociological aspects of both, the researchers' motivation and attitudes towards cooperation with the private sector. Researchers

The research reported is based on a survey applied in 2011 to 851 researchers working at about 4 different Spanish regions. The questionnaire collected data on the individual and research group's characteristics. Data of the benefits researchers have got from collaborative projects with firms were also obtained. We will use logistic regression models to identify the main factors influencing the propensity of researchers to establish linkages with enterprises. Main findings point at the evaluation system, based on classic normative science as the main obstacle in the motivations to cooperate with industry. The profiles are research group directors from the four regions studied.

The shifting sands of academic autonomy: the impact agenda and interpretive policy research. *Liz Sharp, University of Bradford; Steve Connelly, University of Sheffield*

In this article we explore how the impact agenda has differential effects on academic research autonomy through the case of interpretive policy research. Academic autonomy, the much-prized ability of academics to conduct research activities independently of the demands of business, government and society, is understood to involve both control and resources. We argue that 'the impact agenda' (i.e. the increasing expectation that research's usefulness to society should be demonstrated), provides a novel and largely untried yardstick for measuring research value. While limiting control autonomy through the consideration of non-academic criteria, if broader definitions of impact are operationalised it also has the potential to extend resources. Discipline/practice links, user involvement in research, the fit between a research sub-field and the paradigms dominant within a corresponding practice subfield, alongside the latter's openness to change, were all identified as factors which would affect how a particular academic sub-field impacted on practice. The use of these factors are explored through their application to the case of interpretive policy research: an interesting case because the 'interpretive turn' challenges traditional measures of academic quality and hence the foundation of some autonomy claims, and at the same time, the practical focus on varied stakeholder perspectives associated with interpretive policy research has prompted ambitious claims about the subfield's potential impact. The case demonstrates how the challenge for all scholars will be to act strategically and reflexively to balance competing imperatives, wherever possible using gains in perceived social value to further their ability to conduct original and independent research.

"Getting on Board, Keeping on Board": Negotiating Article Manuscript Quality. *Rebecca Lund, Aalto University School of Economics*

In this paper I offer an Institutional Ethnography (IE) of quality negotiation in the making and revision(s) of an article manuscript submitted for an A-level journal. A wealth of authors have by now analysed the possible consequences of the appearance and (seemingly) growing acceptance of a new Publishing Institution and discourse where the "quality" of article manuscripts to an increasing extent have become synonymous with it appearing in a "A level journal"; and where it seems more important to publish in a Top Journal, and consequently follow the conventions of these, than to be passionate about one's work. However, fewer have rooted their analysis in how individual academics themselves go about negotiating this process within the social relations in which they take part before-after-during the process of publishing; that is, how and to which extent the new discourses of quality are in fact shaping subject activities and experience of their work. Drawing on numerous interviews on the work of female academics in one Finnish research environment; one in depth interview on the practice of publishing in an A level journal; reviewer comments; email correspondence between authors and editors; manuscript versions; and various institutional texts (e.g. Research assessment exercises; Journal Lists) I offer an IE analysis of how interests and power become articulated and accomplished in one local context. While

pressures are apparent, alternative ways of working around the institutional conventions of this new research economy can be identified.

Agri-biotechnology and development: Global science, technological promise and regulatory politics. *Sally Brooks, Independent Researcher*

Theoretical developments and policy debates surrounding 'research for development' have moved away from linear innovation and technology transfer. Literatures on 'Mode 2' and 'post-normal' science and 'systems of innovation' have collectively challenged the explanatory power and prescriptive utility of linear, research-led, discipline-based innovation models. These theories have been taken up by an international agricultural research system (the CGIAR) and other international agencies attempting to design 'pro-poor' agricultural innovation systems (AIS) in developing countries. Lessons from the field tell a different story, however. In an analysis of institutional and scholarly responses to the variable and contingent 'success' of Bt cotton in developing countries, Glover (2010a,b) finds the linear vision is alive and well among developers and promoters of the technology. This paper argues that, just as field results in diverse local contexts require more nuanced analysis, so too do the globalised networks of researchers, funders, policymakers and technology advocates that appear so attached to a linear vision of science. This paper draws on developments in STS applied to global finance to analyse these networks. Second, it shifts the empirical focus from technology adoption to regulation as the primary site of struggle in the GM crop debate.

049. (81) Expectations and innovative technologies – II

11:00 to 12:30 pm
Solbjerg Plads: SP213
Chair:
Alan Robert Petersen, Monash University
Participants:

Self-organizing Mechanism about Systems of Technical Innovation. *Sun Ye, Tsinghua University*

This article study on the internal innovation process within the subsystem of innovation, the competition and cooperation between systems of technological innovation within the firms, also the interaction between the technological innovation system and its external environment, better reveals could be made on such an open system about its internal parameters. The methodology of Synergetic is the status of a dynamic throughout the self-organization methodology. It is the methodology of the system itself how to maintain dynamic self-organizing. Research on the dynamic mechanism of the technological innovation system with synergetics, could better Provide comprehensive and dynamic theoretical explanation and interpretation of technical innovation. The core objective of this research is to point out the internal problems within system of technological innovation of China. Eg: technological innovation and research results out of touch, the cultivate mechanisms for innovative entrepreneurs are inadequate, talents of innovate incentive cannot be given full play, few outstanding individual and society communities could lead the subsystem continue to break the convention and technological paradigm. Simple imitation to advanced technology became the mainstream of technological development. Finally, use the case studies on the Chinese Enterprises to illustrate the relationship between Autonomy of Technology and the Technical Social Constructionism from the perspective of the organizational philosophy. Expect that technology innovation and self-organizing discipline could really play a role in all relevant areas, the development of the society as a whole to technological innovation for the orientation. This article is trying to interpret the practical problems in China's

technological innovation as in the current international innovative thinking.

Expectations on prenatal screening- Fieldwork among Danish health professionals. *Barbara Ann Barrett, University of Copenhagen*

In 2004, the Danish National Board on Health introduced a national offer on prenatal screening, hereby signalling a paradigmatic shift from an automatic offer on prenatal diagnostics to women + 35 years to an offer on information and informed consent for all pregnant women. According to the Danish organization of prenatal screening, GPs are to inform pregnant women on prenatal screening at the first pregnancy consultation. Prenatal screening is then performed at an ultrasound clinic in gestation week 11-13 and a risk assessment is calculated based on a blood test, a measurement of the nuchal translucency and the age of the pregnant women. My Ph.D. project "Guidelines in Action- An Anthropological Analysis of Prenatal Screening" focuses on how guidelines are enacted in the clinical setting between health professionals and pregnant women and how Danish health professionals and pregnant women experience prenatal screening. This presentation will focus on data from observation of daily work practices by health professionals in general practice and the ultrasound clinic, and interviews with GPs, sonographers and obstetricians on expectations on prenatal screening now and in the future. Taking data from this fieldwork in general practice and the ultrasound clinic (spring-summer 2012) as point of departure, this presentation discusses questions like: What are clinician's expectations on prenatal screening? What possibilities do they see? What challenges do they see? How are expectations handled in relation to informed choice and autonomy?

Market expectations: neuromarketing and the promise of consumer insight. *Tanja Schneider, University of Oxford*; *Steve Woolgar, University of Oxford*

The impetus for this paper is our attempt to answer the question "what is neuromarketing?". Based on our ongoing fieldwork to date we found it difficult to find a set of neuromarketers, who would agree on a definition of neuromarketing or use the same (combination of) technologies. In this paper we make sense of neuromarketing as a 'multiple object' and turn the variability of interpretation and multiplicity of activities among the neuromarketing actors into a starting point (Jensen, 2010). We are particularly interested in exploring the various promises entailed in neuromarketers practices. One key promise that many neuromarketers share is the suggestion that their biometric and neuroscientific technologies (e.g., eye-tracking, fMRI, EEG etc.) offer superior insights into consumer behaviour than traditional market research techniques such as surveys and focus groups (Schneider and Woolgar, 2012). Nonetheless, we have encountered variations of this promise. Some neuromarketers claim that neuromarketing has the potential to replace traditional market research techniques. Others highlight that neuromarketing offers additional insights if used alongside more traditional market research techniques. Rather than considering this as a typical co-existence of 'competing expectations' accompanying the introduction of radically new technologies (Pinch and Bijker, 1984 cited in Hedgecoe and Martin, 2003), we explore the notion of 'elastic expectations' in this paper. By this we mean that different expectations evoked in relation to neuromarketing technologies enable a flexible distribution and adoption of neuromarketing techniques in the markets of market research and consumer insight.

Anticipatory practices, epistemic objects and spatial contexts. *Toni Ahlqvist, VTT Technical Research Centre of Finland*

The present "knowledge-based economies" are increasingly governed through anticipatory knowledge and related practices. In this paper I analyse how the anticipatory practices construct epistemic objects in specific spatial settings, and through

particular local knowledge. Adapting Miettinen and Virkkunen (2005), I approach epistemic objects as "open-ended projections oriented to something that does not yet exist". Thus, epistemic objects are channels to generate and renew local knowledge. The generation and renewal is mediated through anticipatory practices. In the analysis, I follow Anderson's (2010) classification of anticipatory practices: calculating futures, imagining futures, and performing futures. I illustrate my points by briefly discussing three case studies, covering different socio-technical problematics in different spatial contexts. The first case is a state-scale development programme, realised by Finnish Innovation Fund Sitra (2009-2010). The programme aimed at imagining and performing the future "vibrant Finland" as a pioneering entrepreneur state. The second case is a long term local development process, from mid-1980s to 2000s, of building a science-technology district at South-West Finland. The process deployed a socio-technical imaginary of "synergy" to materialise a "geographical value chain" in the local landscape. The third case is a roadmapping process realised at VTT Technical Research Centre of Finland (2006-2008). The process aimed at grasping the variegated futures of social media. In the cases, I focus on two issues: firstly, on the contextual roles of anticipatory practices and epistemic objects, and, secondly, on the tensions between the projected futures and the present actions.

050. (60) Crime, technology, and policing - II
11:00 to 12:30 pm
Solbjerg Plads: SP214
Chair:
    Peter Lauritsen, Aarhus University
Participants:

To swab or not to swab – policing and the negotiaton of forensic technologies. *Corinna Kruse, Linköping University, Sweden*

Based on ethnographic fieldwork, this paper discusses the relationship between forensic technologies and "old-fashioned" policing in the Swedish judicial system. One the one hand, forensic technologies – especially DNA evidence – are described as a resource that helps solve crimes; on the other hand, they can be downplayed in terms of not being able to replace "real" police work. How these two positions are reconciled varies between different parts of the judicial system, as forensic technologies are put to use towards different goals. For the police, for example, forensic evidence may create or solidify suspicion, whereas the forensic scientists emphasize its exonerating power alongside incrimination. Finally, legal experts come into the picture only when suspicion has already been solidified, and, accordingly, they focus on how it relates to suspicion against a particular individual. The paper will discuss such examples of the interplay between suspicion and forensic technologies in different parts of the judicial system, arguing that forensic technologies are part of a complex set of negotiations of practices and knowledges of crimes, criminals, and suspects. In these, forensic technologies can become the useful tools as which they often are advertised – although they may be useful for other purposes than intended – just as much as they can bring about changes in practice. In other words, this paper will discuss practices of embedding forensic technologies into law enforcement discourses as well as practices. More generally, it will contribute to notions of how technologies are continuously negotiated and shaped by users.

Writing the history of DNA in policing practices in Denmark. *Ask Risom Bøge, Aarhus University*; *Peter Lauritsen, Aarhus University*

Ask Risom Bøge & Peter Lauritsen DNA profiling is today considered to be the golden standard of truth telling in Western courts (Aronson 2007), but it is also a surveillance technology.

After Alec Jeffreys and his students by accident discovered DNA fingerprinting in the mid-1980's, it was first used to fight illegal immigration. It then quickly spread and became a standardized part of policing practices in many industrialized countries, including Denmark. Soon national DNA databases shot up in Europe and the US and through the Prüm treaty the European databases are now becoming increasingly integrated. Within surveillance studies, the history of DNA and other surveillance technologies have repeatedly been characterized in terms of surveillance creep or function creep (Dahl & Sætnan 2009; Marx 2006; Nelkin & Andrews 1999). These concepts are important to surveillance studies as they point to a certain dynamic whereby surveillance spreads over time. In spite of their extensive use, however, it remains unclear what it means to say that technologies 'creep' and oftentimes the concept is given a deterministic and rather normative flavor. From a position in STS this presentation aims at a reinterpretation of the creep. This is undertaken through an empirical investigation into the history of DNA in Danish police practices. We describe how DNA is translated and displaced in different directions simultaneously. For instance, it is not possible to write the "Danish history" without regard for "the global history" as technologies, knowledge and practices flow from a multitude of other origins. Furthermore, we show that DNA cannot be understood as a passive technology which is simply formed by its surroundings. Instead, it makes sense to address how DNA performs certain understandings of crime, effectiveness and police work.

The Manchester Riots: Emergent Policing Practices in Urban Space Securitisation. *Elisa Pieri, University of Manchester*

In a post 9/11 landscape characterised by the strengthening of the continuum between internal and external security, policing practice increasingly incorporates in its remit to fight crime technologies and strategies that are aimed at reducing vulnerabilities and augmenting resilience to a wider range of perceived threats. This paper looks at the emergent policing practices deployed in the recent UK riots in Manchester. As various forms of urban unrest spread from London to other UK cities in August 2011, police officials, journalists and politicians hotly debated and hastily condemned rioters' use of social media and mobile technologies, which they claimed were pivotal in co-ordinating the disturbances. The paper critically discusses the police's own use of social media for identification and apprehension of suspects. It problematises the increased police reliance on a set of technologies, databases and networked analytics – from CCTV and forensic DNA technologies to Automatic Number Plate Recognition systems used to deploy real time urban exclusion zones. The paper highlights some of the key complexities and ambiguities generated by the integration of such technologies and practices, and reflects on the embedding of specific constructions of suspicion and riskiness in the prevention of crime and disorder. The paper theorises a connection between emergent police practices - including their role in police branding and image management - and the mobilisation of discourses of responsible citizenry and moral disdain towards disorder. This connection may contribute to legitimising emergent practices, and enrolling certain publics in surveillance and intelligence sharing.

Can electricity can sooth the savage breast? What tasers do to police use of force. *Cédric Moreau de Bellaing, Ecole Normale Supérieure - Paris*

In 2004, the Centre for Research and Study of Logistics of the French national police conducted a technical evaluation of the taser X-26, a handgun discharging electrical impulses paralyzing temporarily the nervous centers of the target. Currently, more than 3,000 French police officers are equipped with a taser. It is presented by its designers and the police as an evolution towards civilization in law enforcement: the taser would not permanently harm the body; it would increase the security of police interventions; the highly technical nature of the object would guarantee a proportionate and reasonable use of police force. However, this technological optimism is not shared by everybody. Human rights associations have expressed their doubts about the plausibility of a sustainable replacement of firearms by tasers. They refuted the presumed lack of material and physical hazards provoked by the weapon, and denounced the lack of independent expertise. Finally they pointed out how the taser can create additional tensions between the police and citizens. Studying the taser, its technical design and the controversy it aroused, I want to see how a technological change can affect policing and how this weapon is the subject of debates about what a public force should be. While the taser is described as illustrating a broader movement of neutralization of the violence, I shall show that it is rather the source and the medium, the empirical place and the conceptual object of power relations.

Demythologizing the use of DNA in police investigations. *johanne yttri dahl, NTNU and Norwegian Police University College; Heidi Mork Lomell, The Norwegian Police University College*

The expansion of the Norwegian DNA database in 2008, the so called DNA reform, was funded on the myth that DNA increases the detection rate of volume crime significantly. The DNA reform in Norway was therefore especially targeted towards increasing the clearance rate for low-detectibility property offences. The DNA database has now expanded from including DNA profiles of people convicted of serious crimes to also include profiles of anyone convicted of a criminal offence leading to imprisonment. Previous research has identified various factors associated with solving a crime. First of all, most crimes that are solved are solved at the crime scene by patrol officers, not the investigators. Further, it is the complexity of the case rather than the skills, methods, and techniques of the investigators that determines the probability of solving it. Detectives or investigators do not, as popular fiction portrays, spend time on "mysteries", they concentrate on cases which are more or less already solved, and spend their time preparing cases for the prosecution. According to Brodeur (2010), forensics plays almost no part in solving crime. However, they play a crucial role in court. In our ongoing research on the Norwegian DNA reform, we analyze the impact of DNA at various stages of criminal investigation and prosecution. In this paper, we will present preliminary findings from our study. We critically question whether the use of DNA in police investigations is transforming policing practices, and thereby we aim to demythologize the use of DNA in police investigations.

051. (66) On states, stateness and STS: government(ality) with a small "g"? - II
11:00 to 12:30 pm
Solbjerg Plads: SP216
Chair:
Nicholas J Rowland, Pennsylvania State University
Participants:

The Tractor and the Plow: Commercial Agriculture and Ethiopian Statemaking since 2002. *Sarah Stefanos, University of Wisconsin, Madison*

The Ethiopian federal government has recently implemented a national growth and development strategy that moves away from smallholder agriculture, long the backbone of the economy, toward significant private investment in commercial/"modern"/mechanized agriculture. The material effects of this policy have been large-scale land transfers to foreign and domestic investors, displacement of Ethiopians from their land and an ensuing discourse that has deemed such practices neo-colonialism, land-grabbing, or imperialism. Using never-colonized Ethiopia as my case study, I use the theoretical directions of Foucault (1977; 1991), Alatout (2006), and Sparke

(2005) to explore commercial, technoscientific agriculture as a site of political action/performance that is statemaking. Based on four months of in-country interviews and participant observation, I argue that Ethiopian statemaking through agriculture in the last decade cannot be adequately captured by the framework of neoliberalism; instead, statemaking has been practiced by diverse actors who re-negotiate the territorial and governmental dimensions of the Ethiopian state and the subjectivities of its residents. Relations of power between regional, federal, and foreign governments are shifting and being resisted, borders between land types and uses are blurring, and Ethiopia's fertile south is emerging once again as the battleground over what it means to be Ethiopian. This work on the relationship between technology and governance in the context of agriculture contributes to STS literatures on states and state ontologies; modern political practice in the South; and South-South relations.

Inside/outside again? Private security companies and the formation of 'modern' assemblages in Eastern Congo. *Peer Schouten, School of Global Studies (University of Gothenburg)*

This paper aims at exploring how ANT can contribute to a more nuanced understanding of how private security companies contribute to the constitution, upholding, and separating out of 'modern' governmental assemblages in post-conflict Eastern Congo. Private security companies (PSC) accompany all the presence of western actors in the Eastern Congo (and in Africa more generally) yet social sciences have not been able to assess the difference PSC make in upholding enclaves of 'westernness' in non-western settings. Based on 9 months of fieldwork in the eastern Congo, this paper proposes that ANT can contribute to a micro-sociological understanding of the material practices of private security companies in such settings, yet it outlines some important questions that need to be addressed in order to link ANT to ongoing debates in critical approaches to international relations: what exactly is the difference 'material' security practices make and how can one assess them beyond the discourses of security practitioners about them? How does ANT work outside of the western, democratic setting that Latour et al seem to implicitly presuppose? What is 'governmental' in a setting where formal 'government' is a mess? Addressing these questions allows a conversation between ANT/STS and international relations.

Port(al)s: How infrastructure flattens the world we live in. *Jan-Hendrik Passoth, Bielefeld University*; *Nicholas J Rowland, Pennsylvania State University*

After studying labs up-close, STS scholars concluded that day-to-day (i.e., small "s") science was "nothing special". The upshot: the lab setting, with all the mundane practices of science, was a special infrastructure capable of scaling problems up and down. Now, can the same be said about government? Like lab studies, we must go to the very locations where states, globalization, and international regulation are enacted, contested, and reshaped to understand how governing is actually done. And, as it happens, we are afforded a glimpse into the micro-workings of small "g" government when observing longshoremen in harbor settings; they are, if you will, the lab scientists of globalization. Ports, like labs, are special infrastructures capable of scaling problems up and down. This is because ports are at once two places at the same time; they "port". They are "here" and "there" (i.e., somewhere else); global and local. By adopting a flat-world view, we can begin ontologically rethinking the global/local hierarchical divide that has crippled the expansion of state theory during the 20th century.

Governing the environment: Guidance documents and the 'making up' of environmental practitioners. *Matthew Cashmore, Aalborg University*; *Tim Richardson, Aalborg University*

Governmentality, as both analytical perspective and theory of the

dominant mode of governing in neoliberal societies, is based upon the notion that government involves calculated attempts to shape the beliefs and conduct of individuals towards particular ends. Our focus in this article is the 'making up' (after Hacking 1986) of a central locus of power and authority in environmental politics and practice, environmental practitioners, and their role in relation to the environmental policy. Guidance plays a prominent, perhaps even "critical" (Kalen 2008, p. 657), role in contemporary government strategies for the environment. It is used extensively by governments, and their agencies, to interpret or reinterpret policy positions and to proffer advice on particular pressing environmental issues. It is also produced by non-governmental organisations seeking to steer environmental government or to claim some form of intellectual authority within a particular policy field. The production of guidance, therefore, appears to be an important mechanism for both (re-)constructing governmental discourses and exerting a claim to authority, yet its contribution to the subjectification of environmental practitioners has received very limited scholarly attention. This article examines how the subjectivities of environmental practitioners are discursively constructed in guidance documents that purport to provide authoritative statements on such subjects as knowledges, procedures, methods and ethics. The subjectification of environmental practitioners through guidance is analysed in terms of such characteristics as identities, capacities, orientations and aspirations. In so doing, we map out how an effective and virtuous environmental practitioner is constituted and with what potential consequences. We also analyse how those engaged with the writing of guidance reflect on their contribution to environmental government.

Nature, Environment, and the Technoscientific Enviro-State. *Patrick Carroll, University of California, Davis*

This paper contributes to a new conceptualization of state-environment relationality from an STS perspective (specifically a variant of actor-network theory [ANT]). It argues against the conception of a single macro, and in many ways structural, relationship between "the environment" and "the state." In addition, it argues for the de-coupling of the environment-nature synonym that undergirds this macro conceptualization. The paper argues instead that state-environment should be conceptualized as a complex set of shifting and resisting relationalities between agents (human beings), actants (material culture), and forces (non-designed materialities). The aim is to reveal the ontology of the "enviro-state" as a complex technoscientific assemblage that is always in process. While rejecting the macro framing of a single state-environment relationship, and the related environment-nature synonym, I seek to acknowledge the work these discursive frames play in facilitating (through governmentalizing practices) the complex process of assemblage that such categories, paradoxically, fail to capture. The overall aim is to reconceive the ontology of state-environment as a complex "thing," i.e. a gathering that is simultaneously human and non-human, material and discursive, practice and process. The concept of an all-encompassing (original meaning of "environment") "enviro-state" constituted in complex and differentiated relationalities is contrasted with macro image of a single relationship between "the state" and "the environment" that constitutes the conceptualization of "the environmental state." The enviro-state is presented as inextricably bound up with the formation of the technoscientific state.

052. Honoring Mike Lynch

11:00 to 12:30 pm
Solbjerg Plads: SPs01

Michael Lynch has just finished a very successful ten years as Editor of Social Studies of Science. He took on the position after the retirement of one of the journal's founding editors, David Edge, and the journal has thrived through that transition. During the same period, Mike also served in

a variety of other key roles in the field: as a co-editor of the most recent Handbook of Science & Technology Studies (2007), as President of 4S, and as Chair and Director of Graduate Studies in his department at Cornell. He has even kept up an impressive research profile, including co-authoring an award-winning book on DNA fingerprinting, Truth Machine (2008). For a while it has seemed as though Mike is everywhere one looks in STS. To honor Mike, and to recognize his editorship of Social Studies of Science, this panel gathers some former students, colleagues, and collaborators. Their presentations will intersect with and explore different facets of his work, and will touch on some well-established themes in the sociology of science: productivity and gatekeeping. Even in the latter, though, we can see a distinctive approach, because Mike's work has more often involved shepherding research through gates than simply opening and closing them. This session is in honor of Mike's multiple roles as scholar and shepherd.

Chair:

Joan Fujimura, University of Wisconsin

Participants:

On Catalysis: Wrestling with Instigations and Provocations from Mike Lynch. *Park Doing, Cornell*

This paper reflects on 'research moments' in which Mike Lynch himself or Mike Lynch as a body of research has influenced my own approach to research and scholarship. These 'research moments' came in a variety of types of interactions with Mike, including those in which he was acting in an editorial capacity. Mike's sensibility of observation as interactive and and generative seamlessly carried through from his research to his interactions with me and many other scholars. His continuing reflexive focus on the question 'what is this interaction for?' germinated and cultivated my own work on the interactions of laboratory scientists and engineers as well as my own considerations on the interactions between STS and science and engineering. I appreciated and was inspired by the 'non-linearity' in his purposeful interactions with me whereby simple questions worked their way into my consciousness and research. I still ponder the time he told me, "I appreciate your silences," and asked me, "who determines what's ethical?" And, I always keep my eye on the purpose of any interaction.

The Art (and Artifacts) of Mentorship: Student Advising and Extra-Ordinary Action. *Janet Vertesi, Princeton University*

Lynch's principal contribution in Science Studies is predicated on his framing of science as "ordinary action", and his attention to members' accounts in distinguishing, for example, art from artifact in laboratory phenomena. However, Lynch has also made a considerable contribution to Science Studies as a discipline through his deep and considered mentorship of many students in the field. I examine the importance of this latter contribution, describing the art (and artifacts) of student mentorship according to Lynch, and ultimately arguing for a new analytical category through which we might best understand his contribution to Science Studies: that of "extra-ordinary action."

To be determined later on. *Ruth Margaret McNally, Anglia Ruskin University*.

TBD

Mike Lynch: STS as (a long) vacation. *Alan Irwin, Copenhagen Business School; Maja Horst, University of Copenhagen*

In 'Science as a vacation', Michael Lynch argues that 'STS might aim for something other than the serious job of doing business'. In so doing, he makes a strong case for an STS that does not aim to be useful but instead does 'its own job'. In our presentation, we will explore some of the challenges associated with this position and especially its relationship to STS traditions of policy relevance and engagement. What does it mean for STS to do its job? Or rather, what does it mean for us to do our jobs? Taking inspiration both from Lynch's published work and the different ways he has performed his STS jobs, this presentation will discuss the relationship between vacation, work, professional

ethos and personal contribution in the context of STS.

Discussants:

Lucy Suchman, Lancaster University
Sergio Sismondo, Queen's University

053. (103) Ethics and biomedicine - II

11:00 to 12:30 pm
Solbjerg Plads: SP503

Chairs:

Luigi Pellizzoni, University of Trieste, Italy
Marja Ylönen, University of Jyväskylä

Participants:

Ethics expertise and democracy in political regulation of biomedicine. *Maria Hedlund, Lund University*

Bioethics has emerged as a source of ethics expertise to provide solutions to ethical dilemmas brought to the fore by the development of biomedicine and, more specifically, gene technology. Ethics has to do with morals and values, and it could be argued that the moral autonomy of all individuals prevents expertise of this type. Moreover, if morals and values are seen as distinct from facts, it could hardly be defensible that someone's morals and values could attain the status of expert knowledge, i.e. claims of validity above and beyond the sphere of subjective opinion and belief. Nevertheless, people from various disciplines have emerged as bioethicists or ethics experts, and political decision-makers have responded by creating ethics committees and government commissions with the task to give expert advice on ethics. The purpose of this paper is to delineate a preliminary understanding of the use of ethics expertise in democratic politics. This will be done by an analysis of ethics expertise in three steps. First, is the existence of ethics expertise at all possible? Second, and independently of the answer on the first question: how is the political use of supposed ethics expertise justified? And, third: what does this political use of ethics expertise implies from a democratic perspective? This third question is the main focus in the paper, which contributes to STS literature by explicitly addressing the relation between ethics expertise and democracy in political regulation of biomedicine.

Looking for Ethics: the challenges and rewards of taking an STS approach to ethics. *Catherine Heeney, Consejo Superior de Investigaciones Científicas; Michael Parker, Oxford University*

The approach of using empirical data to develop or support ethical theory is increasingly accepted. However, it presents some difficult questions. For example: how and which empirical data should inform normative recommendations; and how to include insights from sociology? An advantage of using social science to reach normative recommendations might be that ethics could strive for a more active role through increased knowledge or expertise in a particular context as opposed to being told what the ethical problems are by scientific and policy community (Hanson 2011). However, carrying out empirical work and then making ethical judgments' more even than the observations, explanations and theorising which is a part of science and technology studies, could draw accusations of 'academic muckraking' (Latour and Woolgar 1979). The sensitivity of making ethical pronouncements based on in depth the knowledge of a context cannot be underestimated. Haimes (2002) has suggested that viewing ethics as a part of the context would avoid the pitfalls of asking social scientists to make ethical pronouncements (Singleton 1996). However, this implies a quite different ethics to one understood as providing help for those working in a given context or as highlighting ethical problems in order avoid them. We draw on the experience of carrying out ELSI work as part of an EU funded project to develop a genomic prognostic technology for Inflammatory Bowel Disease, to reflect upon some of the implications of the issues outlined here.

Ethics as Designed and Displaced: landscaping the political culture of health controversies in Taiwan. *Wen-Hua Kuo, National Yang-Ming University*

This paper provides an STS commentary on Taiwan's recent controversies on health governance. In particular, it explores the widening gap between the formulation of biotechnology policies and the public debates arising in the name of ethics. Biotechnology, as Donna Haraway has prophetically pointed out, represents one of the key terms that dominate the paradigm of how life is assessed. It also directs our attention to some of the emerging technologies that could fundamentally change direction as life sciences advance. Overwhelmed and suspicious, some humanity scholars criticize the uncertain nature of these innovations and the possible social and ethical consequences that they may bring. In East Asia, the introduction of biotechnology creates particularly complicated situations. The notion that maintaining health of their populations is an exclusive state responsibility endorses the huge investment made by East Asian states in introducing translational medicine to enable high-quality trials for the latest drugs. While doing so, these states do not hide their strong self-interests, as this investment can also boost their economic competitiveness by shoring up biopharmaceutical infrastructure. Like biotechnology, these situations are emergent and present new challenges. They are not solely ethical or political, but contain aspects of both, and this determines in what context these innovations, as well as the ways to access them, are socially received and settled as they travel to East Asia. Three cases – the attempt to create a national biobank, the testing and inoculation protocol for the N1N1 vaccine, and the foundation of the Taiwan Association of Institutional Review Board (IRB) – are investigated with this perspective in mind. By juxtaposing them, this paper argues that they are silent examples of Sheila Jasanoff 's notion of "republics of science." By closely tracing how ethical principles, as designed, are received along with science regulations as the basis of these debates, this paper hopes to show that ethics is not an empty, abstract concept, but always being "displaced", as it is woven into social fabrics that, through different institutional and cultural arrangements, facilitate the transformation of our bodies and lives.

Paradigm Shift in Prenatal Genetic Risk Assessment for Down Syndrome. *Jessica Mozersky, University of Pennsylvania*

In October 2011, a highly predictive non-invasive prenatal screening test to detect Down syndrome was introduced. Using a simple maternal blood sample, the test can determine with a high level of accuracy and as early as 10 weeks in pregnancy whether a fetus has Down syndrome. This new test represents a major and significant potential paradigm shift to prenatal screening and diagnostic practice. Immediately following the study publication, the test became commercially available in the United States and has received a great deal of media attention. As a result, the test is already being integrated into clinical care in some US medical centers yet the implications of the test for clinical practice and pregnant women remain unknown. While the use of this test may simplify screening and potentially reduce the number of invasive tests women undergo (i.e. amniocentesis and chorionic villus sampling), it has also been suggested that it may raise new ethical concerns particularly regarding informed consent and decision making. At the same time, legal battles are raging as competing companies are bringing their own versions of this test to market, while the US health care system and patchy insurance coverage have already fragmented who can access this test. This paper will present preliminary qualitative ethnographic data from a large US academic medical center that is in the process of integrating this test into clinical practice. Data includes interviews with some of the first pregnant women to undergo this test as well as their health care providers.

054. (93) Neuroscience as a science of the social? - II
11:00 to 12:30 pm

Solbjerg Plads: SPs05
Chairs:
Svenja Matusall, ETH Zurich
Johannes Bruder, eikones NCCR Iconic Criticism
Participants:

Catharsis, Transcendence, Self-Regulation: The Shifting Roles of Psychoactive Substances in Post-Traumatic Therapy. *Ulrich Koch, ETH Zurich*

In psychiatry and psychotherapy the reemergence of the neurosciences as a pervasive explanatory framework for mental disorders during the 1990s was closely linked to changes in psychopharmacological treatment practices. The transformations of these practices are the focus of this paper. The shifting roles of psychoactive drugs in the treatment of traumatic neurosis since World War II will serve me as a telling example of how the properties and potencies which are inscribed in a substance vary within different therapeutic regimes and their respective explanatory frameworks. From a genealogical perspective, the changing roles of barbiturates and LSD in the treatment of traumatized soldiers and Holocaust survivors (Sargant, Grinker & Spiegel, Baastians) will be contrasted with the assessment of recently developed psychoactive substances, which are seen as an integral part of "Post-Traumatic Therapy in the Age of Neuroscience" (van der Kolk): Throughout the 1950s and 60s the administration of psychoactive drugs was valued as a facilitator of the psychotherapeutic process. Since the last decade of the 20th century the – still insufficiently understood – effectiveness of such substances is increasingly seen as posing a challenge to the psycho-social model of mental illness. A closer look at psychotherapeutic practices reveals, however, that neurological or biochemical explanations of mental suffering did not displace psycho-social approaches, rather, the specific bio-medical model propagated by the neurosciences transformed the nature of interventions aimed at the psyche. Ultimately, the aim of this paper is to point out the anthropological reconfigurations at stake in these transformations.

Punch drunk: Chronic Traumatic Encephalopathy (CTE), the medicalization of violence and the appeal of stained brains. *Aryn Martin, York University*

Concussion in elite and everyday sport has exploded onto the media stage in recent years with the identification of a new disease entity, Chronic Traumatic Encephalopathy. CTE, a degenerative disease directly linked to repeated brain injury, has been dubbed an "epidemic" and a "public health crisis" by the North American media. It is most often found, so far, in current or retired professional players of contact sports. Visual evidence of increased Alzheimer-like tau protein tangles – found on autopsy in the brains of deceased professional athletes – have been central to establishing scientific and cultural legitimacy of this disease. A particular constellation of "symptoms" are associated with CTE, including depression, loss of impulse control, substance addiction and suicide. The medicalization of CTE, as it is playing out in the media, in courts, in policy, and in medicine, has the potential to reduce the social complexity of these phenomena. Violence in this story becomes both a cause and a result of specific brain pathology. I argue that the persuasive localization and explanatory force of stained tau proteins eclipses the complex relationship of violence to sociological categories such as masculinity, fear, marginalization, and consumerism. This is an exploration of how post-concussion brain damage – a biological and social entity – is emerging in and beyond the laboratory.

Anxiety and fragility in the neuroscience of the social: considering autism research. *Des Fitzgerald, London School of Economics and Political Science*

For scholars interested in the neuroscience of the social, autism research is a compelling area: (1) 'the social' has always been at

stake in the clinical definition of autism – which describes a group of neurodevelopmental conditions with problems in social interaction, communication, and range of interests; (2) the neurobiological coherence of autism nonetheless remains tricky, and many still seek a brain-based biomarker. Thus, to think about neuroscience and sociality, I have been interviewing autism neuroscientists – wondering how a phenomenon so entangled in overlapping conceptions of biology and sociality might still manifest in the brain and body of an individual. Here, I report on an unexpected outcome of these interviews - several scholars have pointed to structures of hype and expectation in social neuroscience; but while my data show autism neuroscience to be sometimes oriented around precisely such desires and confidences, I also found this research to be riven with a much stronger current of anxiety, and also a feeling of overall ambivalence, and sometimes even a basic lack of faith in its own efficacy. Thus, my argument is that beneath its patina of hope, the neuroscience of the social can be a fragile and an anxious pursuit too; that it is often beset with fears and worries that contradict its carefully-wrought image of epistemic authority. However, drawing on Karen Barad and Donna Haraway, I will argue that this data does not invite a new kind of critique; instead, it urges attention to a previously unrecognised 'diffractive' quality within social neuroscience.

Neuroscience as a science of which social? *Gregory Hollin, Institute for Science and Society, University of Nottingham*

This panel asks: "is neuroscience on the brink of becoming the new science of the social?" This paper answers: it has become a science of the new social. Research (Hollin, in prep) has shown that the cognitive sciences radically reconstructed the definition of the social during the 1980s. Cognitive psychologists' novel proposal was that of a social essence; an intrapersonal, biologically determined, cognitive module to be deployed within interpersonal space. The biomedicalization movement (e.g. Clarke et al. 2003) proposes that, in an era of neuroplasticity and epigenetics, we have moved beyond a "a crude form of biological and evolutionary determinism" (Rabinow 2008: 188) and into a time characterized by bio(neuro)sociality. The possibility of a new construction of the social within neuroscience thus seems a possibility. Taking the empirical example of autistic sociality, the paper will present both documentary evidence and data gathered from semi-structured interviews with a number of leading social neuroscientists in order to critically examine the constructions of the social utilized in contemporary depictions of autism. These constructions retain the essence of cognitive psychology but shift again, once more taking the social in a novel direction. In order to appreciate the potential impact of neuroscience it is important not only to situate the discipline in relation to changing ontologies of ourselves, but also in relation to changing ontologies of the social. The findings in this paper begin this process, going some way to mapping these historically novel constructions of sociality.

055. Design, STS and cosmopolitics: From intervention to emergence in participation and sustainability - II

11:00 to 12:30 pm
Solbjerg Plads: SPs07
Chair:
Alex Wilkie, Goldsmiths, University of London
Participants:

Design workbooks: non-scientific inscriptions. *William Gaver, Goldsmiths, University of London*

Design workbooks are collections of proposals for design directions that we use as a hinge between opening phases of research and exploration and later stages of developing specific prototypes. The proposals they contain are typically composed of images and small amounts of text that run over one or a few pages, indicating an area for design, an experience to be attained, or the functional outlines of a system. Typically produced separately, proposals are amalgamated, juxtaposed, and grouped to produce a workbook, and in the process more inclusive themes and issues - a 'design space' - emerges. In this talk I discuss the nature of workbooks as research documents, and describe their role in our design process. Borrowing from Latour's description of inscriptions, I suggest that because workbooks assemble multiple concerns and are mobile, flat, reproducible, recombinable, and so forth, they share aspects of scientific inscriptions' power to produce knowledge. But design workbooks are not 'mutable mobiles'. Because they are concerned with projecting directions for making, they are designed to be open, evocative and flexible rather than setting up a 'cascade of ever simplified inscriptions' to produce 'hard facts'.

Cohering an Ecology of Practices through Public Design. *Carl DiSalvo, Georgia Institute of Technology*

Over the past several years there has begun a shift in design discourse away from defined projects and fixed objects, to amorphous design things and dynamic events. While this shift is still nascent, it portends new modes of design practice and new purposes for design. This talk will explore how the processes and products of design might be used as a medium for collaborative inquiry and collective action. To do so, I'll draw from Stengers' notion of an ecology of practices to ask "How can a plurality of habits, desires, expertise, and affects cohere together into a cosmopolitical form?" I'll address these questions through a discussion of the Kitchen Lab: a public design project that brings together designers, museum educators, researchers, non-profit organizations, and community members to co-construct an experimental platform for the exploration of food politics. Key to the Kitchen Lab is probing how the public production, sharing, and consumption of food might enact cultures of sustainability, and in tandem, how in order to enact cultures of sustainability requires new associations and collaborations between a diversity of individuals, groups, and institutions. As part of this paper I will also explore the qualities of an ecology of practices. I contend that although design might be a means for cohering an ecology of practices, the most productive structure is one that exists in a constant state of tension, or agonistic pluralism. It is when these practices contest one another that radical social innovation can occur.

Design Practices and the Micropolitics of Sustainability. *Ramia Mazé, Interactive Institute*

Having won the battle of 'big public ideas', as many argue, sustainability has a (cosmopolitical) potential to frame alignments across hemispheres, nation-states, socio-economic and interest groups. In this, sustainability is clearly not only an environmental – but a social and political – matter, which is insufficiently addressed in technocratic approaches prevalent within policy and technology development, urban planning, architecture and design. Postcolonial perspectives on STS, for example, elucidate how sustainability involves struggles – among ontological and epistemological framings, priorities in policy and design implementations, and those accessing and controlling resources within and across locations. Socio-technical approaches, thus, involve questions about how such struggles take place as social practices, considering social locations, material cultures and mediation processes. Practices of policy- and design- making, for example, involve a micropolitics of recognition and representation, just as practices of communicating and consuming involve forms of agency enacted in relation to policies and designs. Such issues transform how we might understand and practice design. Indeed, from a field conventionally formulated in relation to mass production, market consumption and technical innovation, a growing number of contemporary design practices engage with public policy, social mobilization and political activism. My own work includes

practice-based research and case studies in the area of sustainable development, in which I investigate the role of design interventions within domestic practices, participatory situations and organizational settings. In line with the 'social' turn within the sciences, I argue for 'critical practices of design', which are formulated and performed in relation to a micropolitical understanding of socio-material practices.

Energy Scavenging and Cosmopolitics: Expanding the Materialities of Participation in Sustainable Technology. *Jennifer Gabrys, Goldsmiths, University of London*

Making energy visible and material is now a common approach within energy-related design and policy projects, which variously seek to influence energy behavior and conservation or encourage new modes of energy engagement. The objective of reducing energy consumption often underlines these approaches, such that by making energy present and palpable a greater awareness and subsequent reduction of energy consumption will be established. While these projects can give rise to interesting "aesthetic" maneuvers in relation to devices through which energy manifests, the materialities of energy can be seen to exceed these delineations that work with a certain approach to the "substance" of energy. This presentation will first develop a discussion of what the expanded materialities of energy might involve, and will suggest how to adopt a more cosmopolitical approach to understanding participation and intervention within energy. Working from a selection of energy projects that engage with scavenging wasted or excess energy, I will then open up an inquiry into how creative practice projects that develop practices for harvesting rather than saving energy suggest alternative ways of arranging the materialities of energy, and for making interventions within sustainable technology and participation.

056. (32) Environmental infrastructures: STS's anthropology of nature-cultures - II: Water

11:00 to 12:30 pm
Solbjerg Plads: SPs08
Chairs:
Atsuro Morita, Osaka University
Anders Blok, Copenhagen University
Brit Ross Winthereik, IT University of Copenhagen
Casper Bruun Jensen, IT University of Copenhagen
Participants:

Ontological Politics of Flood: Infrastructures and Enactment of Nature and Society in Chao Phraya Delta. *Atsuro Morita, Osaka University*

Last year, Thailand's Central Plain experienced an unprecedented flood, which caused enormous damage to agriculture, industry, and urban infrastructures. This presentation aims at elucidating the complex web of social and material relations that constitute the flood by placing it in the historical formation of various infrastructures — i.e., canals, irrigation, industrial estates, and flood monitoring systems. As Europeans in the 19th century called Bangkok "the Venice of Asia," cities in the Central Plain were characterized by its water-friendly amenities: traditional architecture and urban planning well adapted to annual floods. At the same time the severe ecological conditions, characterized by wet season inundations and dry season droughts, made the hinterlands unfavorable for agriculture and settlement. The region had thus been regarded as a frontier until the 1950s, when the construction of a huge irrigation and drainage system made stable farming possible. Since then, modern water management technologies have transformed the landscape of the Central Plain from a frontier space to one of Asia's largest manufacturing centers. This presentation discusses the ontological and epistemological roles of those water infrastructures in the constitution of the flood as a natural and social disaster. The infrastructures that transformed the Central Plain's landscape not only physically shaped the flood by allocating water unevenly but also helped create knowledge about water circulation, topography, and the country's social and political structures. By focusing on this dual role of infrastructures, the paper argues how nature and society were performed in this unprecedented disaster.

River talk: narratives of riverine environments in hydropower conflict, Turkey. *caterina scaramell, MIT HASTS*

Rivers are unstable entities that confuse spatial categories and blur and remake boundaries of the socio-natural. Water infrastructure is generative of changes that go beyond water bodies, trickling into other domains of life, human and non-human, and of meaning. This paper is an ethnography of mundane environmental expertise in Turkey in the context of designs that produce displacement. Recent changes in the energy market and in water law have facilitated the implementation of small-scale-hydropower projects in most rivers and rivulets of the country, triggering strong reactions, expressed in debates and legal struggles over energy, water right and environmental governance. Rural residents with a stake in the affected areas, have come visible to the media and social science researchers. I show how in the Northeast different communities come to re-know watery environments as they undergo dramatic transformation of flow and value. It shows how different people argue for their position in the conflict by positioning themselves vis-à-vis rivers, which are thus congealed as particular flows of meaning, memory and power. Rivers become unstable boundary objects around which people dissent; however, it is not the same river that dissenting groups are talking about. I argue that as people tell the researcher narratives of human-river relations, they reconfigure particular forms of environmental knowledge where belonging to a particular environment, and knowing it through works or sensorial engagements means belonging to a particular community. I reflect on how I combine STS and anthropological literature and methodology to make sense of the field.

Buried streams and hidden narratives: A sociomaterial approach to understanding urban water. *Jennifer T. Mokos, Vanderbilt University*

The bodies of people are intimately connected to bodies of water. Urban streams are often piped, channelled, paved, and diverted through an intricate network of infrastructures. These structural simplifications combined with widespread impervious surfaces can alter water flow patterns and impair ecological functioning across urban landscapes. Furthermore, as water molecules move through these water infrastructures, they can become physically incorporated into living organisms along with discarded chemicals and contaminants. These parallels between people and water are both physical and ideological, connecting notions of pollution and health in ways that integrate physical boundaries and social classifications. In this paper, I present an approach to understanding the sociomateriality of urban water through the intersection of water infrastructures and human experiences. Through ethnographic research on water systems in the city of Nashville, Tennessee, I explore how urban water is both designed and natural. This paper focuses upon the specific methodological approaches utilized to identify the hidden dimensions of water and the practical considerations involved in interpreting natural and cultural synergisms. Attending to this complexity reveals the layered relations of power that are embedded within the urban water landscape and the hidden possibilities for resistance against predominant narratives and infrastructures.

Inventive Numbers and Natural Infrastructure. *Helen ruth Verran, University of Melbourne*

There are calls for investment in 'natural infrastructure' – "Bridges are alright but what about the degrading ecosystems?" After publication of a much cited paper in the prestigious journal Nature some fifteen years ago, the social movement calling for recognition of 'ecosystems services values' has now recruited

that global bastion of popular natural sciences: The Natural History Museum London (see http://www.nhm.ac.uk/nature-online/biodiversity/earth-debates/value-of-nature/index.html). Such calls prompt me to think about numbers, for numbers are central in reimagining nature as natural infrastructure or natural capital. The ways numbers are used in the arguments of those promoting the use of ecosystems services values is both unconventional and controversial in science. My intention in this paper is not to disparage the ecosystems services values social movement, rather my focus is on numbers. My claim is that those of us who use numbers in our arguments should be far more familiar with numbers' cultural, social, and political performativities.

057. (95) Has feminism changed science studies?
11:00 to 12:30 pm
Solbjerg Plads: SPs10
Chair:
Elvira Scheich, Freie Universität Berlin
Participants:
The 'assembler' as a social imaginary for designing nature, technology, and society. *Petra Lucht, Technical University of Berlin & RWTH Aachen*

In this paper I argue that the paradigmatic concept of the 'assembler' in nanotechnology not only serves as a model for designing nature and technology. The 'assembler' may also be viewed as a 'social imaginary' (Castoriadis) for designing social reality. Also, the 'assembler' shimmers as an 'assemblage' as its own impediment. This thesis will be supported through looking at different discourses, practices, and knowledges. My starting point is the concept of the 'assembler' in nanotechnology and views of nature and technology that are going along with that concept. Secondly, studies on how consumers have become co-producers of products of all kinds will be taken into account for the above mentioned argument. Thirdly, it will be asked to what extent the social imaginary of an 'assembler' shimmers as an 'assemblage' in areas such as the (new) media, arts, and literature. In order to discuss this I refer to different theoretical concepts of 'assemblages' as they have been developed in STS and Gender Studies (Deleuze/ Guattari, Haraway, and Verran). It is concluded that the social imaginary 'assembler' is associated with promises of modernity such as technological progress and individualization. But social assemblies form themselves through building a community or a society. Therefore, the above mentioned promises of modernity are bound to a paradox: The modern individual will become a modern one only when it is able to integrate itself into a community or society. It does so through conceptualizing itself as part of a social 'assembler' respectively, a social 'assemblage'.

Production of eggs and embryos, invisibility of women, and research in Spain. *Eulalia Pérez Sedeño, Spanish National Research Council; Ana Sánchez Torres, Universidad de Valencia*

The use of eggs as a basic biomaterial creates a concern about the possible abuse in the production of oocytes. If within the assisted reproductive technologies, women have lost the control of their reproductive processes, and the analysis from feminism has failed to participate in any decision-making process (in hospitals, bioethics committees, or legislative drafting), all the indications are that the same will happen with the research that uses eggs or embryos as biomaterial. In this paper, we start from the debate comes up with the enactment of the assisted human reproduction law in Spain, about the use of currently frozen embryos remaining from fertility treatments. Also, we analyze the two main Spanish laws that have attempted to arrange these debates - Assisted Reproductive Law and the Biomedical Research Law -. We will try to show that several lines of research, now leading

research lines, are not really as separate as it seems. Different lines of research (cloning, genetic engineering) converge in stem cell research and all of them are interrelated through In Vitro Fertilization (IVF), since the remaining material of this technology is used for therapeutic cloning and stem cell research.

The fruitfulness of mixed comparative approaches in STS. *Anne-Sophie Godfroy, Institute for History and Philosophy of science and Technology (IHPST)*

Jasannoff's "Designs on Nature" or Felt & Nowotny's "After the Breakthrough" are good examples of the relevance of comparative approaches in STS. Mixed cross-perspective comparative methodologies and "styles" bring to light categories and concepts to think complex systems of interactions between public decision, law, the private sector, experts, the construction of social norms and the role of civil society, in relation to scientific practices. First, the paper will describe closely those methodologies in order to propose a sort of common comparative methodology that could be applied to any STS field. Instead of benchmarking more or less comparable sets of data, they compare qualitatively complex systems in context. In a second part, we will test this methodology and see how fruitful it could be. As we have worked for ten years in EU funded projects about gender and S&T education policies and on gender and science careers policies (projects WOMENG, PROMETEA, MOTIVATION and HELENA), we gathered a large international collection of data in these fields. As the fields studied by Jasanoff or Nowotny & Felt, they raise epistemological and social complex issues, connecting each time in a different way knowledge production systems, doing gender, gender culture and gender awareness, social relations and involvement of civil society and politics. Moreover, all projects developed different comparative perspectives we want to confront to the methodology described in the first part. We want to identify the benefits we could expect from it compared to the actual methodologies we used in the projects.

A Longitudinal Examination of Gender Differences in Scientific Careers: Evenidence from Ghana, Kenya, and Kerala, India. *Paige Miller, University of Wisconsin, River Falls; Wesley Shrum, Louisiana State University*

Gender and science is a much studied area within the social sciences. Much of this research is confined to highly functioning scientific systems, neglecting female researchers in peripheral areas. The work that has been done on the scientific systems of less developed areas has either been descriptive or cross sectional in nature or was done before the widespread diffusion of ICTs. Because the Internet and email ease the constraints of time and place on interactions, some posit that the diffusion of ICTs will lead to significant changes in the research careers of scientists, particularly for female researchers in less developed areas who may use the technologies to overcome cultural restrictions. Over the last decade, Internet and mobile phone penetration in Africa and Asia has increased providing the perfect opportunity to examine corresponding changes in female researcher's careers. Using panel data gathered at three points (2000-2002 and 2005, and 2010) during the height of ICT diffusion, this paper examines a variety of changes in female researcher's careers in Ghana, Kenya, and the Southwestern Indian state of Kerala. By employing panel data we take an important step towards filling a gap in the social science literature.

058. (18) Bio-objects and bio-objectification - I
11:00 to 12:30 pm
Solbjerg Plads: SPs12
Chairs:
Tora Holmberg, Institute for Housing and Urban Research, Uppsala University
Conor Douglas, VU University Medical Centre Amsterdam

Participants:

Bio-objectification and bio-identification: recursive relations in the social shaping of bio-objects. *Andrew Webster, SATSU, University of York*

This paper provides a conceptual framework through which we can explore the processes whereby novel forms on life are subject to the interactive dynamics of bio-objectification and bio-identification, via the substantive domain of regenerative medicine. It explains how this field is an appropriate empirical site where these concepts can be usefully deployed and moves on to sketch out a methodology through which this theorisation can be used to interrogate others areas where emergent life is found, and how this can also provide the basis for policy steer.

Generative relations: crafting bio-objects within digital realms. *Sakari Tamminen, University of Helsinki; Niki Vermeulen, University of Manchester*

Bio-objects, a term that refers to the categories, materialities and processes that are central to the configuring of "life", play a crucial role in the 21st century in which increasing knowledge of the biological is fundamentally transforming what life itself means and where its boundaries lie. The bio-objects concept hints at the objects' material and socially ordered form; it is distinct from being a mere 'thing' without internal (material) or social (exterior/embedded) order. These two modes of ordering are always relational processes that can be traced in/to empirical situations. This paper explores digitalisation of life as a process of bio-objectification through historical and empirical case studies in human biobanking practices and systems biology. We analyse which instances or parts of life matter so much that they become represented digitally, with the potentiality of global circulation in digital mediums. Looking into the formation of digital collections and models of life, we trace the ways in which 'life' looses its organic materiality as an example of bio-objectification, and, instead becomes digital object matter within an infinitely larger realm of biomedia. The paper asks two questions, namely what type of bio-object is digital life and what are relational implications of life becoming a virtual matter? At the same time, we explore how particularly potent generative relations (politico-ethical, economic, technical) become mattering in digital objectification practices of current biomedical practices of biobanking.

Blocking the Process of Bio-objectification: the translation of regenerative medicine in Japan. *Koichi Mikami, Graduate University for Advanced Studies*

This paper focuses on the interaction between the regulatory decisions on regenerative medicine in Japan and the social actors in this field, and examines how such actors respond to the regulatory blockage in a particular process of bio-objectification. Regenerative medicine is a good example of bio-object: stem cells are displaced from one's body and replaced in the others as medicine. While medical use of body parts has been studied in the contexts of other technologies, like organ transplantation and in vitro fertilization, it is the involvement of manipulation practices that makes regenerative medicine distinctive from such technologies: stem cells are expanded and differentiated, and are turned into the right tools for medical applications. The translation of regenerative medicine, therefore, requires the official approval of its manipulation practices as well as the legitimization of its right-ness for medical applications. Despite its emphasis to realize this technology, the Japanese government has, over the last decade or so, made several regulatory decisions, which resulted in the severe regulatory environment for particular trajectories of regenerative medicine. To understand the logic behind such regulatory decisions and to explicate what counts as a good manipulation practice and also as a right tool for medical applications in this context, the idea of purity (and danger) seems to play an important role. By paying attention to the concept of purity, this paper demonstrates how the social actors in Japan attempt to (re-)organize their practices in order to (re-)establish the process of bio-objectification in regenerative medicine.

Blurring the Boundaries in Bio-Banking: Reconfiguring Biomedical Infrastructures and their Governance. *Conor Douglas, VU University Medical Centre Amsterdam*

Key boundaries articulated in biomedical genomics and its governance frameworks are now in flux because of demands to scale-up and circulate their research resources. The emergence of biobanking (i.e. the systematic, large-scale procurement of human tissue and data for research purposes) provides a significant contribution to such reconfiguration processes since it is located at the interface of a number of these destabilized boundaries. These include boundaries between the informational data and the biological material contained in biobanks; boundaries between active models of donor recruitment and passive models of procurement through patients; and boundaries between public and private spheres of action and use of biobanking research resources. What is more, this is taking place as boundaries in national and transnational governance regimes are also being redrawn. While many of these boundary reconfigurations have been studied in isolation, their combined implications for the governance of socio-technical change in biomedicine are not well understood. Drawing on previous work in Science and Technology Studies and sociology, we will discuss what boundary reconfiguration processes are implicated in the emergence of biobanking, how these impinge on prevalent models and arrangements of governance, and what challenges these reconfiguration processes raise for governing socio-technical change in biomedicine. We suggest that a 'bio-objectification' heuristic device (Vermeulen, Tamminen, and Webster 2012) can aid in asking helpful questions about how the circulation of vital material in the 21st century matters in the governance of bio-medicine and R&D.

The movements and circulation of Aedes aegypti OX513A: mapping regulation and governance of GM mosquitos. *Luisa Reis Castro, Spiral, Université de Liège / Maastricht University*

Although recent years have seen an increase of activities concerning genetically modified (GM) insects, there has been limited discussion on it, inside or outside academia. While GM plants have been more broadly considered, GM animals and especially GM insects have not been become an 'issue', contributing to what has been defined as 'transgenic silences' (Holmberg & Ideland, 2009). This paper will focus on one GM insect: the Aedes aegypti OX513A. This technology was developed and patented by British biotech company Oxitec to combat dengue disease. It adopts the RIDL (Release of Insects Carrying a Dominant Lethal) technique – also developed by Oxitec. There have been already three releases in the world: first, in Cayman Islands in the end of 2009; in Malaysia through December 2010 and January 2011; and in Brazil from February 2011 until nowadays. This bio-object is presented as a scientific breakthrough in the healthcare, a solution that allows combating dengue – classified as a neglected tropical disease – through a technological fix, by suppressing/ exterminating the population of the vector Ae. Aegypti. In contrast, it is also defined as just another step on the continuum of Sterile Insect Technique (SIT), a vector control strategy that has been used since the 1930s. This paper will map these contrasting framings, focusing on how that relates to the regulation and governance of the GM mosquito, throughout its movements and circulation.

059. Legitimizing ESS II: the expectations of ESS touching reality
11:00 to 12:30 pm
Solbjerg Plads: SPs13
The purpose of this session is to study the present efforts to build one of the

currently most exciting new scientific facilities, the European Spallation Source (ESS), a joint international responsibility of seventeen partner countries in Lund, Sweden. The decision to locate ESS in Lund was taken 2009, the negotiations about financing will come to a close in 2013 (the cost estimate is 1,5 billion euros). The design process is well underway, the first neutrons are to be produced in 2019 and the facility should be fully operational 2025. The ESS is a major large scale facility promised to produce multi-disciplinary science in the context of the modern globalized knowledge economy, attempting to live up to intensified social demands and contribute on the path to the sustainable society. This session will specifically focus on the promises that are produced in legitimizing ESS. These are communicated both internally and externally, made to draw actors together to make ESS possible. The session will target how these promises and at various stages in the realization process has to touch base with reality. A central question is not only what promises as produced, but also succinctly what happens when they are at different levels evaluated, incorporated by actors, as well as a discussion about how some of them could (not) be realized. Central to the session is to put ESS in an European policy context, as well as in comparison with other neutron facilities, as well as to the synchrotron facility MaxLab in Lund.

Chair:

Kerstin Sandell, Dept of Gender Studies, Lund University

Participants:

An Olympic Campaign of Physics: The ESS in Local Media. *Tobias Linné, Department of Communication and Media, Lund University*

The building of the European Spallation Source in Lund has received much attention in especially local media. In this paper, the Swedish daily newspaper Sydsvenskans coverage of the ESS is analysed. Media representations and media coverage play an important role regarding how people perceive the role and legitimacy of science in society. This study aims at contributing to an understanding of (1) the different kinds of expectations on ESS that has been raised in local media and how these can be understood (2) how these expectations are created and maintained through the media coverage and (3) what subject positions can be identified in the media coverage. The empirical material consists of a sample of over 400 news articles from Sydsvenskan from the years 2000 to 2011. The articles have been analysed using content analysis. A range of variables have been included in the study, from more basic variables like the number of words in the articles to variables measuring how the critique of the ESS is put forward and who is cited and referred to in the articles. The study shows that the coverage of the ESS strongly emphasises the region as expansive, both in economic, social, cultural and scientific terms. The study also shows that the reporting of the ESS rather than focusing on science issues often has a campaigning tone, functioning as to help to drive up public support for the building of the ESS in Lund.

Reaching the inside from the outside? Member identification and auto-communication. *Sara von Platen, Department of Strategic Communication, Lund University*

Organizations today are tremendously preoccupied with their public appearance and make great efforts communicating their unique and well-groomed identities in different media. But externally mediated communication can also convey strong messages to the employees concerning the organization, its staff and the tasks they are supposed to perform. External communication may thus be a powerful way of creating member identification, but also disidentification, with the organization, its visions and goals. MAX IV-laboratories is a synchroton radiation facility presently under construction in Lund. The facility is a development of an existing laboratory and it is supposed to be world leading when it opens for research in 2015. The MAX IV-project has attracted considerable media attention, which makes this an ideal organization for studying the self-reflective features of external communication. The purpose of this qualitative study is to contribute with knowledge on the processes of member

identification and organizational auto-communication, i.e. how organizations communicate with themselves. A central question that is being pursued is: What significance does the research facilities' external communication and PR-activities have for how the employees conceive of themselves, research work and their organization? The investigation shows that the external communication is framed by the organizational history, reinforcing the prevalent organizational identity and member identification. Identity maintenance may be useful in times of change. But it can also be a potential threat if it entails a strong inward focus and a lack of attention to changes and demands in the surrounding society.

ESS: Designing organizations and institutions for collaboration in science. *Josephine V Rekers, CIRCLE Lund University*

One of the primary motivations behind the European Spallation Source (ESS) is to remain competitive in neutron research. This research community is global in nature, and scientific advancement in this field, and fields in which it finds applications, relies heavily on very large and capital intensive apparatus such as the planned ESS. However, once ESS starts operating, it will be competing with other neutron facilities for reputation, the scientific frontier, and permanent and visiting researchers. In order to compete, it is necessary but not sufficient to develop the best and brightest instruments. In addition, research on creative research environments suggest the facility must also have physical, organizational and institutional features that make for productive, stimulating and successful collaborations. Which factors shape the likelihood of users' collaboration with other scientists at the facility, with universities in the region and with industry? The relatively 'greenfield' development of ESS poses some challenges, but also opportunities to 'start fresh'. In other words, if we can identify the features that support collaboration, they could be prioritized in the development of organizational capabilities inside and outside ESS. In this paper we survey other neutron research facilities (using desktop research and key informant interviews) and trace their collaborative relationships within and across facility boundaries. How did they develop and evolve? What can ESS, Lund University and the Øresund region learn from these examples, and what is the potential of initiatives aimed to support such knowledge synergies?

060. (54) Disasters - redesigning collective orders - II

11:00 to 12:30 pm
Solbjerg Plads: SPs14
Chairs:

Zuzana Hrdlickova, Goldsmiths, University of London
Manuel Tironi, Pontificia Unversidad Catolica de Chile
Israel Rodríguez-Giralt, Universitat Oberta de Catalunya

Participants:

illocality: Emergency Housing, Displacement and the Distribution of Sick Space. *Nick Shapiro, University of Oxford*

After Hurricanes Katrina and Rita displaced almost 500,000 Gulf Coast residents, the US Federal Emergency Management Agency (FEMA) deployed 120,000 nearly identical emergency housing units from Alabama to Texas. Inhabitants of these temporary shelters, known as "the FEMA trailers," developed an array of health issues and the trailers' particleboard walls were found to contain high levels of formaldehyde. Drawing on two years of ethnographic fieldwork, I argue that the homogeneous and cramped architecture of the trailers generated shared spatial frustrations and a myriad of illnesses, which brought their heterogeneous inhabitants experientially closer together, even if geographically distant. The FEMA trailers materially and biosocially became a regional collectivity of their own—one that was distributed across the Gulf and pivoted around New Orleans.

The uniform emergency housing, resulting formaldehyde-related illnesses and the jarring reshuffling of the Gulf Coast in late 2005 enabled new forms of spatiality. The FEMA trailer collectivity yielded a unity without proximity– what I term an 'illocatity'– to emerge at a scale unprecedented in US housing history. In addition to designating a sense of place without a unified location, the illocality is composed of sites of sickness– ill-locations. These two dimensions of illocality are mutually constitutive, as trailer occupants with an array of strange symptoms sought out fellow residents to swap stories and build up a corpus of knowledge on shared understandings of the bodily effects of trailer life. This simultaneously distributed and unified place undergirds the urban dynamics of a region shaken apart in disaster.

Of Borders and Buffer Zones: The Spatial Politics of Disaster in Sri Lanka. *Vivian Y. Choi, University of California, Davis*

This paper examines the politics of nation-building and securitization through spatial and border practices and policies after the 2004 Indian Ocean tsunami and during the end of Sri Lanka's civil war. Undergirding these practices of governance is a logic that Andrew Lakoff and Steven Collier and the Anthropology of the Contemporary have also traced in the United States, that treats natural disasters and so-called acts of terrorism as seemingly inevitable events that need to be prepared for and managed ahead of time. In Sri Lanka, I show how the war was not merely the social context in which the tsunami played out, but rather the tsunami engendered a certain way of managing uncontrollable events, including war and terrorism. Specifically I compare the implementation of a no-build buffer zone along the coastline after the tsunami to the designated "Civilian Safe Zone" in Sri Lanka's war-torn region in the North. In this paper I will illustrate how securitization – either due to war or natural disaster – has lead to emplacement: in tsunami-affected areas movements and mobility have been restricted or deemed unsafe due to the construction of buffer zones and increased border monitoring. This type of emplacement bears resemblance to the Sri Lankan military's tactic to round up all Tamil civilians in the "civilian safe zones" and detain them during and after the final surge of the civil war, based on the possibility that terrorists were lurking amongst them. I highlight how these spaces to ensure "safety" and security reflect the Sri Lankan state's vigilance towards future disasters and terrorist attacks.

Technologies of Displacement: Urban Design and Planning after Katrina. *Graham Owen, Tulane University*

In the aftermath of Hurricane Katrina in New Orleans, numerous proposals were made for the redesign of the city in response to disaster. Although initial calls for its wholesale relocation (Jacob; Kusky; Mittelstaedt & Reiter, 2005) were resisted, propositions for the internal reconfiguration of its urban form gained more serious attention (those of the Urban Land Institute, 2005, and the mayor's Bring New Orleans Back Commission, 2006). With much of its poor population in diaspora, the city entertained urban schemes that involved abandonment of low-lying neighbourhoods predominantly low-income, mixed-race or African-American. As Maret and Allen (2008) observed, reconstruction generated tensions among sustainability, justice and recovery. Several actors saw disaster as opportunity: recovery was replaced with transformation. As debates over rebuilding evolved, neighbourhoods resisted, but professional elites envisaged transformations in which access to preferred ground was key. In parallel, the city's extensive public housing estates, though low-rise, more solidly built and more capable of integration into the city fabric than most, saw many of their inhabitants prohibited from returning and their sites razed for market-led redevelopment. As technologies of urban infrastructure, morphology and development, how were the disciplines of urban design and planning implicated in this project of transformation, not only physical but also socioeconomic? To what extent, and by what means, were they

complicit in the displacement of populations, and how was their role rationalized? The paper examines design competitions and the recovery planning process, from neighbourhood to city levels, with particular emphasis on the ethics of technologies of displacement.

The social-cultural impact of the Dutch flood disaster of 1953. *WATERWORKS Heems & Kothuis, Maastricht University/TU Delft*

Our paper investigates the social-cultural impact of the 1953 flood disaster in The Netherlands. This disaster seriously damaged Dutch national reputation and identity. A large-scale counterattack was set in: the Delta Works formed the technological answer to the professional and political promise 'This will never happen again' (1). However, these flood defences are not just technological artefacts. They also represent a specific discourse. This is the discourse of fight: a devastating nature had to be fought to protect vulnerable citizens. Most Dutch strongly believed the national enemy - 'the water wolf' - could be destroyed once and for all by means of an ingenious, extensive and technologically driven defence plan. No one dared to openly discuss these costly works. The Delta Works became the main symbol of reconstructed Dutch identity and created a collectively held national safety myth. Despite rationally acknowledged risks, this myth implies that the Dutch feel convinced dry feet can and will be guaranteed. Publicly speaking about a flood disaster as a realistic future scenario was a taboo in The Netherlands for many decades. Dutch society fundamentally changed: water awareness and risk aware behaviour now no longer dominate daily life of Dutch citizens, businesses and administrators. Yet, recent discussions about possible effects of climate change implied a new policy. Risk awareness of citizens must be enhanced. This paper explains why this policy hasn't succeeded. Also we present an alternative approach. Our research is based on a method of interpretive analysis, developed from linguistic and discourse coalition approaches (2) and the Social Construction of Technology (SCOT) approach (3). (1) 'This never again' (Rijkswaterstaat & KNMI 1961: 5). (2) Hajer 1995; Bauer & Gaskell (Eds.) 2000; Wodak & Krzyżanovski (Eds.) 2008. (3) Pinch & Bijker 1984; Bijker 1995.

061. (72) (Re)designing public engagement: innovation in practice and analysis - II

11:00 to 12:30 pm
Solbjerg Plads: SPs16
Chair:
Cynthia Selin, Arizona State University
Participants:

The Public Participation Principle in Science and Technology Communication. *Per Hetland, InterMedia, University of Oslo*

Science and technology communication as field for different communication practices, policy and research are changing. One important reason for this change is the growing number of hybrid forums in which experts, non-experts, ordinary citizens, public authorities, and politicians come together to interact and contribute. This paper explores how Norwegian policy for science and technology communication encourages public participation in hybrid forums. Norwegian science and technology policy documents from the last 40 years are studied using the media package model described by Gamson and colleagues. The paper discusses especially 1) sponsored high intensity participation in forums like lay people conferences, where the participants have a high degree of interactional expertise and 2) spontaneous high intensity participation in boundary infrastructures like Species Observation, where the participants have a high degree of contributory expertise. The concepts of hybrid forums, trading zones, boundary objects and

interactional/contributory expertise are explored in this paper.

Nanopodium: Public debate on nanotech in the Netherlands. *Christien Enzing, Technopolis, Amsterdam*

While during the first years of the new decade, the debate on the opportunities and risks of nanotechnology had been going on for a number of years, this discussion was still limited to a small circle of experts and specific societal organisations. Nanopodium was set up in 2009 to facilitate a public debate on nanotechnology in the Netherlands. It provided a platform for exchanging thoughts, ideas, opinions and best practices on nanotechnology and was new in its bottom-up design. Nanopodium's aim was to stimulate a public dialogue about the opportunities and threats of nanotechnology and resulting applications with regard to individuals and society as a whole. The paper discusses the specific characteristics of the Dutch debate on nanotech that have made the Nanopodium dialogue to a success, and what have been the trade-offs. The paper contributes to the STS literature concerning governance of nanotechnology and especially the role of public debates and public engagement with emerging technologies.

Public engagement in the margin. *Kristofer Hansson, Division of Ethnology, Department of Arts and Cultural Sciences, Lund University, Box 117, 221 00 Lund, Sweden*

This abstract focus upon public engagement activities in policy processes concerning xenotransplantation research in the late 1990s and in the beginning of 2000s in Sweden (xenotransplantation: transplantation of animal cells, tissues and organs to human). I want to analyse those processes of public engagement that did not follow the mainstream policy processes, but instead was pervasive and informal. The most engaged actors in this case were connected to animal rights organizations and the Green Party. It was actors that tried, and some times also failed, to find innovating paths to create public engagement and affect the mainstream policy processes consisting of medical researchers and politicians from established parties. Based on the STS literature this abstract analyses, theoretically and empirically, how the actors in the margin operated in relation to the "elite" and how marginal actors (re)designed public engagement activities in relation to the ongoing policy process. The material is based on studies made in the projects "Impact of Citizen Participation on Decision Making in a Knowledge Intensive Policy Field" (Seventh European Research Framework Programme) and the ongoing project "Participation as a concept and practice" (Erik Philip-Sörensen Foundation). It consists of interviews with actors that were engaged in the policy process of xenotransplantation and analyse of official documents, newspaper articles, reports etc.

Environmental agency in a women's organisation, practices of food and companion species. *Marja Vehviläinen, University of Tampere, Finland*

The paper examines environmental agency as a public engagement in a large civic women's organisation in Finland, and in its practices of food in particular, through Donna Haraway's notion of companion species. The studied women's organisation intermediates research based knowledge on wellbeing in everyday life to its members, broad audiences and specific groups. Simultaneously it works through numerous local groups where (parts of) this research based knowledge is interpreted from the starting point of situated knowledge. The organisation has promoted environmental knowledge and activity for several decades and it had another campaign on ethical consumption and environmental everyday practices in 2010. The paper is based on a qualitative empirical study of the environmental activity of the organisation: 20 interviews of its members and experts, observations of counselling events, an internet questionnaire to its members, text analysis of the 2010 campaign materials and articles in the organisation's journal. Companion species (Haraway 2008) are made of material-discursive relations, including capitalist relations of use and relations of gender, and simultaneously they are particular and situated. Companion species make a starting point to the ethics and politics of respect to be considered in environmental agency. The paper analyses material-discursive relations of both the textual research-based campaign and the members' accounts and situated activities of the women's organisation, and it examines the emergence of environmental agency in these relations by focusing on the practices of food. Local groups are the sites where situated environmental agency is shaped and where diverse ethical positions emerge.

Grassroots Literacy and Asbestos Activism in South Africa. *John Trimbur, Emerson College*

The Asbestos Interest Group (AIG) in Kuruman, South Africa, is a village-based organization founded in 2001 to raise awareness about the dangers of asbestos and advocate for better health care, compensation for asbestos-related disease sufferers, and the rehabilitation of asbestos-contaminated mines, dumps, roads, and buildings in the Northern Cape and North West provinces, the center of crocidolite asbestos mining in South Africa before the industry was closed in 1997. This paper is based on ten years of working with the AIG as an activist-rhetorician. It examines what the linguistic anthropologist Jan Blommaert calls "semiotic mobility," the capacity of the AIG's grassroots, non-elite literacy to have voice and public influence, with particular attention to how the AIG has negotiated he boundaries between grassroots organizing and the dominant literacy regime of the state, the courts, academic research, and the health care system. The line of analysis is two-fold, showing, on one hand, how the written record of mulitnational mining companies, the state, and the medical establishment rendered asbestos contamination virtually invisible for nearly a century; and, on the other hand, how the AIG's grassroots literacy, such as text messaging, village meetings, hand-drawn maps, and household surveys, enabled it to enhance its semiotic mobility and to make the legacy of asbestos mining visible by forming alliances with lawyers, state officials, medical professionals, and academics. The attention to stratified orders of literacy brings a perspective from rhetoric, writing studies, and sociolinguistics that has been largely ignored in STS studies of activism and public participation.

062. (61) New media, digital identities and transformations of surveillance - I

2:00 to 3:30 pm
Kilen: K143
Chair:

Anders Albrechtslund, Aarhus University
Participants:

Techno-economic models of surveillant subjectivity: the case of the Quantified Self. *David J. Phillips, University of Toronto*

We present a case study of economic models that both shape and respond to new practices of self-surveillance. We offer political economic critiques of these models and the subjectivities they mediate. Finally, we address the role that privacy, as moral ideal and as regulatory principle, plays in their maintenance. Within the Quantified Self (QS) movement, people engage in self-surveillance. Most commonly, they use biometric devices to monitor their activities and transmit that data to a server. Analytics are performed on the data and displayed back to the individual, allowing the QSer to make sense of herself. Three structural models are apparent in QS practice. The hacker model is evident in projects that produce open and accessible biometric devices and open repositories for the data produced by them. The Web2.0 model integrates three markets. Devices and data services are sold to individuals, and aggregated data are sold to third parties. In a third model, employers contract with a company to provide QS services to employees, allowing the

employers to reward activities which lower the employer's health care costs. These models mediate the kinds of identities produced, and the position of those identities in structures of power. Each also relies on or resists current privacy ideals and regulatory procedures. Current moral ideals of privacy are not well-suited to engaging the problems confronted within hacker projects. However, data regulatory regimes normalize and regularize the practices of the Web2.0 model, while moral ideals of privacy valorize the responsible individual produced under the third model.

Reflecting shadows: exploring the (un-)controllability of digital identities. *Stefan Strauß, Austrian Academy of Sciences, Institute of Technology Assessment (ITA)*

This paper contributes to further conceptualize the role of digital identity to grasp deeper insights into its transforming capacity on user practices, surveillance modalities and related privacy implications. Based on former research about (governmental) e-ID systems and the control dilemma of e-ID – addressing the problem of lacking controllability over personal information from a user's perspective (Strauß 2011), the analysis explores further how it materializes in a wider (new media) context. From a system-theoretical perspective digital identification represents a meta-system, crossing over diverse application contexts; pointing at meta-system transition (Turchin 1977), shaping user practices and design of its contextual systems (e.g. SNS). Sharing and cross-linking personal information as core principles of new media undermine crucial privacy-requirements as unlinkability and context-separation. While intended information disclosure contributes to collaboration, the intertwining of user practice and identification (and the data entailed) also triggers unintended disclosure. In other words: digital identity throws a sort of shadow. This "identity shadow" (Strauß 2011) reflects a users identity and concurrently morphs it by enabling new space for re- and de-contextualization (or displacement) of the identity beyond the user's control; and thus facilitates new surveillance opportunities for the "surveillant assemblage" (Cohen 2008), i.e. the variety of (potential) observers. The identity shadows' opacity and invisible digital identification mechanisms highlight given similarities to panopticism. Lyons (1994) question about the generalizability of the panoptic over different social spheres becomes ever more concrete and I argue for a strong demand for transparency to illuminate these hidden modes of power towards sustainable privacy protection.

Making data bodies explicit. *Lonneke van der Velden, University of Amsterdam; Frederik Zuiderveen Borgesius, University of Amsterdam*

This article provides empirical insight in practices of behavioural targeting. Analyses about digital surveillance are fuelled with rather abstract notions of 'data bodies' or 'digital profiles', assemblages that can be subject to corporate or governmental control. Other lines of thought warn for the potential 'violation of privacy'. These studies call for more specification of which data is collected by who and how. This article informs such debates by combining two case studies. First, we take information from public relations materials of companies engaging in behavioural targeting, aimed at advertisers. Second, we collect traces provided by tracking tools themselves. The first approach gives insight in the size of the ecosystem of companies trading digital profiles. How many companies trade in digital profiles? How many of these profiles do they process? The findings give insight in, what some call, the 'data wild west'. The second approach focuses on online trackers. By repurposing a browser plug-in that informs users about trackers behind websites, we characterize different collections of websites, including, for instance, websites dealing with health and financial problems. The tool visualises devices that track Internet users, such as web beacons and social media widgets. Hence we are able to give texture to certain segments of the web, including devices that automatically engage with users and those that require voluntary user participation.

Together, the studies bring into view a range of actors involved in networks of profiling and contribute to developing an understanding of the relevance of Actor Network Theory for digital research.

New media and surveillance: Identity and techno-embodied living. *Ian Tucker, University of East London*

Everyday experiences of surveillance have traditionally revolved around feelings of being watched by others not visible to us (e.g. through CCTV). New media are rapidly shifting the boundaries of our sense of visibility to others, with increasing possibilities to surveil and be surveilled, e.g. harvesting of information by organisations for advertising purposes; the production of 'online selves' through social networking sites; the surveillance of others through social media (e.g. Albrechtslund's participatory surveillance); and GPS-tracking mobile apps that cover a diverse array of 'targets' (e.g. friends and family, potential sex partners or nearby bars and restaurants) (Fuchs et al, 2012). New surveillance (Marx, 2002) technologies present challenges to understandings and conceptualisations of embodiment, and the traditional embodied underpinning of social identity. Although our bodies have always emitted information (Thrift, 2010), this has taken an increasingly technological form due to new media, and their relentless hunger for data. This paper addresses the potential implications of new media surveillance for identity and subjectivity, and the embodied-informational configurations they take. The paper will draw upon debates in STS literature about embodiment and affect, which have advocated a view of identity as fluid and multiple, shifting according to context and changing over time rather than taking a temporally stable form (e.g. Brown & Tucker, 2010). Key to this is analysing how the parameters of new forms of identity and subjectivity are set out against a backdrop of increased informational activity and shifting practices of agency.

063. Taking stock of CCS in times of low expectations - I

2:00 to 3:30 pm
Kilen: K146

The role of climate change mitigation has undergone a remarkable change in recent years' political discourse, across many parts of the world. As public policy priorities have shifted towards handling the global economic downturn, focus has shifted away from emerging low-carbon technologies such as carbon capture and storage (CCS). The arguably lower expectations for CCS may therefore partly be blamed on a shortage of public finances, but what of other, possibly unrelated, developments? And what impact might these lower expectations have had on CCS practices, decisions and designs? This session brings together perspectives that examine the state of the art in CCS across a number of different types of case studies. The session focus encompasses several research themes to investigate the changing prospects for CCS, including: the framing of new project developments; likely innovation trajectories; uncertainty and risk in emerging regulations; key stakeholder attitudes; revised policy landscapes; and the roles envisioned for CCS in energy and sustainability transitions. Presentations will use a variety of empirical data and theoretical perspectives to investigate the changing beliefs and conditions that bear on expectations for CCS, as well as the impacts those expectations are having on technology development. The session is thus a contribution to our understanding of the challenges technological fields encounter in times of low expectations.

Chair:

Nils Markusson, University of Edinburgh

Participants:

Low expectations and remarkable opportunities of CCS technology in Finland. *Matti Kojo, University of Tampere, Finland; Anna Matilda Nurmi, University of Jyväskylä*

The European Union climate and energy policy has set demanding targets for Member States to mitigate climate change.

Finland is attempting to address these demands by a 80 percentage decrease from the level in 1990 to the year 2050 in GHG emissions. Carbon Capture and Storage (CCS) is a technology that is proposed to greatly reduce CO2 emissions, but the technology has not a policy in Finland and it is also held possible that no CCS facility is going to be built before 2020 although the technology may be used in some form in the industry. The Finnish energy production palette is not the optimal context for application of CCS technology but there is high-level R&D which seeks for technological breakthroughs. The objective is to investigate how different Finnish stakeholders frame the future of CCS as part of climate and energy policy. Do the stakeholders live in the context of low expectations or do some of them still aim at industrial implementation in Finland? What are the major arguments in relation to potential or lack of potential of CCS? Until now no study focused on the perceptions of the Finnish stakeholders only has been published. However, earlier stakeholder studies provide information regarding conduct of interviews and typologies of CCS issues. Stakeholders' argumentation is examined within the framework of social acceptability which refers to actors' willingness to consider the technology seriously. The paper is based on 12 stakeholder interviews conducted in Finland.

Fig-leaves, smokescreens and greenwash: Theorising Green representations on CCS. *Hauke Riesch, IMoperial College, London, UK*; *Olaf Corry, Open University*

Carbon Capture and Storage (CCS) is seen by its proponents as an important option for reducing emissions through the process of capturing the CO2 from (usually) fossil fuel powered plants and storing it in suitable geological reservoirs such as saline aquifers or depleted natural gas reservoirs.While some proponents see CCS only as a relatively short-term solution, it is often argued that it can form a crucial component in the wider strategy to lower carbon emissions and buy time for alternatives to be developed. At other times it is seen as a false solution that will lead to increased emissions, long-standing safety issues and fossil fuel dependency. Since both sides of the debate share many of the same information part of the reasons for their differing conclusions must be found elsewhere. This paper will explore three interlocking social approaches of social representations, social identity and cultural theory to analyse how CCS is represented within green discourse, how these representations fit into the wider social and cultural identities of the green movement and its common norms and worldviews.

Carbon cultures: Standardization and policy transfer on CCS. *Mads Dahl Gjefsen, University of Oslo/Harvard University*

CCS is a set of technologies aimed at mitigating climate change through limiting CO2 emissions from point source combustion of fossil fuels in power plants and other industrial facilities. An important factor for the promotion of CCS projects and policy support is the creation of standards for performance and safety. However, arising as they are from situated contexts of legal expectations regarding liability, principles of precautionary safety and institutionalized structures for monitoring and accountability, attempts to formulate general standards that are at the same time seen as profitable, safe, and valid across national contexts, must transverse a number of challenges regarding expectations of what constitutes legitimate knowledge, as well as views on what are acceptable risk and reliability standards. This paper presents some of the recent attempts by different commercial and governmental bodies at formulating general principles for how aspects of CCS should be assessed and regulated. I discuss the processes by which standards became seen as necessary, the actors involved and the processes through which quantified standards have been proposed. I then go on to discuss the wider implications of such processes for knowledge sharing and for attempts to generalize and transfer technology policy experiences between national contexts. I argue that standardization processes on CCS must be understood with a view towards the political cultures in which they are negotiated.

Uncertainties in CO2 storage and implications for risk practices. *Benjamin Evar, University of Edinburgh*

Research in the science and technology studies field has identified technology optimism and discounting of economic and policy uncertainties, as a general trend among scientists and engineers involved with the development of emerging technologies. Some studies have suggested that this can also be observed in the field of carbon capture and storage. A related question asks what importance scientists attribute to uncertainties in the knowledge production that arise from limitations and conventions in monitoring technology and modeling approaches, and what these imply for perspectives on data collection practices and the reliability of analyses. This presentation draws on a set of interviews (c. 20) to address the question of how scientists involved with one area of knowledge production for CCS – the geological storage of CO2 – understand uncertainties that bear on their work, and how this relates to risk assessment and risk management methodologies. The research compares key areas of uncertainty, identified in interviews and the scientific literature, with their treatment in best practice guidelines on CO2 storage and asks how the emerging science is translated into risk analyses. Is there evidence of theoretically different approaches to the treatment of scientific uncertainty, and what are the implications for assessment and management practices?

A tale of two CCS demos. *Florian Kern, University of Sussex*; *Jim Watson, SPRU, University of Sussex, UK*; *James Meadowcroft, Carleton University*; *James Gaede, Carleton University, Canada*

Carbon capture and storage (CCS) has been hailed as a key technology for climate change mitigation strategies by international organisations like the International Energy Agency or the Intergovernmental Panel on Climate Change and national governments including the US, Canada, Norway or the UK. While there has been a lot of international enthusiasm since at least 2005 about the possibilities of CCS, there is very little progress on the ground in terms of demonstration projects although it is widely agreed that large scale, fully integrated demonstration is now required for making CCS a viable climate mitigation option. This paper will look at recent experiences with trying to get demonstration projects off the ground in Canada and the UK. The two parallel case studies are aimed at explaining the political economy behind policy decisions in the context of CCS demonstration projects. The analysis looks at the interplay of political, economic and institutional factors to explain policy processes and their outcomes. The analysis is argued to generate lessons about barriers and political dynamics which are of wider relevance to CCS demonstration policy internationally.

064. (41) The politics of algorithms - I
2:00 to 3:30 pm
Kilen: K150
Chairs:
Tarleton Lee Gillespie, Cornell University
Mary L. Gray, Microsoft Research / Indiana University
Mike Ananny, Microsoft Research / Harvard University
Daniel Kreiss, University of North Carolina at Chapel Hill
Participants:

Accounting for people after a disaster: algorithms then and now. *Megan Finn, UC Berkeley*

This paper first interrogates how algorithms for accounting for people were enacted in a non-computationally based information infrastructure in 1906. Second, I consider how computational algorithms, for the same purpose, have been implemented today. The 1906 San Francisco Earthquake was, many would argue, the paradigmatic twentieth century American disaster, and an

opportunity to examine what about information infrastructure becomes visible when it breaks. The earthquake helped start fires that raged for four days leaving about half of the population homeless, as well as injuring visible aspects of the information infrastructure in San Francisco: ruining telephone exchanges and telegraph offices, destroying printing presses, and burning city records and libraries. With people scattered all over the Bay Area, another dimension of information infrastructure was also made visible -- the way that information infrastructure "knows" how to route documents to specific people. This paper looks at how people were made visible or invisible by various algorithms inscribed in the technologies and institutions of the reconstituted public information infrastructure as people tried to find each other. The manner in which the information infrastructure was invented for the post-earthquake city points to the dominant institutions and prevalent ideologies. I then consider internet-based programs today that have been specifically designed with the goal of putting people in touch with each other after a disaster. I look at how the computational algorithms that underpin these programs embody information-related practices, and what and who gets made visible.

Statistically discriminating without discrimination in consumer finance. *Martha Poon, NYU*

Throughout the 1970's Congress conducted hearings to establish equal credit opportunity as a civil right. Legislators would ban creditors from considering sex, marital status, race, color, religion, national origin, or age in credit screening to defend the principle that credit decisions should consider individual merit, and not membership in an arbitrary grouping beyond the individual's control. Fair Isaac, the firm that invented credit scoring algorithms, presented sophisticated explanations for why this approach to political intervention was unnecessary and counterproductive. Reasoning through the logic of statistical differentiation they argued that restrictive public policies were diluting scientific objectivity to the detriment of political intent. The politicians involved in pursuing credit reform disagreed, refusing to exempt credit scoring from the regulations. While regulators would embrace the scientific nature of scoring with one hand, they freely tampered with its autonomy with the other. This review of the congressional record explores the encounter between the logic of statistical differentiation introduced to consumer finance by operations researchers and the legislative sphere. What is meant when credit scoring is celebrated for being unbiased is not that statistical analysis is above the law; rather objectivity indicates that the content of scoring systems became the location from which lenders were best able to demonstrate compliance with the definition of fairness imposed by the Equal Credit Opportunity Act. Fair Isaac lost the battle to define objectivity in consumer credit. But the technology was ultimately adopted because it was refashioned into the handmaiden of oversight and legal administration.

Coding 'Good Technology' for Winning Campaigns: Algorithms and the Aristotle 360 Campaign Management Software. *Fenwick Robert McKelvey, Ryerson / York Universities*

Political parties buy campaign management software like Aristotle 360 because it promises them control over "everything... all in real time, right from your browser"[1], or so claims its developer Aristotle Inc., a leading provider of voter data and campaign software. Control depends on an orchestration of algorithms — the automated processes of software – that model political behaviour, target messages to different demographics, and predict voter responses. This orchestration creates a system of real-time control to help campaigns win — an attractive goal for the political parties across the world who buy the software. As Aristotle Inc. claims, "Good technology, and the right strategy to use it, can be the difference between winning and losing a close election"[2]. But, what is the 'right strategy' according to Aristotle? How is Aristotle 360 a 'good

technology'? Further, how do researchers question the political strategies encoded in its orchestration of algorithms? My presentation answers these questions by studying Aristotle 360 as an 'algorithmic communication media' — a term I use to describe communication infrastructure defined by algorithms. Aristotle 360 controls the interaction between humans and algorithms, and coordinates them toward a campaign win. As campaigns integrate their activities within Aristotle 360, its sense of the 'right strategy' must be scrutinized to understand how its mediation affords new forms of control and coordination in political campaigning. I explain how Aristotle 360 functions as an algorithmic communication media through a thick description that draws on software studies, media theory, and science and technology studies. I ask how algorithms mediate relations between campaign staff and voters, and represent political campaigns as probabilities and forecasts? My presentation contributes to the field of science and technology studies by questioning how campaign software replicate the 'right strategy' across different campaigns. [1] http://www.aristotle.com/campaigns [2] http://www.aristotle.com/campaigns/international-campaigns/

Queering Technological Infrastructures? Anatomy of a paradox. *Mary L. Gray, Microsoft Research / Indiana University; Mike Ananny, Microsoft Research / Harvard University*

Bowker and Star claimed that a "good infrastructure is hard to find" (1999). If it does its job right, it is ubiquitous, a seamless transfer of energetic meaning from one node to the next. That is, until it breaks down. Those moments of breakdown allow us analyze the political tussles embedded in and produced through the people, thoughts, objects, and ways of being that give infrastructures their shape. In doing so, those moments refract what sociologist Zymud Bauman might call our "liquid" state (2000). Infrastructures, by definition, formalize complexity as they tuck it away, out of sight. This opacity is necessary for them to smoothly functioning. Given the ethos and politics of queer theory and its focus on the messiness and mashups of identities and desires that come with upending the norm, the idea of queer infrastructure might seem like a paradox: how can sociotechnical systems that aim to standardize and facilitate ideals (organizing them and making them happen) simultaneously foster non-standard approaches or unanticipated ways of being (letting them emerge and helping them happen)? That is, how can infrastructures both constrain and afford a queer "space of possibles" (Bourdieu)? By "possibles" we mean potentials: affects (e.g., that aren't optimistic, hopeful, or out, the "shoulds" of LGTBness); identities (that aim to be unsettled or undone); social imaginaries (that aim to be unsettling or undoing). This essay uses a case studies approach to consider the cultural politics and technological remediations that shape the sociotechnical infrastructures of lesbian, gay, bisexual, and transgender (LGBT) advocacy campaigns. Specifically, we compare: the "It Gets Better"/IGB and "Make It Better"/MIB anti-bullying campaigns launched on YouTube in 2010 to an earlier form of "queer infrastructure"—the Gay and Lesbian National Hotline, formally launched in 1996, in New York City. Emerging media of a particular historical moment—nationally networked toll-free routed telephony—built the infrastructural backbone of the Gay and Lesbian National Hotline and its present-day iteration, The GLBT National Help Center. How does the viral capacity of the Internet extend—but also confound—brick and mortar non-profit advocacy groups built on these older sociotechnical systems? If infrastructure is performative, what kinds of performances do we presume in each of the cases and how is each resistant to queer possibilities that they foreclose? What does it mean to look at infrastructures in a field of power structured by professionalization? In this project we: (1) develop the idea of queering infrastructure, (2) situate it in relation to the professionalization of non-profit organizations, (3) trace its appearance across three distributed infrastructures,

and (4) consider the implications for expanding social movements, advocacy, and support in relation to the new aesthetics of engagement in online support organizations. Our aim here is not to critique the failings—or celebrate the accomplishments—of any one example but, rather, to see what kinds of readings can be achieved through ethnographic and archival interpretation of these advocacy infrastructures. Digging through these cases is a methodological move to see not only what different emerging media-inflected infrastructures silence, but also to see the broader "space of possibles."

065. (37) Design and displacement in energy system transitions: pasts, futures and presents - III

2:00 to 3:30 pm
Kilen: Ks43
Chair:
Catherine Butler, Cardiff University
Participants:

Towards a sustainable grid development? Comparing grid development regimes. *Ole Andreas Brekke, Uni Research, Stein Rokkan Centre for Social Studies, Bergen, Norway*; *Hogne Sataoen, Stein Rokkan Centre for social studies*; *Patrick Devine-Wright, University of Manchester*; *Susana Batel, University of Exeter*; *Etienne Bailey, University of Exeter*; *Martin Albrechts, KTH Royal Institute of Technology*

Several countries are currently facing the challenge of re-designing their electricity grids, due to the need to connect new renewables, a rising awareness on security of supply and ageing electricity grids. For that task, not only economic but also social and environmental aspects of grid development have to be considered. This paper examines grid development regimes in Great Britain, Norway and Sweden, and discusses the challenges and opportunities they present for a sustainable grid development. While the electricity grid in both Britain and Sweden historically developed in a centralized way, in Norway, grid development was decentral. In all three countries, the electricity sector was deregulated in the 1990s, resulting in a shift from state monopoly to private ownership in Britain and a shift towards public limited companies operating under market conditions in Sweden and Norway. But while cutting costs became the major priority in both Britain and Norway after deregulation, with drastically sinking investments in grid infrastructure, investments fell less drastically in Sweden. Today, however, investment needs are high in all three countries. We examine how need for grid development is argued and framed, specifically looking at planning processes, regulatory practices and public engagement issues. Similarities and differences between countries are discussed with reference to the distinct historical trajectories of each grid regime. Although converging tendencies in the planning processes are observed, the path-dependency in the energy sector still seems to be strong. This specifically concerns the way the central, regional and local levels are (not)integrated in the three regimes.

Designing and Displacing Future Energy Systems: Public(s), (Dis)engagement and Future Imaginaries. *Catherine Butler, Cardiff University*; *Karen Parkhill, Cardiff University*; *Nick Pidgeon, Cardiff University*

In discussion of energy systems, publics are often located at the end of a linear conceptualisation, positioned only as consumers or end-users. It is clear, however, that publics are deeply implicated in multiple aspects of the ways that energy systems are configured (e.g. as producers of energy, as citizens with voting powers, as active protesters or proponents of particular energy infrastructures or forms of energy, as workers in energy industries, as consumers in a wider sense with roles in buying new technological forms, as lay experts with particular knowledge insights, and so forth). With this multiplicity of roles in mind it is important to recognise that engaging diverse publics in energy system change will be imperative to the materialisation of envisioned transitions. In this paper, we report findings from innovative qualitative deliberative workshops about whole energy system transformations conducted with members of the public across Wales, Scotland and England during the summer of 2011. These workshops involved novel methods designed to engage people in reflection on energy system change, in particular, small group work with an online energy scenario building tool, and small group work with 'scenario narratives'. This paper will contribute to STS debates about the roles of publics in techno-scientific issues through an analysis of the ways that participants in our deliberative work (dis)engaged with different future imaginings and possibilities for change. We examine the ways that different aspects of envisioned futures are resisted, challenged or welcomed, providing insights into the potential for the displacement of current designs.

Public perceptions on new energy grid designs: A cross-country comparison. *Øystein Aas, Norwegian Institute for Nature Research*; *Patrick Devine-Wright, University of Manchester*; *Torvald Tangeland, Norwegian Institute for Nature Research*; *Susana Batel, University of Exeter*

Policy concerns about climate change are fostering large transformations in the design of energy systems in several countries. These also include upgrading and developing energy grids, namely through new high-voltage power lines. However, several of these new grid projects are being met with strong opposition from NGOs and local communities. It is then crucial to understand public perceptions about grid developments and how they may be related with different policy and technological designs for energy grids. For that task, in this paper we will present a comparative analysis on perceptions about three different grid development regimes, relying on data collected through surveys conducted amongst representative samples of the public in Norway, Sweden and UK. The survey investigated public's' knowledge, attitudes and beliefs about high-voltage transmission and distribution grids. Generally, the public in all countries accept the need for h-v grids, however the willingness to accept a new h-v powerline near where people live is less. Knowledge about power lines and grid systems is low, as well as knowledge and trust in the national grid companies. Planning processes are viewed as centralized top-down processes with few opportunities for locals to influence the process. Despite general similarities in the responses, the study also documents a range of differences between and among each public. The paper discusses these in light of the distinct characteristics of the grid development regimes in each country. Finally, we share some thoughts about the implications of the findings for a more sustainable design for grid development.

Design and displacement of interfaces between the social and the technical in energy transitions. *Jens Schippl, ITAS, Karlsruhe Institute of Technology (KIT)*

Triggered by different causes such as climate security, energy security or strategies for improving international competitiveness, a transition of the energy system is of utmost importance for many countries and regions. In Germany, such a transition was recently pushed by the political decision to phase out nuclear power. In consequences, many visions and concepts exist that outline potential future designs of such a transformed energy system. But in general such future-oriented studies concentrate on design and displacement of technical components in the system. However, energy systems are socio-technical system. A transition of the system is not at all limited to technologies but also the interfaces between technologies and society will change; the relationship between societal actors and the technologies will have to be re-designed as well. This affects established attitudes, perceptions and routines. In 2011, the

Helmholtz Alliance Energy-Trans was established in Germany to look at the transition of the energy system with particular focus on the demand side and on the interfaces described above. The presentation will give an overview on the 5 years running alliance. In doing so, the relevance of improved knowledge on potential developments along these interfaces for the understanding and the governance of energy transitions will be discussed. The presentation will consider methodological reflections related to the design of socio-technical system and the knowledge needed for such a design. It will be argued that a clearer focus on the design of these interfaces is needed to better understand and govern socio-technical systems.

Designing the low-income electricity consumer: pilot studies of dynamic pricing in the US. *Daniel Breslau, Virginia Tech*

Reforms in the retail pricing of electricity in the US aim to reconstruct the electricity consumer as a rational, knowledgeable, and calculating agent, who is responsive to large and rapid changes in the price of electricity. The construction of the new consumers involves a range of technological supports, such as smart meters, price-monitoring software, home automation systems, marketing, and consumer education programs. But coordinating all of these elements is a program of economic experimentation that assimilates the actual consumers to the actors of economic theory. Thus introduction of dynamic pricing systems for electricity in the US has been accompanied by an extensive program of pilot studies, randomized experiments, demonstration projects, and economic analyses. This paper examines pilot studies of pricing reforms in California and Maryland, in the context of political contention between proponents of the reforms and those opposing them as advocates for electricity consumers. The main focus of this contention is "low-income consumers," what their interests are, and who speaks for them. The consumer advocates argue that these consumers are vulnerable to price volatility, and have limited ability to adjust their consumption in response to price changes. The pilot studies subject consumers to the new price system, but in the context of an experiment that allows the assimilation of their behavior to economic theory, for instance, by estimating the price elasticity of demand for low-income consumers. Rather than the consumers' vulnerability to price risks, the economic research quantifies the benefits to consumers when they are able to adjust their consumption to changing prices. The economic research program, by articulating the agency of consumers with economic theory, put forth the rational consumer as a fait accompli.

066. (45) Feminist theory, values & ICT design - I

2:00 to 3:30 pm
Kilen: Ks48
Chairs:
Corinna Bath, Technical University Berlin,
Judith Simon, Karlsruhe Institute of Technology
Participants:

Gendered entanglements of human-machine-interferences. *Waltraud Ernst, Johannes Kepler University Linz*

This paper wants to contribute to a way of studying gender in technological processes and productions informed by a theory of gender that does not presuppose gender as a given binary or dichotomy. Drawing on the insights of Karen Barad (2007) and Lucy Suchman (2007) I will argue that Judith Butler's approach on performativity of gender (1993) is useful for the discussion of gendered entanglements of design practices. With her understanding of matter as a dynamic intra-active becoming Barad makes a claim to discuss the entanglement of matter and meaning as innovative methods for constructive interdisciplinary engagements. Following Suchman, the human-machine-interface is a dynamic process of materialization, in which meanings can change. This means, although newly developed technological

objects need to be recognized in their envisioned cultural environment, they always carry the possibility to lead beyond the replication of accredited norms. This means, gendered subjects and objects can experience in interaction new practices and new meanings of them, including their gendered meaning. By the effort to counteract, to fit or to perform along the norms produced by knowledge and ignorance of gender, sex and sexuality, we all contribute to prove what counts as knowledge at this very moment. It is in this way, I think, that not only our apparatuses and concepts shape the results, but all involved "subjects, objects, humans and non-humans or inappropriate/d others" depending on each other, mutually produce each other and the world.

Responsibility & accountability in ICT design. *Judith Simon, Karlsruhe Institute of Technology*

I take it as one central task of feminist research to examine and diagnose the changes, the problems, but also the chances of contemporary societies in order to strive for the better, to reconsider "the human condition from the vantage point of our newest experiences and most recent fears" as Hannah Arendt puts it (Ahrendt 1985). One of these new experiences which seems to pervade many, if not all aspects of our contemporary environment concerns the difficulty to attribute responsibility, to locate accountability in ever more distributed and entangled socio-technical systems. Think small - about the difficulties of finding and reaching the person to make responsible in case of a non-functioning internet connection? Think big – who's responsible for the financial crisis? Computer technology and ICT in particular has deepened and aggravated these issues. Think of artificial agents, search engine algorithms, the personal data handling of social networking sites; think of drones, robots in military and health-case or unmanned vehicles: who is responsible, and specially if things go wrong – who is to blame: designers, users, the technologies or rather the distributed and entangled socio-technical systems? Feminist theoreticians, such as Karen Barad and Lucy Suchman have offered theories and approaches to tackle the problems of responsibility and accountability in networked, entangled and distributed systems. In my talk I want to assess the merits and limits of these feminist approaches to understand and improve responsibility in computerized societies.

On Designerly Thinking and Feminist Thought. *Anna Croon Fors, Department of Informatics, Umeå University, Sweden*

This paper advances the potential in a merger of feminist and designerly thoughts. Since digital objects are not just adding to the already existing, but also transforms common existential grounds, we are in increasing need of accounts of digitalization beyond representationalist views on science and technology. That is, instead of fostering us with a sense of the digital as given, it is increasingly asserted that the meaning of digitalization should be regarded open, dynamic, multiperspectival and unfinalizable (Dourish 2001, McCarthy and Wright 2004, Verbeek 2008). In advancing this stance a particular focus is placed on experiences, skills and know-how affiliated with a designerly way of thinking (Cross 2011, Dorst 2011, Kolko 2009). Such thinking emphasizes abductive rather than reductive thinking and where what is not-yet constantly is a part of designerly judgments and interpretations (Nelson & Stolterman 2003). Since design theories and methods have a long tradition informing the field of Informatics in Scandinavia valuable tools addressing digitization in contemporary focusing on real consequences, interventions, creative possibilities, and responsibilities has always been part of the field. Entanglements, that Barad (2010) suggest are relations of obligation, bound to the other, as well as being indebtedness to. My research, worldview and concern revolves around such matters while also trying to stay attentive to significant others that are neither subjective, nor the objective but rather resembles the phenomenological third alternative – the lived. As such my attempt is to focus on the lived character between selves and otherness as cut together, rather than apart.

Participatory design and feminist interventions. Emancipatory potentials of public engagement. *Andrea*s Jackie Klaura, Department of Social Studies of Science, University of Vienna*

ICTs pervade our everyday lives. How we work, live, share, engage and communicate is shaped by products forged in big ICT companies, small nerdy start-ups, academic spin-offs or even in presumably egalitarian Free Software projects. In any of these cases the development is usually mainly driven by economic decisions on the macro level or developer assumptions and experiences on the micro level. Sometimes development includes usability studies, yet the intended use(r) is preconfigured. A rather different approach was developed in the context of Participatory Design. Inspired by a thrive for democratisation of technology and feminist interventions, Participatory Design projects integrate different publics into design and development of ICTs. There we find concrete technoscientific practices which embrace feminist epistemologies' demands for strong objectivity (Harding), situated knowledges (Haraway), agential realism (Barad) or process ontologies (Braidotti). In a Situational Analysis (Clarke) of Participatory Design researchers' views and reports, I relate concepts of participation, publics and interdisciplinarity. From this, a technofeminist (Wajcman) framework for the co-production of technologies and publics emerges. While in STS public engagement in technosciences is mostly framed at a policy level, I present participatory processes at the level of concrete technoscientific practices. This might inspire further work and stimulate important reflections regarding STS and its relation to public engagement. Furthermore it highlights the importance of feminist theory not only for STS but also the computer sciences, too.

Laboratory Studies as a Means of Feminist Intervention into ICT Research and Design Practices. *Göde Both, Paderborn University*

My contribution to the conference discusses laboratory studies as a means of de-gendering ICT research and design (R&D). Laboratory studies, informed by feminist theories, can be a tool in preventing problematic inscriptions of gender in technology (Bath 2009). Interventions at the sites of ICT research and design open up a space for challenging epistemological and ontological assumptions of ICT artifacts. Conceiving gender and technology as co-emergent calls for a "double constructivist" (Landström 2007) analysis of R&D practices; during the process of configuring technology and users, the gender identities of the designers are performed simultaneously. Without a stable cause for gender, de-gendering artifacts becomes a challenging endeavor. By reviewing recent ethnographic studies of ICT R&D (Weber/Bath 2005, 2007; Sefyrin 2009, 2010; van der Velden/Mörtberg 2011), I will highlight the potentials, limits, and issues of feminist laboratory studies. How do these studies account for the entanglement of gender and technology? What can STS learn from these examples? Gender is not only iterated by the designers, users, and artifacts; the ethnographic researcher, too, inescapably takes part in the performance of gender. The discussion will be followed by a brief presentation of my upcoming laboratory study on driverless cars.

067. (28) Responsible and sustainable innovation: differences, similarities and relevance for STS - I
2:00 to 3:30 pm
Kilen: Ks54
Chairs:
Jaco Quist, Delft Univerity of Technology
Harro Van Lente, University Utrecht
Ellen Moors, Innovation Studies, Copernicus Institute, Utrecht University, NL

Participants:

Acceptability of sustainable and responsible innovations: From public acceptance to co-production. *Eefje Cuppen, TU Delft; Olga Di Ruggero, TU Delft; Anne Lorene Vernay, Delft University of Technology*

Responsible innovation focuses on the desirability and acceptability of new technologies for society while sustainable innovation emphasizes their social and environmental impacts. We argue that the acceptability by 'the public' is a condition for both these innovations. In the field of STS a lot of work has been done on public acceptance of, and engagement with, new technologies. In this paper we critically reflect on the concepts 'public acceptance' and 'public engagement' from the perspectives of responsible and sustainable innovation. We will argue that the concepts of public acceptance and public engagement are not sufficiently equipped to deal with issues of acceptability in responsible and sustainable innovation. Public acceptance is technocratic, reductive and counterproductive. These arguments lead to an interactionist understanding of public acceptance , meaning that it should take values and perspectives of all involved actors into account as well as their interactions, rather than only those from 'the public'. Although 'public engagement' -and the related concept of public participation- incorporates this interactionist understanding, these concepts are not sufficiently equipped to be applied to bottom-up sustainable innovation processes. Therefore we will introduce the concept 'co-production' as an evolution of these two concepts. 'Co-production' conceptualizes responsible and sustainable innovation as transdisciplinary projects in which a diversity of actors, with diverse values and preferences, jointly produce knowledge and understanding necessary for sustainable and responsible innovation. We will argue that 'co-production' is more appropriate to deal with alignment of values and perspectives in responsible and sustainable innovation than 'public acceptance' and 'public engagement' and illustrate this with some examples.

Articulations of responsibility and sustainability in nanotechnology: Comparing fixed and fluid funnels. *Colette Bos, Utrecht University; Harro Van Lente, University Utrecht; Alexander Peine, Utrecht University*

Both sustainability and responsibility are broad 'umbrella' terms which can be filled in in many different, and sometimes even contradictory, ways. The relation between sustainability and responsibility, therefore, depends on how this is filled in. In this paper we trace the processes of articulation of sustainability and responsibility and analyze how they are interrelated. Frequently, these processes of articulation include two funnels: specification of broader terms into specific ones (top-down) and legitimating of activities by relating them to encompassing goals (bottom-up). Some specifications of sustainability have become taken for granted: when mentioning a solar panel, it is taken for granted that people know that this is sustainable. Other specifications of sustainability are not obvious and require explanatory work to connect them to the umbrella term in order to gain legitimacy. The funnels of specification and legitimacy can thus differ in the degrees in which they are fixed or fluid. The nanotechnology field provides interesting cases for studying processes of articulation: because this field is young the processes of articulation are explicit, which makes them traceable. This paper will investigate and compare a 'fixed' and a 'fluid' funnel case of nanotechnology. The fixed funnel is traced in nanotechnology for solar cells, while the fluid case is visible in nanotechnology for packaging material. Within packaging, sustainability can relate to many different and also contradictory aims, including responsible innovation. Consequently, this research will study the articulations of sustainability and responsibility and reflect on how these relate.

Technology Assessment for Knowledge Production: A

Framework for Analyzing the Conditions of Responsible and Sustainable Innovation. *Christian Büscher, KIT*; *Andreas Lösch, KIT*

Studies on Responsible Innovation (RI) and its "greener" sibling Sustainable Innovation (SI) are confronted with a well known challenge: to introduce normative orientation in processes of invention and innovation. To manage this challenge researcher have to assess the conditions of introducing normative criteria in the early stages of knowledge production. Approaches of System Analysis in Technology Assessment (TA) have taken on the task of comprehensively documenting and anticipating the desired and undesired social, economic, political, legal, as well as the technical and ecological consequences of purposeful and planned actions. In order to assess possible consequences TA has to be able a) to pinpoint the stage of evolution of observed topics, b) to analyze modes of learning of social systems, and c) to find normative orientation in concepts such as the 'precautionary principle' (reasonable concern about unwanted causalities), 'sustainable development' (maintaining social, economical and ecological functions), and 'participation/transparency' (inclusion of plural viewpoints). However, for RI and SI one has to find entry points to consider unforeseen causalities in research and innovation. Therefore we have to analyze the evolution of technological fields as processes of institutionalization, differentiated in stages of formulating expectation statements, scientific and/or political agendas, or, finally, technological paradigms. We like to discuss, in which of the respective stages unforeseen/unwanted consequences and sustainability issues can be recognized and implemented in the further course of innovation. The presentation suggests an analytical framework, which combines concepts of STS with systems analysis in TA.

Design junctions, transition arenas and performed interventions. *Ulrik Jørgensen, Aalborg University*; *Jens Stissing Jensen, DTU Management*

Transition arenas seem to involve a variety of new actor configurations going beyound the actors typically involved in government and business driven technology and innovation policies. This reflect the importance of new sites for change and the role of intermediary actors engaging in and bridging the constructed duality of production and consumption as well as infrastructure and utility. These include existing institutions like municipalities and grassroot organisations, but also re-opens avenues for other boundary crossing actor constellations. Design (or innovation) junctions has been used to characterise new sites for innovative activity as e.g. factories, officies and hospitals. In the perspective of sustainable transitions it seem relevant to explore the character of such design junctions in relation to arenas for transition as the demand for involvement and change seem to challenge and go beyond the platforms and corporatist structures dominating technology and innovation policy even though they increasingly engage in new configurations. One of the characteristics of transition arenas might be that they offer space for actors to perform new forms of cooperation and to build experiences through interventions. The paper will based on a number of cases of new actor configurations that engage in sustainable transition processes explore the relation between and usefulness of the concepts introduced: design junctions, transition arenas, and performed interventions.

Participatory Technology Assessment & Stakeholder Engagement for Responsible and Sustainable Innovation: a conceptual & methodological comparison from recent cases from the Netherlands. *Jaco Quist, Delft Univerity of Technology*

Over the last decade the concepts of responsible innovation and sustainable innovation have made impressive careers within and outside the STS community. Both are broad, encompassing concepts that embody unspecified, yet normative and desirable goals. Responsible innovation, on the one hand, focuses on how

new emerging technologies like in nanotechnology or life sciences can be said to be desirable and acceptable to society. It is studied how to respond to societal concerns and a broader range of social and ethical aspects in order to profit from benefits and to prevent unwanted side-effects. Sustainable innovation, in its turn, is about developing and introducing innovations that create environmental and social value in addition to economic value. It is studied how these innovations and underlying technologies are constrained by different kinds of 'barriers' that prevent them from broader use into society, or how sustainable innovations may have side-effects too, for instance due to displacement and unintended changes in socio-technical arrangements and practices in society. Methods and conceptualisations in studies of responsible and sustainable innovation both build on methods, theories and concepts from STS and (constructive) technology assessment, but do this in different ways. This paper will discuss differences and similarities of both concepts and relating them to their history in STS and Technology Assessment before turning to three? cases of stakeholder engagement for responsible and sustainable innovation conducted in the Netherlands: (1) Participatory backcasting for sustainable protein foods (2) stakeholder dialogue for biomass (3) stakeholder workshops & socio-technical scenarios for organics large area electronics, which will followed by a methodological comparison and an evaluation how the cases link to the concepts of responsible and sustainable innovation. It will be concluded by a discussion on the methodological implications for doing participatory technology assessment and stakeholder engagement focussing on criteria derived from the concepts of responsible and sustainable innovation?

068. (75+76) Design values - the materialization of building design/Digital models in technology and construction - III

2:00 to 3:30 pm
Kilen: Floor Ground floor - Ks71
Chairs:

Kjell Tryggestad, Copenhagen Business School
Chris Harty, University of Reading

Participants:

Exploring socio-material orderings in ethnography of architectural design. *Katrine Lotz, Royal Academy of fine Arts, School of Architecture*; *Marianne Stang Våland, Copenhagen Business School*

How can the socio-material assemblages involved in contemporary 'doings of architecture' be identified and studied? The paper discusses recent transformations within architectural design practice and the extended network of local actors and technologies mobilized in contemporary building construction. Interested in examining how the current requirements in the field are – and can be - handled in architectural production, we aim to contribute to the ongoing development of ethnography of Architectural Design (Yaneva 2008, 2009, 2012). In our research, we focus on recent requirements that are recognized to cause displacements – some of them deliberately installed to do so - in established architectural practice: The attempts to regulate and homogenize project-information in digital 3D/4D-models from very early stages of the planning; the manifest tendency of involving an increased number of actors in all stages of the building-process, and finally the increasing demands for documentation – 'evidence' – of the choices made over the course of the planning, in terms of issues like economical consequences and parameters for 'sustainability.' The paper will present empirical examples of planning in contemporary architectural design. We attempt to follow the actors in detail through their socio-material involvements and 'architectural inventions' such

as visualized motives of space, materials, atmospheres, building-parts and -components, and to explore how relations continuously tie and untie as a means to serve the new requirements. The aspiration is to produce concepts that unfold socio-material orderings and actor/processes involved in architectural becoming.

The sound of glass: an unheard(-of) dimension in architecture. *Annelies Jacobs, Dept. of Technology and Society Studies, Faculty of Arts and Social Sciences, Maastricht University*

This paper demonstrates and explains the mutual relationship between the deafening silence of the architectural discourse on sound and the application of big panes of glass. It aims to show how the deep-rooted preoccupation with visual representations of building designs displaced sound as an important aspect of architecture and urban space. Theoretically the paper builds on the history of twentieth century architecture and on publications within the humanities and social sciences that reflect on the relation between technology, culture and sensory experience. Empirically, it draws upon interviews with Dutch architects and the international exhibition Perception of Space (2004) in Rotterdam. It all started with Frank Lloyd Wright's fascination for the flowing space of traditional Japanese houses and the ensuing ideal of 'openness' and free-flowing space within twentieth century architecture. However, both Wright and his followers opted for openness in visual terms. They either simply forgot about the aural characteristic of the thin-walled Japanese house and its rice-paper screens, or did not know about it. Probably, they only studied plans and drawings of these houses without ever visiting them. Moreover, their visual preoccupation also inspired them to use glass-walls to suggest openness and free-flowing space, as glass is transparent or 'open' for the eye. However, for sound glass is far from 'open' and big panes cause annoying reflections. Managing the sound of space turned out to be a tedious problem that henceforth was delegated to an acoustic specialist. Sound thus devalued into a second order aspect of architecture.

Designing the observability of in-patients in single bedroom hospital wards. *Carole Boudeau, university of reading*

This paper is a study of architectural design work. It explores the relationship between the architectural design of a hospital and the organisation of healthcare activities within this building. The architectural project concerns the relocation of an existing NHS specialist hospital to the medical campus of the near-by university town (South of England). An important requirement that the NHS Trust, client of this project, made was that, from their work stations in the wards, nurses should be able to see at least 66% of the in-patients. This paper specifically focuses on some of the architectural drawings that were generated during the design of these bedrooms in order to exhibit how the problem of the 66% visibility of in-patients was worked out by designers. The analysis is grounded in ethnomethodology. It takes the architectural drawings and visualising tools as material features of designers' work and reasoning practices (e.g. Livingston, 2008). These material features exhibit: the configuration of the bedroom ward, the position of the nurse's station within it, as well as the materialisation of the nurses' gaze. The analysis of these architectural drawings renders manifest how they incorporate and prescribe real worldly healthcare practices in the so-designed wards. It therefore focuses on both the relationships between spatial design and the healthcare practices which are meant to occur in the would-be hospital; given the focus on relationship between the built environment and social activities, this paper is consequently highly relevant to STS.

Materiality and Visualization in hospital design: How big is big enough? *Chris Harty, University of Reading; Kjell Tryggestad, Copenhagen Business School*

Different forms of representation are ubiquitous in building design processes, circulating across and between various actors.

They are mediators in the development of design. The mobilization of multiple forms of representations and visualizations suggest that design materialization might have several important roles to play in negotiating the building design and project, including in the exposition and resolution of controversy in the design process. This paper describes and discusses two cases of design activity around single bed rooms in hospitals in Denmark and UK. Across many national healthcare systems, single bed rooms are being seen as the preferred alternative to more traditional ward-style accommodation, as it has advantages for privacy and dignity for patients, less disruption to other patients and better control of hospital acquired infections. But fundamentally, single rooms mean less hospital beds in the same building envelope – hence size of these rooms becomes a critical issue. The two cases document debates over whether the single rooms in a design scheme were big enough to allow necessary clinical activities to take place within them. The two cases both involve the use of different representations and visualizations – economic calculations, drawings, and virtual and physical models. We use these cases to discuss the roles of different sorts of representations and visualizations in design process, in terms of opening up and settling controversies (such as room size), in terms of the way they differently represent and visualize 'space' within the design, and in terms of the kinds of materiality and collaboration they perform.

069. Governing the food-health nexus: Practices and materialities - I
2:00 to 3:30 pm
Radisson Hotel: Radisson A

Eating, digesting, preparing and enjoying food are everyday elements of social life into which the study and application of scientific ideas and new technologies routinely intervene. Similarly, food's materiality -- including its perishability, contaminability, and digestibility -- continually evades scientific and technical mastery. Health sciences and food processing technologies thus play a central role in modern dietary practices and epistemologies. This double session examines the changing relationships between eating practices, governance, and materialities, particularly as they emerge from controversies over nutritional advice, 'healthism,' and risk reduction. Overall, the panel proposes that, by embedding technological, chemical, physiological and biological knowledge into the very design of techniques and technologies such as nutrition measurement devices, cooking or weight-reduction practices, regulatory mechanisms, and new foods, these practices transform markets, relationships of public-private institutional actors, as well as citizen-consumers' understandings of food. Papers encompass research about how diets, foods, ingredients, nutrients, scientific claims and health information are incorporated into public health and marketing campaigns and practices. This includes government guidance or standards as well as private and commercial activities. Each of the contributors to this double session explores a different set of actors and questions, but shares a common interest in the heterogeneous and contested character of the relationships between food and health.

Chairs:
David Schleifer, Columbia University
Xaq Frohlich, Independent Researcher
Bart Penders, Radboud University Nijmegen

Participants:

Securing Health: Defense, Industrial Bread and the Biopolitics of Nutrition. *Aaron Bobrow-Strain, Whitman College*

In 1951, on the tenth anniversary of War Food Order Number 1, which mandated synthetic enrichment of commercial white bread in the United States, nutritionists, public health officials, and the American Medical Association reflected that the introduction of vitamin-charged loaves (and their widespread acceptance by the American public) had achieved one of the most dramatic nutritional advances in human history. Thanks to the wartime campaign for synthetic enrichment not only had industrial white

bread been saved from alimentary impotence, Americans had also come to value—even crave—added vitamins in their food. Forgotten in the celebration, however, was how forcefully many health scientists had resisted synthetic enrichment ten years previously, acceding only as a matter of wartime expedience. This paper shows how synthetic bread enrichment emerged out of an uneasy alliance between war planners, chemical and food industry interests, and nutrition scientists as the most "practical" solution to the biopolitical problem of securing the health of the U.S. population in a time of crisis. It explores intersections between national security rhetoric and nutrition science (something that has once again come to the fore in the United States—this time in discussions of obesity). In the case of bread enrichment, the urgency of national security helped turn dietary reform movements in an unexpectedly "democratic" direction (sinking baking industry plans for promoting health breads as premium-priced status goods). At the same time, biopolitical urgency facilitated the erasure of dissent, cementing powerful associations between industrial food and national security.

"You'd have to be whack to be mad at information!". *Xaq Frohlich, Independent Researcher*

In the last few decades there has been a turn in politics to "informational regulation", the indirect regulation of products and safety through the use of information disclosures. In 1973, for example, the U.S. FDA shifted its food label regulations from "standards of identity" to informative labeling through three new agency rules: the introduction of a voluntary "Nutrition Information" label, the end of the use of "imitation" labeling, and the requirement of listing ingredients for all foods, not just nonstandard ones. This paper situates these efforts within a climate of proto-neoliberalism and early deregulation, where cross-party confidence in "letting consumers decide for themselves" led to a governmentality of persuasive tactics (information labels) rather than coercive ones (food prohibitions). It details several ways the FDA construed its implementation of the first nutrition label as a "modest" intervention: emphasizing the label's "voluntary" nature, playing up popular consumer support, and using "objective" numbers and nutrition over more subjective or politicized descriptions of food. The paper then describes the fallout of this "informational turn" in food politics by examining how it has constrained the terms of later debates over "commercial free speech", particularly those in the early 1990s with the introduction of the "Nutrition Facts" panel and in the 2000s with GMO labeling. The recourse to information labels and other models of "read the label" consumer advocacy, the very design of food "facts", presupposes a certain kind of rational, informed, and literate consumer-citizen, which this paper seeks to unpack.

Who has the guts to make health claims? Good and Bad Scientists in Europe. *Kim Hendrickx, University of Liège*

How can scientific statements be made in which molecules or bacterial strains figure as active food constituents, contributing to human health beyond basic nutrition? This paper traces the specific historical and political circumstances that gave rise to the above question, and how the issue is played out in the EU at present. Special attention goes to the European health claims regulation that is in the course of being implemented today. Often referred to as a 'learning process', this implementation has proven to be very difficult and sometimes conflictual, especially regarding claims related to the human intestinal flora. Here, the nature of scientific evidence and the boundary between food and medicine have become the stakes in discussions and contestations between the European Food Safety Authority (EFSA), new emerging groups such as 'gut health' scientists, and scattered critical voices throughout the Member States. Next to a subject of actual research, the 'gut' becomes a space of symbolic investment where 'good' and 'bad' bacteria echo the rivaling conceptions of good and bad science between the actors involved in the production and evaluation of health claims. It will be

shown that in addition to the rise of new professional identities, these frictions are also changing the meanings of 'nutrition' and the clinical trial.

The materiality of eating: specificities around fats in cooking practices. *Rebeca Ibanez-Martin, Spanish National Research Council*

Drawing from empirical data collected in during cooking sessions, this is a paper that seeks to unpack specificities around edible fats -as a material- and cooking -as a practice-. There is a nutritional expert discourse that explains the properties of fats. There is taste preferences. There is, also, cultural, economic, and political divisions in the uses of fats. Italian olive oil sells in gourmet stores whereas Palestinian olive oil sells in fair trade shops. But, how about practices? Fats are a quite elusive category in daily practices of cooking. On the one hand, fats are essential in the cooking process. On the other hand, fats are not understood in isolation, but in relation to something. Furthermore, there is a intimate dimension to the relation between human sensibilities and fats in cooking practices. Also, "fats contextualize your cooking". It would be contradictory to use olive oil in a Thai dish. But we also give meaning and contextualized fats in our daily cooking habits when put together with our personal stories. That is, fats are to be understood within a complex set of relations between materialites, sensibilites, and practices. This relationality erodes the individuality preached in nutritional theories and forefronts the collectiveness that shows how cooking and eating goes beyond and transcends the individual generating a common body.

The story of a risk object: cholesterol in Finland, ca. 1950–1980. *Mikko Jauho, National Consumer Reseach Centre, Helsinki*

The paper looks at the rise and discursive acceptance of a specific aetiological idea, the diet-heart link, and its role in the management of cardiovascular diseases in Finland. According to this idea, the types of fat in nutrition influence cholesterol levels in blood, which in turn affect cardiovascular health and mortality. This notion was put forward by Ancel Keys and others at the end of 1940s, was widely researched in the following decades, and became the foundation of nutritional recommendations and other policy measures in the 1960s and -70s – although it has been contested ever since its inception. Finland is an interesting case, since it became part of international research activities early on. Finnish males held record numbers in cardiovascular mortality. National researchers collaborated with Keys, conducted important intervention trials, and were thus instrumental in the network that established nutritional fat and cholesterol as risk objects. Such objects carry imputations of causality, give rise to regulatory activity, and organize institutional and personal practices. Special emphasis will be put on the epidemiological equipment employed in maintaining the diet-heart link. The role of nutritional fat and cholesterol in cardiovascular diseases was established in large-scale epidemiological research projects, which introduced the concept of risk factor into medicine. The paper ends with reflections on whether the diet-heart link and risk factor epidemiology forms a standardized theory-method package stabilizing nutritional fat and cholesterol as risk objects for intervention across boundaries to a multiplicity of interest groups.

070. Making Life visible: Material performances in the museum

2:00 to 3:30 pm
Radisson Hotel: Radisson B

Throughout history museums and collections have had a prominent position in the production and dissemination of authoritative knowledge. The claim to a position as neutral provider of popular education has, however, come under heavy attack within STS and cultural studies (Bennett 1995; Haraway 1984), and the focus has shifted towards studies of

how museums in multifaceted ways are producing rather than merely presenting – showing – facts. Museologist Wera Grahn has termed this phenomenon production of 'museal facts' in order to capture the often ritualised processes – collection, registration, classification, ordering, framing etc. – that objects go through in order to become intelligible in the display of knowledge offered by museums and collections (Grahn 2006). With this point of departure, the four papers of this session explore particular aspects of producing the facts of 'Life' offered in ethnographic, natural history, and embryological museums and collections. Emphasis is put on material-semotic practices intervening in and processing 'things' in order to transform them into museum/collection 'objects', hence procuring the visibility necessary to the establishment and dissemination of scientific knowledge of human and animal life. Such transformations rely on displacement in a very literal sense; the transport of things – from foreign places, natural habitats, the human body – into the collections and further on into display. Furthermore, in a historical perspective, the continuous re-arrangement of these objects of knowledge within new contexts may radically transform, and at times problematize, what they represent.

Chairs:

Sniff Andersen Nexø, Dep. of History, The SAXO Institute, University of Copenhagen, Denmark

Anne Folke Henningsen, University of Copenhagen

Participants:

Simian Bodies in Gothenburg Natural History Museum. *Liv Emma Thorsen, Dep. of Culture Studies and Oriental Languages*

Mounted animals evoke the concept of the chimera because they are composites. As scientific historian Lorraine Daston (2004) emphasizes, objects that are chimerical talk, or make us talk because they transcend boundaries and connect disparate elements. Departing from the displays of simian mounts in Gothenburg Natural History Museum this paper juxtaposes the neat taxonomy in the glass cases displaying apes, half-apes and monkeys and the labels attached to each mount. The simian bodies do what is expected in a natural history museum, they are pointers at the natural worlds in South America, Africa and Asia. The labels, on the other hand, unsettle the established order in the glass case by referring not only to the geographical habitat of the species, but also to the place where the animal died. Astonishing many of the simians on display died in Gothenburg. Thus the three words "Död i Göteborg" transform the naturalized animal from a species example to an individual; and they make the observer curious maybe less about the habits of the species in question, but more about of how and why so many monkeys lived in the city in the beginning of the 20th century. The answer provides us with a heterogeneous collecting history consisting of a variety of 'anecdotes', of politics, economy, human dreams, enterprise and ignorance.

Displaying and Displacing Knowledge of the Other. *Anne Folke Henningsen, University of Copenhagen*

Taking the ethnographic collections at the Danish National Museum as point of departure, this paper reflects upon the meaning making processes involved in the display of ethnographic knowledge to a public, non-specialist audience in a museum setting. In the term display I also include the processes of collecting the ethnographic objects and of designing the exhibitions so as to convey the desired knowledge. As Barbara Kirshenblatt-Gimblett (1998) has pointed out, museum exhibitions are never just passive carriers of content but in themselves powerful meaning making motors conveying specific messages. Based on this insight, I wish to analyse what museologist Wera Grahn (2006) with inspiration from Donna Haraway calls material-semiotic nodes – i.e. material objects through which meaning is (re)presented and negotiated – in the ethnographic collections at the Danish National Museum. At the centre of attention will be the design of the museal meaning making motors in the dissemination of knowledge of the world outside Europe. This includes displays in which the objects

seemingly unproblematic visualises the intended narrative, but also when the objects and the narratives have a more troubled relationship, and finally the displacement involved in the translation processes from collection to exhibition. In short, the dynamics of the ethnographic objects and their framing in the museum – the design and the displacement of ethnographic knowledge.

Discreet performances. How glass matters to embryo specimen. *Sniff Andersen Nexø, Dep. of History, The SAXO Institute, University of Copenhagen, Denmark*

Through more than a decade, researchers within the field of STS and the history of science and medicine have fundamentally challenged the notion of 'the foetus' as a reality of nature that preceded modern scientific knowledge production about it. Among those, anthropologist Lynn Morgan and historian of embryology Nik Hopwood have pointed to the complex social organisation of embryo collection, and the highly specialised and elaborate work of model and specimen production, systematisation and interpretation prerequisite to the emergence of the foetus as we know it today: The biological being developing through distinct stages from conception to birth (Hopwood 2000; Morgan 2009). Following this line of investigation into the practical work of 'foetus production', my paper addresses a particular issue of material performativity in the making of embryo specimen: I take as a case the collection of the Tornblad Institute for comparative embryology at Lund University, established in the 1930es, and comprising a vast amount of serial sections and wet specimens of vertebrate embryos, including human such. Within this frame, I explore how different types of glass – for processing, for fixing, for displaying – have partaken discreetly in the performance of the specimen. On this basis, I suggest that glass – rather by virtue of, than in spite of its pellucid and inconspicuous capacities – plays an active role in transforming perishable and unruly matter into stable, visible, scientific 'facts of Life'.

Producing nature through glass cases. *Brita Brenna, Centre for Museum Studies, University of Oslo*

In their ubiquity glass cases are emblematic of the museum, defining it and framing it. They are emblematic as signs for museum-ness; for a particular way of making things visible and out of reach. Theorizers of museums have often employed the glass case synecdochically, a part which stands for the whole. Glass cases have for example been portrayed as coffins for dead museum-objects. However, these critiques seem to threat the cases as black boxes which are not interesting in their own right, but rather self-evident museum features that do not need further investigation. STS opens blackboxes, this paper is an attempt at opening the glass cases, what is made through this machinery for nature production? How did glass cases acquire the capacity in the first place of converting dead animals into museum objects? This paper will look at glass cases in the natural history department at the regional museum in Bergen in the years around 1900, or more precisely it will try to look on and through the glass case; to examine the case, and to look for what it makes of what is inside. Nature is designed and displaced through glass cases, but most importantly, what is produced is nature in many versions – probably – how to disentangle these through opening up the glass case is both the methodological query and the empirical question in this paper.

Truth Spots by Design. *Tom Gieryn, Indiana University; Kathleen Oberlin, Indiana University*

When evaluating contemporary sites how do we know when a museum qualifies as a 'truth spot' or is in danger of being rendered a modern day 'curiosity cabinet' (Gieryn 2002; Findlen 1999)? In the American Association of Museums' definition, they assert a museum must maintain collections and interpret things of 'this world.' Yet it becomes paramount to examine how the natural history museum-form developed in relation to built

design decisions and collections encouraged or denied claims for them to be rendered as a site through which to establish truth. We identify, in accordance with STS scholars, that natural history museums evolved as places to display the wonders of science making the publicly-accessible case for science as credible, useful, and authoritative, and eventually as a place that differentiated between what counts as things of this world. However, the museum as a truth-spot continues to be wrestled over with challengers that emerge to expose entangled roots complicating not only claims of consensus and secular knowledge, but also how to establish such claims in one site. Through an examination of historical and contemporary case studies, we contend museums' negotiation of technological advancements call into question the contemporary design and role of museums, specifically the centrality of physical collections and on-site scientific research. Yet, most importantly this process reflects how the natural history museum-form's agglomeration of claims in one site for public display may be subject to external groups challenge during this period of reassessing what and who determines a museum as a truth-spot.

071. (43) Childhood, values, and digitisation - I

2:00 to 3:30 pm
Solbjerg Plads: SP112
Chairs:
Irma van der Ploeg, Zuyd University
Isolde Sprenkels, Zuyd University
Participants:

Translate, visualize & displace: Digital modes of risk assessment in Dutch youth care. *Karolina La Fors-Owczynik, Zuyd University, Maastricht*

Prevention modes in Dutch youth care are increasingly predicated upon digitally identifying, profiling and demarcating children considered 'at risk' and those seen 'as risk'. This involves definitions and translations of complex youth care problems, such as abuse or bullying, into risk criteria and technological design. Through such translation processes, values, such as 'child safety' or 'protection from juvenile criminality' become displaced. The Reference Index High-Risk Youth is a risk alerting system amongst Dutch youth care organisations, and involves the registration and sharing of 'risk images'. This requires dynamic interpretations and enactments of risk criteria by individual professionals of different disciplines and organisations. The technology-mediated 'risk images' appear to be central as to how they (re-)configure understandings about risks, and contribute to displace values. One example of such displacements occurs, when 'child safety' becomes translated into the communication of risk signals and criteria to profile children 'at risk'. A second displacement emerges, when 'protection from juvenile criminality' is translated into the communication of risk signals and criteria to profile children 'as risk'. When sharing risk signals becomes a measure of success for improving prevention in itself, this points to a third displacement. This paper investigates how such displacements occur through the ways in which youth care workers engage with the Reference Index and 'risk images' in their daily practices. For the analysis, empirical data is provided by system demonstrations and interviews with professionals. Finally, the paper aims to contribute to the STS literature on visualization (Latour, 1986; Burri & Dummit, 2008).

Profiling 'at-risk youth': Data mining and values in crime policy. *Francisca Grommé, University of Amsterdam*

Crime policy professionals find 'at-risk youth' particularly hard to grasp, because their regular sources of information do not help them understand the local contexts in which youth commit offences. In 2010 a Dutch city initiated a pilot to learn whether they could find neighbourhood-specific profiles of youth

behaviour with data mining. Data mining is a statistical technique in combination with software that finds patterns in large amounts of data without choosing the variables in advance. The city's aim was to create 'proactive' youth policies, such as targeted information campaigns. In this paper I examine how the values related to proactive youth policies (e.g. 'protection') emerge and shift during this pilot. As is often argued, values can be reconfigured by the scripts embedded in a technology. Here I aim to refine this notion by showing how values are articulated as part of everyday practices that, in turn, matter to how values are reconfigured. In particular, I view values as 'goods' that are performed by the use of professional knowledges and artefacts (Mol, 2008). In the paper I present ethnographic portraits of two policy officers. First, I show how marketing techniques and consumer profiles, as used in data mining, became part of the knowledges and artefacts that the policy officers would draw together to perform the values of proactive policies. Second, I give an account of a value clash that was closely intertwined with a debate about scales of analysis and correlations, thereby suggesting the embeddedness of values in everyday statistical practices.

Digitization in child welfare: 'raising' contrasts, reducing ambiguities. *Inge Lecluijze, Maastricht University; Bart Penders, Radboud University Nijmegen; Frans J.M. Feron, Maastricht University; Klasien Horstman, Maastricht University*

Paper files disappear, while digital infrastructures shoot-up. What does digitization do? In Dutch child welfare, an 'early warning' electronic information infrastructure – called the Child Index – is currently implemented. This Child Index is considered an important tool to stimulate early detection of children 'at risk' and it should enable different kinds of professionals to collaborate and to coordinate care. The Index enables professionals to enter a digital signal into the system that a child is considered 'at risk' and in case of multiple signals, the Index requires coordination. This way, it is thought, children 'at risk' will get better care sooner. The question is whether in practice this digital technology lives up to its promises and expectations. Based on empirical data, which are gathered by following stakeholders' experiences with the Child Index in daily practice, I will show that digitization is not a neutral process, as it transforms analogue assessments into digital evaluations, thereby reducing ambiguity and raising contrasts. Besides the fact that the meaning of 'risk' is blown up which is reflected by professionals' displaced language ('signalling' becomes 'reporting' a child), the materiality of the infrastructure also increases contrasts. While it first enabled classifying signals as low, high, urgent, currently it only enables to enter a signal or not. In practice, professionals compensate this digitization process by working around the Child Index in order to reconstruct analogue spaces which they consider a requirement to help the child-in-flesh.

Constructing a Self on Facebook: Teenage patients, privacy, and autonomy. *Maja van der Velden, University of Oslo*

This paper reports from a study among long-term ill teenage patients in a children's hospital in Canada. Semi-structured interviews with the teenagers focused on the question of if, and how, they shared their personal health information in social media. Content analysis was used to inductively derive codes and themes from the transcripts. The findings show that teenage patients apply their privacy awareness to advance their self-definition and self-protection in social media. Self-definition refers to how they present themselves on social media, as an 'ill' teenager or as a 'normal' teenager. Self-protection refers to the need to protect themselves against feelings of vulnerability, embarrassment and difficult questions. This paper's contribution to STS literature lies in its exploration of autonomy. The teenage patients' self-definition and self-protection can be understood as

enactments of their autonomy. I will discuss this autonomy in two accounts of autonomy: embodied autonomy (López and Dòmenech, 2008) and autonomy-in-relation (Haraway, 2008). A relational and multiple understanding of autonomy makes new practices at the human-machine interface visible: teenage patients use Facebook to construct a self and to take care of themselves, even if Facebook is not taking care of them.

072. Postphenomenological research: theoretical contributions

2:00 to 3:30 pm
Solbjerg Plads: SP113

Over the past decade, the 'postphenomenological' approach to science and technology has come to play an ever growing role in science and technology studies. As it developed out of a fruitful interaction between philosophy and STS, it has come to inspire both philosophers of technology and scholars working on empirical studies of science, technology, and society. By articulating notions that can be used and further developed both in empirical studies and in theoretical work – like mediation, multistability, and human-technology relations – postphenomenology is increasingly adding helpful perspectives to other approaches in STS. The four panels we propose each focus on a different aspect of the postphenomenological approach, in order to explore its methods and its possible implications for STS and empirical philosophy of technology. Panel 1 focuses on theoretical contributions; panel 2 on empirical perspectives; panel 3 on new human-technology relations; and panel 4 on philosophical implications.

Chair:

> **Peter-Paul Verbeek**, University of Twente

Participants:

> It Takes Both Postphenomenology and STS to Describe Mundane Artifacts. *Robert Rosenberger, Georgia Institute of Technology*
>
> Because the postphneomenological perspective is adept at describing an individual user's embodied relation to technology, and because STS perspectives such as ANT and SCOT are adept at describing the ways technologies are informed by social dynamics, it is sometimes suggested that both postphenomenology and STS are crucial for any complete account of an artifact. But more needs to be done to integrate these perspectives since not all aspects are immediately compatible, and since defenders of each tend to bristle at the implication that their own perspective is not already complete. Here I focus on postphenomenology's notion of multistability, that is, the pragmatic claim that a given technology can always be used for multiple purposes, and yet at the same time is restricted by its materiality to only some purposes and not others. I argue for the importance of the notion of multistability for STS approaches, and as a guiding example I examine the everyday handrails and ledges that play one role as public space artifacts found in parks and plazas, and that simultaneously play another role as sporting obstacles on which skateboarders perform tricks. In particular, I consider the example of Philadelphia's JFK Plaza, or "LOVE Park" as it is locally known, which for a time served as a major skateboarding destination despite never having been designed for that purpose. My contention is that STS accounts such as ANT, SCOT, and Madeline Akrich's script analysis are crucial for understanding the history of the handrails and ledges of the park, and yet these accounts also remain incomplete without an understanding of embodiment and multistability.
>
> Postphenomenology vs. "Postpsychoanalysis": Digging into the Technological Unconscious. *Yoni Van Den Eede, Free University of Brussels (VUB)*
>
> This paper is an experimental-philosophical attempt at applying Freudian psychoanalytic concepts to the study of technological design. Within the latter the notions of human-technology relations (Ihde, Verbeek), artifactual agency and morality (Latour, Verbeek), and the 'technological unconscious'

(Feenberg) seem to attest to an understanding of technology in terms formerly reserved for "human" endeavors. In taking this strand of analysis a step further, can we go as far as probing the "psychology" of technologies? Methodologically, we proceed through five steps. First, a brief sketch of the historical but complex relations between phenomenology and psychoanalysis is in place. Second, we ask in how far the aforementioned concepts have heralded a "psychologization" of technological objects (corresponding perhaps to an "objectivizing" take on psychology prevalent since a few decades). In a third step we connect these conceptual tools to Freud's account of psychological topology, functioning, and pathology: in how far can we say that technological design exhibits psychodynamic characteristics? Which leads us, fourth, to the issue of practical applicability: if technologies to a certain degree "work" according to psychological principles, can we then, in case they fall victim to "pathologies," "better" their condition via some form of psychoanalytic "treatment"? In a last step we ask whether, to really make psychoanalysis work for the analysis of technology design, we are not in need of a "postpsychoanalysis" that – like postphenomenology – creatively moves beyond the boundaries of its mainly human-centered field of origin in order to engage with the dynamics of objects-in-networks.

> Postphenomenology follows art to science to art. *Don Ihde, Stony Brook University*
>
> Drawing from earlier work on the camera obscura's use in both art and science, this paper will examine new roles on photographic imaging in both art and science practices. I will focus upon embodiment skills in both practices and upon the interactions between art and science contexts. A brief examination of changed portraiture histories will also illustrate the main themes of the analysis. For example, the introduction of photography had very similar impacts and trajectories which paralleled the earlier introduction of modern printing with respect to praxis transformations

073. (87) Ignorance by design. rethinking knowledge, anti-knowledge and the unknown in STS - III

2:00 to 3:30 pm
Solbjerg Plads: SP114

Chairs:

> **Matthias Gross**, Helmholtz Centre for Environmental Research - UFZ
>
> **Linsey McGoey**, University of Essex

Participants:

> "I don't watch the news anymore and I haven't died": Strategic Ignorance and Zoonotic Disease. *Simon Carter, Open University; Stephanie Lavau, University of Exeter*
>
> In our research on the interface between animal health and public health, we have noted that lay people often strategically invoke notions of ignorance in positioning their own knowledge in relation to scientific, public health and media understandings of zoonotic disease risks. The period in which we conducted ten focus group with UK citizens (2011-2012) was marked by a number of zoonotic disease events – past, present and future. These included: a recent swine flu epidemic, which prompted a large scale public health campaign; on-going concerns about future outbreaks of avian flu; a recent outbreak of E.coli amongst children visiting a petting zoo; and a number of incidents of foodborne diseases, the most notable being the E.coli contamination of beanshoots in Germany. While referring to these events, respondents marshalled distinct discourses of ignorance and non-knowledge as an active choice and strategic resource, rather than a mere lack of understanding arising from passivity. In this paper we explore several forms of such expressions of ignorance, including: the intentional bracketing out of unknowns (e.g. as an 'ignorance is bliss' strategy for

avoiding anxiety); awareness of lack of information that was considered unimportant (e.g. as a strategy for distributing attention to other concerns); and dynamic mindfulness that further knowledge may be dangerous (e.g. both because 'knowledge' may make daily decision making impossible and as a strategy for living with the perceived inevitability of new, emergent diseases).

Performing the (unknown) home of ubiquitous computing.
Charalampia Kerasidou, Lancaster University

When the ubiquitous computing (ubicomp) community turned its attention to the home and the domestic sphere - which a few years after Mark Weiser's first articulations of ubiquitous computing was proclaimed as the next big thing - there was a proliferation of voices ready to modestly confess their ignorance and perplexity on the topic. We know that the home is different, they would assert, what we don't know is in what ways it is different. Through their proclamations that a fundamental research problem in designing for the domestic environment is to understand the everyday nature of homes and how people live in them, these voices urged for further investigations, for different and better ways of 'knowing' the home in more 'intimate' ways. But what does it mean for the home to become known? Under whose gaze can space from unknown become knowable and who benefits from such knowledge? My paper seeks to explore the above questions by tracing the relational ways through which home and ubicomp community are performed and co-produced. In other words, I want to trace the efforts of the ubicomp community to perform the home as unknown and only knowable by them at the same time as they seek to establish themselves as a distinctive and expert disciplinary voice.

074. Technologies of subjective space
2:00 to 3:30 pm
Solbjerg Plads: SP205

Recent social theories attempt to conceptualize space in its relation to subjectivity in ways that go beyond the idea of a container on which to map its movements and functions. The emancipation from abstract functional space (or from the neglect of space altogether in favor of process) opens to a variety of spatial turns – different ways in which space can be related to human practice and meaning – from territorialization to situated learning, from heterotopia to action contexts. However, once space is free of function, it often recedes to the role of a metaphor for frames, modes of ordering, or experience. In this session, we seek a more practice-based approach to spaces as 'subjective'. We explore how spaces are constituted BY, WITH, and AS technology, and at the same time by subjects and for the development or disciplining of subjects. We try to harness the potential for learning about this design of 'subjective space' from technologies and practices that form and are formed by particular spatialities or sites. In our different fields, 'science and technology' appear in two versions that interact: One is in the common sense notion of material artifacts designed with natural science and used in everyday life; the other is a broader concept of standards immanent to practices and embodied in things and habits.

Chair:
Morten Nissen, Dept of Psychology, University of Copenhagen
Participants:

Space as Machine and Ideological Index in Social Work. *Mads Bank, Department af Psychology, University og Copenhagen; Morten Nissen, Dept of Psychology, University of Copenhagen*

Like in fields such as health care and education, social work defines certain situated encounters ¬or activities – e.g., the residential institution or the series of group therapy sessions – at once as its collective units and as its technical means. In this 'technology of collectives', space is often both a set of (sometimes deliberately designed) conditions, and an index of the collective that is formed and forming itself. This is not only the case when 'methods' or are referred to by the name of their place of origin (e.g. 'Minnesota' institutions), but also in the unfolding practices in or at such places – as when intimacy is indexed to the closed door of the counseling room, or 'scientificity' signified by the one-way mirror. In these activities, the thingness and affordances of spatial arrangements form part of the processes that constitute common sense. As such, space is a challenge to any conceptualization of the standards of social work. Interesting paradoxes arise in spaces crafted as spatio-technical 'machines' for counseling - which is performed as at once tightly located and cross-contextual. As when the heterotopian standard of a naked therapeutic space obstructs the forming of a talking collective of young people, so that other technologies must be applied to re-configure the room as a talking-space. The paper will draw on empirical examples to explore how we can conceptualize the production of spatio/technical 'machines' for talking collectives. It is designed with the purpose of preparing analyses of user-driven standards in the counseling of drug users.

Emplaced Standards/Subjects: Bridging Theory and Methodology in Media-Technological Intervention. *Stephan Sieland, Department of Psychology, University of Copenhagen*

Along with the rapid development of new media technologies (like smartphones, laptops, tablets and other handheld devices), forms of intervention in social work are being dislocated from face-to-face interactions in physical spatialities and allocated to "face-to-interface" interactions. Looking from the perspective of social workers and psychologists, standards of e.g. health, education, family and peer group interaction, drugs and alcohol use etc. can be innovatively (re-) created and maintained via e.g. apps, sms- and internet-based technologies. However, from the perspective of their clients, these standards enter into and are re-modeled by the complex web of cultural references that subjects have access to via the same and other media technologies. The media-technological spaces thus co-constitute a space of struggle where subjects both utilize and are subjected to multi-sited media-technological practices and their standards. In order to conduct research on the governance/disturbance of subjects and standards implied by new media technologies, this paper argues that both theory and methodology must align with the co-constituting specificities of these technologies. Due to their perceptuality, i.e. visual, auditive and tactile/touch modalities of mediation, new media technologies can "double" physical space whilst also creating new spaces. If we approach the dialectic processes of standards and subjects via traditional theories and methods (like discursive and narrative approaches), we might be unable to capture the specific perceptual implications of media-technological spaces. This paper will attempt to overcome this problematic by suggesting an "emplaced" approach to the media-technological implications for the governance/disturbance of standards and subjects in social work.

Self and Other in Digital Learning Spaces. *Ernst Schraube, Roskilde University*

The teaching and learning spaces at universities are in transformation. With the incorporation of electronic technologies like ipads, smart boards and electronic platforms like "moodle" new digital spaces are emerging in educational practices. These technological spaces are not only useful tools expanding human activities, they are also powerful socio-political "forms of life" (Langdon Winner) constituting the relationship between self and the other and transforming fundamentally the practices of teaching and learning and the processes of generating knowledge. This paper explores the meaning of digital learning spaces at universities focusing on their implications for the learning processes of students. Usually studies of technology and learning identify teaching with learning and conceptualize research from an external, third-person standpoint. Starting with a discussion of the paradoxes of the teaching-learning short-circuit I argue for a

systematic inclusion of the learning subjects into the research and develop (informed by the work of Yrjö Engeström as well as Klaus Holzkamp) the analytical concepts of defensive versus expansive learning. Based on these conceptual reflections I will present some thoughts what kind of learning concepts and understandings of self and other are materialized in digital learning spaces and how these spaces relate to the development of expansive learning.

Health, Illness and Biosocial platforms. *Paula Gonçalves da Silva, Faculty of Medicine of Porto University/ Institute of Molecular Pathology and Immunology of the University of Porto (FMUP/IPATIMUP); Joao Arriscado Nunes, CES University of Coimbra; Rui Mota Cardoso, Faculty of Medicine of the University of Porto/ Institute of Pathology and Immunology of the University of Porto (FMUP/IPATIMUP)*

In contemporary societies, the relationship between patients and health professionals is undergoing substantial changes, associated with the growing recognition and empowerment of patients as active participants in deliberations and decisions associated with the management of their condition. Within this context, adequate knowledge of disease/illness increasingly depends on the dialogue between patients/citizens and experts/ professionals. This paper reports on a multidisciplinary project entitled "Knowing disease: patients first", funded by Calouste Gulbenkian Foundation in collaboration with the Institute of Molecular Pathology and Immunology at the University of Porto (IPATIMUP) and the Centre for Social Studies (CES, Associate Laboratory, University of Coimbra). Action research (Lewin, 1946) is the qualitative methodology adopted in this project, which main goal is to contribute to establish iterative arenas that place patients, their experiences and their expectations at the centre of those collaborations. The co-production of patient-centred knowledge between patients and experts is the core of biosocial platforms and correspond to the emergence of renewed alignments of experiential and biomedical knowledge of disease/illness. This is of particular interest in the case of Portugal, where patient-focused health care is constrained by a tendentially hospital-centered public health service.

075. (01) Clinical research in post-genomic medicine - III

2:00 to 3:30 pm
Solbjerg Plads: SP207
Chairs:
Alberto Cambrosio, McGill University
Peter Keating, University of Quebec, Montreal
Participants:

Multiple Scientometric Perspectives on Medical Innovation: Using the Medical Subject Headings (MeSH) of PubMed in the case of "RNA Interference". *Loet Leydesdorff, University of Amsterdam; Daniele Rotolo, SPRU-Science and Technology Policy Research, University of Sussex; Ismael Rafols, University of Sussex*

Multiple perspectives on the nonlinear processes of medical innovations can be distinguished and combined using the Medical Subject Headings (MeSH) of the Medline database. Focusing on three main branches—"diseases," "drugs and chemicals," and "techniques and equipment"—we explore the use of base maps and overlay techniques to investigate the translations and interactions and thus to gain a bibliometric perspective on the dynamics of medical innovations. To this end, we first analyze the Medline database, the MeSH index tree, and the various options for the static mapping from different perspectives and at different levels of aggregation. Following a specific innovation (RNA interference) over time, the notion of a

trajectory which leaves a signature in the database is elaborated. Can the detailed index terms describing the dynamics of research be used to predict the diffusion dynamics of research results? Possibilities for further integration between the Medline database, on the one side, and the Science Citation Index and Scopus (containing citation information), on the other, are specified.

The Emergence Of New Technologies: A Multi-Perspective Analysis on The Case of HPV Molecular Diagnostics. *Daniele Rotolo, SPRU-Science and Technology Policy Research, University of Sussex; Michael M Hopkins, SPRU - Science and Technology Policy Research University of Sussex; Ismael Rafols, University of Sussex*

Emerging technologies represent important opportunities for nations' growth and wealth. They have the potential to create or change industries and sub-sectors favouring then innovation. Given the central role emerging technologies play, we aim to investigate the phenomenon of emergence in order to disentangle its complexity. We adopt an institutional-evolutional framework combined with a multi-perspective approach that includes scientific disciplines, technological areas, actors and institutions involved in the process of emergence. To this end, qualitative (historical analysis and interviews) and quantitate (bibliometric methods) techniques are jointly used. We focus the analysis on the process of emergence of Human Papilloma Virus (HPV) molecular diagnostic tests since the conception of this approach in the 1980s. HPV diagnostics are one of the most promising technologies for cervical cancer screening, with a market of 100+ million tests performed annually. Findings reveal the emergence of HPV diagnostics mainly driven by (i) the potential the technology has for the development of more reliable tests and (ii) companies seeking new technological opportunities to compete with the established Pap test. Our paper makes contributes in two respects. Firstly, we show that emerging technologies may co-exist, rather than replace, established ones especially in environments characterized by strong regulations and entrenched institutions. Secondly, we highlight how adopting a multi-perspective analysis combined with mixed qualitative-quantitative techniques is helpful to investigate the process of emergence since it provides a broader view of the phenomenon without losing connection with the empirical reality.

Anticipating promises of personalized genomics in research and clinical care. *Jennifer Fishman, McGill University; Michelle McGowan, Case Western Reserve University*

"Personalized Genomic Medicine" (PGM) is a label that has emerged to capture the goal of using molecular tools to develop individualized, predictive, and preventive health interventions. Widespread acceptance of PGM as a new paradigm within clinical medicine is reflected in the academic medical centers in the United States that have designed "personalized medicine" programs and centers in anticipation of the realization of the translation of genomic research into clinical applications. Through an analysis of qualitative interviews and case studies of select personalized medicine programs, this presentation explores the perspectives of key actors within these PGM programs at academic medical centers in their attempts to integrate personalized genomics into clinical research and clinical care. We explore the ways in which this "vanguard" conceptualizes the socio-structural and political landscape of PGM and the implications of the relationship between their views and the axiological commitments of PGM itself. This allows us to probe the values that drive and shape the entire enterprise of PGM from within the academic medical industrial complex and draw attention to how the anticipation of PGM is coupled with mundane infrastructural and socio-technical details of the practice of science that are likely to complicate the realization of the much hyped goal of personalized medicine.

Risk Genomics and the Pharmacogenomic Enterprise:

Personalized Medicine in Research and Clinical Practice. *Ramya Rajagopalan, University of Wisconsin-Madison*

This paper explores some of the ways that the burgeoning push for "personalized medicine" is being realized by the instantiation of pharmacogenomic approaches in clinical practice. It argues that the research/clinic complex in US biomedicine is a key site in which these practices are taking shape, drawing from ethnographic fieldwork done at such a site. Current visions of personalized medicine, as practiced at such sites, are built around a discourse of risk that permeates medical practices of drug prescription, drug dosing, and drug monitoring. Within this conceptual space of risk and risk-based practices, a convergence is growing between the production of knowledge around how pharmaceuticals act in bodies, and the production of knowledge that aligns predispositions to drug reactions with differences at the level of individuals' DNA. Practitioners argue that knowledge of such differences may help mitigate risks associated with drug dosing. Thus pharmacogenomic efforts to realize personalized medicine are helping to establish and sustain linkages between genetics studies and drug development on the research side, and between genetic testing and drug dosing on the treatment side. This paper develops the concept of "risk genomics" to theorize this emerging set of practices and discourses about genetic risk and prescription drug management in clinical care. It uses the concept of risk genomics to analyze a case in which the pharmacogenomic enterprise has quickly translated results on a highly-prescribed drug from "the bench" to "the bedside."

Systems Biology: When is Scientific Vision Immoral? *Sophia Efstathiou, Norwegian University of Science and Technology*; *Rune Nydal, Department of Philosophy. Norwegian university of science and technology*

Medical systems biology in general and personalized medicine in particular are currently prominent areas of technoscience promises and futures. Different promises are made to different audiences, with different effects. Imagining what is possible and sharing these imaginings is a key driver of creative scientific work. But when is scientific vision immoral? How is honesty possible to match with dreaming? This paper is an outcome of an ELSA research project experimenting on how integrating philosophy in a systems biology research group can make a difference in project design. Through a collaboration between philosophers and systems biologists faced with these issues we attempt a principled articulation of how scientific vision can be productive and ethical, and relate this to the case of medical systems biology. Following Raymond Geuss's analysis of ideology (The Idea of a Critical Theory, 1981) we offer distinctions between a. epistemic, b. functional and c. genetic properties of a scientific program and propose that these matter for establishing its ethos: a. the truth or falseness of the content of its claims, b. whether the envisioned use or actual function of the program entails the excessive oppression of moral agents and c. whether drivers actually giving rise to the program match agents' motivations can singularly or jointly affect its moral quality. The scope of systems medicine epistemic claims, how targeted audiences are affected and whether those engaged in medical systems biology accept both manifest and latent drivers of a systems medicine program matter in telling when its visions are legitimate.

076. (02) Establishing expert knowledge: local work in clinical trials sessions - I

2:00 to 3:30 pm
Solbjerg Plads: SP208
Chair:
   Sarah Wadmann, University of Copenhagen
Participants:

Clinical trials as gift relationships. *Heta Tarkkala, University of Helsinki*

Patients as volunteers and donors are an important resource for biomedical research. In previous research on biobanking, their participation is often explained by altruistic motives. In this perspective, people are willing to participate when asked and when they feel they can help. However these altruistic motives have been increasingly questioned in research. By using Mauss' ideas of reciprocity and gift-giving, I have analysed patients' participation in clinical trials neither from the viewpoint of desire to help nor from self-interest, but from that of trust formation. The presentation is based on qualitative analysis of interview data with patients diagnosed with chronic myeloid leukemia. Viewing patients' participation as reciprocal gift-giving helps to understand the ways in which emerging social relationships promote the continuity of research activities. When care from welfare institutions and research conducted through university are intermingled, specific settings for people to attend biomedical research as participants and patients are created. The participation thus functions as an option for patients to develop a close relationship with their doctors and strengthens their hope. The resulting trust is crucial for patients' positive attitude towards research practices in the future, which works for the benefit of the doctor-investigators. In this circle of reciprocities between doctor-investigators and patients, trust and hope become crucial foundations for continuity of research activities, including biobanking. The circle of reciprocities also raises further questions about the possible complexities of trust embedded in biomedical research practices.

Closeness and distance: Emotion management in clinical drug testing. *Sarah Wadmann, University of Copenhagen*

This paper explores relationships between research staff and study participants in a multi-centre, phase-III cardiovascular drug trial. Based on an ethnographic fieldwork carried out in four Danish clinical research sites between May 2010 and March 2011 and interviews with project nurses, clinical investigators and study participants, the paper examines the tacit and explicit negotiations between research staff and participants to show how staff-participant relationships come to imitate an ideal picture of a family practitioner-patient relationship. I argue that research staff seeks to balance their dual role as clinicians and researchers through the management of emotional intimacy with participants. Further, I suggest that the boundary work researchers perform carries important implications not only for the possibility of obtaining clinical data about drug effects and safety but also for improving the quality of chronic care. The paper also discusses the way that boundary work in the clinical research context contributes to understandings of research ethics and fairness by responding and adhering to the principle of referral in the national healthcare system. This paper contributes to the STS-literature on boundary work by providing a case from a national healthcare setting through a discussion of what motivates participation in drug testing in a context of universal access to healthcare services.

Unruly experiments: stem cell therapy, clinical trials and the (limits of) regulatory knowledge. *Christian Haddad, University of Vienna*

In this paper I wish to explore an area where established regimes of clinical research practices are problematized, reshaped and adapted: the emerging field of experimental stem cell therapy. The clinical trial, in its contemporary hegemonic form, has complex histories and its contingent forms have been repeatedly challenged and contested by various actors, events, and forces. As stem cells have expanded from basic to clinical research, established regimes of conducting and regulating clinical research—which have in large part emerged with the conventional pharmaceutical industry—have, once again, become "irritated". At stake have been simultaneously epistemic,

technical, regulatory, ethical, and organizational issues. Many involved have thus been concerned with questions such as how to "integrate" stem cells into the routines and practices of the conventional clinical drug trials, and how to generate some sort of regulatory expert knowledge able to tame and control this unruly emerging field; a field that constantly seems to elude processes of objectivation—and hence, control—through regulators and regulatory scientists. Drawing on field work conducted in the context of my Ph.D. project, I will analyze a set of concrete events, situations and struggles that bring into view the intricate processes of governing emerging experimental fields. From a conceptual view, I argue that exploring stem cell therapy suggests to problematize the limits of knowledge both as a central category in STS research and in the processes of social ordering, as means to govern radically elusive, experimental areas of (bio-)science and technology.

Transits, regulation and mattering in the Global-south: The production of Human Papilomavirus (HPV) vaccination policies. *Oscar Javier Maldonado Castañeda, Lancaster University*

The HPV vaccines are presented as the latest tool against cervical cancer, an innovation beyond cervical screening. This relationship is the result of the establishment of demographic and epidemiological facts as well as the promotion of agendas around cancer control, sexuality and women rights. The devices for making these relationships are diverse, including data construction, interest groups activism, governmental regulation and health diplomacy. This paper discusses about the relation between policy order and technical domain in the case of HPV vaccination global policy. The policies are engaged with different materialities in the establishment of control strategies for cervical cancer in local realities. In these realities the national boundaries matter because of the restriction that the political orders may impose in the transit and circulation of persons and things. This paper analyzes the transits of the HPV vaccines and their policies in the Global south presenting as case study the experiences of Colombia. The main question is: how does the HPV vaccine leave the laboratory and become a public health tool? I discuss about the complex network of relations that support HPV vaccination policy, as well as I identify the negotiation spaces in which public problems face science and technology knowledge and where policies are defined in this case. This work pretends to contribute in the analysis of the relation between technoscience and policy in the global south; as well as, understanding the co-production of gender, disease and in the transits of vaccines and policies through national-state boundaries.

Designing a Sociocultural Assemblage for Clinically Evaluating Yao in Australia. *Rey Calingo Tiquia, The University of Melbourne*

The development of a clinical evaluation system for traditional Chinese medicine (TCM) 'therapuetic practices ' or yao is a pressing contemporary issue in Australia. TCM is not a static body of knowledge. It incorporates systematic forms of evaluation which support innovation. Critical here are clinical records and possibilities for developing new schools of practice. Currently a system of values i.e. the randdomized controlled trials (RCT) incompatible with TCM practice is widely used in evaluating yao and in the process dispslacing TCM practice and its embodied set of values and logic. It is a clinical evaluation system that developed in association with Western biomedicine. I argue against allowing the values, standards and theory generated from the locale of the laboratory as the basis of clinically evaluating yao. I propose that the embedded local practice of bian zheng lun yao (differentiating clinical patterns to associate the appropriate yaowu) be recognised as an already existing and appropriate model for clinically evaluating yao. Seeing that TCM's overriding concern is the 'relief of symptoms in the individual,' I propose developing conceptual instruments that can

be used to design the construction of an empirical study for clinically evaluating yao. This study is a contribution to the growing body of local and situated knowledge in STS. Through the processes of translation, the local is mobilized so that it has global reach, while the global is articulated locally.

077. Private property in the public interest? Patent politics in comparative and historical perspective
2:00 to 3:30 pm
Solbjerg Plads: SP210

Intellectual property is an increasingly controversial area of innovation policy. From controversies over patents on genes and essential medicines to debates about appropriate limits to the power of copyright holders, contemporary societies are struggling to define how best to define private property in the public interest. This panel explores the politics of intellectual property in historical and comparative perspective, and focuses on how debates about what constitutes a patentable invention are producing political orders in terms of the articulation of particular rights, ideas about appropriate participation, and even the boundaries of the "political" itself. This panel contributes to discussions in STS about appropriate innovation policy and the relationships between science, technology, and democracy.

Chair:

Shobita Parthasarathy, University of Michigan

Participants:

The United States Patent Office and the Politics of Life: A Historical View. *Kara Swanson, Northeastern University School of Law*

Since the United States Supreme Court ruled in 1980 that living organisms may be patented, there has been an on-going debate about the appropriate role of the patent office in policing the boundaries of patentable subject matter. Should the agency go beyond deciding whether new technologies are patentable under the criteria of new, useful and nonobviousness, and also consider the social benefit, ethics, morality and/or policy implications of new areas of technology? This question has been addressed by Congress, the courts and scholars concerned about the role of patents in agribusiness and medical treatments. In contrast to other countries which have suggested that ordre public is an appropriate concern of a patent agency, the consensus in the United States since 1980 has remained that the patent agency is and should be, both descriptively and normatively, outside of politics and ethics. This paper argues that the United States patent office is not and never has been apolitical or neutral. It analyzes the unique nature of this executive branch agency as an agency seen to be outside of politics by examining the historical roots of this patent office exceptionalism. Looking from the 19th century to the present at the decisions of the patent office, this paper uses of the politics of life to explore how the patent agency sought to stay out of public controversies by avoiding patenting controversial technologies, employing shifting doctrinal strategies. In addition to considering the approach to the patent office toward patenting living organisms, it also looks to the long history of the patent office with respect to abortion technologies, another area of innovation that has long been the subject of sociolegal controversy.

Producing Participation in US and European Debates about Life Form Patents. *Shobita Parthasarathy, University of Michigan*

This paper argues that, as patent systems make decisions about the scope of the private sphere, they are also producing particular ideas about appropriate participation particularly in relation to the governance of innovation and markets. In service of this argument, I compare recent controversies over patenting human genes, human embryonic stem cells, and plants in the United States and Europe. For the past 30 years, a wide variety of groups in both the United States and Europe have challenged patents on life forms, citing moral, ecological, socioeconomic, and health

concerns. While public interest groups in the United States have experienced little success, those who claim that patents have caused them direct harm by infringing upon their individual rights have managed to capture some attention in legal, policy, and public spheres. In Europe, by contrast, while some groups representing the public interest invoke rights language, most speak in terms of maintaining European values and specifically balancing the value of stimulating innovation with values of promoting human dignity and maintaining public health. These groups, and the alternative forms of knowledge and expertise they present, have experienced greater legitimacy in the patent domain and specifically inside the European Patent Office. I will also discuss the implications of these different visions of appropriate participation in the patent system for innovation, markets, and democratic politics more generally.

Access to medicines, the right to health, and intellectual property in South Africa. *Manjari Mahajan, New School University*

The access to medicines movement has been strikingly successful in challenging an increasingly globalized regime of intellectual property. It has produced heterogeneous coalitions between activists, governments, patients, and generic-drug manufacturing companies which in turn have shaped the agendas of international treaties, donors, and global research alliances. The movement, in its various disparate forms, has fought for the inclusion of clauses within TRIPS that emphasize flexibility in the face of public health emergencies. A key, though by no means exclusive, strategy of this movement has been its deployment of a human rights discourse, and its invoking of a "right to health". In this paper, I will examine how a treatment access movement in South Africa wields the right to health in its fight for antiretroviral drugs. I will probe the promises and limitations of South Africa's treatment access movement's strategy: even as it uses the right to health to question procedures and policies of patent regimes, it leaves intact the causal assumptions and core logics underlying intellectual property policies. I will suggest a role for the access to medicines movement, in South Africa and beyond, which challenges the boundaries of existing economic expertises on which intellectual property debates often rest.

Intellectual property, pharmaceuticals, and questions of sovereignty. *Kaushik Sunder Rajan, University of Chicago*

In this paper, I explore some of the imperial and postcolonial dimensions of global pharmaceutical politics through a focus on how international patent regimes get interpreted in ways that lead to tensions between demands for the protection of global "free trade", on the one hand, and attempts to assert national sovereignty, on the other. I do so through a focus on three recent convergent events: the controversy surrounding the denial of a patent in India on Novartis' anti-cancer drug Gleevec; the granting of the first ever compulsory license on a drug by the Indian government, for Bayer's anti-cancer drug Nexavar; and negotiations around a free-trade agreement between India and the European Union. In all of these issues, an apparent tension emerges between the imperatives to protect global capital and those to protect public health. I explore how the state mediates these tensions; how "public health" as a concept itself comes to be at stake in these negotiations; and how intellectual property emerges in these contexts not just as a "right" but also as knowledge that has to be properly learned and judiciously applied. I argue that these events concerning patents, policies and the reconfigurations of knowledge / value are integral to the contemporary scientific histories of pharmaceutical development, and not simply contingent epiphenomena that emerge alongside "innovative" drug development.

078. (83) Studio studies & creative production - I
2:00 to 3:30 pm

Solbjerg Plads: SP212
Chair:
　　Alex Wilkie, Goldsmiths, University of London
Participants:

Off the studio. Accounting for sensible practices within the engineering processes of a design chair in Italy. *Alvise Mattozzi, Free University of Bozen*; *Laura Lucia Parolin, Milano Bicocca University*

What if creativity lies out of the studio in the hands of those craftsmen who take care of the design project for the producing industry after it has been released by the designer? It is known that many furniture and housewares designers chose Italy to produce their objects not just because of the dialogue they can have with the company management (see DeMichelis 2001; Verganti 2009 on the issue), but also because they can rely on the special competence and sensibility of Italian craftsman working with design companies in many Italian production districts. By recovering an ethnographic research carried out by one of us (Parolin 2010), we intend to show how it can be possible to take into account and to account for the role of socio-material practices of affect, sense and sensation by using semiotics as a descriptive methodology. We will address the role of two suppliers craftsmen working at a design chair prototype in order to describe their dialogue with the producing company, materials, requests and drawings and thus showing where is one the source of innovation within Italian design. Besides offering a slightly different point of view on the issues tackled by the panel, our contribution aims at deepen the dialogue between semiotics and Actor-Network Theory (Latour 1992; Law 2008).

Collective Bodies: Theorizing the Positions of the Glassblowing Team from the Dispositions of Practice. *Erin Elizabeth O'Connor, Marymount Manhattan College*

Drawing from three years of ethnographic research in a New York City glassblowing studio, in which I became a glassblower myself in order to theorize the process of the acquisition of embodied knowledge, this paper analyzes studio practice as a collective practice. Glassblowing, unlike many studio practices, is only rarely done as an individual practice. Instead, it is done by a team. In a studio situation, these teams are small, ranging from two to seven people. While scholars have studied collaboration in art production, such as Howard Becker's Art Worlds, they focus on the network of resources and actors that are required for art production, and in this sense highlight the broader social division of labor of art production rather than collaborative team work of art production. From the vantage point of becoming a glassblower, that is of acquiring the embodied knowledge of glassblowing, my research revealed a new possibility for theorizing studio practice, particularly team studio practice: it theorizes how the organization of the team is not only an outcome of the needs for production, but rather is also, and perhaps more fundamentally, the outcome of the dispositions of the glassblowing practice. Specifically, it analyzes how the glassblowing skill set becomes isolated and distributed across multiple bodies and moreover, how and why these various skills are ranked and placed within the hierarchy of a glassblowing team. In this sense, this paper provides an analysis of the the organization of work as a reflection not of the needs of production, but rather of the constraints of and possibilities of working bodies, which include the tools and equipment through which those bodies extend themselves. This not only contributes an embodied understanding of studio practice, but it also does so not at the level of an individual, but rather of a collective. In sociological studies of studio practices, the process of making is often analyzed in terms of market forces: production, including both the style of production and the objects produced, meets market demand. A notable exception is found in Hannah Arendt's The Human Condition, in which she

considers how the organization of work is determined by the production needs of the object. As an alternative to understanding studio practices as outcomes of structural forces or the needs of production, scholars have integrated subjective experience into understandings of how and why certain objects are fabricated. These analyses, while interesting for their incorporation of meaning and social interaction, are limited, however, insofar as they render the "subjective career" of the artist from individual narratives. A focus on individual narrative, though a balance to structural analyses, I argue, overlooks both team studio practice and embodied meaning.

Creative Collision: Designers, Test-Persons and Artefacts in the Lab. *Julian Stubbe, TU Berlin*

In recent years scholars have stressed to consider the design of new technological artefacts as a creative practice. Nevertheless, little research has been done in order to understand how the ubiquitous challenge of creating something new, unique and original shapes the actions of designers and is objectified in a technological artefact. Within my research I will approach this question by comparing cases from two fields of innovation: one is an experimental speech dialogue system in the field of technoscience and the other an interactive art installation. Inscriptions in both artefacts are based on specific visions of human-machine-interaction. In my talk I will concentrate on one aspect of this context and ask: In what kind of places are visions of human-machine-interaction created and what role do they take in the creative process? I consider the test lab (science) and the exhibition hall (art) as epistemic places, where interactions are provoked and images of users are created. In these 'places of collision' we can observe how creativity is performed on both sides of the artefact: scientist set-up the system and test-persons learn its handling in a test-lab; the artist's studio becomes a place of experimentation and the exhibition an experiment with an active involvement of the spectator. From the first findings I will draw a concept of creative technology design that moves beyond semiotic approaches of scripts and configurations, and reconceptualises actions of technology design as a process of experimental learning. My talk will include short video screenings and first hypotheses from the analysis.

Propagating experimental idioms with a networked laptop orchestra. *Patrick Valiquet, University of Oxford*

Recent decades have seen an intensification of research and development in digital broadcasting and telepresence infrastructure in which composers and musicians have increasingly been engaged as expert researchers in transnational, multi-institutional partnerships. This research has normalized the deployment of experimental music-making traditions as a kind of catalytic substrate from which elements of established models of creative practice and musical ontology may be disaggregated and propagated as new idiomatic hybrids for use in the testing stage of design. Informed by Hennion's (1989) analysis of studio practices in pop music production, this paper examines encounters with these propagation practices through interviews and participant-observation conducted during an ethnographic study of teaching and learning processes in electroacoustic music. It begins by tracing the genealogies of the institutional and technological architectures combined to assemble the "laptop orchestra" for a "networked improvisation." Both idioms are shown to require a degree of technological accumulation which limits their propagation outside of institutional research laboratories and depend upon a degree of aesthetic purification achieved through the application of strategies associated with Euro-American "non-idiomatic" improvisation traditions. Successful propagation is ensured in practice through the meticulous isolation and testing of human and non-human agency in rehearsal, in performance, and in ongoing analysis. Although experimental idioms in electroacoustic music are often rationalized by musicians as humanistic efforts to push back against inexorable technological progress, these ideological

struggles belie a more complex reconfiguration of the values of novelty and agency, contributing to the formation of a uniquely laboratory aesthetic.

079. (81) Expectations and innovative technologies - III
2:00 to 3:30 pm
Solbjerg Plads: SP213
Chair:
Alan Robert Petersen, Monash University
Participants:

The Expectations Role on Nanotechnology Development. *Rui Vieira Cruz, University of Minho*

Nanotechnology is a new technological paradigm for the XXI century that, although in an emergent phase, is both presented as the Second Industrial Revolution and as the Molecular Revolution. Being a multidisciplinary knowledge field with various inter-industrial applications - energy, agriculture, health, military among others -nanotechnology is creating new promises, hopes, expectations but also risks and ethical issues. These are aspects that provide the framework for nanotechnology's social acceptance (and social assimilation) by various agents and actors such as national states, enterprises, scientists, entrepreneurs and individuals (citizens). This paper main objective is to improve knowledge on how expectations affect (and are affected by) nanotechnology development as a new emergent technology. Thus, it will use the theoretical cycle/wave framework - provided by Kondratieff and (neo) Schumpeter (ian) works - on the innovation process in the long-term technological social assimilation process. It will also relate it on the (new) contributions on technology dissemination/diffusion that promote nanotechnology as a (possible) General Purpose Technology, without ignoring, however, the ideological direction that is being given to nanotechnology development. This paper is sustained by an extended bibliographical analysis methodologically combining it with statistical analysis regarding the Kondratieff and Schumpeter (ian) cycle/wave theories in promoting socioeconomic change, but also on the companies' network creation in Portugal by explaining how the dissemination process (possibly) that makes nanotechnology a General Purpose Technology (GPT) is evolving. It also demonstrates, by implementing a content analysis, how fictional works namely on literature, movies, tv shows and videogames affect nanotechnology's cultural representations and promote or prevent its development.

Dream of Pure Science: The Meaning of Expectations in Nanobiology. *Aiko Hibino, Hirosaki University*; *Masato Fukushima, The University of Tokyo*

This study examines the meaning of expectations for the advancement of basic science, specifically in establishing a new biology. The sociology of expectations provides a useful perspective for analysis of innovative dynamics by focusing on the role of expectations (e.g. Brown, 2003; Petersen, 2009; Wainwright, et al., 2006). A question arises about how different layers of an expectation work and give rise to different outcomes in a singular objective. The use of nanotechnology in life science was exemplified in our case study. The development of nanotechnology in biomedicine, called nanobiomedicine, has already created large expectations of technological breakthrough. Counter to this, a small group of Japanese biophysicists have tried to promote the idea of nanobiology as pure basic research. They have tried to understand biological phenomenon at the level of single molecules with new nanotech tools such as Atomic Force Microscopy. Their efforts, however, have encountered a series of difficulties, because their adherence to basic science has been against the current trend toward a biomedical platform (Keating and Cambrosio, 2003), despite the fact that

nanobiomedine and nanobiology share the similar, if not identical, expectations. By analyzing discursive practices in published text and in laboratories, we will discuss how and in what conditions the different types of expectations from similar objects may rise and fall in the matrix of science, industry and policy. We will also discuss the self-recursive dynamics of expectation in a socio-technical context.

The ethical implications of expectations: A case of stem cell treatments in India. *Shashank Shekhar Tiwari, Institute for Science and Society, University of Nottingham*

In recent years, the significance of expectations in the development of a particular science and technology regime has attracted a great degree of attention amongst the scholarship of science and technology studies. The scholarship in sociology of expectations has observed that different kinds of promises, hopes, fears, visions and expectations associated with a particular area of science and technology play a vital role in the innovation process (Brown et al., 2000;Tutton, 2011). The growing literatures in this area, though highlighted the impact of expectations on innovation activities, it does not pay attention to the ethical and social implications of expectations. There is an apprehension that high expectations may results in the proliferation of immature and unproven applications of technologies and if the related technology is associated with health sector than it can have serious impacts on patients (Peterson, 2009). This paper attempts to fill this gap through empirical studies of stem cell treatments in India. Drawing on the theoretical framework provided by the 'sociology of expectations' this paper aims to analyse the real-time present expectations of stem cell based treatments in India. Following a summary of survey data on key projects in this area, the paper will draw on interviews with scientists, clinicians, firms and policy makers associated with the development of stem cell science to examine: a) the articulation of expectations by different key players; b) what types of promises are being mobilised and c) the raised ethical and social issues of expectations of stem cells in India.

Marketing hope: the dynamics of expectation in relation to stem cell treatments. *Alan Robert Petersen, Monash University*; *Megan Munsie, Stem Cells Australia*

In recent years, medical tourism has emerged as a major economic sector, reflecting and contributing to far reaching changes in the practices and expectations of contemporary medicine. Treatments for virtually all conditions can be purchased at various clinics and hospitals around the world, if one is willing and able to pay (e.g. Connell, 2011). This paper focuses on one form of medical travel, stem cell tourism, exploring the politico-economic and socio-cultural conditions of its emergence and the implications for those seeking treatments, for the future of stem cell science and for bioscience more generally. The market for early stem cell treatments has been enabled by a combination of factors, including deregulatory policies, changing definitions of citizenship, and government support for high-tech interventions and bio-economic development. Drawing on data from our research involving analysis of online advertising for stem cell treatments, and interviews with patients who have travelled overseas for such treatments and with scientists, clinicians, and patient groups, the paper will explore the co-construction of science and society and of users and technologies (Oudshoorn and Pinch, 2003). It will highlight the dynamics of expectation that underpin the market of stem cell treatments and the dangers of inflated expectations for patient welfare and for future citizen engagements in relation to stem cell science and other biosciences.

080. (48) Design challenges of working and organizing in technologically dense environments - I

2:00 to 3:30 pm
Solbjerg Plads: SP214
Chairs:

Enrico Attila Bruni, Dept. of Sociology and Social Research - University of Trento (IT)
Cornelius Schubert, TU Berlin

Participants:

Coding is newsmaking! How programmers fit into Chicago Tribune's newsroom. *Sylvain Parasie, Université Paris Est / Marne-la-Vallée*

Since the mid-2000s, several major American newspapers have set up dedicated teams, within their newsroom, that are staffed with "programmer-journalists". Bringing into the newsroom a wide range of computer techniques, these people have challenged the established ways of articulating work and technological practices in news organizations. First, because their integration into the newsroom has conflicted with the physical, temporal and symbolic separation between editorial activities (in the newsroom) and technical support (in IT and graphic departments) that prevailed until then. Second, because most of these "programmer-journalists" are highly involved in various and heterogeneous work collectives that only partially overlap the newsroom as a material and human environment. Highly engaged in open software communities, they largely rely on infrastructures and technical artefacts that go far beyond the physical limits of the news organization (e.g. softwares, servers, web frameworks, programming languages). Based on an empirical study of Chigago Tribune's "news applications team" in 2010, our contribution focuses on the emerging processes that rearticulate newsworking and technological practices in the newsroom. We analyze the pragmatic rules that have been gradually designed to make programmers and their technical artefacts compatible with organizational daily routines. We point out how programmers take advantage of their involvement in various heterogeneous networks and infrastructures to fit and transform the constraints of news production. Drawing on actor-network theory and infrastructure studies, our contribution highlights how the actors' involvement in heterogeneous networks affects the articulation of work and technological practices in an news organization.

Business Intelligence as Strategizing Practice: Narratives and Experiences. *Ravi Dar, Department of Business Studies, Uppsala University, Sweden*

The ubiquity of information technology in contemporary organizational life is matched by an intensity of involvement in sociomaterial practices that involve technologies, people, occupational roles, functional routines and other heterogeneous elements. Practice theory and Actor Network theory perceive the constitution of organization identity in complex processal relationships. For organizations that purchase information systems as a tool to do things faster and better and cheaper, it often turns out to be laborious and expensive acquired knowledge. The experiences of information system implementation, more specifically Business Intelligence, are shared by thousands, if not millions, of organizations. Research into the perceptions and enactments of BI in large Swedish corporations has offered new insights into IS conceptualizing and sociomaterial semiotics. This paper follows the situated reasoning that gives BI meaning within the existing and becoming relationships between local elements. In interviews with organizational members responsible for IT strategy and implementation, narrative constitution of meaning is sought with the use of framing analysis. A main finding is an enacted shift in the conception of 'BI' from a decision support tool that generates 'intelligence', to the realization of the demands, requirements and possibilities of intelligent organizational processes. BI comes forth as strategizing practice; the work to implement and use BI

transforms perceptions of how information can and should be organized (locally), and in consequence: how work can and should be done (locally).

The role of ICT-supporters as mediators and instigators of designs and order in clinical practices … and how they sometimes fail. *Lone Stub Petersen, Department of Development and Planning, Aalborg University*

Argument: With the increasing dependence on ICT in the turbulent, varied and technology dense environments of hospitals the role of ICT-supporters is becomming central in the continued design and redesign of both informaiton systems and organizational practices. Predominantly centralized supporters are involved in the daily challenges of the hospital staff in the interactions with information and communication technologies in their daily practices. The continous and increasingly complex conflicts and challenges arrising in the relations between technologies and different professional groups for both clinical, administrative and communicative tasks at the hospital give rise to considerations on what the role of the mediators of these conflicts – including the ICT supporters – are and how they actually engage in these conflicts. Method: Based on an explorative qualitative case study on support in hospitals including 35 interviews, 20 observations, 14 meetings and other materials gathered through the three year study. Contribution: Considers the role of ICT-supproters in the design or re-arrangement of clinical work environments and practices hereby highlighting an often neglected but important group of actors and their influence on the rearrangement of technology dense environments.

Transforming knowledge across domains in the temporary development spaces. *Louise Brønnum, Aalborg University Copenhagen; Christian Clausen, DTU Management*

This paper addresses transformation of knowledge across different knowledge domains and competencies in the Front End of Innovation (FEI) [Koen 2002].We examine the temporary spaces [Clausen, Yoshinaka 2007] that emerge when different knowledge domains are brought into play (implicit or explicit) in staging innovative concept development. FEI appears as temporary spaces for innovative processes; and studies have pointed out the limited uptake of user knowledge (Elgaard Jensen 2012). This paper will discuss the possibilities and barriers for uptake of user knowledge in FEI in relation to the constitutions of these temporary spaces. There seems to be a limited understanding of: how knowledge is transferred and transformed into design objects facilitating a process where knowledge enables innovative thinking across knowledge boundaries. The paper is based on empirical data primarily from case studies in industrial R&D from medical device development and a consultancy company both working with an explicit ambition for transforming user insights into data applicable for concept development. The empirical data will be examined and compared with current literature on transforming and transferring knowledge between domains [Carlile 2002, Star 2010, Binder et al 2011]. Additional literature on the constitution of temporary development spaces will be relevant in the analysis. The paper examines a range of heterogeneous actors engaged in the transformation process [Latour 1999, Callon 1988; Jensen 2003]. Such actors include evaluation criteria for new concepts, project constellations and organisational structure. The paper contributes to the understanding of how user insights may be transformed across the temporary spaces of FEI.

Complex working environments and the human-robot interaction: challenges for the design of work organisation. *António Brandão Moniz, Universidade Nova de Lisboa and Karlsruhe Institute of Technology; Maria João Maia, Universidade Nova de Lisboa-FCT; Eva Zschieschang, Karlsruhe Institute of Technology-ITAS*

The technologically dense environments (TDE) applied to our approach refers to settings in which human actors/robot operators and technological artifacts (robots) work 'together' and where working and organizing are inextricably linked to the use of these technologies. That is the case of complex working environments using intelligent robots in manufacturing industry, from where several examples will be discussed in our paper. Such integrated systems reveal new challenges for the design of work, organisations and also technologies. There is an aim to develop advanced manufacturing systems in which safety play a central role. This has been underlined by international technology platforms as well by major robot manufacturers. However, organizational models that are able to achieve flexibility under complex frameworks are those that must include advanced automated systems with well-designed work places. Such design is also including concepts as responsibility, decision making, situation awareness and risk assessment. And such concepts must be used also by the direct operators of such systems, which imply an adequate level of competence and skills. This implies that TDE should be designed integrating the elements of human-technology interaction framework, and not only the technology features and capacities. This same type of problems are also being transferred to other sectors where robotic systems are also applied, as at the medical field (chirurgical and radiology equipment), mining and underwater monitoring and heavy-duty, agriculture and forestry, among others. The discussion of outcomes will be based on empirical evidences and on the qualitative research approach that we undertook recently.

081. (57) New orientations in risk management practices: designing nature and society anew?
2:00 to 3:30 pm
Solbjerg Plads: SP216
Chairs:
Joana GUERRIN, IRSTEA (France)
Anna J Wesselink, University of Leeds
Christelle Gramaglia, Research in sociology, UMR GEAU - Cemagref Montpellier
Participants:

Tornado Alley Versus Dixie Alley: The Problematization of Tornado Risk in Meteorology. *Jennifer J Henderson, Virginia Tech*

Situated at the intersection of disaster studies, science and technology studies, and science and technology policy, this paper argues that the process of constructing tornado risk within the meteorological community has led to two problems: an incomplete framework for understanding population vulnerability and an overreliance on technocratic and rationalistic solutions to these hazards. Taken together, such tendencies, I argue, create gaps in governmental policies and potential instances of environmental injustice. The significance of this discussion stems from multiple weather-related disasters in 2011, which stunned the meteorological community and initiated long-overdue conversations often framed by the following question: With such advanced technological developments in place and improved lead times for weather warnings, how is it that so many people died? Drawing on risk theorists like Piers Blaikie and Shelia Jasanoff, I illustrate how tornado risk is embodied by problematic concepts designed by meteorologists themselves, specifically Tornado Alley and Dixie Alley. I explore how these maps displace certain populations as tangential to core tornado probabilities and represent the tacit negotiations bureaucratic organizations make as they forecast uncertainty amid a demand for quantitative risk assessment. Methodologically, I rely both on Foucault's theory of problematization and on discourse analysis to explicate these visual constructs and definitions of risk. By making the problematization of tornado risk visible, we can begin to imagine

new risk management practices and policies that better address the emergency preparedness needs of populations displaced by traditional meteorological analysis. We may also reveal hidden inequalities masked by such cartographies.

What Science Doesn't Know Can't Hurt Us. *Graham Lucas, University of Newcastle Australia*

For some time the scientific community and governments have been grappling with the potential health risks related to Electric and Magnetic Fields (EMF). The electric and magnetic field phenomena is associated with conveying electricity through transmission and distribution cables located in streets and property easements, either above or below ground to homes and businesses. Primarily the concern is whether exposure to magnetic fields causes cancer in humans – specifically leukemia children. For the scientific community there is no definite repeatable causal link or complete understanding about how other factors might mediate or moderate the effects of magnetic fields. Meanwhile communities impacted by expanding infrastructure demand answers, protection, and information regarding the potential health effects. Without definite answers governments and industry must proceed with policy based upon 'maybes' and 'what-ifs' hence the 'precautionary principle' adapted by electricity supply companies. Within this specific context of risk and uncertainty, this paper draws upon a study of the development of a new Australian Radiation and Nuclear Protection Agency Standard on EMF. In particular the emphasis is upon the derivation of the standard through consultative involvement and influence of interest groups, community representatives and industry groups. It is demonstrated that the previous Australian National Health and Medical Research Guideline (NHMRC) provided some order to the EMF/health controversy only to create further uncertainty when the document was rescinded in 2006. Hence it is argued that, even in the face of scientific uncertainty, policy formulated collaboratively might provide the stabilisation to matters of concern. This empirically based paper contributes to the session by analysing a specific matter of risk and demonstrating the shift in the way a specific hazard is managed in policy and practice.

Living with floods: between technological panacea and political disaster. *Joana GUERRIN, IRSTEA (France)*

Since the 1990s, a majority of flood management experts are promoting new ways of dealing with floods. Formerly considered as a risk to be fought against, experts now call flood managers to adopt policies that would encourage riparian inhabitants to live with floods. At the core of what does look like a paradigm shift are measures such as floodplain restoration projects. They consist in lowering or erasing flood protection infrastructures in front of particular floodplains, in order to reconnect the river and its wetlands as well as operate water storage. If a majority of flood manager experts agree on the ecological, economical and hydrological relevance of those projects, it seems that no study has so far been made on which type of science is at the roots of this new ways of dealing with floods. Within a limited but conclusive scientometric survey, we studied publications promoting floodplain restoration projects. By reconstructing a genealogy of this way of thinking flood management, we show that its promoters are conceptualising the environment mainly through its functions. The relevance of changing the function of a floodplain is considered out of any social and political considerations. From a qualitative survey realised on the Rhône River (France), we will show that redesigning a wetland should definitely be thought about as a political issue. This river has recently experienced major flood events. The stake of the new flood policy is to restore a floodplain where people live. This technological panacea proves to be a political disaster locally.

In what (other) world do we want to live together? *Jim Dratwa, European Commission, Facultés universitaires Saint-Louis,*

Brussels

Have we been witnessing a regime change in the way international organizations deal with the articulation of knowledge and action? This paper explores and questions those emerging new relations to risk. It does not only consider changing practices within risk analysis. It also builds on three politico-administrative entities, three modes of articulation of knowledge and action, three devices of experimentation of the State: the precautionary principle, impact assessment and responsible innovation. All three entities are scrutinized in their emersion and in their realization on the field (that of the European Union institutions in particular). They are probed in their connections to risk and indeed to uncertainty and to proof (notably with regard to notions of 'evidence-based policy-making') as well as to the futures and to the future worlds (natures and societies, institutions and individuals – safe and sound and 'at risk') that they underpin. In closing, in their distinctive relations to the evolving hegemony of Risk, the three entities scrutinized in this paper are shown to offer alternative proposals in terms of political –and cosmopolitical– epistemology (i.e. regarding the choices about (the means to decide) truth, regarding the means to discriminate between knowledge claims, regarding the means to articulate knowledge and action, and regarding the modes of coexistence of such choices).

082. Uncertainty trumps? Science and contested authority.

2:00 to 3:30 pm
Solbjerg Plads: SPs01

Climate change sceptics raise their voice on the internet, economics has lost its status of "the physics of the social sciences" and population groups that used to follow government directives docilely are failing to respond to vaccination campaigns. It looks as if science is under attack from all sides. But while the public debate about science has definitely become more intense, the root causes of contemporary upheaval are less clear. Fierce criticism of science is often coupled with an almost unassailable position of this same science. Also, is science in the dock, or authority more in general? This panel aims to shed more light on the backgrounds and implications of science as an increasingly publicly contested domain or source of expertise. For these purposes, it considers the societal position of the sciences and of scientific expertise from two angles: an institutional perspective, that looks at the position of science in relation to other societal domains such as politics, policy and economy/industry, including historical developments, and a perspective that starts from everyday practices, consisting of real-life interactions between scientific experts and consumers-citizens. We propose two sessions of each five papers to explore the following questions: What exactly is at stake in these encounters? Is there a break with the past, or only a change in emphasis? What is the implication of contested scientific expertise for its position as an alleged superior source for decision-making?

Chairs:

Hedwig te Molder, University of Twente & Wageningen University
Rob Hagendijk, Universiteit van Amsterdam

Participants:

An Inside Job? Contesting Business School Research. *Alan Irwin, Copenhagen Business School*

One consequence of the financial crisis has been an increased discussion over both the societal responsibility and professional standing of business school research. On the one hand, and as in the documentary 'Inside Job', this has taken the form of direct criticism of business school academics. On the other, there has been a heightened discussion about the aims and purposes of business school research. Thus, journal and institutional rankings (such as the FT45, ABS and UT Dallas lists) can play a significant role in academic career development and the

international assessment of research quality. At the same time, an often-lively discussion has developed around the thesis that business schools have 'lost their way'. The argument here is that in seeking to make business research more 'scientific', the requirement for practical relevance and ethical responsibility has been forgotten. Both the recent 'Carnegie 2' report and the larger tradition of Critical Management Studies reinforce this point. Given that these issues may not be unique to business school research, it appears relevant for STS scholars to consider the contested character of this research domain – and especially the relationship between disciplinary emergence, claims to scientific status and professional practice. What is the relationship between 'scientific credibility' and notions of professional/societal contribution? Put differently, what can the different traditions of STS thinking (including SSK) tell us about the processes of disciplinary emergence and professionalization in this domain?

Uncertainty Trumps and Traps. The risky paths toward democratization of scientific advice. *Pierre-Benoît Joly, INRA*

The cognitive authority of science is widely considered as a key resource for decision making in rational-legal political systems. Science speaks truth to the power; policy makers are legitimate to deal with values and interests! In this perspective, scientific advice has to be close (but not too close) to policy-making since –as shown by many STS scholars- one of the key sources of credibility of scientific advice is the cognitive authority of science. Hence the intensity of boundary work to include scientific advice in the territory of « science » and separate it from policy making. Over the past 30 years, scientific advice has been challenged by many actors –including STS scholars- for not taking into account the plurality of ways of knowing and world views. Hence the motto of « democratization of expertise » and the debates on precautionary principle. And, as might be expected, the will to democratize expertise may conflict with the need of credibility. What are the sources of credibility of expertise when it becomes more inclusive ? I will focus on transformations of expertise on GMOs (mainly in France within the European frame) since 25 years. I will deal with the debates in order to identify both the rationales for changes and the repertoires of critic which are mobilised and performed, and specifically focus on the recent conflicts related to the setting of Haut Conseil des Biotechnologies (2008) which created a « second circle of expertise » devoted to socio-economic and ethical issues.

The public authority of science: erosion and resilience. *Rob Hagendijk, Universiteit van Amsterdam*

Is the public authority of science eroding? Public commentators and journalists often suggest so. Official representatives of science express their concerns. Cases of scientific fraud (f.e. the Stapel affair in the Netherlands) fuel their fears that the public is increasingly sceptical and distrustful vis-à-vis science. Exposure of ties of scientists with industrial and commercial interests and accusations of political bias (f.e. in climate change research) are part of a discourse. And yet, public opinion surveys time and again show that scientists are trusted more than almost any other category of actors in the public domain (politicians, journalists, lawyers). People responding to such questionnaires expect their lives to improve thanks to future advances in science, they think schooling in science is important for their children, and they are in favour of investing more in public science as a key factor in solving social problems, in addressing the big challenges of our time and in safeguarding economic wellbeing. To understand this paradoxical situation one needs to explore the non-academic practices in which scientist are engaged this paper argues. How are scientists involved in the practices of law, politics, economics, risk management and public health? Instead of focussing on science as practiced in academic settings we argue the importance to follow science in the increasingly wide and extended extra-academic practices of 'science in the wild.' What

goes on there and how is scientific uncertainty handled?

Identity work, and the public credibility of scientific experts. *Erwin van Rijswoud, University of Twente*

Controversies are moments when the authority of scientific expertise is thoroughly revised, and relations between actors and representations of scientific expertise may shift diametrically. Such controversies are not isolated events but intimately tied to previous events and interactions between science, policy and society. From the perspective of the individual scientists involved this implies that previous controversies shape their interactions with more recent events, in particular their strategies to uphold their public credibility. Although the construction of scientific authority often is related to the successful enactment of a dual attitude, one that presents oneself as an authority while being serviceable and responsive to society, I will argue that the scientist's professional identity is an important element in understanding how experts (re)gain public and political authority, and why this sometimes fails. In this paper I will discuss the historical dimension of scientific credibility with the notion of identity work. This notion explains that the intentions with which scientific experts enter such debates are thoroughly tied to their reflections of previous interactions and experiences. Their reflections and intentions for future interactions are expressions of one's professional identity, and the study of identity work therefore is a valuable aspect in the study of expertise. This is illustrated with examples from two scientific domains that are marked by their responsibility for public security: virology and hydraulic engineering. In conclusion, I will argue that identity work has not just analytic merits, but also facilitates interventionist uses.

"Contested "Science"? Reconstructing Pandora's Box.. *Brian Wynne, University of Lancaster*

Controversy studies have been a definitive, if changing, theme of STS ever since Nelkin's seminal work of the 1970s. Much of the important social and political sinews of scientific knowledge-construction have been identified through such STS scholarship. However the idea that such controversies were 'scientific controversies' has always been problematic, in that a major point of such analytical work was to show that other issues were at stake than just to demonstrate that scientific propositional standpoints also embodied and projected social commitments which were not being clearly articulated as such. This problematic meaning has been exacerbated over the last decade by STS work which has studied expertise in ways which already presume the collective frameworks of meaning within which such expertise becomes salient, before (or perhaps, as) questions of its propositional veracity come into focus. Powerful institutional voices in science as used in public policy issues, such as the UK chief scientific adviser, and the London Royal Society's President, have recently used their public authority as 'scientific authorities' to repeat and give official authority to long-standing tendencies go further than only to assert the officially sanctioned scientific truth of public issues like anthropogenic climate change, or genetically modified foods-crops, but to deem particular standpoints anti-scientific and immoral. This paper will review some of the unrecognised shifts in meaning which are undercurrents to these discursive developments, as well as to review the place of STS in understanding and making them matters of democratic debate.

Discussants:

Huub Dijstelbloem, University of Amsterdam
Stephen Hilgartner, Cornell University

083. (103) Risk, regulation and ethics - III
2:00 to 3:30 pm
Solbjerg Plads: SPs03
Chairs:

Luigi Pellizzoni, University of Trieste, Italy
Marja Ylönen, University of Jyväskylä

Participants:

'A deviation from standard design': regulatory organizations, misconduct and the TGN1412 trial. *Adam Michael Hedgecoe, Cesagen, Cardiff University*

Through an analysis of the disastrous TGN1412 clinical trial of March 2006 which left six healthy volunteers gravely ill, this paper explores the way in which regulators contribute to organizational misconduct. Linkign to STS discussions of organizations and regulation, this paper draws on Diane Vaughan's analysis of the Challenger disaster, this paper specifically seeks to explain why a particular high risk design was both chosen for this drug trial and approved by a specific regulatory body, a Research Ethics Committee (REC). Building on broader ethnographic research, this paper draws on documents related to the clinical trial and interviews with researchers and members of the REC concerned, to show how the use of this design was the result of the normalization of deviant behaviors, and hence broader organizational deviance, rather than a specific act of misconduct.

Unethical Science for Policy in the Environmental Governance of Agricultural Biotechnology. *Fern Wickson, GenØk Centre for Biosafety; Brian Wynne, University of Lancaster*

Conflict in Europe over the regulation of genetically modified (GM) crops has intensified recently as several member states (e.g. Germany and France) have declared national prohibitions on cultivation despite approvals given by the European Food Safety Authority (EFSA). National prohibitions are currently legally permitted if made on the basis of potential risks to human health or the environment supported by scientific knowledge. All current prohibitions have been deemed illegal due to insufficient scientific evidentiary support, yet they remain in place, creating a deep political impasse that scientific expertise has not been able to resolve. This presentation discusses the current proposal for regulatory reform in Europe, which would give member states autonomy to make their own decisions on cultivating GM crops, but interestingly, only on grounds other than those related to health and environmental risk (which are seen as satisfactorily addressed by EFSA). To demonstrate why this approach is alluring but its understanding of the nature of scientific risk analysis seriously flawed, we use debates over the science cited to support the German ban on GM maize as a case study. Contributing to STS literature, we demonstrate the irrevocable entangling of values in science for policy and discuss serious ethical questions concerning the way this science is developed, quality-controlled, and given authority in the environmental governance of agricultural biotechnology. We argue that inadequate recognition and treatment of the value-commitments influencing science currently weakens the ethical standards involved and has particular significance as Europe debates new legislative reform on GM crop cultivation.

Post-Fukushima: nuclear safety regulation and the challenge of recognition. *Marja Ylönen, University of Jyväskylä*

The nuclear power accident at the Fukushima Daiichi plant in Japan in 2011 interrupted the so called nuclear renaissance and reshaped nuclear agendas and policies all over the world. In Europe stress tests were organized to assess risk and safety at nuclear power plants. Tests began in June 2011 and will be made public in April 2012. In the paper it is argued that nuclear safety regulation has not been a democratic affair. It has been managed as a technical rather than a social issue. For this reason it is important to analyze the openness and closure of national regulatory frames with regard to ethical and social issues after the Fukushima accident. The paper focuses on the societal-institutional regulation of nuclear safety in Finland and in the UK. The differences of their regulatory frames with regard to

science-policy boundaries, risk-responsibility links and externalized problems and social tensions, will be discussed. The concept of recognition, as developed especially by Honneth, is applied to help understand the prerequisites for the emergence of ethically qualified actors. As distinct from communitarian theories, this concept emphasizes the importance of universal relationships of recognition, which exceed the borders of particular communities, such as regulatory agencies. Empirical materials consist of reports of national nuclear safety agencies and interviews with regulators and representatives of NGOs, to which discourse analysis is applied.

Global Disparity on the 'Risks' of Technology. *Jung-Ok Ha, Seoul National University*

This paper analyzes the global disparity on the risks of biomedical technology. Most discussions on global disparity focus on the disparity of the technical benefits. However, the problem of disparity over the actual risks is also significant. Particularly for newly emerging biomedical technology, the global disparity in Asia is very serious. While many Asian countries aggressively began their technological development, the legislative and administrative regulations were weak compared to the enthusiasm for technological development and thus there have been some scandalous cases. This paper notes the global politics at work in the recognition of and reaction to risks, particularly in terms of the health outcome of children born through IVF. IVF is the leading biomedical technology which Asian countries like China, The Philippines, India and South Korea have been very active in the development of. In many Asian countries, the overall social control of technology is often considered as an obstacle to 'technological development' and is something that can thus be sacrificed in the name of technical achievement. Such notions of 'development first' and the need to catch-up significantly affects the following issues of technology's risks: What is considered a risk and whom does the risk affect? How important are any countermeasures considered and how are they followed up (as collective issues or individual/exceptional issues)? This study indicates that the risk of technology should be characterized as a social fact and that technological risks are not a mere 'side effect' as technological development and risk are both closely intertwined.

084. (93) Neuroscience as a science of the social? - III

2:00 to 3:30 pm
Solbjerg Plads: SPs05

Chairs:

Svenja Matusall, ETH Zurich
Johannes Bruder, eikones NCCR Iconic Criticism

Participants:

Good Brains, Bad Brains: Historical and Contemporary Perspectives on the Neuroscience of Morality. *Felix Schirmann, Faculty of Behavioral and Social Sciences, University of Groningen, The Netherlands*

Pedophilia induced by brain tumor; callousness resulting from a malfunctioning limbic system; altruistic behavior based on oxytocin levels – these are some of the multifarious outcomes of the neuroscience of morality. This growing field of research tries to anchor the ethical in the skull and consequently transforms our understanding of what it means to be good and bad. The accompanying conflation of the biological and the moral has far-reaching social implications. Neuropsychological assessment of perpetrators and the use of fMRI evidence in court testify to a change in wider social practice. The upshot is a trend to neuro-bio-medicalize morality. Though this project is promoted as a modern invention, the underlying line of research is of long-standing. Nature - in the form of neurobiology and evolutionary theory - intruded the moral realm in the 19th century. Then, brain scientists, physicians, and alienists rendered morally aberrant

behavior as disease of the brain. Thus, the neuroscience of morality has a rich past which I aim to present as informative history by addressing the following questions: What has brain science contributed to a) moral psychology as a science and b) the understanding and assessment of morality? My answer suggests that although neurobiological approaches to morality have proven promising as well as persistent, the associated theories, the employed methods and technologies, and the adduced empirical evidence remained disputable at all times and still are today. The analysis will be conducive to comprehend the interrelation of science and social practice and will thus add to STS.

Ethnomethodology and neuroeconomics on what keeps society together. A case-study in comparative epistemology. *Pim Klaassen, University of Amsterdam, Department of Philosophy*

A crucial question in the social sciences is what holds society together. What is the lubricant responsible for us getting along without too much friction? According to one often heard answer, trust fills the explanatory vacancy. However, trust has been conceptualized in many highly diverse ways within the social sciences. One interesting and distinctive articulation was formulated by ethnomethodologist Harold Garfinkel. According to this trust is a background condition of what he calls constitutive practices—almost a transcendental condition for the possibility of any type of sociality, we might say. In the last decade or so, a new challenger discipline has emerged with regard to the truth of trust: neuroeconomics. Combining behavioral game theory with either neuro-imaging, pharmacological intervention or both, much neuroeconomic work has been devoted to trust. One of the core assumptions underneath this paper is, as Foucault put it, that [t]he conditions necessary for the appearance of an object of discourse [...] are many and imposing. [...] it is not easy to say something new; it is not enough for us to open our eyes, to pay attention, or to be aware, for new objects suddenly to light up and emerge out of the ground (Foucault 2002, p.49). Building on this, then, in this paper we will take stock of the respective conditions for saying something about trust fulfilled in the cases of ethnomethodology and neuroeconomics. Moreover, we will investigate what consequences the differences found have for the respective object-constructions entailed by ethnomethodology and neuroeconomics.

Sociology, neuroscience, and the study of thick moral concepts. *Ruben Flores, Higher School of Economics*

If at some point neuroscientists and social scientists dismissed each other's activities, there is today a growing recognition that these different traditions of studying the human world can offer valid insights about our sociality, and that dialogue and collaboration are both important and necessary (Rose 2011). How is this dialogue to proceed, however? In this paper I would like to put forth some ideas of how this dialogue could take place focusing on the study of "thick moral concepts" in general, and of "humanness" in particular. Thick moral concepts "simultaneously describe and evaluate, yet description and evaluation cannot be separated out", and "presuppose or are ontologically dependent on institutions and cultural facts" (Abend 2011: 146). Thus, they are particularly suitable for social scientific enquiry. Interestingly, they have arguably remained outside the radar of neuroscience, which has mostly focused on "thin" moral concepts such as "right or wrong" (Abend 2011: 145). Since my background is in sociology, I shall reflect on the way way in which the sociology of morality – in all its different perspectives, for sociology is not a monolithic discipline – could establish a dialogue about the topic at hand with the neuroscience of morality.

Toward a Social Ecology of Brain and Mind. *Sal Restivo, Independent Scholar*

The neurosciences have become a key source of images of our future. Images of an emerging "neurosociety" and a growing "neurotech" industry are competing with earlier developments related to The Knowledge Society and The Information Society. These images have a bias that Leslie Brothers has labeled "neuroism." Neuroism leads to claims about God and morals in the brain, the brain playing chess, and the brain explaining the mind. Critical S&TS responses to neuroism and neurocentrism are already underway in neuroscience and society studies, "critical neuroscience," and social studies of the neurosciences networks. This paper focuses on the policy issues and ethical debates raised by these developments and outlines a perspective on brain and mind informed by sociological, philosophical, and ethical considerations. I build on my recent work on the social life of the brain, minds and mindscapes, citizens and cyborgs, and the robosapien revolution. I claim that in the end we will have to leave sociology, biology, and philosophy behind and remake the landscape of sociocultural theory in terms of a theory of social ecologies and the perspective of a neo-natural philosophy. With sociology and biology in the forefront of my thinking, social ecology offers the best way to organize research and theory on brain and mind. Social ecology is rooted in the human ecology paradigms of the 1950s and ecological systems theory. It allows us to integrate across levels, contexts, and disciplines and resolve some of the paradoxes and dilemmas rooted in traditional brain/mind, mind/body, and brain/body dichotomies.

085. Designing Society, socializing design – an enquiry on the performative relationship between ANT and Design - I

2:00 to 3:30 pm
Solbjerg Plads: SPs07

The notion of design emerged at the beginning of the last century to bridge the world of science and engineering with the one of arts, and it is now colonizing all aspects of our everyday life. Understandably, design is generating increasing interests in social science, and has recently become a concern in Actor Network Theory too (Latour, 2009; Yaneva, 2009). In this session we aim to explore the relationship between design and ANT, and how they can benefit from each other. In particular, we aim to discuss: how design can be used as a resource to inform social research and perform social intervention, and how Actor-Network Theory can be understood as a resource to inform design theory and practices. The first concern is discussed in light of the emerging interest in using design, and in particular visual design, to represent controversies and complex social processes, as a mean to give voice and represent to a large public (Venturini, 2009, 2011). In particular, we are interested to discuss how design can help deploying social issues, making them public (Latour and Weibel, 2005) and debatable (Dunne and Ruby, 2001). The second concern is discussed by exploring the possibility of Actor Network Theory not only to be a tool to describe and reflect on design processes (as already offered by Law, 1992; Callon, 1996; Houdart, 2008; Yaneva, 2008; Storni, 2012), but, more importantly, to see how it can contribute to current design theories and practices.

Chairs:

Cristiano Storni, Interaction Design Centre
Tommaso Venturini, MediaLab, Sciences Po, Paris, France

Participants:

Designing Controversies: How design has been socialized and why sociology should be designed. *Tommaso Venturini, MediaLab, Sciences Po, Paris, France*

Actor-network theory is one of the social theories that contributed the most to the acknowledgement of Design. Revealing the role played by technical objects in collective life and making clear that, without technology, modern societies would be unmanageable by size and complexity, ANT helped to overcome the misunderstanding that assigned to Design a mere decorative function. As ANT showed, it is through design that

the technical components of objects are assembled into a functioning unity. And it is thanks to design that such 'internal' assembly mirrors and contributes to the external assembly of collective phenomena. Every time a designer connects separate parts or materials, she is also bounding social actors and groups. Far from being a superficial decoration, design (the art of form) guarantees the organization of modern societies by informing and formatting our sociotechnical existence. Time has now come for design to return the favor and serve ANT. Among others contributions, designers can play a crucial role in developing the controversy mapping approach. Originally conceived as a method to train students in the exploration of sociotechnical debate, controversy mapping is nowadays turning into a full research method. Its aim is to investigate the most entangled scientific issues, deploying the fabric of modern technoscience and modern societies. In such enterprise, ANT needs help from Design. Who better than the designers knows how to simplify collective imbroglios while respecting their richness? Who better than designers knows how to articulate complexity? In this communication we will discuss the potential for and ANT-design collaboration drawing on our experience in teaching controversies to design students in Paris and Milan.

Returning the challenge: Designerly ways of doing ANT. *Pelle Ehn, School of Arts and Communication, Malmö University, Sweden*

"Now here is the challenge. In its long history, design practices has done a marvelous job at inventing the practical skills to draw objects, from architectural drawing, mechanic blueprints, scale models, prototyping etc. But what has always been missing from those marvelous drawings (designs in the literal sense), are the controversies and the many contradicting stake holders that they bears with it. In other words, you in design as well as we in science and technology studies may insist that objects are always assemblies, "gatherings" in Heidegger's meaning of the word, or things and Dinge, and yet, four hundred years after the invention of perspective drawing, three hundred years after projective geometry, fifty years after the development of CAD computer screens, we are still utterly unable to draw together, to simulate, to materialize, to approximate, to scale model, what is a thing." (Latour 2008) Three related words in the challenge: drawing, things and together. Drawing concerns the designerly "creative" skills required, things what controversial social-material assemblies that are being opened up or created, and together who and what that is participating and how actants are included. This challenge is utterly relevant to contemporary design practice and design thinking, and the collective pseudonym A. Telier has for a decade reflected upon how to respond to such a challenge, especially in a book entitled Design Things (A.Telier 2011). To us the power of STS and ANT discourses for rethinking design, for understanding engagement in design things and for doing better design has been vital. But maybe it is also worthwhile turning the challenge back. Now here is the challenge. In its short history, science and technology studies has done a marvelous job at following the actors and analyzing social-material controversies. But what has often been missing is a performative dimension of these analysis and in making the things public. What can be learned from design. Are there more designerly ways of doing actor-network theory, beyond mere analysis and mapping, for example as active and constructive interventions as the studies networks are re-constructed and unfold? Can for example ANT theorizing be performed as a "living lab" through interventionist design activities such as collaborative experimentation, prototyping and infrastructuring (Björgvinsson et al. 2010)?

Constructing the world - betraying constructivism? *Peter Danholt, Information studies/Dept. of Aesthetics and Communication, Aarhus University, Denmark*

Actor network theory (ANT) has in the field of STS contributed immensely to the study of science practice and technological innovation. ANT has produced accounts of science and technological innovation as inherently performative and processual and where the outcome of the processes is the product of association of heterogeneous actors. In such practices the human actor is de-centered and herself a network and action is always other place (Latour 2005). Such a notion of science and technological development both resonates with, but also contrasts, design. It resonates with design, because it emphasizes the aspect of fabrication and construction. But it contrasts or resists design "as an art of planning" (Berger 2009) with a specific intention and outcome. So when Latour exclaims that a common world is something "we will have to build, tooth and nail, together" (Latour 2004), he express the central idea of constructivism, namely that there is no necessity about how things are and that it requires continuous work to exist and live together. But by implication, he also says that the common world could be crafted or at least, that it is a worthy and feasible ambition to hold. It seems that with the very ambition of building or designing a better world, however shared and notable the ambition (to the intellectual Euroamerican), it nonetheless also seems to betray or at least dilute a constructivist and cosmopolitical (Stengers 2010) ontology of multiplicity, heterogeneity and de-centeredness.

Design interventions as a form of inquiry. *Joachim Halse, The Royal Danish Academy of Fine Arts, ▢School of Design*

The word intervention is in everyday use typically understood as goal-oriented interfering in a course of events to promote a preferred state, usually defined by an external force, for example diplomatic, military, or medical (literally 'coming between'). In experimental design research, however, the word intervention is less about conflict resolution or correction. Design interventions are increasingly seen as a research method, not to test a prefigured solution to a defined problem, but to enable new forms of experience, dialogue and awareness about the problematic to emerge. As such it is often employed as a strategy of complexification. Utilizing basic design methods such as sketching and prototyping design interventions are often playful, experimental and open-ended in setting up a frame for exploring a given topic in a new light. Drawing on examples from design research, commercial design practice, and design students' work this paper focuses on how design interventions can be seen as a form of inquiry. What happens when the conventional outcome of design processes, namely material, visual and bodily articulations of new possibilities are used to raise new research questions? How can we understand the design intervention as a research method, as a proper occasion for knowledge production? Can the particular stagings of new products, services or relationships be seen as an entirely new field for empirical ethnographic inquiry into people's concerns, aspirations and imaginative horizons?

086. (32) Environmental infrastructures: STS's anthropology of nature-cultures - III: Indigenous Knowledge

2:00 to 3:30 pm
Solbjerg Plads: SPs08
Chairs:

Atsuro Morita, Osaka University
Anders Blok, Copenhagen University
Brit Ross Winthereik, IT University of Copenhagen
Casper Bruun Jensen, IT University of Copenhagen

Participants:

"Propane ate Mushroom": Knowledge translation in the forest revitalization movement. *Shiho Satsuka, Rachel Carson Center, LMU/ Anthropology, University of Toronto*
In recent years, Japanese citizens have mobilized to restore

satoyama, traditional agrarian landscapes, as a strategy to fight the damage that modern life is thought to have inflicted on both humans and the environment. This paper traces one especially vigorous wing of the satoyama movement: the mobilization to re-create the forests that produce highly valued matsutake mushrooms led by a charismatic microbiologist. Although attempts at cultivation have been made for over a century, matsutake has evaded this human intention. Matsutake requires a specific symbiotic relationship with its host trees, and this symbiotic relation is still a "puzzle" for scientists. Thus, instead of cultivation, scientific experts recommend restoring forests to the most suitable condition for the mushroom: forests used for collecting fuel and green fertilizer. The source of the decline of matsutake harvest was diagnosed as the introduction of propane gas to rural communities. In the satoyama movement, citizens reenact traditional resource use in village forests by coppicing wood and raking the forest grounds. In matsutake forest revitalization, expert science and lay knowledge are constantly in translation in order to understand the inter-species relations. In this process, participants sharpen their awareness to living and non-living beings who share the space, and the whole forest as an assemblage of various beings – including humans and human intervention - itself began to appear as environmental infrastructure. This paper explores what kinds of knowledge translation take place in satoyama by intersecting the STS and anthropological discussions of translation.

Collaborative Inquiry in Environmental Issues: A Case Study of Mikata Lakes Restoration. *Masataka Nakajima, The Graduate University for Advanced Studies (Sokendai)*

While environmental issues today are technical and complicated, environmental challenges such as biodiversity conservations and nature restorations necessitate citizen participation and active engagement of local residents. Mobilization of local residents is necessary for continuity of such projects and their effective implementation. Moreover, the ambiguous ecological concept of biodiversity cannot be defined by science or scientific community, and should be negotiated with local communities. However, participation to meet such tasks is not necessarily achieved, given practical obstructions. This study aims to identify problems in realizing citizen participation, particularly collaborative research on local environments by citizens and experts. In this paper, I discuss the case of the nature restoration in Mikata Lakes, Fukui prefecture, Japan. It examines the process of two collaborative inquiries in the restoration project conducted by two different research groups, one consisting of sociologists, the other ecologists. While both collaborative inquiries aim to restore a local environment, they possess different perspectives and images of the nature to be restored, as well as different purposes and definitions of collaboration. I argue there is a methodological gap between the two inquiries, one focuses on values of people, the other focuses on facts on ecosystem, and suggest probable disadvantages of the restoration project caused from this separation of values and facts.

"Parataxonomy" and "Postcolonialism" in Science in Action : Traditional Knowledge Digital Archive Project in India. *Moe Nakazora, University of Tokyo*

Since the late 1980s, "indigenous knowledge" has enjoyed global recognition in multiple environmental discourses such as a solution to global environmental problems, a base for making more "sustainable development" and a clue to develop crude drugs. Following the 1992 UN Convention of Biological Diversity (CBD), which articulated the importance of protecting indigenous knowledge and the need for benefit-sharing with "original owners" on its commercial application, the governments of "resource nations" have launched the documentation and digitalization of existing indigenous knowledge. The attempts to scientifically formalize "informal" indigenous knowledge have been criticized by the "incommensurability" between indigenous and scientific knowledge, that is, between situated knowledge,

which cannot be relocated and rationally evaluated, and the rational, objective, tested knowledge that the institution of science produces. In spite of these critiques, demand for a resolution to the problem of incommensurable ontologies is more and more urgent these days, and several experimental programs started to look for the possibility to work with the multiplicity of differing knowledge traditions [cf. Helen Verran], by reflecting social theory in basic concept and structure of databases. In this presentation, I focus on one of such experiments by Indian "state" actor, the "People's Biodiversity Project," and examine how the project team, consisting of local plant taxonomists, phytochemists, and an anthropologist as a specialist of local "culture," tried to change colonial knowledge relation in this new "postcolonial" or "multi-voice" archiving attempt. I will specifically pay attention to the zones of interaction and translation, where the project team met vaidiyas (traditional healers) and worked to find ways to represent their knowledge through "para-taxonomy," setting scientific and traditional taxonomies alongside one another, sometimes allowing for translation of one into the other, but not always.

Making Knowledge in Environmental Partnership: An Inverse Development Anthropology. *Brit Ross Winthereik, IT University of Copenhagen*; *Casper Bruun Jensen, IT University of Copenhagen*

Based on ethnographic work conducted with WWF Denmark, this paper addresses a double question: What does it take for the WWF to make knowledge in and about partnerships and, simultaneously, how does partnership affect our knowledge-making practices when partnership is an all-encompassing form in development aid? In addressing these questions, the focus is on monitoring and evaluation activities as they unfold in a development project on ecotourism. The center of our attention is a traditional Long House built on the border of a national park. More than any other object in the project the Long House is actively participating in making and sharing knowledge. The problem facing the evaluators is of course that the house is grounded and cannot travel, but must be represented and spoken for in spreadsheets and reports. In the paper we discuss the ways in which information infrastructures are constructed with the purpose of ensuring accountability and transparency in development projects with multiple partners. We find knowledge making and partnership making to be intimately related to technological and organizational arrangements. Inspired by work on recent work spanning STS and social anthropology, we characterize our approach to knowledge production in partnerships an inverse development anthropology.

087. (97) What is STS for? What are STS scholars for?

2:00 to 3:30 pm
Solbjerg Plads: SPs10
Chair:
Gary Downey, Virginia Tech
Participants:

Technology after the Nuclear Revolution: Revisiting Post-War Political Thought. *Casper Sylvest, University of Southern Denmark*; *Rens van Munster, Danish Institute for International Studies (DIIS)*

The immediate post-war decades was one of the most fertile periods for critical reflection on the social and political consequences of modern technology. Combining intellectual history, philosophy of technology and political theory, this paper revisits the post-war decades and argues that particularly the thermonuclear revolution of the 1950s spurred a wider and more sophisticated reaction to technology than is often acknowledged. In particular the paper seeks to draw out how in the wake of the thermonuclear revolution a diverse group of scholars in the

humanities and social sciences developed critical but reflexive approaches to technology that encompassed questions of security and global politics, liberty and political authority as well as ecology and sustainability. At its best, intellectual history forces us to rethink our own assumptions and commitments. By drawing out the broad vision and critical spirit informing the work of scholars like Bertrand Russell, Günther Anders, Lewis Mumford, and others, the paper directs attention not only to the changing nature of the intellectual and the critic in relation to the social and political effects of technology but also to the profundity and relevance of post-war political thought. Indeed, the paper ends by reflecting on the blind spots of currents approaches to the politics-technology nexus and the role that a better grasp of post-war techno-political thought can offer in this respect.

Society cannot be cut? Civic knowledge in times of "crisis." *Tereza Stockelova, Institute of Sociology, Academy od Sciences of the CR*

In June 2010 new right-wing coalition was formed after the elections in the Czech Republic. Soon after, "Platform of personalities for support of reforms" was convoked by a sociology professor, a few economists and businessmen who declared their readiness to back the new governmental policies by expertise. I felt sickened by the fact that the new government of cuts and "reforms" should claim both political and expert legitimacy in the public space and before the "Platform" managed to fade out (which came pretty soon) a couple of academic friends and myself called for people – academic and otherwise – to establish a citizen-knowledge initiative to oppose governmental policies and inquire into alternatives under the motto "Society cannot be cut". From my side, this move was directly inspired by STS literature on participatory knowledge and the politics of expertise. The initiative has now nearly 500 members and regional cells in more than 16 cities all over the country. On the basis of auto-biographic/ethnographic experience of its spokesperson I will analyze the movement as an attempt to performatively re/constitute society. I will focus on the issue of the relation between social science knowledge and society, and articulations of and tensions between sociological and economic knowledge in the public space. The question why, in the "reflexive modernity", the demand for instrumental knowledge is, at least in the Czech Republic, very high in policy processes as well as in the public, will be discussed.

Big STS. *Gary Downey, Virginia Tech*

This discussion paper is an argument for doing our jobs (Lynch 2009) better. It makes a case for expanding formal attention to agencies of critical participation amidst audiences that rely on dominant images of science and technology, including through practices of teaching and outreach. An audience-centered description of STS calls attention to a recurring core question: What are the relationships among the technical (or knowledge) dimensions and the nontechnical (or social, cultural, political, etc.) dimensions of science and technology (and their analogs), and how do these relationships change over time and from place to place? The existence and force of dominant images of science and technology give normative content to every epistemological and ontological claim in STS. Many fields claim jurisdiction over the study of science and technology, but only STS takes this question as a main source of expertise and influence. Can we allow agencies in our teaching and outreach to better inform agencies in research and scholarly publication? Can we make our research more audience-centered? The concepts we develop matter. Images of construction, networks, co-production, matters of concern, interactive expertise, reflexive critique, local interpretation, ontological politics, and dominance, for example, all plot distinct pathways for participating critically in the arenas we study. Drawing examples from discussions of the politics of STS research, practices of engagement and intervention, offering expert testimony, and teaching engineers and scientists, this paper maps some mechanics for better scaling up STS scholarship beyond the boundaries of the field.

From Natural Dialectics to STS: The Historical Evolution of Science Studies in China. *Lu Gao, The Institute for the History of Natural Sciences*

This paper will tell three stories in the evolution of natural dialectics which happened in the 1960s, 1980s, and 1990s China. Natural dialectics was introduced into China as Engels' great ideas to guide the critique of the old society, especially the lack of scientific spirit in the early 20th century China. As Marxism became the main political theory for the Chinese communist society, natural dialectics obtained its legitimacy not only in the policy discourse, but also in academia. However, even in the 1960s, the academic community of natural dialectics attempted to separate itself from the ideological, policy oriented research and move toward the 'pure' academic, philosophical research in order to achieve some independence for the discipline. After the reform and opening-up policy of 1978, natural dialectics was gradually replaced by the philosophy of science and technology in university education which implied the triumph of the earlier struggle. In the 1990s, as the Edinburgh school and SSK were introduced into China, like most other countries, scholars adopted the STS agenda which viewed science as a complicated practice within society. And this turn could be seen as an new convergence of the Marxist constructivism and the Chinese policy practice in the end of the 20th century. As the discipline evolved from natural dialectics to philosophy of science and technology to STS, the meaning of science has also been fundamentally changed.

Critical collaborations in life science and society: from STS to consultancy, and back again? *Maud Radstake, CSG Centre for Society and the Life Sciences, Radboud University*

This paper builds on my experiences as a postdoctoral researcher and staff member at CSG Centre for Society and the Life Sciences in the Netherlands. Funded by a public-private genomics research consortium, CSG has established a substantial multi-disciplinary program to study and co-construct ethical, legal and societal issues in relation to the life sciences. A defining element in CSG's approach has been the inclusion of 'societal interaction' and 'societal valorisation' as criteria to assess the quality of research projects. From 2007, I have engaged in participant observation of CSG's research projects and management to understand how researchers relate to, interpret and substantiate the centre's explicit aim to be relevant beyond one's academic peers. Since I came to join the centre's management team in 2010, the nature of my work has increasingly shifted from doing STS research to the employment of STS perspectives for research management, valorization and acquisition. In this paper I present some examples of collaborative work with a number of CSG researchers in the field of nutrition science and translational molecular medicine. Such collaborations have ranged from scholarly reflections on methodological issues to the establishment of private enterprise in training and consultancy for life scientists. Yet successful translation of STS work for life science audiences has come at the expense of writing about this for an STS audience. For the successful continuation and scaling-up of our activities, however, engagement with scholars in the field seems indispensable. The paper concludes by suggesting a model of public-private collaboration to address this issue.

088. (18) Bio-objects and bio-objectification - II

2:00 to 3:30 pm
Solbjerg Plads: SPs12

Participants:

The moral economies of the human stem cell crowd. *Shai Mulinari, Malmö University; Tora Holmberg, Institute for*

Housing and Urban Research, Uppsala University; Malin Ideland, Malmö University

One critical issue confronting human stem cell research is the lack of embryos as research/therapeutic material. In the pursuit of ways to amend this shortage, ethical and legislative issues have been raised. Specifically, ethical and legal debates concerning donation of eggs for research and creation of human embryos in vitro have been recurring in many countries. More recently, some countries e.g. the UK and Denmark have witnessed similar debates around the creation of interspecies embryos. In parallel to these debates, however, medical and commercial expectations from the stem cell technology have been rising. In this paper we discuss the shaping and functioning of the moral economies in which these issues are settled. What kinds of moral "currencies" are viable and valued by different moral communities, and how can these moral economies be understood in relation to the bio-objectification process surrounding human embryonic stem cells? How is this bio-object constructed and reconstructed inside the different communities? Drawing from case studies of different yet interconnected moral communities at various sites – research, media, research policy and market – we will highlight the bio-objectification processes through the notions of "virtues and vices" and "expectations". We will discuss relations between virtues and vices and expectations, and how they are closely related to each other. The analysis builds on various forms of data: e.g. interviews with stem cell researchers, policy documents, media articles and press releases.

IVF couples bio-objectification of embryos donated for scientific research. *Susana Silva, University of Porto, Portugal; Helena Machado, University of Minho; Catarina Samorinha, University of Porto, Portugal*

This paper aims to contribute to the discussion around governance and regulation of the fates of cryopreserved embryos by understanding the processes of bio-objectification actualised by IVF couples who donate embryos for scientific research, on the basis of in-depth interviews conducted in Portugal. Bio-objectification occurs at two interrelated levels: first, when IVF couples conceptualized cryopreserved embryos in terms of their bio-chemistry and genetic profile, grounded on quality measurement practices performed by the medical team. Second, when IVF couples constructed narratives that combine reciprocity, altruism, scientific progress, responsibility, trust, and capitalization of affect as a way of extending the 'genetic self' both into the future of medical technologies and other prospective parents. Bio-objectification processes draw an ethically acceptable line between human life (sick people, in particular infertile couples) and non-life (cryopreserved embryos through technological procedures) on the basis of a civic genomic pragmatism. It means that IVF couples who donate embryos for scientific research had a practical and grounded vision of cryopreserved embryos (pragmatism) based on representations concerning the geneticization of genealogy (genomic) but which was, above all, the result of direct personal experience with assisted reproductive technologies marked by the social power of medicine and technology to fulfil parents-to-be identity and to achieve the right not to inherit genetic problems (civic).

Induced pluripotent stem cells as 'bio-objects': stabilizing new research design in regenerative medicine. *Mianna Meskus, Department of Social Research, University of Helsinki*

Future-oriented expectations are an organizing principle of stem cell innovation. Stem cells' regenerative potential (pluripotency) has been found useful in developmental biology, drug discovery, and transplantation medicine. This paper discusses stem cells' curative potential and the consequent ethical, scientific and personal implications, by focusing on induced pluripotent stem cells (iPSC). So far, social scientific research on biomedicine has focused mainly on questions aroused by stem cells of embryonic

origin. This paper, however, aims to explore the current reformulations and new designs of stem cell science. There is a paradigmatic shift occurring in stem cell research, from the use of ethically contested embryonic stem cells (hESC) towards the successful derivation of induced pluripotent stem cells through genetic reprogramming of somatic cells – with possible new forms of ethical and political contestation. The paper is based on my on-going study exploring the acquisition and use of human biological materials in regenerative medicine. The analysis draws from my interviews with researchers working on hESCs and iPSCs, in Finland and the UK. The paper aims to discuss the ways in which stem cell researchers define and 'translate' the controversial biological materials they work with, in order to stabilize and standardize the increased genetic reprogramming of somatic cells into stem cells. Theoretically, the paper takes up the 'agential' aspect of specific technologies and biological materials, and discusses this aspect in relation to analyzing biological materials, such as stem cells, as 'bio-objects'.

DNA Mutations, Birth, and the Value of Life. *Joëlle Vailly, Inserm - Iris*

More than the notion of "quality of life" (qualité de vie in French), often used in medical discourses and beyond, it is "a quality life" (vie de qualité) which seems at the core of a series of biomedical practices. Based on observations of consultations in a French hospital and on interviews with patients' families and professionals, this presentation considers how the objective of maintaining "a quality life" is pursued, by identifying ways in which neonatal testing for a genetic disease (cystic fibrosis) links up with prenatal testing for the same disease. In a context of widespread understanding that social inclusion of handicapped persons is antagonistic to the exclusion of "sick" fetuses, this study shows how the two approaches of testing, after and before birth, converge overall: there are situations where an increasingly attentive patient care and increasingly demanding approach to fetal selection reinforce each other. It also shows how three elements can impact this convergence: a) DNA mutations which contribute to the bio-objectification of the disease, b) taking action early on which is structural in contemporary biomedical approaches, and c) the diseased children's value of life which is formulated more or less explicitly in parents and professionals' discourses. In conclusion, the notion of "a quality life" in connection with birth will be discussed.

Crafting invisible bone: the case of Dual energy X-ray Absorptiometry (DXA) in Taiwan. *Hsueh-Kuei Lin, St. Mary's Medicine, Nursing and Management College; Zxyyann Jane Lu, National Yang-Ming University*

This study explores how bone knowledge produced through DXA technology in Taiwan. Participant observations were conducted at the radiology units for DXA test from two hospitals and technicians and physicians who performed and interpreted DXA were interviewed. Based on the framework of "do-ability" developed by Fujimura (1987:258), the emphasis on clinical practices produce scientific knowledge made doable by the alignment of several levels of work organization. This study examines how physicians and radiologists articulate their work processes, and the conditions affecting alignment of routines of these two departments. The findings reveal that bone knowledge is produced in the processes of crafting invisible bone. I focus on three themes in the study. Firstly, sacrificed professionalism : the power to adjust parameters by radiologists and technicians due to diverse patient backgrounds and bodily conditions in achieving perfect picture of DXA may be compromised in order to reach smoother communication and better interpretation by physicians. Secondly, simplification: images of bones were simplified to numbers, graphs and colors for communicating with medical professional and patient. Complex knowledge regarding bones has been simplified by DXA graphs and numbers so that public understanding can be achieved and furthermore, the DXA simplification graphs and numbers transform scientific bone

knowledge to self-evident common sense. Lastly, Familiarity: DXA results applied familiar symbols of daily life in order to translate scientific knowledge to popular languages. For instance, the negative numbers and red colors were used to indicate osteoporotic bone. Familiar symbols in the DXA graphs with cultural meaning also provide the persuasion for truth that information about invisible bone becomes credible. In conclusion, the knowledge production process of bone has reflected that creation of infrastructure facilitating negotiation between physicians and radiologist and further alignment of daily routines between two parties are also initiated.

089. (65) Political devices - I
2:00 to 3:30 pm
Solbjerg Plads: SPs13
Chair:
Endre Dányi, Dept of Sociology, Lancaster University
Participants:

Political Devices. *Endre Dányi, Dept of Sociology, Lancaster University; Jan-Peter Voss, Technische Universität Berlin*

From the outset, science and technology studies (STS) has been very good at detecting and discussing the politics of seemingly neutral and functional devices in the societal fabric (associated with laboratories, hospitals, factories, museums, and innovation centres) by examining the work that goes into their construction and operation. Interestingly, however, it has paid rather little attention to devices within politics, that is, artefacts that constitute the infrastructure of democracy and governing itself. These devices, on the one hand, include parliaments, parties, electoral systems, courts, and regulatory agencies, all of which are expected to function as core components of a 'political system', performing a political community and its collective decisions. On the other hand, they include policy instruments, modes of governance, and regulatory mechanisms, that are often treated as calculable generators of specified social outcomes, ready for use anywhere, at any time. Drawing on the STS literature on the politics of devices in general, and our empirical research on the Hungarian Parliament and emissions trading and citizen juries as policy instruments in particular, in this introductory paper we will outline two interrelated ways of studying politics as various sets of material practices. By doing so, our aim is to generate productive discussions amongst the participants of the 'Political Devices' panel about what count as political devices, how they relate to each other, and how their study may contribute to the re-politicisation of politics in an era when governing appears to be an increasingly technical problem.

The intertextual construction of policy instruments The case of emissions trading. *Arno Simons, Technische Universität Berlin*

This paper deals with the making of emissions trading as a policy instrument. Policy instruments in general and emissions trading in par- ticular are political devices of a special kind since they are typically claimed to be non-political, i.e. (quasi-)technological tools, neutral in themselves and linked to values only in that they are "used" to achieve specific policy goals. However, once we open the "black box" of emissions trading, we see that the technological appearance of this "tool" is actually a social construction which crucially depends on two things. First, a distinction between emissions trading theory on the one hand and emissions trading practice on the other, and second, a spiralling movement between theory and practice, the former serving as blueprint for the latter and the latter serving as experimental test site for the former. It is argued that this movement between the theory and practice of emis- sions trading as well as the distinction between theory and practice itself have largely been constructed in and mediated by heterogeneous documen- tary pratices, i.e. within an intertextual network that spans different social worlds. The making of emissions trading as

a policy instrument, so the claim, can therefore be understood as a process of writing and reading oneself and others in and forward through the configuration of actor-networks in the form of prospective and retrospective narrative structures that appear in text (scientific articles, policy reports, green and white papers, directives, etc.). A theoretical discussion of this point will be followed by a methodological reflection on ways of making traceable and analyzing the configuration of intertextual actor-networks in the case of emissions trading and beyond.

Prices as Political Devices: Water, Human Rights and Calculation in Costa Rica. *Andrea Ballestero, Rice University*

Strong privatization programs implemented in the 1990s in Latin America left the region with a sour taste for making water "private," and also with a growing social skepticism toward policies that overtly transferred water management and/or ownership to the private sector. In the new millennium, however, the privatization rhetoric has lost purchase and none of the former international promoters of the approach feel compelled to aggressively uphold its policy significance. In this context, regulatory agencies are facing the challenge of creating pricing mechanisms that can speak both to the notion of human rights and to the necessary public-private alliances that are now prescribed as efficient policy tools. This paper is an examination of the ethical conundrums of pricing water, a substance understood to be a human right in Costa Rica, while recognizing that it is a human right. I examine the deeply ingrained assumption that human rights cannot be priced, and contrapose it to the fact that everyday millions of people participate of the economic management of water. How, then, do economic regulators navigate the thorny topic of pricing water and forbidding profit generation in the provision of a public service? How is the ethical domain embodied by the technical patches and partial solutions that regulators craft? And, how does this shape our understanding of prices as political devices? This paper explores the ethical difficulties of regulating against profits, and shows how through the manipulation of one financial indicator, called the development yield, regulators attempt to keep profits at bay while fulfilling their task of protecting citizens against the desire for profits of public utilities.

Putting Interests Back In: Between Vertical and Horizontal Politics of Chemical Control in Europe. *Henri Boullier, Université Paris-Est/LATTS and IFRIS*

This paper examines the European Chemicals Agency (ECHA) as a site where actors from different levels of governance have articulated the production of knowledge and governance norms in the context of the Europeanization process. The ECHA, established by the 1907/2006 Regulation concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), is a critical space of changing regulatory knowledge in Europe. I will tell the regulatory trajectories of two chemical substances as they become European and focus on the process of European integration in the face of national, European and industrial interests. The analysis shows that the delegation of powers to this recent regulatory agency, supposed to achieve various claims of subsidiarity, accountability and efficiency, is more complex than it is often assumed. Even further, the ECHA's creation illustrates the limits of the centralization of powers in the hands of the European Commission with a tendency to privilege national arrangements and economic reasoning. By following the trajectories of two chemicals, I will show how the Agency ultimately casts itself as a space of uncertainties and opportunities, where national, European, and industrial interests are articulated. Within this network of coproduced practices, cultures, norms and procedures, the STS literature will be mobilized along with political theory in order to get a better understanding Europeanization in an approach that reconciles postpluralism and constructivism. I will conclude that, to achieve legitimacy, the regulatory agency operates under a set

of institutional, cultural and political considerations that allows to discuss to the underlying dynamic of cryptofederalism.

Techno-legal instruments as political devices. Defining nanomaterials and shaping a European space of regulatory action. *Brice Laurent, CSI - Mines ParisTech*

This paper considers the techno-legal instruments that constitute chemical substances for regulatory objectives. These instruments comprise legal texts, technical criteria, measuring tools, and control and enforcement methods. As they differentiate substances among themselves, they perform an ontological work. Focusing on controversies about the definition of nanomaterials within European institutions, this paper argues that these techno-legal instruments are political devices in that they shape the modalities of European regulatory actions, and ground the legitimacy of European decisions. I first describe the approach undertaken by the European Commission in proposing a "responsible development" of nanomaterials that does not strictly define nanomaterials. I contrast it with constraining regulatory initiatives undertaken by the European Parliament. This opposition within European institutions does not only confront technical arguments, but also two ways of envisioning the representation of the European public and the scope of European legitimate actions. In a second part of the paper, I analyze a project within the European Committee for Standardization aiming to propose a guidance for the labeling of nanomaterials. This is a site where the boundary of the European space of political action is contested, as international participants directly intervene in the making of European standardization instruments. These empirical examples allow me to display the experimental character of both the political identity of the European Union and the technical definition of nanomaterials. They offer a path for the analysis of political categories - such as legitimacy and sovereignty - that considers techno-legal instruments as political devices performing ontological works.

090. (54) Disasters - redesigning collective orders - III

2:00 to 3:30 pm
Solbjerg Plads: SPs14

Chairs:

Zuzana Hrdlickova, Goldsmiths, University of London
Manuel Tironi, Pontificia Unversidad Catolica de Chile
Israel Rodríguez-Giralt, Universitat Oberta de Catalunya

Participants:

Taming the Rivers- Flood Control and Colonial Rule in Taiwan, 1895-1945. *Yawen Ku, Inst. of Taiwan History, Academia Sinica*

This paper discusses the complex relationship between the colonizer and the colonized through their interaction with "nature", using a case study of the flood control in Taiwan during Japanese colonization. Flooding has been historically known as one of the serious natural disasters in Taiwan due to the landform and weather, From the colonizer's perspective, this natural catastrophe threatened the stability of the riparian population and required governmental intervention. The Japanese thus launched a series of investigations to "tame the rivers" after major flooding events in 1910. Since 1916, systematic flood control projects had been successively carried out, and the construction of embankments was considered as the major achievement. According to the Japanese, the success of flood control demonstrated its effective governance--official statistics showed that more than 160 petitions were submitted till 1930s, urging the Governor-General's assistance of embankments building. The Taiwanese's "embracement" of the Colonizer's protection from flooding disasters and its leadership of using modern engineering technologies to improve local living conditions, was portrayed by the Japanese as the motivation of their persistent control and govern over the nature and the social. However, reports from local newspapers showed significant local protests and petitions against embankment building, as these upriver constructions not only let people lose their riparian lands, but also generated flooding issues for people who lived in the downstream. The tension between local Taiwanese, Japanese Government and the resistance from the nature indicates that under the colonial authority is a series of negotiations about creating a sustainable social-political-natural order.

Framing allergy: Constructing a new disease and its solutions in postwar Taiwan. *Hung Bin Hsu, National Chung Hsing University*

This article analyzes how allergy was discovered and became popular, and details the close interaction between disease framing, discipline formation and ecological changes in Taiwan. Today allergic diseases are the most common ailments although the concept of allergy (過敏in Chinese, which literally means "oversensitivity") enjoyed a rather short history on the island. Symptoms related to allergy today, like a rash of round, red welts on the skin that itch intensely, were usually attributed to "the invasion of wind into the body" in traditional Chinese medicine. It was not until the time after WW Ⅱ that the Taiwanese society began to "discover" allergic diseases and the medical technologies for diagnosis and treatment were not introduced and developed until 1970s against a backdrop of U.S. medical aid. The discovery of allergy and its medical solutions paralleled the development of local immunological society and its clinical discipline on the island. Doctors and researchers on the island utilized U.S. resources to study the rapid ecological changes, demographical movement and its implications to people's health and (hyper)sensitivity on the island, and, at the same time, to consolidate the new discipline of immunology among the field of biomedicine. Unexpectedly, with the popularization of allergy and its immunological concept in Taiwan in the following decade, allergic diseases also became one of the specialties of traditional Chinese medicine, with a special reference to the adjustment of one's constitution to enhance the resistance to the changing environment.

That which does not kill you makes you stronger. Earthquakes and State building in Chile. *Magdalena Gil-Ureta, Columbia University*

This project explores the relationship between earthquakes and the development of the Chilean state. Earthquakes happen with no logic, and no political intentions can be read in nature. But what follows is deeply political and in the Chilean case it has been in the base of state development. Earthquakes and the process of dealing with their consequences unleash mechanisms of state building similar to what was been argue for the case of Western Europe and the effect of war (C.Tilly). Earthquakes have caused the Chilean state to organize, to improve the capacity of its administration, to strengthen its control and autonomy and organize Chilean society in different ways. This means an increase in state strength, both in terms of despotic and infrastructural power (M.Mann). In this paper I use historical methods to follow this history of disasters and social change in Chile since independence (1810). I argue that natural disasters are not only interesting as emergency situations but must be studied as events on the longee durée, following Sewell's proposition to see events as "sequences of occurrences that result in transformations of structures." I will also argue that the development of seismology is related to this connection between earthquakes and state. It is only after earthquakes are seen as risk, that people's expectations about earthquake-damage prevention and recovery arise. Dangers are politically safer than risks, and risks are a consequence of scientific development (N.Luhmann).

The ontological politics of disasters: modes of governing uncertainty. *Israel Rodríguez-Giralt, Universitat Oberta de Catalunya; Manuel Tironi, Pontificia Unversidad Catolica de Chile*

By comparing two case studies, Doñana's ecological disaster (Spain, 1998) and Chile's last earthquake (2010), this paper explores "ontological politics" in disaster situations (Mol, 1999). Sociological research has rightly signalled at disasters as complex and highly contested events that trigger all sort of political conflicts and collective disorders. This paper goes one step further and argues that disasters are not only complex entities, but multiple ones: a disaster is never a monolithic phenomenon but an articulation of different –and sometimes conflicting- enactments. The paper looks at the different versions of disaster assembled/contested in the above-mentioned case studies. It shows the practices and processes comprised in these definitions and the different spatial-temporal topologies emerging from these multiple disastrousities. Rather than being isolated and well-defined versions, the paper also analyses how these different arrangements co-exist, interrelate and transform each other, creating a complex and dynamic political space. A space in which different versions of what a disaster is cohabit with a wide range of other instances, intervals and events that define alternate ways of governing/organizing uncertainty: accidents, emergencies, catastrophes, crisis, etc. The paper finally explores a style of analysis that refrains from applying a single and simplified theory to such packed and contested events and advocates a closer attention to the multiple "political ontologies" emerging and co-existing in the complex management of uncertainty.

091. (72) (Re)designing public engagement: innovation in practice and analysis - III

2:00 to 3:30 pm
Solbjerg Plads: SPs16
Chair:
Gretchen L Gano, Arizona State University
Participants:

Seeking meaningful continuities for public engagement in urban planning. *Helena Leino, University of Tampere, School of Management, Finland*

Participatory planning techniques have not managed to start fundamentally new paths in planning. Participation in planning is usually fixed to the stages of planning procedure, which entrains participation toward closures and produces participants without the understanding and commitment to long term development of their living environment. Plenty of research on participatory planning abounds whereas the question of how planning exploits and produces continuities meaningful for urban dwellers, local identities and social sustainability is under-explored. This creates a particular momentum for introducing the idea of meaningful continuities in technology-driven urban planning. Continuities make urban life meaningful: (1) urban dwellers put reliance on them in their everyday life, (2) planners when working for urban design, and (3) policy makers when striving to control urban development. The empirical case presented in the paper focuses on how continuities enact through social interaction, physical environment and the properties of user-centered technologies. The case is a Finnish municipality Lempäälä that has very broad-minded attitude towards involving public in planning processes, supported by the municipal council. Thus, there exists a strong political will for radical rearrangement of participatory planning practices. The redesign of public participation is approached with pragmatist orientation. The urban life interpreted this way is highly processual, emergent and radically perspectival. Dewey argues for creative and dynamic, fragmented publics that need constantly be re-created (Dewey 1927). This viewpoint coheres with the idea of urban planning as a never-ending engagement, where different ideas and representations emerge and their practical use is continually experimented on specific situations.

Engaging publics even if "they don't care"? The case of public lighting. *Nona Schulte-Römer, WZB*

Public lighting practices are changing: the European norm is under revision. Climate change policies are forcing municipalities to invest in the modernisation of their lighting infrastructures and in more energy efficient light sources. Meanwhile, experts with backgrounds in biology, engineering, medicine, astronomy or sociology are fighting over the question of appropriate lighting. How much energy can we save without feeling unsafe? How can we protect urban ecosystems and still enjoy urban night life? But what does 'the public' want? "They don't care!" That is how lighting engineers responded to this question when I talked to them about their work. Yet, during my ethnographic research in this field I also learned that the people on the streets actually do care. Yet, they rarely express their opinion about light levels, colour temperature and darkness unless they are asked to. Facing public investments, political representatives and experts in the field perceive this muteness of the so-called end users as a problem. Yet, there is no catch-all solution to address it. Against this background I propose to discuss different modes of engaging the public in urban lighting projects. My examples include methods like surveys and quasi-experiments as well as less conventional participatory formats in the course of urban design projects or festivals. Finally, I consider the democratic value of the accumulated, site-specific expertise of local actors, e.g. technicians or designers. The acknowledgment of their implicit understanding of the local situation might open up alternative ways of articulating public claims.

Multimodal narratives in urban development. *Jarkko Bamberg, University of Tampere; Pauliina Lehtonen, University of Tampere*

Understanding the complex socio-material reality of cities and finding creative solutions for urban development requires heterogeneous knowledge. Yet the inclusion of diverse ways of knowing in collective decision-making is difficult. It has been argued that narratives are elemental for including different types of knowledge in practices of urban planning. This paper builds upon this stream of research with an additional component; the paper asks how narratives articulated with manifold semiotic resources (e.g. speech, gestures, and photographs) can facilitate inclusive and creative urban development in specific settings. The paper focuses on instruments and settings of storytelling and narratives-in-interaction. Different semiotic resources have their own benefits in communication (e.g. maps show spatial relations, stories unfold events in time), but they can be combined into multimodal narratives to take advantage of multiple means of meaning-making. Empirically the paper builds upon a planning process in the city of Jyväskylä, Finland. This planning process aims to develop an old industrial area, called Kangas, as an extension of the city center. In the process innovative methods has been utilized for public engagement, such as digital storytelling, in which people made short films to deliver their ideas about the development of the area.

Urban planners on the move. *Peter Munthe-Kaas, DTU MAN; Birgitte Hoffmann, DTU MAN*

The concept of creative cities has become an essential guideline for the managerial level in city administrations, producing a noticeable demand for creating new narratives of urban life and innovative approaches to urban environments. From these discursive winds, policy visions of creative urban developments that include new ways of public engagement are developed by local governments, and together with the concurrent discourse of New Public Management this puts a lot of pressure on urban planners to engage in new approaches and relations to the citizens as active in relation to (re)designing urban space. Citizens' involvement in urban design is often approached as a question of developing new methods for citizens' participation in and/or designing of new planning processes; however, innovative

approaches to public engagement in urban development need to relate to and challenge the broader socio-material complex around urban space, and the paper investigates the approach of urban assemblages to describe and analyse the processes of developing temporary spaces for co-creation of urban space. This paper explores the processes within a concrete extensive experiment of developing innovative approaches to involving citizens in the (re)designing of urban spaces in Copenhagen, Denmark. The technical administration in the municipality has a strategic ambition to move from an authoritarian administrative practice to a more collaborative approach to urban development. An ambition that entails a shift towards a more facilitating role for planners as they are supposed to cooperate more with the different actors in the urban landscape. The empirical study that the paper reports from is the case of 'The Environmental Metropolis', which is the dominating narrative of the creative turn of Copenhagen. As part of a larger project called 'TEMPOS', based at the Technical University of Denmark, the municipal department has engaged with researchers to investigate new ways of involving users through establishing temporary spaces. The paper presents insights from the initial comprehensive investigation within the Technical and Environmental Department of Copenhagen. Based on participation, interviews, and observation in the planning of innovative inclusion processes, the paper explores the planners' perspectives and experiences as they experiment and develop new ways in urban development.

Dutch public flood safety engagement beyond the myth of dry feet. *WATERWORKS Heems & Kothuis, Maastricht University/TU Delft*

Near-floods and a mass-evacuation caused by extreme water levels in the rivers Rhine and Meuse were incentives for Dutch government to change the national flood safety policy in 2000. 'A New Approach to Water' became the policy slogan. Dutch government presumes that public engagement in decision-making on flood safety projects will lead to more risk awareness, public support for new waterworks and shared responsibility for flood safety. Government expects 'no or hardly any negative side-effects' from this strategy. This didn't prove right. To gain insight in public engagement we draw on a method of interpretive analysis developed from linguistic and discourse coalition approaches (1) and the Social Construction of Technology (SCOT) approach (2). The research in two empirical cases of public engagement in flood safety decision-making show that proposed solutions didn't meet the safety perception of the local population. Citizens contested the participation process by forming changing discourse coalitions behind changing storylines. The entangled use of different discourses on flood safety, combined with the fact that the presumed safety guarantee of dry feet was put up for discussion, lead to emotional reactions in society. Insufficient acknowledgement of the perception gap between government and society resulted in undesired side-effects of public engagement; varying from apathy, indignation, mutual loss of trust and even distrust. We explain that the national safety myth of dry feet needs to be deconstructed to reform public flood safety engagement. An alternative discourse, not based on risk control but on acknowledgement of vulnerability, could help to develop a society-wide care for flood safety in which government and citizens take responsibility based on their own specific competences. (1) Hajer 1995; Bauer & Gaskell (eds.) 2000; Wodak & Krzyżanovski (eds.) 2008. (2) Pinch & Bijker 1984; Bijker 1995. REFERENCES Bauer, M. W. & G. Gaskell (eds.) (2000). Qualitative Researching with Text, Image and Sound. A Practical Handbook. Los Angeles, Londen, New Delhi, Singapore: Sage Publications. Bijker, W.E. (1995). Of Bicycles, Bakelites and Bulbs. Toward a Theory of Sociotechnical Change. Cambridge, Mass. & Londen: MIT Press. Hajer, M. (1995). The politics of environmental discourse. Ecological modernization and the policy process. Oxford: Oxford

University Press. Hajer, M. (2003). 'A frame in the fields. Policy making and the re-invention of politics.'In: Hajer, M. & H. Wagenaar (eds) (2003). Deliberative Policy Analysis: Understanding Governance in the Network Society. Cambridge: Cambridge University Press; pp. 88-108. Pinch, T. & W.E. Bijker (1984). 'The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology might Benefit Each Other.' In: Social Studies of Science, 14; pp. 388-441. Wodak, R. & M. Krzyzanovski (eds.) (2008). Qualitative Discourse Analysis in the Social Sciences. New York: Palgrave MacMillan.

092. (61) New media, digital identities and transformations of surveillance - II
4:00 to 5:30 pm
Kilen: K143
Chair:
Jason Pridmore, Zuyd University
Participants:

Sign on surveillance: Third party site mediation and social media. *Jason Pridmore, Zuyd University*

The possibility to "sign on" to a website using social media accounts like Facebook, twitter, and Linked in, or to use other types of accounts such as google or windows live, has become a central, and sometimes a required, means to access information, account details, make payments and more for a number of companies. While this process is enabled by increasingly universal identification and authorization schemes based on OpenID and OAuth, a majority of websites rely on third party vendors to facilitate the technical aspects of this "social sign on". These third party vendors serve to gather at the point of sign on detailed information about user, ranging from personal information to interests to networks to contacts/friends to location and more. The access granted in this process produces a relatively robust profile of each user, in many cases far more detailed than a proprietary sign in system would facilitate. Over time, this information can be combined and analyzed for crucial marketing information. At the same time, the cooperation of these social media companies with website owners gives to the social media companies the ability to connect with (and track) users far beyond the (ever expanding) confines of their own environment. This paper examines these practices as a form of collaborative surveillance, in which marketing practices both shape 'consumer' behaviour and are shaped by them. The ease and convenience of such systems for consumers limits recognition of the surveillance capacities, yet they also allow for new forms of participation.

Participatory surveillance in the Rotterdam Nightscape. *Tjerk Timan, University of Twente*

In Dutch city centres, several stakeholders have been designated the task to create safe and pleasant nightlife districts . One way of securing these districts is via surveillance. While questioning forms of surveillance technology is done in surveillance studies, focus here is mainly on the top-down regimes of surveillance technology. However, in this paper an attempt is made to approach surveillance from a bottom up perspective by looking into mobile cameras used by visitors of the nightscape of Rotterdam . The mobile camera as an actor in the nightlife district may alter touch-points of potential surveillance activities. We use the concept of participatory surveillance to refer to both conscious and unconscious participation in providing information to databases that are also accessible for others. In current nightscapes, the boundaries of what is or can be used as surveillance information is blurring. Roles of watched and watcher, of top-down and bottom-up surveillance as a consequence become increasingly fluid. From a socio-technological perspective, this move can be described as a

coming together of consumer electronics, new media and surveillance technology. From the point of view of citizens, the latter has a closed and regulated character, where the logics of new media can be described as the opposite: open and transparent . Both organisational surveillance as well as the (accidentally) participating citizen have to deal with a changing landscape of surveillance, where the digital and the physical, the online and offline world are getting more intertwined in public nightlife and its surveillance assemblages. The central question in this paper is if/whether or not evidence of participatory surveillance can be found in the practices of Rotterdam nightlife citizens. In an exploratory fashion, in-depth interviews with rotterdam citizens were conducted to find out whether traces of participatory surveillance can be found in practice.

Privacy protection: Taking advantage of false or ambiguous information. *Arisa Ema, University of Tokyo*

Privacy is protected in different ways and by different means. One common way to protect personal privacy is "not to provide personal information to strangers." However, what people would do if they faced the situation that they must provide their personal information in order to get long-wanted information offered by a stranger? Would they risk providing their own personal information? Or would they take another strategy: provide false or ambiguous information? This strategy is studied in many fields such as the study of "deception" and "lie" on the internet conversation and the study of privacy enhancing technologies. However, this strategy confronts dilemma of becoming a crime strategy rather than privacy and civil liberties strategy. This study investigates the public attitude towards this strategy, "privacy protection strategy" by creating scenarios which provide false or ambiguous information to protect one's privacy. Working with data from questionnaire survey with about 500 people aged 18 to 60 in Canada, China and Japan each, this paper addresses the question of (1) whether people use "privacy protection strategy" and (2) whether people are in favor of teaching this strategy at the high school information education. The results showed that Chinese people are the most "privacy protection strategy" users, the Japanese less and Canada in between. In addition, people with higher information literacy tend to answer that they will use "privacy protection strategy." This result implies that there might be digital divide towards the way to protect privacy.

Mapping practices of construction and destruction. *Louise Nørgaard Glud, Aarhus University, Institute for Esthetics and Communication*

The paper investigates how mapping as a monitoring method is reconfigured when used to construct a map application that seeks to involve inhabitants in the building plans for their neighborhood. The mapping takes place in spring 2012 in the largest marginalized urban area in Denmark as part of my PhD. Here 16 7th graders participate in a workshop where they develop a concept for a map application for smartphones that allows them to connect experiences and behaviors to location. As part of the design process they create visualizations of their neighborhood e.g. they draw an experience map and make a walk-through where they use a map app called Foursquare to connect text and pictures to places. The paper investigates how the mapping works as an experiment to start controversies and make it possible to see and trace human and non-human agencies constructing the urban area. The paper also analyzes how the mobile monitoring is reconfigured by acts of construction and destruction to correspond with the teenagers' digital identities towards their peers and their teachers. Moreover, the paper explores how these ways of acting translate how the teenagers describe the places in their neighborhood and from that how they design to visualize these descriptions in the app. Methodologically the paper uses Harold Garfinkle's breaching experiments to develop a method that uses mapping as an experiment to make visible agencies. Furthermore, the concept

iconoclash introduced by Bruno Latour is used to analyze acts of destruction and construction made visible in the mapping.

Social spaces: understanding location sharing. *Anders Albrechtslund, Aarhus University*

To share a location with other people is more than simply conveying geographical information. Embedded in our locations is partial information about activities, interests, opinions, patterns of movement and much more. In the context of online social networking, these types of information are already available, but location sharing on the one hand works as a "handle" that holds together manifold types of information, and on the other hand expands and enriches this information. Locations in online social networking are necessarily tied to a physical location as representations of these. However, this does not mean that these venues are only meaningful as a reference to physical space. When we share locations online then these places or venues mix with physical locations and, together, they form augmented locations, which can be accessed by our social networks. Comments, suggestions, photos, etc. can augment and thus reconfigure these locations, and these layers of meaning change in accordance with relations in the social networks. The focus of this paper is the subjectivity that via location sharing takes part in its own surveillance. Building on a postphenomenological approach, my ambition is to better understand why people voluntarily engage in self-surveillance and, thus, contribute to surveillance studies as an emerging field in STS. Location sharing is an obvious extension of online social networking that offers an opportunity to connect the potentially empowering self-surveillance practices of social life especially observable in the city.

093. Taking stock of CCS in times of low expectations - II

4:00 to 5:30 pm
Kilen: K146
Chair:

Benjamin Evar, University of Edinburgh
Participants:

Understanding institutions in CCS: Two case studies in Finland. *Arho Toikka, University of Helsinki*

In this paper, I propose a dynamic institutional systems framework to integrate social, economic, technological and governance concerns into a simultaneous analysis and demonstrate the frame with case analyses on the budding developments of Carbon Capture and Storage (CCS) technologies in Europe. The framework combines cognitive institutionalism with the Socio-Ecological Systems (SES) framework. Institutions are the rules of the game in a society shaping human interactions; both formal rules, such as laws and regulations, but also informal institutions through traditions and practices. Incremental change, institutional inertia and path dependency shape choices in energy systems. There is no guarantee that the process finds the institutions to support the technologically most advanced or environmentally most benign energy production systems. I look at the institutions in the SES subsystems of production systems, technology systems, governance systems and user systems and how they constrain and enable each other. The analysis is based on data collected on two Finnish CCS demonstration projects; a cancelled retro-fit project for a coal-fired power plant and a recently developed method for mineralizing CO_2 into stable calcium carbonate. Finland is an example of a country that lacks geological formations suitable for CCS and would have to transport the captured carbon dioxide abroad. Mineralization has been suggested as an alternative for regions that lack storage potential as the minerals are widely available and there is no need for geological formations and site monitoring.

Stakeholder perceptions on carbon capture and storage technologies in Finland. *Laura Kainiemi, Aalto University, Finland; Carl-Johan Fogelholm, Aalto University, Finland*

Carbon Capture and storage (CCS) is one of the least well known measures for mitigation of climate change. Although acceptance studies indicate a cautiously positive attitude in Europe, many demonstration projects have been postponed or cancelled in recent years due to the realization of a variety of economic, technological, political and societal uncertainties and risks. Simultaneously organizations such as Intergovernmental Panel for Climate Change (IPCC) and the International Energy Agency (IEA) maintain that CCS is vital for successful climate mitigation. In order to improve the success of demonstration projects, more concise risk assessments are necessary to reveal potential problems and to allow addressing these issues in project planning. Individual projects as well as integration of CCS into larger energy systems both depend on institutional and organizational support from a variety of contexts. We map stakeholder perceptions of various experts from an institutional perspective and present a framework for identifying path dependencies, challenges and opportunities in the dynamic development of the social, political and economic setting around CCS technologies. The analysis is based on data collected on two Finnish CCS demonstration projects; a cancelled retro-fit project for a coal-fired power plant and a recently developed method for mineralizing CO2 into stable calcium carbonate. The analysis maps common concerns among the actors and identifies shared properties in the most worrying uncertainties.

Upscaling capture technologies: Lessons from FGD and industrial gas turbines. *Nils Markusson, University of Edinburgh*

Current capture pilots plants are typically a few 10s of MW in size, as compared to the 500-900 MW of a full scale coal-fired power plant. Upscaling on this order, in time for CCS to make a contribution to mitigation efforts over the next few decades, is daunting. Two detailed historical case studies, drawing on primary and secondary literature, of up-scaling of flue gas desulphurisation (FGD) and Combined Cycle Gas Turbines (CCGT) are presented. These cases are then compared with an account of the status quo and expectations about upscaling of CCS, from a capture technology expert. The historical case studies show that upscaling processes are not trivial, but can lead to serious and costly technical problems that take time to resolve. Moreover, these problems are not necessarily predictable. It has also been argued that most of the technologies needed for full-scale CCS deployment have been deployed at similar scales in other applications, which suggests that technology transfer could help towards rapid up-scaling of CCS. However, as the historical case studies show, technology transfer comes with its own problems. Finally, the case studies shed light on the scope for, and risks of, deliberately forcing technology scaling, contrasting the regulation driven development of FGD with the more market driven trajectory of CCGT. The main conceptual contribution of the paper to the sparse literature on technology scaling, is a typology of different modes of up-scaling. This draws attention to the wide range of processes involved, and their differing challenges and potential benefits.

Mapping the social study of CCS. *Olaf Corry, Open University*

This paper suggests a way of organising and thinking about the variety of studies of 'CCS in society' that exist or perhaps could exist. First the various existing social scientific disciplines currently being deployed to study CCS and other related technologies from a social science point of view are mapped out. Next I discuss different criteria by which social studies of CCS can be categorised. This is designed to give a better understanding of what kind of studies exist and what might be developed and to emphasise that within each discipline, a variety of different approaches can be found. Lastly, the current bias

against reflexive or second-order approaches that study observations about observations of CCS is highlighted, pointing out that most social studies of CCS take the basic vocabulary of CCS as given and present 'first-order' observations. A different kind of approach concerns the 'the way questions are asked in the field' (Andersen 2003, p. xi). This way of questioning asks about the emergence of categories, problems and themes moving 'from first-order observations of "what is out there" to second-order observations of the point that we are watching from when we observe "what is out there"' (Andersen 2003, xi). Andersen, N. A., 2003. Discursive analytical strategies: understanding Foucault, Koselleck, Laclau, Luhmann. Bristol: The Policy Press.

The neglected side of engagement: the role of project developers. *Sylvia Breukers, Researcher; Paul Upham, University of Leeds; Mariette Pol, Energy research Center of the Netherlands, the Netherlands*

Recent years have witnessed the proliferation of many studies on public perceptions of the deployment of CCS. All this work aims at a better understanding of 'the receiving side' of energy innovations, namely the general public, local community, end-users etc, in order to learn what projects and processes have the best chances of gaining societal acceptance. Much less attention has been paid to the implementing side - project developers and consortia. This paper presents empirical research into CCS project implementers' motivations, thinking and approaches towards engagement and communication. In addition, it presents a comparison of existing toolkits and guidelines for engagement and communication. A key finding was that within project consortia, there often is no shared vision on (the goals of) engagement and communication. This seriously hampers the development of a well-thought out engagement strategy. The comparison of toolkits shows that these pay no attention to the project implementers themselves and their motivations. However, the project implementer is not just an 'outside actor' steering the process towards a preferred outcome with the help of some tools and instruments. All parties – including the project implementer – are part of the project context. We suggest that toolkits can be improved by gearing the attention of project implementers towards reflexively considering their own internal structures, perspectives, motivations, expectations and aims of engagement and communication exercises. Only then can the implementer make a fully considered choice with respect to tools and instruments. Moreover, such reflection should encourage honesty about motives and methods.

094. (41) The politics of algorithms - II
4:00 to 5:30 pm
Kilen: K150
Participants:

How Associational Algorithms Do Public Work. *Mike Ananny, Microsoft Research / Harvard University*

What is the *public* work of algorithms? If democracies partly depend upon "redescrib[ing] lots and lots of things in new ways" (Rorty, 1989: 9), juxtaposing difference (Young, 2006), and co-constructing knowledge (Dewey, 1927/1954), then networked algorithms become situated languages that structure and reflect associational democratic life. Search engines, recommendation systems and online marketplaces become sociotechnical assemblages (Latour, 2005) that do at least three kinds of public work. *First*, they are often intertwined with populist logics. Like surveys, opinion polls and focus groups (Herbst, 1995; Igo, 2007; Salmon & Glasser, 1995), they reflect _images of the public_ that confuse summation with consent, seeing algorithmic compilations of individual preferences as constituencies that have agreed to be governed. *Second*, the _power to make associations is unevenly distributed_ among those with access to, and knowledge of, the sociotechnical materials and practices that sort, rank, and relate ideas. *Third*, depending on algorithms'

fixedness and embeddedness, they may serve as "closure mechanisms" that _limit interpretive flexibility_, foreclosing alternative realities (Pinch & Bijker, 1984: 409) and bracketing democratic life (Noelle-Neumann, 1984). I explicate these three types of public work using a case study. In April, 2011, the Android App Marketplace's matching algorithm listed 'Sex Offender Search' (a localized map of registered sex offenders) as the app most related to 'Grindr' (a spatial index of men seeking men). I unpack this association, describe its changes over 3 days, analyze responses to an essay highlighting its existence, and connect it to a critical discussion of algorithmic, associational democratic life.

Assessing the role of algorithms as autopoietic tools of governance. *Jacob Oermen, University of Copenhagen*

In the age of 'big data' it is important as ever to discuss the ways and methods we use to draw meaning out of the myriad of data that has become available online in recent years (e.g. social network data). The use of computer algorithms is already widely employed to meet this challenge, although it remains a topic of controversy how these programs operate. This paper looks at algorithms as epistemological machines that influence our perception of complex phenomena or, in STS language, help to turn 'matters of concern' into 'matters of fact'. Drawing primarily on empirical data from online hyperlink networks the paper discusses in which ways algorithms, most prominently the algorithms related to hyperlink structures, narrow the field of interpretation and how they simultaneously suggest certain readings of the connections in the data. This arguably takes place at multiple levels from the sorting and ranking of information (i.a. which data points to include and how to combine them) to the final data visualization (e.g. a map of hyperlink relations or a search results list). During these processes the algorithms can be said to structure or govern our understanding of relevance, importance and relationship in the data. Throughout this discussion the paper sheds some light on the overall question of how far these algorithms can be considered as autopoietic tools of governance that alters our conception of the data online. In this way, the paper contributes to the existing body of literature on Science (Information) and Technology Studies.

Threshold of visibility: on the politics of appearing and disappearing on News Feed. *Taina Bucher, University of Oslo*

This paper explores how the construction of modes of visibility on the Web is increasingly delegated to algorithms and other software processes. Despite their pervasive presence, algorithms 'are rarely discussed in themselves and rarely attended to as objects of analysis' (Mackenzie, 2007: 93). Algorithms are 'making decisions about who to deal with and how to deal with them' (Beer, 2009:989). It is precisely this decision-making capacity of algorithms, understood as 'associative devices' that this paper intends to explore, questioning how certain associations are made. Drawing on perspectives from 'software studies' (Fuller, 2008) and STS (Latour, 2005; Winner, 1986) this paper discusses one particularly important algorithmically curated media space, a space where the influence of algorithms is arguably felt by over 800 million users – the Facebook News Feed. Through a close reading of the known operative principles of the EdgeRank algorithm along with data from a small experiment of 'reverse engineering', this paper argues that Facebook configures and shapes a specific form of participatory subjectivity. Influenced by Foucault's (1977) writings on the architectural structuring of visibility, I argue that the regime of visibility generated by EdgeRank imposes a perceived 'threat of invisibility' on the part of the participatory subject. As a result, I reverse Foucault's notion of surveillance as a form of permanent visibility, arguing that participatory subjectivity is not constituted through the imposed threat of an all-seeing vision machine, but by the constant possibility of disappearing and becoming obsolete as instigated by the micropolitics of power through the

algorithm.

In search of the algorithm: Exploring the practical politics of Search Engine Optimization (SEO). *Malte Ziewitz, University of Oxford*

Algorithms are a difficult horse to catch. The subject of media reports, research projects and congressional hearings, they are increasingly portrayed as influential entities and conduits of control that 'govern', 'shape' or 'sort' our everyday lives (Slavin 2011). At the same time, they are usually treated as closely guarded secrets and have become somewhat of a modern myth. While sociologists have started to theorize the phenomenon through grand concepts like 'post-hegemonic power' (Lash 2007) or called for transparency and disclosure (Introna and Nissenbaum 1999), this paper takes a different approach. Rather than taking the currency and status of the algorithm for granted, it engages with the work of those who deal with algorithmic cultures on a day-to-day basis. Drawing on seven months of ethnographic fieldwork with a UK-based Search Engine Optimization (SEO) agency, I will explore the practical politics of analyzing, influencing and resisting search engine rankings and attend to the material-discursive practices of secrecy, publicity and analytics. In doing so, I will trace the ways in which the very idea of an algorithm figures as a conduit for ordering relations. What is often portrayed as a straightforward tool for producing information turns out to enact a mode of governance based on ambiguous analytics and a self-perpetuating 'need to know'.

Toward a Sociology of Algorithms; the Case of "Spreading Santorum." *Tarleton Lee Gillespie, Cornell University*

Public information algorithms (web-scale search tools, personalized news feeds, recommendation engines, social networking sites) play an increasingly important role in identifying what information is most "relevant," a crucial resource for of our participation in public life (Beer 2009). Our field requires a careful sociological analysis of the algorithm (Anderson 2010), from two lenses - as sociotechnical artifacts fitted with inscribed politics, and as social and institutional accomplishments within the production of knowledge. Algorithms are not just codes with consequences, they are a "knowledge logic" built on the "articulation" (Slack, 1996) of material, semiotic, economic, institutional elements, an unstable accomplishment that must be regularly deployed and maintained. Public information algorithms must contend with a fundamental tension: between evaluation and curation. A page of search results or a list of trending topics is offered as a calculated of relevance, based on complex, proprietary, and shifting approximations of value. Yet these sites also find themselves responsible for curating the information they provide, based on self-imposed rules, community norms, user expectations, and legal obligations. To maintain the credibility of the results and the continued authority of the information provider, they must carefully and publicly characterize the algorithm as a neutral tool, free of both subjective criteria and censorial side effects. These tensions are on display in the case of U.S. Senator and Republican presidential contender Rick Santorum, and the campaign to algorithmically "redefine" him, begun by sex columnist and activist Dan Savage.

095. (37) Design and displacement in energy system transitions: pasts, futures and presents - IV
4:00 to 5:30 pm
Kilen: Ks43
Chair:
   Catherine Butler, Cardiff University
Participants:
   Role of public policies in the future 'designs' of the transport system – barriers and opportunities for system change.

Paula Elina Kivimaa, Finnish Environment Institute; *Venla Virkamäki, Finnish Environment Institute*; *Paul Upham, University of Leeds*

The transport sector is an important, partly overlapping but partly separate, system related to the energy regime. In the EU, energy use in transport consumes about 30 percent of energy and produces about 20 percent of greenhouse gas emissions (Directorate General for Energy and Transport 2009). Moreover, the use of oil in transport is a large contributor to the EU's 84 percent import dependency in oil. Many recent climate policies, such as the biofuels distribution obligation, as well as technological solutions, such as electricity vehicles, promoted by innovation policies connect developments in energy and transport regimes. Transport policies are also tied to many other policy domains, such as land use planning and industrial policies. Thus, the promotion of sustainable transport systems is largely dependent on the interplay between various policies, some of which may imply different or even contradictory designs for present and future transport systems. The perspective of policy interplay has not been much addressed in previous research on sustainability transitions. In this paper, we will first create an analytical framework on the role of policies in designing future energy systems based on previous literature dealing with system transitions and empirical research on policies influencing transport system change. Subsequently, we will empirically map policies influencing the Finnish transport system and analyse their likely contribution to sustainability transitions based on their degree of attempt and ability to re-design the transport system in comparison to the analytical framework.

Uncertain Transitions and Transitional Uncertainties in the Making: The case of the UK natural gas network, c. 1940-2010. *Stathis Arapostathis, University of Athens*

The paper studies the transition of the UK natural gas in the period of the last 60 years. It is built on the multilevel perspective of technological transitions as this approach has been developed and explored by Geels, Kemp and Schot. (Kemp, R., Schot, J.W., Hoogma, R., 1998; F.W. Geels, 2002) The paper focuses on the natural gas network as a technological uncertainty and studies the ambivalences, uncertainties and vulnerabilities as they have evolved over the period of the study. I provide a co-evolutionary and co-constructive understanding of the technological transitions and uncertainties with changes in the policy and politics regimes. In this way it brings into the analysis also constructivist approaches to science and technology that go beyond the emphasis on the co-evolutionary character of the society-technology relationship and stress the co-constructive relations between networks, technologies and social groups. The paper argues that to understand the transition of the British natural gas network from 1940s to 2010, three distinct periods can be identified. The first from the 1940s to the mid-1980s was the period of a centralised and regulated industry as well as a period when the network was built concurrently with the construction of a political and regulatory culture, and the culture of new engineering and managerial expertise, particularly during the period of the conversion from manufactured to natural gas. The second period covers the decade from the mid-1980s to mid-1990s and is linked to the privatisation, liberalisation and deregulation of the industry along with the establishment of the infrastructures based on the design and policy principle of self-sufficiency. The third period that covers developments from the mid-1990s to 2010 is related to a technology policy shift and new network design approaches that emphasised 'interchangability' and brought d a transnational dimension to the development of the natural gas network

Energy poverty and the co-evolution of liberalization and institutional change. *Thomas Berger, Inter-University Research Centre for Technology, Work and Culture (IFZ)*

This paper will analyze institutional changes that emerged during the liberalization of the Austrian energy system from 2000 till 2012 and its implications for energy poverty. Energy poverty generally occurs when a private house hold has to spend more than ten percent of its monthly budget for adequate energy services and is therefore connected with the level of income, the build infrastructure and the development of energy prices. The transition of the Austrian energy system unfolded as a co-evolution of socio-technical (the introduction of ICT in customer management) and socio-economic (increase of income-poverty) changes that will be in the focus of this paper. A case study in the Austrian province of Styria shows that the process of liberalization had enormous effects on the formation of new or the adaptation of existing policies directly or indirectly connected with the social consequences of energy poverty. This paper will try to fathom how the co-evolution of institutional and technical change affected certain low-income groups. The new horizontal management paradigm and legal changes of the liberalized energy system allowed the forming of new customer relation strategies and the decentralized micro-generation of power at household level. However, the new possibilities of the liberalization and emergence of new technologies do not equally enable all groups in society to participate. This paper will therefore provide an analytical perspective on the transition of energy systems in combination with socio-economic developments and socio-ecological inequality.

Engineering Economics: The Role of Engineers in Electricity Markets. *Canay Ozden, MIT*

As deregulation turns the electricity grid into a marketplace in various regions of the United States, it falls on engineers' shoulders to translate the ideals of neoclassical economics into physically possible infrastructures. This paper studies how engineers vernacularize economics. By looking at the fashioning of an electricity infrastructure in which "supply" and "demand" must be engineered into grids from the outset rather than analyzed after the fact, I explore how assumptions from neoclassical economics might be embedded into material frameworks that organize the flow of "power" — physical, political, and economic. Academic power systems engineers devise demand response techniques drawing on principles of behavioral economics and attempt to erect a market in retail electricity. Traders of wholesale electricity, often electrical and systems engineers by training, point out the inefficiency of prices to perform as signs of the changing conditions in supply and demand, and summon their engineering experience to predict conditions and adjust prices manually. Focusing on power systems engineers who experiment with retail electricity markets in academic research venues and those who trade wholesale electricity in the markets of New England, I explore how engineers discursively gather together transmission lines, economic theories, and assumptions about human behavior in order to perfect the market. This paper contributes to the social study of markets by documenting the infrastructural underpinnings of markets that enable not just the movement of commodities, but also the circulation of the very economic theories that animate that market.

096. (45) Feminist theory, values & ICT design - II
4:00 to 5:30 pm
Kilen: Ks48
Chairs:
Corinna Bath, Technical University Berlin,
Judith Simon, Karlsruhe Institute of Technology
Participants:

Gender and Computing: A Case Study of Women in India. *Roli Varma, University of New Mexico*

Scholarly literature on the construction of gender in computing in the West has focused on the differences between men's and women's representations in the computer science (CS) and

computer engineering (CE) fields and their perceptions of computer technology. Men are seen as mostly interested in the computer technology especially on programming; in contrast, women are seen as mostly interested in the social aspects of computer technology especially its use for the society. The dominant trend in the scholarly literature is that the CS/CE themselves are gendered. I question such view of gender and computing fields by using example of women in India. Contrary to the situation in the West, there has been a significant increase in the number of women entering CS/CE fields. This is despite the prevalence of Indian patriarchy—a system of male dominance legitimized within the family and society through superior rights, privileges, authority, and power granted to men. Based on 60 in-depth interviews conducted with women enrolled in CS/CE fields at four institutions of higher education in India, I propose the cultural construction of gender and computing fields. Unlike in the West, CS/CE are viewed as women-friendly fields in India.

The African women's organizations IT paradox: towards an epistemic change. *Joelle Palmieri, Les Afriques dans le Monde*

Because of at least an epistemic violence, in Senegal and South Africa, ICT limit the scope of women's political action while at the same time offering women's organizations tools for exercising oppositional power. Women's organizations mainly use ICT to further their visibility and know too little about the global issues related to the Information Society. Does this lack of knowledge impede them in reaching their goals? Conversely, as trends in political action are expressed more and more in the virtual world, and this virtual world is increasingly accelerating the management of the daily, have the women's organizations chosen to taken note of these two trends and bring this note into the public knowledge arena? In research on the political effects of the use of ICT by women's organizations we have conducted in both countries since 2004, we find the juxtaposition of the virtual and the real a paradox. On one hand the use of ICT reinforces existing gender inequalities and on the other hand ICT allow us to move, through informality, the management of the daily from the private space to the public space. This "digital informality" contributes to the Feminist Standpoint theory. Especially, observations we made in South Africa tend to give evidence that some women's organizations use ICT as channels for highlighting non-savant women's knowledge. In Senegal, it is some non-normative experimental uses of Internet that question constructed frameworks. Thus, the feminist epistemology must be developed to accommodate this paradox.

Doing Design Work: Double Participation and Feminist Values. *Alison Marlin, University of Melbourne*

ICT design has traditionally been based on an assumption that there is a stable world 'out there' which can be represented and designed for, leading to a focus on providing what users want, or should want. A number of feminist scholars (including Donna Haraway, Kathryn Pyne Addelson, and Helen Verran) have found it helpful to re-conceive the world through a working imaginary of emergence. This raises questions of how to do ethical and accountable design work when one is always, inevitably, intervening and remaking the world in concert with other participants. I will seek to address some of these questions in relation to my research on family intimacies incorporating information and communication technologies such as Facebook, mobile phones and Skype, and the work of the feminist philosopher Kathryn Pyne Addelson. I will argue that users are already engaged in remaking moral and social orders in their everyday enactments, and that designers and academics can best support them in this endeavour by taking seriously their double participation in life-in-the-world and life-in-the-academy/design community. Addelson and Verran tell us that it is this double participation that enables us to do feminist work, and to create generative spaces in which social and epistemic orders can be questioned and remade.

Trapped in gender? Challenges in research on Computer science's gender gap. *Anna Vitores, Centre for Science Studies, Lancaster University*

This paper examines the conceptualization of gender and technology used in most recent research about women's under-representation in Computer Science studies. The definitions and relations between gender and technology are examined through a content analysis of a literature review on this specific topic over the past decade. It is argued that both gender and technology are still strongly essentialized within much empirical research when a) defining the problem b) constructing the object of study and c) constructing an analytical framework. In a heuristic sense, this essentialism is destabilized by those studies that rely on Feminist science and technology studies contributions when conducting empirical work. However, even within this kind of studies that adopt the mutual shaping of gender and technology framework, arguments and analysis keep relying on the stability of gender identity. Fulfilling the sort of prophecy made by Rosalind Gill and Keith Grint (1995) when identifying 'black-boxing'gender as one of the risk of the meeting between constructivist perspectives on technology and feminism, gender identities are taken for granted. Thus, while computer science and computer artefacts tend to be approached as something that is susceptible to having different meanings, uses and effects, gender, even when it is discussed as a social and cultural construction, is dealt with as a fixed and evident construction. The paper closes with suggesting some analytical tools which could contribute to approach artefacts and trajectories towards computer science studies as gendered, without being trapped in gender as a stable and determining factor.

097. (28) Responsible and sustainable innovation: differences, similarities and relevance for STS - II
4:00 to 5:30 pm
Kilen: Ks54
Chairs:
    Jaco Quist, Delft Univerity of Technology
    Harro Van Lente, University Utrecht
    Ellen Moors, Innovation Studies, Copernicus Institute, Utrecht University, NL
    Ipo van de Poel, Delft University of Technology
Participants:

A "nudge" towards better behaviour? The limitations of individual choice models. *Isabel Fletcher, ESRC Innogen Centre, University of Edinburgh*

This presentation will analyse ideas about individual behaviour change mobilised in recent British policy on public health and environmental sustainability. Poor decision making by individual citizens – about the food they eat or the ways they travel – is increasing framed as central to resolving problems such as global warming or increasing rates of chronic disease. However, conventional methods of influencing behaviour, such as government advertising promoting energy-saving or the health benefits of increased fruit and consumption, appear to have little effect. An alternative approach derived from behavioural economics (Thaler and Sunstein, 2008) advocates influencing behaviour or 'nudging' individuals by means of offering financial incentives. or changing the environment within which their choices are made. I will analyse recent UK government publications on environmental sustainability and health policy, in order to outline the understanding of behaviour change that they contain, including initiatives targeting specific individual behaviours such as domestic energy use or physical activity levels. Drawing on recent social science critiques (e.g. Jones, Pykett, and Whitehead, 2011), I will argue that such approaches contain an understanding of behaviour change, based on studies

of consumer behaviour which have been inappropriately generalised across many different contexts. They are also largely untested and their longer-term effects are uncertain. However, part of their appeal to policymakers is that they provide an individualised and simplistic account of behaviour and ways to change it, and this is a problem for STS scholars and other social scientists trying to offer alternative and more complex accounts.

Designing Dynamic Consent Mechanisms in ICTs: Lessons in User Engagement and Notification. *Nadja K. Kanellopoulou, University of Oxford*

Social and ethical issues arising from the use of ICTs in biomedical research are of increasing concern for balancing the interests and expectations of human participants with broader societal interests for global, innovative research. Existing socio-technical arrangements in the design of large bio-repositories reveal regulatory black boxes and the use of ICTs as key catalysts for change and emerging conflict. Prominent areas of contestation include privacy and data sharing protections, consent and withdrawal, ownership and control of biomaterials and data across networks, user feedback mechanisms on the use of large bio-repositories. In an environment of increasing computational complexity, research funders call for studies to improve our understanding of 'responsible innovation' in ICTs to aid the design of global research governance frameworks. This paper presents the findings of an EPSRC comparative case-study on designing dynamic consent mechanisms for managing personal data in the UK. It discusses an example of responsible, and responsive, innovation for engaging research users continuously through the utilisation of intuitive, easy-to-use mechanisms. The comparison of models used in biomedical and social research has identified a quest for alternative, lighter consent and user notification approaches, in responding to social dilemmas as they arise rather than anticipating risks in advance. It is argued that the study of dynamic consent systems can assist in developing a common approach on ethical issues across ICTs, and enabling societal actors to become mutually responsive to each other. This paper aims to increase interdisciplinary understanding of responsible innovation within and beyond the field of STS.

Designing Sustainability. *Alan Glen Murray, University of Edinburgh*

As everyday products increasingly have the capacity to sense, make decisions, analyse and learn, designers need to understand the potential complexity and cross-disciplinary nature of designing 'behaviours' in interaction. To design open-system learning sentients, products must become independent agents. This raises the need to examine the implications of a non-human agency of emerging products. We need to reflect on how we can design socially acceptable intelligent artefacts which go beyond the conventional understanding of Artificial Social Intelligence (Bainbridge 1994) or of interactions with and between robots (Dautenhahn 1995). By designing products that act as an extension of a user's own thinking and acting self, we may help to preserve and promote an extended sustainability with intelligent products, as users are encouraged to invest in extending its meaningful life-cycle. Although true Artificial Intelligence in everyday products is not yet a reality, perceived intelligence is. As these artefacts are increasingly part of everyday life, people "live with" and experience technology (Wright & McCarthy 2004) beyond simply "using" it. This paper will develop a set of speculative proposals to consider how a user's relationship with emotional intelligence in products may lead to an unexplored terrain in which personal investment in a product as extension of the self leads to long-term sustainability.

Indigenous Knowledge and Co-Designing for Sustainable Communities: A Case Study with the Pinoleville Pomo Nation. *Ryan Shelby, UC Berkeley*

Currently, there is a shift towards participatory approaches with end users to embed social factors in sustainable development endeavors. The optimal strategies and decisions, however, vary with the social, geographical and economic conditions of each community, yet few sustainable development and innovation projects take into account the social performance metrics throughout the new product development of these projects. This paper describes a research partnership between the Pinoleville Pomo Nation (PPN) and UC Berkeley's Community Assessment of Renewable Energy and Sustainability (CARES) team during the co-design and development of culturally inspired, sustainable housing that embeds ground source heat pumps, photovoltaic systems, natural daylighting systems as well as the long-standing culture and traditions of the PPN. This paper presents an engineering design thinking approach called Co-Design developed at the University of California, Berkeley that allows engineers and members of indigenous communities to understand the social performance metrics in sustainability systems as they relate to renewable energy and sustainable building design. We also present the Pinoleville Pomo Nation's framework for sustainability and show how the Co-Design methodology can be used to understand the situated knowledge of CARES and PPN researchers. Moreover, this paper details how the Co-Design methodology provides another STS approach for eliciting end user needs and fostering the co-production of knowledge from various knowledge bases.

098. (33) Investigating environmental science and technology

4:00 to 5:30 pm
Kilen: Floor Ground floor - Ks71
Chair:
Catharina Landstrom, University of East Anglia
Participants:

Green tricksters: how do we deal with the volatility of criteria for sustainability? *Tomas Moe Skjølsvold, Norwegian University of Science and Technology*

Across the globe policy makers are seeking a socio-technical shift which brings us in the direction of more sustainable and climate friendly societies. The task sounds simple: we need to replace CO_2 intensive practices, technologies and fuels with counterparts that are 'green', 'sustainable' and 'climate neutral'. Many years of experience, however, has shown that the task is far from simple. One challenge lie in establishing criteria for how to evaluate practices, fuels and technologies in a climate perspective: how do we decide if a technology is 'green' or not? Research from the last four decades suggests that such criteria are frequently established pragmatically, often on a case-to-case basis. Thus, the type of knowledge which feeds into the making of such criteria will differ greatly and there is a lack of universally adopted indicators. In turn, this means that the established criteria are often quite volatile. What is 'climate neutral' today might not be tomorrow, and what is 'sustainable' in one locality might be treated differently elsewhere. This is a challenge for policy makers who might have to reverse previous policies based on new knowledge, or who may be faced with competing evaluations. This paper analyzes such volatility as 'trickster qualities', and seeks to contribute to the development of an analytic approach which reveals such qualities based on frame analysis (e.g Goffmann, Callon). The argument is exemplified via the empirical analysis of specific controversies where the 'climate neutrality' or 'sustainability' of several fuels and technologies are contested (e.g. bioenergy and peat).

Environmental technologies and scientific practices in transnational research networks: a wastewater technology in rural India. *Vivek Narain Mathur, University of Leeds*

This paper analyses the experience of introduction of an innovative wastewater treatment and biomass technology in a

small town in India as part of a research project on sustainability involving engineers and scientists from UK and Indian universities. Small in scale and developed in partnership with some of the local stakeholders, it attempted to create a locally appropriate solution from 'outside' the existing technological regime and infrastructure. Although the partnership with certain local stakeholders lent some legitimacy to the technological intervention, several other local voices got excluded. The technology was not designed to be a part of the existing infrastructure, rather as a separate initiative. However, a lack of adequate integration with the existing infrastructure and physical context despite inevitable linkages undermined the significance and effectiveness of the technology. The paper critically examines the processes of design and management of the technology in light of these challenges faced. It questions the implicit as well as explicit notions related to the role of technology in sustainability within these processes. It also questions the role of engineers and scientists that was implicit in these notions. Further, it seeks to understand how these scientific practices thus reinforced some of the notions of the dominant sustainability discourses because of the networks within which they were embedded. The paper concludes with a reflection on the possibilities for transformative potential of environmental technologies through transnational research networks, as well as other similar contexts.

Social representations of alternative pest management approaches in agriculture. *Elisabeth Gauthier, Agriculture and Agri-Food Canada*; *Gale E. West, Laval University*; *Anne-Marie Handfield, Université du Québec à Montréal*

Considerable effort has been invested around the world to reduce the use of synthetic pesticides in agriculture. Given public concerns associated with these compounds, one might assume that citizens will necessarily welcome any attempt to reduce their use. Using citizens' focus groups and social representation (SR) theory as an analytical framework, we analyzed how citizens construct meaning around three alternative pest management approaches, namely biopesticides, biological control and integrated pest management (IPM) approach. Participants expressed their views, first on the terminology commonly used to describe these three concepts, then on formal definitions. Strongly influenced by terminology at first, the objectification and anchoring of SRs progressed through discursive interaction, particularly through exchanges between gardeners/farmers and other participants. Paradoxically, of these three approaches aiming to reduce the use of synthetic pesticides, the one allowing their use (IPM) was the most acceptable to participants. Results, and the use of SR theory, shed new light on previous research on the acceptability of pest control approaches. Implications for communications about pest control are discussed.

The Unbearable Lightness of Air: a case of citizen's management of odorous environment. *François Mélard, Université de Liège*

What does it means for local residents to account publicly for olfactory nuisances in their environment, to share their experiences, and, above all, to render objectivable what could appear, at first glance, as sheer subjectivities? Relying on an Actor-Network Theory (ANT) approach to technical democracy, a Belgian case study where knowledge co-production between citizens, university, and a spin-off enterprise is described and debated. Between the odor emission source (industry, waste disposal,…) and the odor immission realities (reception) there are an heterogeneity of both natural and social factors that render the flux of odorous molecules more or less challenging to trace. This story is about both technical and social traceabilities. This story is about the intimate, but problematic, relations between electronic noses and human lookouts (Vigies), where the identity of impacted residents and the aerial characteristics of the odors are closely related. The very intimate (recalcitrant) trajectories of

air causes interesting mode of associations between key protagonists: a change in the protocol of measurements and it's the nature of the relations between them that is transformed. In terms of governance, the direct involvement of citizens in the odor monitoring in direct collaboration with the industry (odor source) offers a kind of "management of proximity" that contrasts with the more classic mode of regulation by public authorities.

Experiments in environmental STS. *Catharina Landstrom, University of East Anglia*

Science and technology studies appear to mostly have engaged with public participation in two ways, one is conducting critical scrutiny of failures to involve the public adequately in science related decision making. The other being the facilitation of, and reflection on, deliberative activities and their shortcomings. Critical of these modes of engagement Pestre (2008) exhorts STS practitioners to 'develop a more informed political philosophy' in order to address discourses on participation and good governance as forms of governmentality. The challenge is to invent ways to 'talk positively about various kinds of knowledge, including science' and to better 'understand the various links between science, the political order and democracy'. Taking on Pestre's challenge this paper explores how critical environmental STS can engage differently with public participation. The paper reflects on an example of STS involvement in an interdisciplinary project experimenting with upstream public engagement in flood modelling. Framed in a science studies understanding of knowledge and controversy the project had scientific objectives and articulated a critical stance to local flood risk management. The role of STS in this project contrasts with both that of the independent critic and the democratic facilitator, formulated in other contexts. Examining this project in which STS combined with natural science and local experience to create new knowledge about local flooding we suggest that environmental issues can offer opportunities for new modes of science studies engagement.

099. Governing the food-health nexus: Practices and materialities - II
4:00 to 5:30 pm
Radisson Hotel: Radisson A
Chair:
David Schleifer, Columbia University
Participants:

What counts as a blueberry? *David Schleifer, Columbia University*; *Michaela Desoucey, Princeton University*

Food industry professionals are among those who have been exposed to American pundit Michael Pollan's admonitions to choose and eat foods containing clearly recognizable ingredients – things that people's "great-grandmothers would recognize as food." Following scholars like Warren Belasco and David Hess, who have shown that mainstream businesses routinely take up and elaborate technologies and ideas that originate in grassroots, oppositional movements, we investigate how this idea has shaped new entrepreneurial opportunities in the United States. In particular, how does the industrial food system incorporate, elaborate, institutionalize and materialize naturalness? We analyze how suppliers market ingredients to food manufacturers in order to understand the social, technological, and regulatory processes within the industrial food supply chain that make it possible for foods to be defined as natural and thus 'recognizable' to consumers. Because food manufacturers must disclose ingredients, but "clean label" or "natural" ingredients are not defined by the government, how do industrial organizations create economic opportunities out of a lack of clearly defined regulatory categories? The research is based on qualitative content analysis of advertisements and articles from 12 issues

each of the two largest distribution food industry trade magazines – Food Product Design and Food Technology, both from 2010. Our preliminary findings suggest that suppliers make active use of loose labeling requirements as they try to enroll manufacturers in the process of making food products and labels that appear "clean."

Food Fight: Unpacking Dietary Credibility. *Bart Penders, Radboud University Nijmegen*

Claims about food and nutrition, about the 'right' things to eat, are abundant. They originate from an immense variety of sources, embody a variety of agendas and differ significantly in their content. While food and nutrition are championed as key ingredients to local and public and individual health campaigns, they also feature as key drivers of national, innovative economies. Those involved in generating such claims include nutritional educators – governmental or otherwise, food industry, scientists – commercial and academic, public health officials and many others. Each aim to influence consumer-citizens' daily food and dietary choices. This paper inquires where the credibility of each of these professional groups originates from, how it is actively established and maintained by their members and how it ties into, or responds to the credibility of other professional groups. Embedded in such credibility establishment strategies lie conceptualizations of the consumer-citizen as their prime audience, social and material ingredients to dietary credibility and cultural and political understandings of the role of food and food professionals' expertise in our society.

Designing the "Food Code": The Codex alimentarius. *Brigit Ramsingh, University of Toronto*

Following the Second World War, the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) teamed up to produce a list of food standards, called the Codex Alimentarius or "Food Code". These UN agencies assembled teams of health professionals, government civil servants, medical and scientific experts to design food standards for specific commodities as well as for key food safety areas of additives, microbial hygiene and pesticide residues. The Codex was intended to meet the agencies' twin aims of protecting human health and promoting trade interests of its member states. Once ratified, the food standards were distributed to governments for implementation on a voluntary basis. This changed after 1995 with the emergence of the World Trade Organization and the Sanitary and Phytosanitary (SPS) Agreement which gave the Codex greater legislative backing at the international level. The question of what happens once the Codex is put into practice is intriguing in light of its controversial aims of protecting consumer health whilst facilitating trade not to mention its trajectory from a voluntary form of governance to becoming an arbiter of "sound science" for food standards. Moreover, from its inception debates arose over whether a truly international standard could be attained, as adoption of one might occur at the cost of marginalizing local and regional interests. Drawing upon Jasanoff's notion of co-production I will address the inherent tensions of Codex standards, and consider how food science is contested within this institution.

Slow Food: the geographical becoming of a new social movement. *Stefan Dormans, Radboud University Nijmegen; Bas Hendrikx, Radboud University Nijmegen; Arnoud Lagendijk, Radboud University Nijmegen*

In order to understand the global circulation and diffusion of ideas and practices this paper proposes a theoretical and methodological framework which aims to move beyond the case study approach. In a study of a rapidly growing new social movement, Slow Food (SF) , the paper looks both at the global diffusion of SF ideas and practices as well as the local articulation and appropriation of these ideas and practices. Since its establishment in Italy in 1989, SF has evolved into a significant global social movement promoting sustainable, local

and high quality food production and consumption. Drawing on Actor-Network and Assemblage Theory, this paper presents an approach to trace and explain the proliferation of SF, starting from its original 'design' (a local protest in Rome against the establishment of a McDonalds restaurant) to its current multiplicity of displacements. In this paper, we argue that the emergence of SF can be usefully understood as a threefold process of 'geographical becoming'. First, SF expands and evolves through the continuing interaction and engagement with existing socio-technical arrangements in specific places and spaces. Second, it embeds itself in these places and shapes new local food agendas. Third, it constitutes a geography in itself, with concentration and dispersion, cores and peripheries, virtual highways and cul-de-sacs. We draw upon the strong internet exposure of SF and combine systemic (webometric and content analysis) with interpretative approaches (multi-sited ethnography and discourse analysis) to explore these particular geographies and understand the circulation and diffusion of SF ideas and practices.

Discussants:

Xaq Frohlich, Independent Researcher
Bart Penders, Radboud University Nijmegen

100. (39 + 44)Temporal practices and socio-digital organizing + Universal design and ambient living
4:00 to 5:30 pm
Radisson Hotel: Radisson B

Chairs:

Ingrid Erickson, Rutgers University
Maxine Saborowski, Alice Salomon University of Applied Sciences Berlin

Participants:

Reshaping the Day: smartphones and the renegotiation of temporal practices. *Martin Hand, Queen's University*

This paper will present original empirical data concerning how smartphones are intervening in existing time-practice schedules that organize daily life, through both the replication and expansion of self-conscious strategies of temporal management and the routine production of visual 'social data' in ordinary practice. The paper will develop a theoretical framework that situates the use of smartphones in terms of their intervention and domestication within the management of intersecting and often conflicting social practices. The central focus of the paper draws upon in-depth interviews with smartphone users to analyze the role that combinations of digital devices, software, and social media play in a) coordinating and managing intersecting schedules of work and leisure through the use of multiple devices and specialized apps; b) altering conceptions of conventional temporalities (conversation and friendship mediation); c) enabling novel temporalities to emerge through the visualization of social practices that seem to require continual monitoring, partly as a consequence of their fluidity. The paper draws out and develops some of the ways in which people frame the negotiation of temporal scheduling through socio-technical arrangements in explicitly ethical terms. The paper seeks to make a contribution to the relationship between visual data and method in STS.

"Sent from my iPhone": Blurring boundaries in the work/home-place. *Rebecca Whittle, Lancaster University; Rebecca Ellis, Lancaster University; Ian Marshall, Lancaster University; Paul Alcock, Lancaster University; David Hutchison, Lancaster University; Andreas Mauthe, Lancaster University*

Following the conference theme of design and displacement, this paper explores the conflicts and contradictions that emerge as the introduction of new technologies with the potential to link work and home prompts questions around responsibility (moral, familial and, increasingly, environmental), control and

legitimacy. The paper draws on qualitative research (interviews, group work and observations) with Lancaster University employees which were conducted for 'Current', a two-year, interdisciplinary research project which explores digital energy in the workplace and which seeks to develop interventions to enable this energy to be managed more sustainably. Through a detailed examination of participants' accounts of their working day, the paper shows how technologies and associated services such as smart phones, dual screens, DropBox, iPads, the use of social networking for work purposes and the emergence of a BYOD (Bring Your Own Device) culture at work can lead to deep uncertainties around work/home boundaries and the notion of what it means to be 'productive' at work. Such uncertainties become more interesting still in the context of environmental concerns, as attempts to develop energy-saving interventions in the workplace expose further conflicts and contradictions around technology and control at work – including fears that employers may use technology as a benchmark for productivity, thus making it harder for devices to be powered down when not in use. The paper concludes by exploring productive ways of resolving some of these conflicts in order to help workers and employers renegotiate questions of responsibility in relation to technology in more constructive ways.

Design, Cultural Background and Methodological Approaches in the Integration of AAL and Robotics. An Intercultural Comparison between Europe and Japan. *Gregor Fitzi, University Oldenburg (Ge). Istitute of Sociology; Gesa Lindemann, University Oldenburg (Ge). Istitute of Sociology; Hironori Matsuzaki, Carl von Ossietzky University of Oldenburg, Institute for Social Sciences*

Recent developments in care and service technology show a particular shift to an integration of AAL and robotics into a comprehensive design. Perceptive tasks become more and more distributed to installed AAL components, whereas actuating tasks are entrusted to robotic entities that can move and act within these intelligent environments. Such a splitting of the traditional sensomotoric core of automation technology is due to the increasing demand for simplifying user interface design of care and service technologies. Another important implication lies in the need of implementing a new vision of man-technology interaction, which is derived from behaviorist assumptions and thus considered to be universal. In this regard, however, developers are facing methodological difficulties because practical understanding of man-machine interface and end-users' attitude toward advanced technologies vary from culture to culture. Our talk presents the results of a month-long ethnographic study in European and Japanese laboratories of care and service technologies. This intercultural comparison highlights different features and strategies in the related design development. We start with significant criteria for a typological analysis of those approaches which aim at integrating AAL and robotics technologies into a comprehensive design. Similarities and divergences between the observed approaches are then analyzed from the point of view of sociological interaction theory. This provides critical insights into the socio-cultural embeddedness of development process of technological artefacts on the one hand and allows an evaluation of pros and contras for the future implementation of synthetic AAL technologies on the other.

Exploring old and new media: Comparing military blogs to Civil War letters. *Seth Shapiro, Cornell Unviersity; Lee Humphreys, Cornell University*

Comparing new media to older media can help identify fundamental uses and perceived effects of communication technology. This study textually analyzes one soldier's milblog and one Civil War soldier's letters and diaries to understand how milblogs compare to older forms of soldier correspondence. Despite overt distinctions in historical context and the technical systems utilized, this analysis suggests that the milblog and letters/diaries share tremendous similarities. In composing their correspondence through these distinct media, each soldier maintained similar anxieties over technological affordances, perceptions of audience, and motivations for corresponding. Both soldiers utilized mediated communication that was subject to blockage and censorship, while affording them connectivity to their world at home. Both mens' writings suggest an audience broader than to whom the correspondence is written. Particularly of note is the role of the Civil War letters to be shared in the community and published in the local paper. Based on both men's writings, we identify three motivations for correspondence: journalistic, relational and therapeutic. Though there were some differences in style and content, little that was done or accomplished via the milblog was without direct precedent in the Civil War letters and diaries. While milblogs may have seemed a radical departure from the routinized military communication complex of modern warfare (Burden, 2006; Stype, 2010), this analysis suggests similarities in the communication patterns, affordances, and motivations to soldiers in the 19th century.

101. (43) Childhood, values, and digitisation - II
4:00 to 5:30 pm
Solbjerg Plads: SP112
Chairs:
Irma van der Ploeg, Zuyd University
Isolde Sprenkels, Zuyd University
Participants:

Online sociability: children, technology and interaction. *Ana Delicado, Institute of Social Sciences Univ Lisbon; Nuno Almeida Alves, CIES-ISCTE-IUL*

Children are among the most frequent and proficient users of the internet in some European countries. Several studies show that children's time spent online is increasing, as well as the diversity of activities they perform. The internet has become a "digital playground", where children meet, play, learn, socialize, exchange gossip and share information and preferences. Through instant messaging, online social networks, and all sorts of other platforms (such as chats, forums, games that allow communication between players, etc.) children are able to maintain a quasi-permanent connection with their friends, family and eventually strangers, even from within the walls of their bedrooms. But how is this "technologically-mediated sociability" (Licope and Smoreda 2006) managed in children's daily lives? How are online and offline interactions intertwined? Do digital and face-to-face friendship networks intermesh or are kept separate? Do information technologies help overcome national borders and physical distance even for children? Are the values of protecting children against the outside world at conflict with the values of autonomy, openness, and cosmopolitism that the internet stimulates? This paper will seek to address some of these questions, based on an on-going research project on children and the internet in Portugal, funded by the Gulbenkian Foundation. The project's methodology combined a survey (N=3049), interviews (N=158), collection of visual data and ethnography with children aged between 8 and 14 years old (N=30).

The Janus Face of Dutch Media Literacy Initiatives Concerning 'Kidsmarketing'. *Isolde Sprenkels, Zuyd University*

Public debates on children's use of new media can be divided in discourses of celebration and discourses of concern (Drotner 2011). On the one hand, new media offer children opportunities to play, learn, and interact. On the other hand, new media add to concerns related to content-, contact-, and conduct related risks (Livingstone 2011). One of the organizations taking up such matters of opportunity and anxiety was the Dutch Council for Culture. It advised the Dutch government in a report on 'media

literacy' in 2005, which started a widespread debate, and gave rise to many (semi-)public and private initiatives. This paper draws on an empirical study exploring these Dutch media literacy initiatives and their take on new media use in marketing and communication directed at children. First, following social and constructivist studies of science and technology, it argues that these initiatives are based on a problematic instrumental view in which new media technologies tend to be considered neutral tools, becoming 'good' or 'bad', dependent on the way they are used. Second, it explores two perspectives these initiatives have on 'kidsmarketing'. One which relates to the vulnerability and innocence of children, considered in need of protection and care. And one which relates to children's participatory potential or agency, considered as competent and autonomous consumers. These sets of seemingly contradictory values produce an ambivalence which is reproduced and utilised to legitimise current commercial marketing and communication practices targeting children.

Digital games in the Norwegian educational discourse. *Kristine Ask, Norwegian University of Science and Technology*; *Lars Skancke, Norwegian University of Science and Technology*

Digital games have been hailed as a possible savior of a "failing educational system". Whereas schools are struggling to engage students, games appear to have qualities that encourage critical learning as well as enthusiasm for literacy (Gee, 2007). 'Digital literacy', a term used in every subject as part of the Norwegian national curriculum, states that it is just as important to be able to use and reflect upon digital tools in a learning context -as it is to acquire traditional skills associated with literacy (reading, writing, numeracy). This perspective could pave the way for digital games in education, but it has proven difficult to implement digital games to those effects. Why? This paper will present research on how video games are formatted and understood in Norwegian national policy documents, national curriculum and similar texts. An inquiry into policy documents can show us how digital games are constructed as tools for learning as well as understandings of what knowledge and visionaries they are based on (cf. Latour 2007). Are digital games and play framed as relaxation, entertainment and/or an escape from 'real' learning? Findings will be based on qualitative textual analyses with a particular focus on what ways (if any) games are understood as educational tools. The aim of this paper is to further build on the link between STS and Game Studies by investigating discourses surrounding games to show how new technologies are shaping our understanding of both knowledge and learning.

Kindergarten children's digitized conduct of everyday life. *Niklas A Chimirri, Roskilde University*

The relation between a child's everyday life and digital media technologies is complex and complicated. To what extent children think them subjectively relevant for their lives and subsequently use meanings transmitted by domesticated technologies in the contexts they live in/with and move through, depends on the specific socio-material conditions they were and are confronted with in practice. Meanwhile children have the possibility to act differently in relation to these conditions. Consequently children are neither merely objectively determined by the technologies, nor can they completely determine their perceptions and actions with and through the technologies. This is to counter widespread one-sided notions that the child-technology relationship can be explained as an either-or relationship: Instead both agents are inextricably intertwined. Karen Barad's concept of intra-action may be valuable for understanding this relationship in such a two-sided manner. However, studies building on an agential-realist perspective often neglect that children face concrete dilemmas when trying to integrate digital media technologies into institutionalized practices. These dilemmas persist over time, which points to the fact that the conditions shaping practice cannot be grasped and

questioned via relationalist descriptive accounts ("snapshots of practice"). Empirical material I collected praxiographically in a kindergarten suggests that children try to collaboratively overcome concrete dilemmas and tackle contradictory demands in the institution. Hence the paper makes the fundamental argument that the children's particular actions are directed towards something more general, towards possibilities and limitations for contributing to the kindergarten practice via their technology-related meanings, and thus towards conjointly conducting their everyday lives.

102. Postphenomenological research: philosophical implications

4:00 to 5:30 pm
Solbjerg Plads: SP113

Over the past decade, the 'postphenomenological' approach to science and technology has come to play an ever growing role in science and technology studies. As it developed out of a fruitful interaction between philosophy and STS, it has come to inspire both philosophers of technology and scholars working on empirical studies of science, technology, and society. By articulating notions that can be used and further developed both in empirical studies and in theoretical work – like mediation, multistability, and human-technology relations – postphenomenology is increasingly adding helpful perspectives to other approaches in STS. The four panels we propose each focus on a different aspect of the postphenomenological approach, in order to explore its methods and its possible implications for STS and empirical philosophy of technology. Panel 1 focuses on theoretical contributions; panel 2 on empirical perspectives; panel 3 on new human-technology relations; and panel 4 on philosophical implications.

Chair:

Peter-Paul Verbeek, University of Twente

Participants:

Techno-anthropology. Hybridizations and in betweeness. *Lars Botin, Aalborg University*

Hybrids and hybridization seems, in a contemporary perspective, to become evermore incumbent and emergent in any discourse on technological innovation and development. (Jamison, Christensen and Botin 2011) The concept of hybridization has been at stake for a couple of decades, mainly in Donna J. Haraway's discussions on cyborgs and their potentials, Rosalind William's elucidations on the hybridization of engineering discipline and identity in a learning environment, Bruno Latour's conceptualization of scientifiction as a hybrid thing in a reality of social constructs and Don Ihde's multiple and plural framing of use and application of things in everyday life settings. The being and knowledge of hybrids in relation to technological innovation, development and implementation shows a picture of dynamics and change, where the importance of contextual and cultural knowledge in relation to engineering science and practice becomes evermore apparent. These post-human and post-phenomenological approaches to hybrids and hybridizations show an increasing understanding of self-generating processes in emergent technological entities or things which constitute in in-between spaces that according to Gilles Deleuze and Felix Guattari is where speed, dynamics and change paradoxically takes place; and on the other hand, according to a post-phenomenological reading, is characterized by intentional multistabilities. The new education and research program Techno-anthropology at Aalborg University (DK) is framed in this perspective of hybridization and in-betweeness in order to show potentials, challenges and opportunities for technological processes of constant becoming. Keywords: Techno-anthropology, hybridization, in betweeness, post-phenomenology and STS

11. Is intentionality sufficient for explaining technology acceptance? *Hongxiu Yan, Shanghai Jiao Tong University*

The meaning of technology is beyond the traditional sense that it

is only an object, how the technology is accepted. The technology acceptance model (TAM) is very widely used for studying technology acceptance. Based on the theory of reasoned action, existing TAM regards perceived usefulness (PU) and perceived ease of usefulness (PEOU) as the two determinants of technology acceptance, and an actual use is determined by behavioral intention (BI) .That is, it has introduced intentionality. There is no doubt either phenomenology or phenomenology, intentionality is a key term. But, technology acceptance is a kind of praxis, it is a coupling of the intentionality of technology and human. From the postphenomenological perspective, the intentionality of technology is a manifestation of the intentionality of human, vice versa. But, is the intentionality the final causes of action? Traditionally, the analysis of intentionality was mainly from the dimension of epistemology, and a few was from the dimension of axiology. So ,the analysis of TAM should be philosophically discussed on the basis of accept subject from the view of value choice, this analysis includes the source, determinants and the evolutions of TAM, therefore the research of technology acceptance will benefit for clarifying the relationship between technology and human.

Mediated Minds: towards an experimental phenomenology. *Shoji Nagataki, International Liberal Studies, Chukyo University*

It is a commonplace to say that mental states or characteristics of others are only accessible to those who have them. The alleged unobservability of other minds is one of the reasons why scientific research of mind seems difficult. On the other hand, we have a quite robust intuition that we can read others' minds in terms of their facial and bodily expressions to some extent; bodily behaviors can mediate one's mental contents to others. The problem is how this intuition can be justified philosophically and empirically, and to what extent we can rely on it. Can the observation of bodily behaviors or facial expressions serve as a basis reliable enough for objective inquiry? In order to address these questions, we will try to find clues in an experimental study in which experienced occupational therapists are asked to discern mental states and personalities of others by their behaviors. The experiment suggests that the skills of those experienced in this field typically include an impressive and distinctive ability to judge the personalities of others only by their bodily behaviors. In the present paper, we will examine firstly how occupational therapists made their judgments about subjects' mental traits; secondly explicate in what regularity bodily behaviors mediate mental states and characteristics; thirdly draw phenomenological implications of bodily behaviors in understanding others; and lastly suggest a possible application of those implications to robotics.

A postphenomenology of time. *Fernando Flores, Lund University*

The traditional presentation about historical time-passing consists in a linear succession of facts in which some aspects of the lifeworld evolve from others in an irreversible manner. The presentation of change is connected to the presentation of gradual or revolutionary linear changes that are irrevocable. I believe that this presentation could be considered correct for living organisms, but does not take account of some important aspects of demonstrative presentations about artefacts and technologies. For example, we can ontologically assume that "hammer-beating" evolved from "stone-beating". In this sense, the "hammer-beating-time" could be considered contemporary-time and the "stone-beating-time" could be considered past-time. However, we still beat things with stones and stone-like artefacts. The technology of the stone-beating is still been used. That means that relationship between the stone and the hammer cannot be seen as "evolutive" in the same sense that organisms "evolve" from each other. Of course the solution to this problem can only be non-testimonial; we must extrapolate the origins of these technologies "giving these artefacts a voice." And the voice

"says" that these artefacts and technologies have a common origin in the "fisted hand" and "fist-beating" in a "fist-beating-time" which is still contemporary-time. We must assume then, that the fist, the stone and the hammer must be interchangeable technologies which do not overshadow each other. This family of technologies and artefacts are contemporary to each other. Time-passing metaphors must then be substituted with metaphors of "technological pulse".

103. Governance of science: integrating policy, funding, steering, organization and practice
4:00 to 5:30 pm
Solbjerg Plads: SP114

The social studies of science have developed several important research lines concerning the social, cultural and material aspects of knowledge production. Simultaneously, research and innovation policy studies have analyzed priority-setting and enactment of governance mechanisms in national R&D systems. However, there is a striking lack of integrative approaches which incorporate the dynamics of governance, societal knowledge networks and research practices. Our ambition has deep roots in STS. Stuart Blume's 1974 book Towards a Political Sociology of Science called for an integrative approach to the study of scientific governance from the perspective that science is inherently political, deeply embedded in society and sharing several of its political features. In a 2006 edited book, The New Political Sociology of Science, Frickel and Moore name Blume's approach "axiomatic" for science studies but call for a its broader operationalization in empirical studies. In this session, we make an attempt to vertically integrate various aspects of science policy, funding, organization and practice. We discuss and analyze different aspects of the governance system of science and how they interplay, including research policy priority-setting and regulation, the role of funding agencies in the governance of science in various institutional settings (foremost in academia), the organization of scientific institutions and units, and the role of individual researcher's identities and ambitions in setting research agendas and influencing the other levels of the research system. These topics are analyzed with respect to their interdependence and as parts of a whole governance system for science.

Chair:

Aant Elzinga, Univeristy of Gothenburg

Participants:

Who Governs Strategic Research Funding? Institutional Dynamics and Research Funding Practice in the Knowledge Foundation. *Daniel Holmberg, Lund University*; *Mats Benner, Lund University*

Research policy is increasingly integrated with industrial and innovation policy. The strategic research policy that emerged in Sweden in the early 1990's resulted in a new kind of research funding both in form and direction: strategic research foundations. The purpose of the one of these foundations, the Knowledge Foundation, was to build up research capacity at Sweden's new universities and to do so in collaboration with industry as a source of revenue and of research directions. This study discusses the empirical and theoretical implications of government research policy and public administrative innovations, and the intertwining of political and epistemological directions. In particular, the paper analyzes how different logics – political, organizational, epistemological – are blended in research funding practices. The paper analyzes the regulation of strategic research funding with an emphasis on how coercive, normative and mimetic institutional mechanisms affect the internal actors of the RFO – scientific expert groups, funding administrators and members of the board – when they develop research funding practices. The analysis indicates that strategic research and strategic RFOs include the dominant institutional logics in the research system: the autonomy model which builds on collegial norms and principles of academic self-regulation with its focus on basic research, and the corporativist

interventionist model with its focus on the needs of society and industry. The trans-institutional model of research funding is an unstable institutional model of research support. This means that both strategic RFOs and strategic research can be viewed as matrices of the research system's various interests and actors, and as a manifestation of research policy ambivalence.

The impact of evaluations on developments in academic careers: Concepts, research strategy and initial findings in the UK. *Frank van der Most, e-Humanities Group / DANS, KNAW*

In the early 1990s, several authors have noticed a decrease in the level of academic freedom and an increase in external influence from policy makers, industry and NGOs (Elzinga, 1985; Rip, 1994; Ziman, 1994). Or, as others put it science's operations have become intertwined with those of industry and governments (Gibbons et al., 1994; Leydesdorff & Etzkowitz, 1996). Co-occurring with these developments the diversity in evaluation practices increased. Next to already existing paper and application reviews, the past three decades, new forms of evaluation have emerged or come to the fore: national disciplinary evaluations, annual job appraisal talks and institute assessments and rankings. Societal evaluation and economic impact assessment are on the horizon (Nightingale & Scott, 2007). Few people have examined the impact of evaluations on individual scientific careers. This paper will propose a conceptual frame and a research strategy inspired by life course history approaches (Giele & Elder Jr., 1998) to arrive at a qualitative means to establish the influence of evaluations on career changes of different sizes and sorts. The paper will also report on a first round of interviews with researchers of different seniority in four disciplines (astronomy & astrophysics, environmental engineering, philosophy and public health) in the UK. How influential are evaluations in the complexity and heterogeneity of everyday practices? Which strategies do academics deploy while coping with them and developing their research agendas? What does that mean for policies behind evaluations? The research reported here is part of the FP7 funded ACUMEN project (www.research-acumen.eu)

The genesis and evolution of research groups in academia – exploiting opportunities and counterbalancing constraints. *Olof Hallonsten, Lund University*

The global academic system is said to be in a state of profound and irreversible change – across institutional, national and disciplinary boundaries – bringing commodification, managerialism, and evaluations obsession. This paper reports on a current study that seeks to conceptualize and analyze the conditions for academic research activities from the perspective of research groups, in light of these trends. Groups, rather than individuals, are routinely identified as the smallest organizational and productive units in academic research, but the lack of any credible definition of 'research group' seems so far to have impeded most studies seeking to explore the notion theoretically and empirically. This study makes a comprehensive effort in the theory realm, informed by organizational studies and major theoretical strands in STS, to approach a definition of research group that accounts for internal and external control of research agendas and relates to other relevant and abundant concepts such as university, department, discipline, community and career. The study also makes a first empirical operationalization of the developed theory framework. Here, opportunities and constraints are used as overarching analytical concepts. The genesis and evolution of research groups, as well as their success or failure on different accounts, is viewed in terms of these groups' capabilities of exploiting opportunities and counterbalance constraints in policy, funding, management, organization, evaluations, practices, trading of credibility, and (cognitive) disciplinary development. A comparative element is included, to allow for conclusions about the importance of different

institutional conditions (e.g. full-breadth university vs. polytechnic vs. newcomer higher education institution). The empirical contribution is at this point restricted to preliminary results from a comparative study of groups in Swedish academic institutions. Suggestions for future research, on basis of the theoretical framework developed, is also a crucial component of this presentation.

Between Vision and Reality: Co-production as research policy buzzword and messy practice. *Josefine Hjelteig Fischer, Lund University*

This paper is based on my PhD project concerning research done in collaboration between industry and academia within so-called newcomer higher education institutions in Sweden. These typically rely more on external funding than the full-scale universities. One research agency targeting newcomer institutions, thus becoming an important source of funding, is the Knowledge foundation. The foundation works actively with a governance strategy labeled "co-production" which means that researchers and companies should work together on the companies core activities while simultaneously generate excellent scientific results, and projects must receive 50 % co-funding from industry. There are reasons to believe, however, that the ideal picture held by the funding agency in its design of "co-production" schemes does not always hold when it comes to the actual research practices. Empirical data from two centers engaged in "co-production" suggests that "co-production" is malleable to local and temporal negotiations, and its practices are shaped by many factors, such as history of the center, personal motivation of the researchers, epistemological trait and disciplinary affiliation, and also sizes and branches of the participating companies. At the same time, given all possible prerequisites the researchers have to relate to and negotiate the concept of co-production, as it is understood by the funding agency. This may well give rise to conflicts as well as interesting new forms of collaboration between researchers and the wider society in which research takes place. The intention of this paper is to analyze such questions using qualitative empirical data from the research centers at newcomer higher institutions.

104. Agnotology as research program and theoretical problem
4:00 to 5:30 pm
Solbjerg Plads: SP205

Ever since Robert Proctor convened a conference on the topic in 2005 and published the proceedings in 2008, interest has exploded in the phenomenon of Agnotology. Perhaps the seeming irony of the procedures and trappings of science becoming commandeered to the manufacture of ignorance has captured imaginations; or perhaps, there is the sense that political interventions in scientific controversies has passed a tipping point with the success of movements like global warming denial or the installation of 'creation science' in school curricula. In any event, the demonstration that there was demonstrable structure and continuity to agnotological interventions in Star Wars, CFCs and the ozone hole, tobacco cancer interactions, and global warming in the landmark book by Naomi Oreskes and Erik Conway [Merchants of Doubt 2010] raised the prospect that this was not some isolated phenomenon. If indeed there can be produced evidence of regular deployal of the 'tobacco strategy' on the part of the same neoliberal think tanks in numerous scientific areas of controversy; or that there are multiple incidents of corporations or governments justifying the alteration of conventional scientific findings through appeal to the 'marketplace of ideas', then perhaps something has really changed, and it seems it is time that 4S took it more seriously. The spectacle of the intentional manufacture of ignorance summons the prospect of a very concrete politics of knowledge, far more pungent than the abstract Foucauvian version. The papers in this session provide specific instances of named actors supported by specific nodes of power and money creating institutions and forms of validation outside of contemporary academic departments, dedicated to pumping noise into contemporary

discourse and inserting tailor-made doctrines that further the agendas of their sources of support. Scholars of 4S have been relatively slow to participate in this research program, compared to the historians of science, for reasons the participants of this session will explore. Perhaps the ingrained skepticism concerning unimpeachable truth claims in science prompt science studies researchers to hesitate, because they think that descriptions of Agnotology presume a naïve world of black and white, noble truth and nefarious falsehood. Or, alternatively, there is the danger that the commonplace stance of questioning expertise in 4S too closely represents a similar hostility to experts on the part of think tanks and corporations. Many prophets of the marketplace of ideas also claim to want to democratize science; but the real devil hides in the details of what it means to open science up to the public. And then there is the understandable hesitancy concerning narratives that sometimes veer close to conspiracy theories; it is, after all, difficult to discern how such large scale multi-participant interventions can be fronted and maintained, or to accept that individuals with various scientific credentials willfully and intentionally promote spurious and misleading doctrines. Agnotology suggests that the world consists of more than serious well-intentioned isolated individual scientists who happen to disagree; but equally, more than a few academic 'core sets' of epistemically similar constitution.

Chair:

Philip Mirowski, University of Notre Dame

Participants:

The Origins of Pharmaceutical Agnotology. *Edward Nik-Khah, Duke University and Roanoke College*

One of the most important contributions of science studies to contemporary policy debates has been the careful documentation of pharmaceutical corporations' efforts in promoting dubious science to construct disease categories, to get around prohibitions against off-label promotion of medicines, and to change the standards for information gathering prior to marketing approval. As a result of these efforts there are a lot of things we seemingly could know about drugs, but for reasons that are entirely preventable, don't. Viewing pharmaceutical ignorance as the outcome of a strategic determination of what is knowable, brings to mind "agnotology" (Proctor and Schiebinger 2008), and more specifically the case made by Naomi Oreskes and Erik Conway (2010) that Big Oil and Big Tobacco enlisted misguided scientists and right wing economists to arrest regulation by manufacturing ignorance. I argue that developments in pharmaceutical science present many similarities to the cases of Big Oil and Big Tobacco (the close involvement of corporations, the participation of misguided scientists, the involvement of right wing economists), often involving the very same institutions highlighted by Oreskes and Conway. More specifically, this paper examines the role of economists of the Chicago School in the construction of the Center for the Study of Drug Development for the purpose of coming to grips with the ideas informing both the willful manufacture of ignorance in drugs, and agnotology in general.

"The co-production of negative boundary objects in the H5N1 debate". *Samuel Evans, Havard University*

In late 2011, researchers from Erasmus and UW Madison submitted articles to the journals Science and Nature, wherein they explained their recent research on aerosol transmission of avian influenza H5N1 between mammalians. The US National Science Advisory Board for Biosecurity (NSABB) recommended that the journal editors redact certain parts of the articles to help prevent the spread of knowledge that might have applications to bioweapons. Since then, many conversations have occurred on this issue about how to balance the concerns of academic freedom and (inter)national security. In this paper, I draw on the literature of co-production, boundary objects, and ignorance to show how the H5N1 debate is a moment of contestation between two different sets of knowledge and social institutions. Instead of trying to block the knowledge outright, attempts have been made to restrict knowledge to only those within certain

institutional frameworks, e.g. "respected scientists." These attempts are experiments at creating "negative boundary objects," which serve the knowledge needs of multiple groups by being known within one set of institutions, and unknown within another.

As Long as they Keep Paying Us, We Must Be Right: Economists and Agnotology in the Economic Crisis. *Philip Mirowski, University of Notre Dame*

Thomas Pynchon once wrote, "If you have them asking the wrong questions, you don't have to worry about the right answers." That is a passing short definition of Agnotology, and nowhere has it been put to use with greater intent than during the current economic crisis which began in 2007. The causes of the crisis were obscure when the financial bubble burst, and have remained controversial ever since. Nevertheless, many of the same think tanks and organizations that engaged in the 'tobacco strategy' with regard to global warming (Oreskes & Conway, 2010) have been hard at work employing the same techniques to manufacture ignorance and foster their own targeted counter-narrative with regard to the crisis itself. This paper (partly joint with Edward Nik-Khah) describes two specific instances of these interventions: the promotion of the narrative that the root causes of the crisis can all be traced back to the errors of government policy, specifically with regard to Fannie Mae and Freddie Mac, and the way this construct was used to undermine the activities of the US Federal Crisis Inquiry Commission; and second, the role of market mechanism designers in first providing academic legitimacy for the Troubled Asset Relief Program (TARP), but then becoming some of its harshest critics when their proprietary auction designs were rejected by the Treasury. We will close with some suggestions on the links of the manufacture of ignorance to the Neoliberal conception of epistemology (Mirowski, 2011).

105. Infrastructure and displacement: Reordering information and classification

4:00 to 5:30 pm
Solbjerg Plads: SP207

We are interested in the relationship between technological infrastructures/devices and the displacement or reconfiguration of information. We seek to question the practices surrounding these infrastructures or devices, by making visible the work of alignment and ordering that lead to classifications. Rather than analyzing existing classifications, we focus on their emergence and shifting character, and the shifting nature of those who participate in knowledge production. Digital infrastructures such as database or geographical information systems appear to have the ability to hide or to make visible various practices, and thus the work of individuals and groups, in new, sometimes unplanned ways. For instance, in scientific practice, Hine (2008) has shown how digital infrastructure revitalized a number of scientific disciplines, providing new tools for systematics and, at the same time leading to new practices involving different actors. In particular, technological devices and platforms appear to facilitate the involvement of nontraditional actors, such as amateurs in knowledge production. Our cases highlight the active role of technological devices in these processes. Panelists : Jerome Denis, Telecom ParisTech , jerome.denis@telecom-paristech.fr David Pontille, CNRS, pontille@ehess.fr Eric Dagiral, Université Paris-Est / LATTS, eric.dagiral@univ-mlv.fr Ashveen Peerbaye, Université Paris-Est / LATTS, ashveen.peerbaye@univ-mlv.fr Lorna Heaton, Universite de Montreal, heaton.lorna@umontreal.ca Florence Millerand, Universite du Quebec a Montreal, millerand.florence@uqam.ca

Chair:

Lorna Heaton, Universite de Montreal

Participants:

Making the Cycling City Visible. Classifying urban facilities in a volunteered geographic information environment. *Jerome Denis, Telecom ParisTech; David Pontille, CNRS*

The bicycle has made an important breakthrough in numerous cities around the world in the last decade. Its use has dramatically increased, notably through bicycle-sharing systems, and various dedicated infrastructures have proliferated. The latter has literally transformed the appearance of urban settings: spaces have been re-ordered through new marks, lanes, median strips that have complexified the sorting of vehicular units, promoting new ones and limiting others. With increasing use, information about these facilities becomes crucial. Knowing in advance where a lane starts and finishes or if a track is separated from the road are more and more considered as important features for the daily shaping of cycling cities. Yet, cycling infrastructures raise specific issues in terms of visibility and accountability: facilities in their diversity are difficult to inventory and categories are not stabilized. In this communication, we will explore how volunteers deal with such issues as they strive to produce an accurate description of bike infrastructures using a collaborative geographical information system. Our study, which draws on the analysis of the online debates in this community and on interviews of some of its participants, shows that they encounter two different kinds of problems. First, they have to deal with the issue of description, from the naming of the different facilities to discovering their actual existence and location. Secondly, they have to deal with the issue of evaluating other urban infrastructures used by cyclists even if they are not dedicated to them, shaping criteria to measure their 'cyclability'. Taken together, these two problems show that, even though the cycling city can be seen as an infrastructure (Star & Ruhleder 1996), it cannot be taken for granted. Rather it is an elusive object (Law 2004) whose description remains difficult, even for practitioners. Its visibility rests on the production of another infrastructure, an informational one, which progressively sets its shapes, its categories and defines its possible uses.

The Pragmatics of Rare Disease Classification: Infrastructure, practice and meaning. *Eric Dagiral, LATTS, université Paris-Est Marne-la-Vallée / Catholic University of Paris; Ashveen Peerbaye, Université Paris-Est Marne-la-Vallée*

In the past decades, a new way of labeling thousands of diseases and disorders has emerged, based on their low statistical prevalence, giving birth to the category of "rare diseases". This is achieved through the mobilization and reconfiguration of a heterogeneous network of pharmaceutical industrialists, scientific research centers, medical and healthcare professionals, patient advocacy groups, and public health institutions. For the various collectives involved in this process, producing knowledge on rare diseases is a crucial aspect for increasing their recognition and visibility. In this respect, classificatory practices play an important role in performing "rare diseases" as a meaningful entity, especially for researchers and policy-makers. Based on an empirical study of the European "Rare Disease Platform", our contribution focuses on the places, collectives, and technologies that allow this classification work to be performed. We analyze the negotiations and pragmatic rules through which diseases are collectively examined and integrated into multiple classifications (e.g. clinical, genetic and molecular), that differ in their design and intended use(r)s. This classification work aims in particular at the inclusion of rare diseases into the revised version of the International Classification of Diseases (WHO ICD), an issue which provides interesting insights on how rare diseases are embedded in existing classification infrastructures, and in return displace them. Drawing on actor-network theory, symbolic interactionism and infrastructure studies, our contribution highlights the importance of database-centered devices and practices in these processes, and stresses the multiple shifts in meaning, agency and collective identity that they entail.

Reshaping a Botanical Database: Dis-placing and re-placing the lines between amateurs and scientists. *Florence Millerand, Universite du Quebec a Montreal; Lorna Heaton, Universite de Montreal*

Online platforms for collaborative knowledge production have emerged in the last ten years, leading to significant changes in the way knowledge is produced and shared. New practices are defined around blogs, wikis or social networks, involving different actors – scientists, amateurs, the public, thus extending and sometimes displacing the locus of scientific knowledge production –not only of knowledge communication - to nontraditional areas. Systematic sciences such as botany, based on listing and classifying organisms in which documentation and collections are crucial, seem particularly able to benefit from the possibilities of data collection and aggregation offered by collaborative platforms, allowing for large numbers of users to contribute. Yet, online collaborative production of knowledge that involves both scientists and nonscientists raise specific issues in terms of access to, presentation, and description of knowledge. Based on an empirical study of Tela Botanica, the French-language botanical network's online platform, we focus on a controversy around the remodeling/reshaping of its main database. The controversy opposes two positions: one, in favor of introducing differential access to the system based on contributors' backgrounds, argues that lay/novice users should be directed to generalized ('Wikipedia style') data first, and only later granted access to highly specialized botanical data. The tenants of this position also propose specific functionalities to reward the contributions of lay/novice users (e.g. 'contribute your own vernacular name for this plant'). The other postition advocates for a single entry access and one data type - specialized botanical data, arguing that only those with the required background should contribute to the database - thus encouraging lay users to find ways to develop their skills and knowledge in order to participate more fully. We illustrate how, historically, the platform built its success upon displacing the line between scientists and amateurs, gathering them together in one carryall 'contributor' category, and we analyse the controversy around the reshaping of the database as a attempt to re-placing this line, by embedding distinct modes for accessing, describing and producing classifications in the system. As the botanical network is firmly engaged in a process of extending its platform scope and activity through data harvesting from other botanical databases, important issues of knowledge description and classification are expected to soar.

The validation of lay knowledge: amateur field biology and archaeology. *Willem Halffman, Philosophy and Science Studies, Radboud University Nijmegen*

Attempts to demarcate lay knowledge from professional expertise often point to professional validation procedures. For example, Merton famously pointed at organised scepticism as one of the foundational values of science. Defences of the value of lay knowledge typically point at unique lay access to knowledge not available to professionals, such as knowledge that stems from privileged access to territory or to lived experience, as with illness. Non-professional knowledge is easily reduced to haphazard knowledge, yet to be processed by the validation procedures of proper research. Such a view underestimates the complexity of validation practices in some forms of lay knowledge already in place. In this paper, I describe validation practices among Dutch volunteer field biologists and archaeologists. In both fields, well-established organisations have developed long-standing traditions of volunteer knowledge production, in difficult interaction with professional researchers. In both cases, involvement with public policy and knowledge commodification have complicated cooperation and validation practices in interesting ways. Dutch volunteer archaeologists have been manoeuvred further to the margins of archaeological research through a state-induced commodification of rescue archaeology. Inversely, volunteer field biologists have successfully taken control of commodification by keeping a firm grip on their databases. The aim of this paper is neither to

reinvent essential demarcations of science, nor to deny such demarcations, but to analyse how practitioners develop tools to distinguish valid from invalid knowledge claims.

106. (02) Establishing expert knowledge: local work in clinical trials sessions - II

4:00 to 5:30 pm
Solbjerg Plads: SP208
Chair:

Sarah Wadmann, University of Copenhagen

Participants:

Clinical Trials and the Deployment of Evidence in Acupuncture and Christian Science Healing. *Kellie Owens, Northwestern University*

The purpose of this study is to understand how advocates of complementary and alternative medicine (CAM) employ various forms of evidence to demonstrate the importance of their therapy. I examine how Christian Science and acupuncture practitioners use different epistemic approaches in order to garner increased institutional support for their treatments. As the structure of American health care changes, CAM practitioners are fighting to have their treatments included in new federal, state, and private health plans. Increasing demand for evidence-based medicine has motivated CAM practitioners to provide biomedical evidence for their treatments in order to obtain and maintain legitimacy. Examining the ways CAM has or has not been integrated into American health care is crucial in understanding the contemporary role of evidence in medicine. While CAM practitioners use various types of evidence in different scenarios, in this presentation I will focus on the use of biomedical evidence. Based on archival data and interviews with practitioners and public figures representing acupuncture and Christian Science, I argue that the willingness of acupuncturists to use randomized controlled trials plays a large role in explaining the rise of acupuncture as a legitimate treatment. Despite an emphasis on scientific language in Christian Science, their unwillingness to adopt randomized controlled trials fuels resistance to Christian Science healing. This outcome was not pregiven due to the inherent nature of acupuncture or Christian Science. Rather, these cases suggest the complex interactions between alternative health beliefs, commitments to evidentiary regimes, and strategies for professional advancement.

Multiplicity (and times) of a biomedical object – the aging erythrocyte. *Maria Strecht Almeida, ICBAS, University of Porto*

Ultimately, present paper addresses the dynamics of research within the life sciences and biomedicine. The analysis is a case-study; it explores research carried out around the problem of the aging process of a specific blood cell, the erythrocyte, since its emergence and throughout the twentieth century. Drawing mainly on published texts and scientometric materials, we tried a mapping of the dynamics of the area. The phenomenon is relevant in different contexts, from the clinical realm, to the research laboratory, to blood banks; the concept of multiplicity (Mol, 2002) appears useful for portraying the aging erythrocyte as a biomedical object – the aging erythrocyte has different modes of existence and might be described as a multiple. Not surprisingly, there were different times of the object. A particular period, 1980s and early 1990s, seems especially interesting. At that time, the mammalian erythrocyte was described (and performed) as a privileged experimental model for the study of aging. The mammalian erythrocyte is a peculiar cell – enucleated, devoid of DNA and the machinery of protein synthesis –, often described as simple. Simplicity and oddness were features that motivated its choice as a promising model in biogerontology. This provides a point of entry for discussing the issue of design and displacement in the dynamics of science –

considering the multiplicity this object, we will look, particularly, at the way this initial model of aging was enacted and the (collective) attempts in exploring its value for the understanding of aging in more complex cells and whole organisms.

Translating Bioscience: An ethnography of value. *Anne Kerr, University of Leeds*

Drawing on a study of innovation in a biomedical science department at a leading UK University, this paper will explore how value is identified, asserted, derived and transformed in a series of experiments, meetings and relationships between scientists, clinicians, managers, funding bodies, regulators and companies seeking to develop novel medical technologies and devices. Taking inspiration from recent STS approach to economic markets, the paper describes the organisation and culture of 'challenge led research' in this department, exploring how it is practiced in the laboratory, the institution, and beyond, and mapping economic, social and emotional values to make sense of these processes. The paper explores value in three projects at various stages of 'translation': a PhD project on non-invasive phenotyping of stem cell differentiation; research to identify the most suitable cell sources for tissue engineering applications; and development of a new product which 'heals' dental decay. Multiplication, co-production, alignment and tensions between different kinds of value and the calculative agencies and rationalities involved in producing, measuring and monetising these types of value will be considered. The paper will end with some short reflections on the value of this approach for understanding contemporary bioscience in and beyond the laboratory.

Judging the Medics' Science: Research Misconduct in UK Medical Disciplinary Proceedings since 1990. *Marie-Andree Jacob, Keele University*

In 1990, historian of science Jan Sapp asked rhetorically "Who really cares if Mendell fudged his data? After all, he was right" (1990: 104). The issue, for Sapp, was the scientific outcome. Twenty years later, the UK General Medical Council in its decision about MMR-autism trials, declared that this case was not about whether Andrew Wakefield's findings were right or wrong. The issue was his honesty. This contrast shows the need to unpack how integrity and truthfulness in science have come to be understood by medical disciplinary and regulatory law in the last two decades. In this paper I discuss GMC cases related to research activities of medical doctors between 1990 and 2010. These decisions are an ideal site for a focused study of how misconduct in medical science is being socio-legally conceived. So far, there has been no systematic analysis of how regulatory criteria in medical governance have been understood to apply to this fast-changing, increasingly scrutinized area (Horton 2010). This project aims to fill this gap. The method combines STS analysis with critical doctrinal analysis of primary legal material (GMC Fitness to Practice Panel decisions, and related judicial review and appeal cases). Attention will be paid to how legal documents themselves craft a narrative (Davis 1987: 3), and constitute cultural phenomena in their own right, instead of merely depending on socio-economic power (Latour 2004, Valverde 2009; Riles 2005).

107. (83) Studio studies & creative production - II

4:00 to 5:30 pm
Solbjerg Plads: SP212
Chair:

Alex Wilkie, Goldsmiths, University of London

Participants:

Perfume-making: The studio as a site of scientific practice and creative production. *Claus Noppeney, Bern University of Applied Sciences*; *Nada Endrissat, Bern University of Applied Sciences*

On the one hand, perfume-making can be described along a sequence of clearly defined steps: the perfume-maker determines the materials to be used in a scent version and writes the exact formula using a spreadsheet. Accordingly, the formula is precisely weighed in the laboratory. Each step is accurately documented on the spreadsheet. The perfumer smells the new scent version. He analyses the olfactory experience based on the formula and modifies the original formula. Thus, scientific practices (e.g. writing formula, weighing, analyzing) seem to dominate the process. On the other hand, perfume-making relies on creative practices that also dominate the public perception of perfume-making: The body of the perfumer plays a significant role in the process. While smelling the different versions of the scent with his nose the perfumer incorporates the molecules of the used materials. Testing the different versions on his arms the perfumer's body becomes part of an experimental setting. In the absence of standardized methods guesswork and the implicit knowledge of the perfumer about possible cause and effect decide the process. Thus, the studio is a place of scientific precision, reproducibility, formula and measurement and at the same time a place of unpredictability, creation and creative subjectivity. The paper explores this concurrency along three significant situations: weighing the formula, smelling a scent version and evaluation of the scent in a client-perfumer dialogue. The paper contributes to STS in so far as it looks at a site on the boundary of science studies and the study of creative processes.

Epistemic dissonance: how do architects come up with alternatives. *Ignacio Farias, Social Science Research Center Berlin*

There is a growing number of ethnographic studies approaching architectural practices from a knowledge-in-action perspective, focusing especially on the practical problem of gaining and articulating knowledge on a not-yet existing object. In this contribution, I propose studying the role of knowledge practices in relation with a fundamental, but specific operation in the design process: the exploration and generation of design alternatives. In this context I suggest that the proliferation of design alternatives is facilitated by epistemic dissonance. David Stark (2009) has focused on different forms of 'evaluative dissonance', this is, when different actors working together differ regarding what they considered as valuable and worthy, how they define the good. I suggest that apart from evaluative dissonance, it is the multiplicity of epistemic positions, detailed information and visual representations that architects to come up with design alternatives. On the basis of ethnographic fieldwork in three architectural offices, I will discuss three practical ways of organising epistemic dissonance by looking at, firstly, how the space of architecture studios enables the coexistence of differing epistemic positions, secondly, how in so-called corrections meetings between chief architects and project architects different amounts of knowledge are mobilized to question and generate design alternatives and, thirdly, how 3D-visualizations and animations bring along new representations of the not-yet existing object that put on trial prior design decisions and open up a space for alternative designs.

Making Studio Practice Public: Assembling a DigiLab through Case Studying Virtual Research Inscriptions. *Amanda Nita Windle, University of the Arts, London*

The DigiLab is a research and enterprise lab in assemblage, based at the London College of Communication, University of the Arts, London. I will focus on the lab's conception phase has lead up to the physical and virtual construction of its studio and website. A sample of online case studies namely — lab, centre, network and hub were studied including; Hyper Island, SiDE, Method Design Lab, Helen Hamlyn Centre (Royal College of Art), Liquid Jungle Lab, IP Business Centre (British Library), Information Environments (London College of Communication), Imagination Lancaster (Lancaster University), the Centre for Fashion Enterprise (London College of Fashion), Charisma

(Open University) and CSISP (Goldsmiths University). This paper will question — how are the activities that assemble 'lab life' in the digital sphere (media and design) constituted through online and offline materialities of the creative studio? Six key terms from Bruno Latour's and Steven Woolgar's theoretical frame were borrowed from Lab Life (1979) as a way to reflect on the textual, audio and visual content of the websites. Running alongside the initial manual content audits, was an automatic web scraper, which used a bot to crawl the websites' content to highlight orphaned/ghost content. I will argue that the working practices of research and enterprise is an interrelation of online and offline inscriptions that assemble studio practice in design and sociological research environments. This is brought to bear through a combination of STS and design (in particular, IA - Information Architecture) contexts, methods and theory.

The cultural (dis)empowerment as shaped in research on algorithms for image processing. *Dominique Vinck, University of Lausanne*

Based on interviews with the members of a research group working on colour image processing for photography, we explore ways to open the black boxes of computational tools, which matter for digital culture and humanities. We look at the way human vision features are defined and displaced to "optimize" the quality of "natural" image encoding and display. The image algorithms and models are based on computer scientists practices and on representations processes of human features (e.g. the subjective criterion of god or bad images), of the image (as a set of pixels versus a user's reconstruction influenced by surround and viewing conditions), and of uses (e.g. cross-comparisons of images, image production, capture, processing and display techniques, and archiving), meanwhile computer scientists make choices and contribute to the re-configuration of them. Furthermore, as there is a diversity of users, we question also who or what voices for them inside the research and design process, in which ways their human or non-human representatives shape the algorithm development, what are the forms and incentives for interaction between researchers and users, how the idea of possible non-users and anti-users is taken into account. The communication looks at image processing algorithms as they shape cultural and information practices. It aims to bring a first insight into what is at stake for the researchers in terms of digital culture empowerment and what role do algorithms play in our cultural environment?

108. Science at the baseline: Consequences of calibration and comparison in 20th century bioscience

4:00 to 5:30 pm
Solbjerg Plads: SP213

The concept of the baseline as a "line forming a basis for measurement or determining position" has its roots in Enlightenment practices of survey. After World War II, establishing baselines in bodies and environments became a key strategy for assessing the impact of anthropogenic harms as well as biological potential. We seek to interrogate the concept of the baseline as a strategy for orienting scientific activity, as a resource for enrolling political interests in such projects, and as a technology of authority for legitimating particular kinds of stock-taking and measurement activity in global contexts. Each of the papers in this session address how the search for baselines has impacted specific technoscientific agendas. In the years immediately following the detonation of atomic bombs in Japan, epidemiologists and human geneticists, alike sought to establish ways of determining levels against which to assess the impact of radiation on bodies and environments. The papers by Bauer and Radin each contribute to the project of unpacking the values led to the construction of human and other kinds of bodies as baselines against which to measure the somatic consequences of modernity. Benson considers how, in the case of 21st century polar bear conservation efforts, the contingent nature of such baselines both animates and constrains the role of science in environmental

policy. Finally, Johnson examines how baselines figure at the level of individual performance in the science of elite sport, devoting particular attention to postcolonial implications of establishing "personal" baselines.

Chair:

Susanne Bauer, Goethe University Frankfurt

Participants:

Locating the Baseline: Calibrating Fallout Effects during the Cold War. *Susanne Bauer, Goethe University Frankfurt*

In the early 1960s, as the fallout from atmospheric nuclear weapons testing reached global scale, government scientists began to measure radionuclides in food. Looking for uncontaminated samples from before nuclear testing for comparison, scientists eventually found their baseline at the Scott Polar Research Institute – in the stocks of canned milk Robert Falcon Scott's expedition took to the South Pole in 1910. Yet to calibrate methods for the assessment of health effects, radiation researchers needed more and different baselines. Just like radionuclides had become experimental tools as tracers and mutagenic agents in the life sciences, scientists, now outside the laboratory of molecular biology, enrolled exposed populations in order to measure the effects of different types and doses of radiation. Deploying already existing studies as research infrastructures for the emerging field of radiation epidemiology, epidemiologists turned the survivors in Hiroshima and Nagasaki into a "unique population" for radiation effects research. They argued there was a "duty to study" exposed populations in order to establish frameworks for global radiation protection. Baselines in this context became increasingly flexible, depending on the data infrastructures and samples at hand. In pragmatic stratifications, researchers would often use the lowest exposure group as the reference and baseline with the goal of testing dose-response relationships, trading the capacity to assess effects at lower dose levels for exactitude in methods at another level. This paper describes how the alignment of exposed populations with an experimental design has shaped scientific practices of risk assessment during and much beyond the Cold War.

Embodying the Baseline: Taking Stock of "Naïve" Bodies in Cold War Human Biology and Contemporary Biomedicine. *Joanna Radin, Yale University*

At the height of the Cold War, a broad range of life scientists articulated claims for the establishment of baselines in an era they saw as increasingly threatened by the pollution of modernity. In his 1963 polemic, Science and Survival, biologist and public intellectual Barry Commoner argued that the advance of the "physico-chemical" sciences without adequate knowledge of the effects of their byproducts on human bodies was tantamount to inadevertantly "conducting a huge experiment on ourselves." Commoner's ideas would be reflected in the activities of the International Biological Program (IBP), which ran from 1964-1974. This paper focuses on those participants in IBP who trained their attention on the human animal, the accidental subject of this inadvertent global experiment. It was the search for baselines against which to measure departure from the normal that led human biologists associated with IBP to seek out bodies that had been unaffected by the negative byproducts of industrial life. Overwhelmingly, they set their sights on communities understood to be primitive and evolved to exist in equilibrium with their environments. In my analysis of this practice, I historicize the concept of the baseline and consider how the mid-century project of turning marginalized communities into markers of biological innocence is consonant with the 21st century search for treatment-naïve populations for biomedical clinical trials.

Floating nature: beyond the baseline in biodiversity conservation. *Etienne Benson, Max Planck Institute for the History of Science*

In the early twenty-first century nature seems to have pulled free

of its moorings like a hot-air balloon caught by a sudden gust of wind. No longer rooted in what were perhaps always illusory certainties — divine providence, universal law, ecological equilibrium — it now presents itself as an artifact that emerges over time and in relation. Like a freely traded currency, its value is backed by nothing but a collective promise. Baselines continue to serve as ballast in environmentalist arguments for restoring ecosystems and wildlife populations to their „original" states, but their intellectual heft is on the wane. What good is a baseline when the world it describes has already disappeared, can never be restored, and may never have existed in the first place? This paper examines the changing fate of the environmental and environmentalist baseline with respect to the conservation of polar bears from the 1960s, when a boom in trophy hunting led to concerns about the survival of the species, to the past few years, when the threat of climate change has led to the designation of polar bears as „vulnerable" and „threatened" by international conservation organizations and national environmental agencies. Recent discourse around the endangered polar bear exemplifies a new relationship to time and to nature: the forgetting of past nature as no longer relevant in a world reshaped by human action, the fear of future nature as unpredictable and potentially monstrous. In this floating world, ecological baselines continue to appeal even as they evanesce.

Establishing a Baseline at the Lab-Field Border: Inside the Medical Tent of the 2006 Comrades Marathon. *Andi Johnson, University of Pennsylvania*

In the mid-2000s a heated debate ensued in science and sport communities alike after being blindsided by the problem of ?overhydration.? For decades, amateur and professional athletes had been encouraged by scientists, physicians, and sports drink manufacturers to drink as much as possible while exercising. The deaths of several marathoners from apparent 'overhydration' in the early 2000s, however, initiated an unprecedented scientific conversation over the causes, boundaries, and treatments for dehydration and "overhydration" (hypernatremia and hyponatremia, respectively). Drawing from ethnographic data, this paper describes the work of a team of scientists documenting hyper-, normal, and hypo- conditions of collapsed runners in the 2006 Comrades Marathon in Pietermaritzburg, South Africa. To take baseline and follow-up blood samples from each of the collapsed runners, the scientists carefully navigated the social and material world of the medical tent. This paper describes the efforts of the scientists and, in doing so, extends the work of historians and anthropologists of science (Kohler 2002; Latour 1999) who attempt to define the relationship between the lab and the field. The paper concludes by returning back to the contexts of sport and medicine and outlining the postcolonial politics and implications of establishing 'personal baselines.'

Discussant:

Geoffrey Bowker, University of California-Irvine

109. (48) Design challenges of working and organizing in technologically dense environments - II

4:00 to 5:30 pm
Solbjerg Plads: SP214

Chairs:

Enrico Attila Bruni, Dept. of Sociology and Social Research - University of Trento (IT)
Cornelius Schubert, TU Berlin

Participants:

Heterogeneous density in Italian Science and Technology Parks. *Michela Cozza, University of Trento-Dep. of Sociology and Social Research*

This paper arises from an ongoing qualitative research project

aimed at studying the processes of transfer and translation of knowledge from centers of creation, such as universities and (public or private) research institutions to firms (Colombo, Delmastro 2002). The organizations taken into account in this project are - on the one side - the universities and – on the other side – some Italian Science and Technology Parks (STP). Mainly, the project is focused on the relation between STP and academic spin-offs. The partial data arising from the one-on-one unstructured exploratory interviews to institutional actors and key informants of universities, STP and incubators, allow a reflection about the management of knowledge and innovation across boundaries (Carlile 2004). These interviews talk about a "dense" environment: this density is related to the sociomaterial practices (Emery, Trist 1981; Orlikowski 2007) and the relations and interactions among multi-situated subjects. I am referring to the researchers-entrepreneurs: mainly at first of a spin-off, the professional identity of these actors is multiple and it is constructed by the "migration" (Fritsch, Krabel 2010) between university, (public or private) incubators and industry. The scheduled interviews to actors of the spin-offs in STP will contribute to the discussion of these aspects. In this paper, the focus on STP allows to analyse the role of interface organizations within the technoscientific networks and across the boundaries of the innovation ecology (Star, Griesemer 1989): STP may be considered as complex organizations that try to manage the heterogeneity of diverse groups of actors.

On the fly: performing medical simulation in and through its double design. *Philippe Björn Sormani, University of Vienna*

Medical simulation in the operating theatre affords us with a "technologically dense environment" (TDE) of a double design. First, this environment exposes students, as part of their practical training, to the technologically saturated scene of the operating theatre. Second, the environment is monitored, and intervened upon, by instructors in the very course of simulation exercises, via the technically induced actions and reactions of HIFI mannequins (alias the "treated patient"), as well as the continuous video recording of any initiated scene (sometimes involving real-time coding for debriefing purposes). This contribution focuses upon how medical simulation is actually performed, on the fly, in and through its double design, by the locally involved parties. Of particular interest is the manifest interplay between "on stage" manipulations and interactions, by students, and "back stage" interventions, by instructors. The paper is based upon instructional videos from in situ simulation. Tricky cases of tracheal intubation have been selected. They afford us with instructive materials to describe the double design of medical simulation in vivo. Our approach to the examined TDE is both ethnomethodological and dramaturgical (cf. also Greiffenhagen, Sharrock 2011). The paper adds an original case study to the corpus of ethnographic and video analytic work on medical practices (e.g., Heath et al. 2007; Mol 2002; Mondada 2007; Schubert 2006). Furthermore, it offers a critical take on STS' "practice U-turn" (Sormani et al. 2011:5) – that is, its mainstream's manifest withdrawal from the detailed examination of social practices in their lively, yet structured performance.

Standards as organizing principles of innovation: theoretical reflections on a contradictory relation. *Imme Petersen, University of Hamburg*

The relation of innovation and standard seems contradictory: Innovation necessarily leads to change by introducing new techniques and products to society, whereas standards are supposed to construct stability across time and space. I want to argue, however, that innovation directly depends on standards as organizing principles. My argument is based on the following discussions in the STS literature: 1) Standards facilitate coordination among the actors working in different locations by defining protocols and practices that guide data and knowledge sharing (Holmes et al. 2010). 2) Standards are often regarded as

specific codified knowledge elements with high normative significance in regulation and risk assessment. As new technologies and products must be authorized for the purposes of meeting safety and quality regulations, standards have direct impact on the creation process and will continue to work when the products come to the market (Egyedi/Sherif 2008). 3) Associated with efficacy, safety, and quality assessment, standards increase the perception of the reliability of the end product and legitimize scientific and technological developments (Rogers/Cambrosio 2007). Even if the STS literature discusses these different effects of standards, a reflection on standards in conjunction with innovation, especially the interweaving of organizational and working practices, are still missing. This paper wants to carefully examine the characteristics of the relation to investigate what standard and innovation mean to each other in a technologically dense environment.

The work, bodies and routines of a new bike. *Mette Mogensen, CBS, Management Politics and Philosphy*

This paper takes as point of departure the context of Danish postal distribution somewhere in between the daily work practices of postal workers, the heavy automation and standardization of mail-logistics and the strategies for a future competitive position in the European markets of liberalized postal service. Based on a larger PhD study, I wish to show how changes in the seemingly banal technology of a kickstand, serves an entry to discuss both the bodies and the politics of work and work routines. The old kickstand is preferred by the routinized bodies of the postal worker, however, the old kickstand does not manage to stabilize the bikes as they have to carry the increasing weight of new markets i.e. new types of mail. With the introduction of a new bike technology, new routines, new bodies, new kinds of postal workers are called for in order to stabilize not only the bikes but also the future productivity of postal distribution. What becomes of the postal workers as a result of a different delegation of competencies between bike technology and body? How does the changing network of production serve to reflect the matter of work routines as ostensive or performative respectively (Latour 1986), and what might this tell us about organizational change and stability (Feldman & Pentland 2003,2008)?

110. Uncertainty trumps? Science and contested authority - II

4:00 to 5:30 pm
Solbjerg Plads: SPs01
Chair:

Rob Hagendijk, Universiteit van Amsterdam

Participants:

Schizophrenia genetics online: Spaces of contestation. *Sally Wyatt, Maastricht University; Susan E. Kelly, University of Exeter; Anna Harris, University of Exeter*

Schizophrenia has long been thought of as highly inheritable; however its genetic basis has continued to elude scientists. The significance of research publications in this area, more recently by consortia with page-long author lists, is debated, and the area of research is generally considered controversial within the fields of medicine and science. Controversy and debate takes place not only in scientific and medical journals, but now increasingly in other online spaces, utilising social media or web 2.0 tools. Internet technologies are often black-boxed in STS discussions of scientific controversy. We examine how the internet acts as an infrastructure for scientific knowledge production. Online spaces of schizophrenia genetics contestation, including forums, blogs, Wikipedia talk pages and webpages for companies selling commercial genetic tests are examined. We explore how different platforms across these sites enable particular kinds of interactions between scientists, consumer-patient-participants and commerce.

We find evidence in these places of: blurring of traditional notions of expertise in medical research when genetic testing companies conduct research using self-reported data; contestation of traditional classification systems for schizophrenia through narratives presented on forums by individuals and through the research directions of genetic testing companies; conversations between company executives and sceptics; and attempts at neutrality, comprehensiveness and consensus in the Wikipedia talk pages. We consider whether the internet opens up genetic knowledge to new forms of scrutiny and, whether analysis of these sites contributes to our understandings of scientific controversy more broadly.

Partial contestations: Citizens' counter-narratives in assessing new technologies. *Ulrike Felt, University of Vienna*

Over the past decades a debate has spawned over the need to develop new forms of governing technoscientific developments in contemporary societies. In particular there was a growing call also from the side of policy makers for engaging "the public" in these processes and thus to open-up technoscientific choices to public deliberation. This was seen as a way to re-establish public trust in science and scientific expertise which was assumed to be lacking. Accompanying these developments there have been a broad range of critical studies in STS pointing at limitations of such participatory exercises. Citizens trying to find a position towards technological innovations get caught between the promised opening-up and the numerous efforts of closing down. In particular it has been underlined that many of the formats and settings support processes of building consensus, at the price of rendering invisible potential contestations at work in such settings. Working with the notion of "partial contestation", the paper looks at the fine-grained work citizens do when assessing new technologies and the role so-called "counter-narratives" play. It will investigate (1) how citizen create different socio-technical assemblages out of a seemingly homogeneous technological entity and work with them, (2) how they struggle to develop context-specific sense-making counter-narratives, and (3) what cultural and experiential resources they use to do so. Understanding such processes allows grasping the coexistence of support and controversy in contemporary technopolitical cultures. The empirical basis of this presentation will be public engagement exercises in biomedical and nanotechnologies in the Austrian context.

Contesting Science as (Re)claiming Epistemic Ownership. *Hedwig te Molder, University of Twente & Wageningen University*

In the public domain, fierce criticism of scientific knowledge is coupled with an almost unassailable position of this same science. This paper argues that in order to understand why this is the case, one need to examine 'expertise' not as a fixed characteristic of certain persons, but rather as 'entitlement to speak'. This entitlement is reinforced – and not just by scientists – by all available means, including an appeal to scientific knowledge. But any claim that the knowledge introduced is the alpha and omega of the discussion will undermine it. The fact that scientific expertise is often challenged seems due not so much to doubts about its correctness per se – this also applies to other knowledge sources – but rather to its claim of precedence, of a decisive voice in the debate that is not open to question. I will illustrate the value of an interactional approach regarding 'science talk' through analysis of an online discussion forum for celiac disease patients, and face-to-face meetings between scientists and patients about a gluten-neutralising pill. The analysis shows how the scientists' questions build 'offers you can't refuse' by presupposing the absolute safety and/or efficacy of the pill, in contrast to the patient's problem-ridden life. In doing so, they claim direct access to the patients' everyday life—thereby failing to treat them as having privileged access to their own experiences and having specific rights to narrate them. By resisting the question format and/or unpacking its assumptions one by one, patients are shown to (re-)claim epistemic ownership.

Science and the Struggle for Public Meaning. *Sheila Jasanoff, Harvard University*

Science tied to processes of public decision making inevitably gets caught in tussles between description and prescription, or is and ought. Science thereby becomes an agent of co-production. In claiming to speak for the world as it is, science finds itself speaking also for the world as it should be. If climate change is occurring, then the world should sit up, take notice, and act on that truth; if multiple chemical exposures are affecting endocrine systems, then we should take urgent steps to clean up the pollutants and stop their further dispersal. Claims of truth to nature morph in this way into demands for action on the basis of those truths, placing science in the uncomfortable position of seeming to advocate for morality, justice, and social order. The contestation that this session explores arises from this role that has been thrust on science to be both factual and normative, to speak both truth and power.For though science can assert superior claims to producing trustworthy likenesses of the world, it has no special authority when it comes to making public meanings—the kind of sense-making that impels societies to act. Under these circumstances, as we have seen, claims of epistemic superiority alone are not enough to inoculate science against conflict. We need a more robust theory of knowledge and public reason that would put science in its rightful place with regard to public meaning-making. This paper will review major STS contributions to such theorizing and sketch ways forward.

Making sense of the shots; vaccine 'conversions' as accounts of odd events. *Wytske Versteeg, Universiteit Twente*

The debate concerning vaccine controversies is often cast in terms of science and pseudoscience, with the implicit assumption that anti- or critical vaxers would vax if only they allowed themselves to listen to science. This paper draws on conversation analysis to propose a different perspective. I try to approach the online vax communities in terms that are much closer to their own, starting from the assumption that they are trying to report anomalous or odd events. This is hard to do without having one's own sanity questioned, so the main question becomes how actors organize their accounts in order to build credibility as rational people. One way to do this are stories of conversion, narratives of how the actor's thinking changed from a former, unknowing state to a new, enlightened, position regarding the desirability of vaccination. The paper will analyze and compare these stories on anti- or critical and on provax sites. The central question is not whether these stories are true, but what they are trying to attain with an eye to both the value system of the online community they take part in, and to that of the outside world.

Discussant:

Stephen Hilgartner, Cornell University

111. Generating methods: The device in/as social research

4:00 to 5:30 pm
Solbjerg Plads: SPs03

A turn to 'devices' has become evident in many areas of social studies, but it also has consequences for social research itself (Law et al, 2010; Lezaun, 2007). Attending to devices in social research, we want to propose in this session, has implications for the conduct of social studies: it may makes it possible to deliberately deploy some of the epistemic and ontological effects to which STS has long drawn attention, and render them productive for social studies. In exploring this, we want to focus on two long-standing concerns in STS: inter-disciplinarity and reflexivity. A device-centred perspective on social research highlights the multifarious provenance of many of our methods, and the uncertain circulations of the tools we like to think of as 'our own.' Recognizing this may turn inter-displinarity into a much more warped, granular and inventive kind of challenge. Secondly, an engagement with devices invites us to apply STS insights – eg its insistence

on research as process or the work done by 'the setting' – to social research itself. Some of the favourite topics of STS, then, here resurface as challenges or tasks for social research. The session brings together a diverse set of papers which will each present a specific device deployed in social research, examining its implications in the above respects. We would like to show that a device-centred approach to social research has the capacity to reconfigure relations between the methods, objects, techniques and subjects of social research in inventive and productive ways.

Chairs:

Noortje S Marres, Goldsmiths, University of London
Nina Wakeford, Goldsmiths

Participants:

On Controversy Analysis as a Digital Method (Or, the Co-word Machine). *Noortje S Marres, Goldsmiths, University of London*

Arguably, controversy analysis is a research method that is native to the social studies of science and technology. However, if we approach this forms of research from the standpoint of its apparatus, its identity seems more uncertain. Much controversy analysis relies on techniques of network and textual analysis, and these are not unique to STS. This circumstance is especially relevant in relation to attempts to develop controversy analysis as a digital method (Rogers, 2009; Latour, 2008). Here a plethora of powerful but rather generic devices propose themselves as relevant to 'issue mapping.' However, some of these tools come with measures built-in that seem rather alien to controversy analysis, such as the ranking of source authority, which goes against the idea of the de-stabilization of knowledge, so central to the concept of controversy. This paper proposes that to deal with this situation, we must recognize that not just the techniques but also the objects of controversy analysis are being transformed by digitization. Here, I will do this by discussing a particular device for digital social research, the co-word machine, which is currently under development. This device translates a method of controversy analysis, namely co-word analysis, to the online context. However, this method has found many other applications online, some of which quite alien to controversy analysis, as in the news visualisation tool Infomous. This situation of 'multifarious application', I will argue, may inform rather than hamper the development of medium-specific applications of controversy analysis, as in the case of 'issue profiling.'

Moving, mixing and mediating census data. *Evelyn Ruppert, Open University*

For over two hundred years, academics, governments and business have been the main analysts and users of census data. While the Internet initially extended access to much of this data, most people lacked the resources, skills, expertise and analytic devices required to use it. However, open government platforms have now spurred an economy of online data, software and 'user friendly' mobile apps such that census data is now on the move, circulating and being mixed with other types of data. As such, census data, at one time the preserve of social science researchers, policy makers, and marketing professionals is now being taken up by various publics who use various online devices to organise, link, analyse and visualise census and other data. But in addition to mobilising data and reconfiguring the boundaries of expertise the same devices also generate data for social research in the form of digital traces of what people do with and how they interpret data. Digital devices can thus be understood as both methods for analysing data and for researching the uses and interpretations of data. In this paper I analyse a dataset of over 1500 mash-□ups and visualisations of US census and other data (along with ratings and commentaries) that people have produced using an online device. I reflect on how this digital device is both in/of an observational method of research that follows what people do with data and folds and reconfigures the boundaries between research, researchers and the researched.

Frederick's Sandbox: From Psychotherapy and Strategy to an STS-Disaster Simulation Device. *Michael Guggenheim, Goldsmiths, University of London*; *Judith Kröll, University of Vienna & Shared Inc.*; *Bernd Kraeftner, University of Applied Arts & Shared Inc.*

How can STS not only observe but also contribute to developing methods for simulating disasters and disaster prevention? Could the knowledge of STS about the relationship between lay people, materialities and expertise lead to improved devices? Existing forms of simulation and forecasting disasters usually are based on the Delphi method, i.e. they are expert based and language dependent. To open up this method and make it amenable to lay people, we sought to materialize it and the result was Frederick's sandbox. Although STS is a great help to analyse the limitations of the Delphi method it is not really a guide to develop new devices. Rather, we turned disciplines, which provide rich repertoires of constructing devices, namely the psychotherapeutic methods of Margaret Lowenfeld and Charlotte Bühler and war games in the tradition of Freiherr von Reiswitz and H.G. Wells. As we hope to show, Frederick's sandbox provides a device which allows to materially interact with both experts and lay people and produce and open up for critical discussion new and diverse futures for technical societies.

Devices all the way down: the social in biological computation. *Alex S Taylor, Microsoft Research*; *Caitlin Cockerton, BIOS, London School of Economics and Political Science*

BioCheck is a software device that has been designed for biologists to model the cell fate of infinitely complex cellular networks; that is, it allows the eventual states of networks with relations that can be theoretically infinite in quantity and value to be deduced through computation. The device is the product of advances at the intersection of computer science, formal logic and biology, and—with the aim of producing an exemplary tool in computational biology—has involved extensive, ongoing contributions from design and social science. In short, BioCheck is an example par excellence of a hybrid device; it is the enactment of an entangled web of disciplines and competencies, and efforts to innovate across these. By detailing some of the unfolding relations that lay behind and within BioCheck, this talk aims to complicate the notion of the 'device' as a social research instrument. It invites a re-figuring of the device, one that de-centres the social in social research and problematises the tidy distinctions made between methods, agencies, motives and outcomes. Questions are provoked such as: how do such devices come into being; in what ways do they disrupt enacted boundaries of out-there and in-here in social science research; who, exactly, are the recipients when such devices are put to work; and how do they entangle with the work of discovery and innovation. Ultimately, we ask how these devices might be conceived beyond the social to expand, diversify and open up the networks of doing and knowing?

Tuning In: Atmosphere as Device. *Nina Wakeford, Goldsmiths, University of London*

Peter Sloterdijk's recent 'second coming' to social theory has manifested itself largely through attention to his theory of atmospheres. Sloterdijk proposes that that 'being-with' is always being-alongside-others in a dwelling that has been built in and in which we are enclosed. From this comes his theory of spaces as 'spheres' and an interest in atmospheres and their interruption, such as the 'airquake'. Drawing on Sloterdijk, this talk outlines the problematics of involvement in technological futures through a description of what might be called an atmospheric disruption within a corporate encounter – using a medium which has particular temporal and affective atunements: 16mm celluloid film. A set of film loops were introduced in a design meeting, not to present the content of the image as a model from which findings could easily be derived, but rather to put into question a model of intimacy or distance from the image by creating a

scenario of embodied interaction that generated a non-normative atmosphere. Drawing on recent debates which question how the empirical might be understood, the research on which this paper draws aligns itself with Patricia Clough's advocacy of an 'empiricism of sensation'. The paper argues that in the encounters between Science and Technology Studies researchers and those developing technological futures, exchanges might occur which go beyond the traffic of knowledge transfer, and rather question the very nature of interdisciplinary exchanges, which may be seen as atmospheric and comprising of Sloterdijk's 'social foam' rather than more networked models of communication.

112. Designing Society, socializing design – an enquiry on the performative relationship between ANT and Design - II

4:00 to 5:30 pm
Solbjerg Plads: SPs07
Chairs:
Cristiano Storni, Interaction Design Centre
Tommaso Venturini, MediaLab, Sciences Po, Paris, France
Participants:

Understanding the materiality of designing in the management context. *Nina Terrey, University of Canberra Australia*
There is a growing interest in managers being more like designers (Krippendorff 1989; Beverland and Farrell 2007; Avital and Boland 2008) and this raises questions such as what is design? And how do managers use design? In this paper the question asked is: how might design practices in management work be described not as individuals with design skills and intrinsic designerly qualities (Cross 1995; Cross 2006; Cross 2011) or expressions of design process (Rowe 1987) but rather more like assemblages or material semiotics (Latour 2005; Law 2007)? This paper draws from the author's current doctorate research and consulting projects where actor network theory is used to tell stories of how design is practiced in the complex organisations. This paper will in particular look at how design as a practice translates the concept of organisational 'meetings' where the orientation is typically to decide and debate, to 'design gatherings' of materials and people to instigate action and interactions focussed on shared goals and outcomes resulting in designed 'things'. The results of these design gatherings are visual artefacts. These artefacts act as packages of knowledge which frame and reframe perceptions of the problem and potential solutions. One of these artefacts is the "journey map" of a citizen or customer. These maps level the view of all human and non human interactions that matter in the journey of a citizen or customer and help the organisations design solutions.

Design AND ant: notes on performative associations. *Cristiano Storni, Interaction Design Center*
This work discusses some of the ways in which Actor Network Theory can contribute to design theories and practices. Being a tool to describe the social (Latour, 2005), ANT offers important analytical tools to explore and describe socio-technical settings to design for. A strong focus on ethnomethodology (Latour, 2005) and on following the actors (Latour, 1987) with an explicit emphasis on the role of non-human actors, already offers useful perspectives to explore and describe the settings, practices and stakeholders to inform the early stage of a design process and their empirical evaluation, not to mention to re-think some of their theories . Being design itself a social process, ANT also provides rich and interesting analytical frameworks and methodological tools contributing to the ability of the designer to reflect on their own actions and theory (Schon, 1987). In both cases, ANT is viewed as a tool to explore and to describe. However, I argue that it might be worth exploring another way of looking at ANT where its arguments can support not just

describing but re-think design at different levels. At one level, the ontological, ANT suggests re-thinking the object of design (being it a product or a service) not much as a stable entity with essential qualities but as a dynamic network shaping and being shaped by it. At another level, the methodological, ANT suggests to see designing as the creation of a more or less stable network with the designers being able to orchestrate the realization and permanence of something that was not there before. In this sense, ANT's most recent concern with democracy and participation in techno-science constitutes an important ally particularly for those designs that are concerned with participation and public engagement (from participatory design to critical design, from social innovation to). Indeed, ANT has brought novel languages and models to unpack, understand and perhaps even experiment techno-democratic processes (Latour, 2004, Callon et al. 2009) as well as a set of tools and practices to explore participation in public matters (Venturini, 2010).

The Organic Imagination; Living Models, Model Living. *Adam Jacob Levin, University at Buffalo*
This paper analyzes different paradigms for "organic" design, as they have been articulated in the 20th and early 21st centuries, paying particular attention to "organic" claims in the field of architecture. It reveals the fissures between aesthetic interpretations of organic form, and the principles behind the original development and functional efficiency of these forms in nature. It also addresses the underlying claims of designers working within an organic vernacular. Within the discourses of architecture and design, "organic" prototypes have been privileged for their promise of enhanced performance, premised upon the efficiencies of living systems. Working "organically" has also traditionally connoted a holistic design approach, which emphasizes the symbiosis of production, function and the natural environment. However, since its introduction into the design vernacular, the definition of "organic" in the design fields has remained equivocal and elusive; and designers' approaches to and appropriations of organic models have been inconsistent and often highly problematic. As architects and designers increasingly invoke organic principles, like morphogenesis and autopoiesis, to describe both their work, it has become imperative to analyze how these principles are being appropriated, and what is either lost or gained in translation. By interrogating the original application of such terms, how they are being appropriated by designers, and how they change across registers, there is the potential for defining means of analyzing the efficacy of designs premised upon such principles; and potentially of realizing the kind of cross-disciplinary synergy promised, but rarely realized, in the contemporary discourse of organic design.

113. (32) Environmental infrastructures: STS's anthropology of nature-cultures - IV: Standardization

4:00 to 5:30 pm
Solbjerg Plads: SPs08
Chairs:
Atsuro Morita, Osaka University
Anders Blok, Copenhagen University
Brit Ross Winthereik, IT University of Copenhagen
Casper Bruun Jensen, IT University of Copenhagen
Participants:

Re-enchanting the world: Biodynamic farming as a cosmic technology. *Ask Greve Jørgensen, University of Copenhagen*
Biodynamic farming practices seem misplaced in a modern society. Taking into account, among other things, the flow of cosmic energies, can easily be labeled as a pre-modern farming practice. The biodynamic farmers in Denmark, nonetheless,

continue their practice, surrounded by an otherwise highly rationalized and industrialized mode of food production. The paper draws on a short and intensive field work on a biodynamic farm in Denmark in the spring of 2010, as well as analysis of different programmatic published sources, representing the biodynamic ideology. The farm selected for the study had low output and a quite philosophically inclined farmer. Through the fieldwork I attempted to allow the biodynamic philosophy and practice to articulate its position on its own terms. Drawing on Bruno Latour's philosophy on modernity, this led to the insight, that the biodynamic practice in a sense might be seen as a modern, in that the different actions taken by biodynamic farmers are intentional manipulations of matter aimed at improving the quality of the produce. This is, in a sense, a technology in a radically different ontological frame that serves to raise the amount of cosmic energy in vegetables, in turn remedying the disenchantment of modern society. In this paper I suggest, that biodynamic farming is practicing criticism of what it perceives as a mechanistic 'outside world'. In an attempt to recontextualize biodynamic farming I then turn to the ambiguous interactions with this 'outside world' via transactions on produce markets.

Considering the future of Globalization from the standpoint of the Inuit Indigenous Movement. *Keiichi Omura, Osaka University*

The purpose of this paper is to examine the history and present conditions of 'globalization' from the viewpoint of the Inuit, the indigenous people living in Canadian Arctic, in order to reveal the characteristics of that historical phenomenon and consider what anthropologists should do to solve the problems raised by it. For that purpose, I will firstly elucidate the present conditions of 'globalization,' which the Inuit are confronting and struggling against today, based on the analysis of 'modernity' by Bruno LATOUR. I will then place the Inuit indigenous movement within the history and present conditions of 'globalization' in order to elucidate what it is the Inuit are protecting against the problems raised by this historical phenomenon. Furthermore, based on that consideration, I will reveal that the root cause of the problems raised by 'globalization' is the conflict between two different systems, in which human and matter are organized and woven into a network overarching the domain of 'culture' and 'nature.' After that, I will show that what we anthropologists are required to do in order to overcome the problems raised by 'globalization' is to establish a worldview based on 'natural-cultural relativism,' which aims to realize the coexistence of the natural-cultural complexes, in place of the worldview based on 'cultural relativism,' which aims to realize the coexistence of cultures on the assumption that 'nature' is universally the only one basis for cultural diversity. Finally, I will discuss the role of anthropologists in establishing the worldview based on 'natural-cultural relativism.'

Surveys and statistics, sightings and stories: Knowing and managing wildlife as demographic and biographic. *Stephanie Lavau, University of Exeter*

"We haven't enough time for this." This banal remark from a reserve manager, as he hastily packed away his telescope, alerted me to two sets of bird observations competing for his attention. As the skies darkened, he was running out of time to find and count populations of over-wintering, migratory swans feeding on the farmland surrounding a wildlife reserve in East Anglia. Alongside this count, he was also attempting to record sightings of individual swans that had been marked with large plastic leg rings as part of a national ringing scheme. Within the multi-disciplinary field of animal studies, the respective attention given to the individual and the collective has been a source of some contention. These various accusations of neglect share a commitment to an either/or relation: animal lives are accounted as individual or as collective. Drawing upon ethnographic observation of the management of bird life on and around British wildlife reserves, I propose instead that accounting or

qualculating (Callon and Law 2005) animal lives always does both; the individual and the collective are enacted alongside and through one another. Organising bird surveys, patrolling reserves, observing bird behaviour, ringing and sighting birds, and managing databases: amidst these technologies and techniques for ordering wildlife and observers (amongst other things), I identify demographic and biographic modes of knowing and managing birds. These two 'environmental infrastructures' enact alternative forms of individual/collective, which resonate with Verran's (2001, 2010) two modes of working unity/plurality in doing number, and their respective concern with ordering and valuing.

Managing "Environmental Infrastructures". *Ingmar Lippert, Augsburg University*

In the hegemonic take, environmental infrastructures have to be managed to be under control. And, in that perspective, control is needed to devise rational paths towards imaginaries like sustainable development. This paper seeks to contribute to the study of environmental infrastructures by way of attending to the situated practices of those agents who, in Western structures of division of labour in the context of ecological modernisation, are positioned to organise and implement specific regimes of knowing and acting upon natures. Of course, such practices may be oriented at grand discourses of sustainability, environmental protection, efficiency, best practice, etc. However when confronted with the messinesses (Law, 2004) involving, inter alia, nature's resistances to being known or acted upon – even fighting back(?) (Latour, 2010) and apparatuses which do not only make natures known but also enact them (Barad, 2003), the imaginary of being in control over natures has clearly to be discarded. By drawing on studies of the enactment of nature-cultures (e.g. Suchman, 2000; Kaljonen 2006; Krause, 2011; Lippert, 2011) by various "agents of ecological modernisation" (Lippert, 2010) this paper illustrates how agents (do not) achieve the construction of particular agencements which signal to audiences that presumably an environmental infrastructure is managed well. This approach allow us to develop an empirically informed conceptualisation of what it does to those agents who are to manage those " interlinked set[s] of material practices, technical artefacts and forms of organisation, through which people and institutions" (as the call puts it) do environments.

Saga of the Orkney Islands Electron. *Laura Watts, IT University of Copenhagen*

There is a beach where electrons are gathered in the Orkney Islands, an archipelago off the far north-east coast of Scotland. It's a stone beach with fossils, drift wood, and turquoise churning waves that can rise ten meters into the sky. This beach is a test site for the European Marine Energy Centre, where prototype devices for generating electricity from the waves are being installed and monitored. Orkney electrons are not the same as electrons gathered in other places. They carry with them different stories from the seascape in which they are made, are constituted by different people and different places; they have different socio-technical resistances. Orkney electrons are made from the rare sea birds on the cliff, the dreams of local energy companies, hopes for island prosperity, fishers, farmers, artists who evoke the beauty of the place, as well as the shape of both political and electrical power infrastructures here at the edge. Electricity may be ethereal, of the ether, but it is situated, material-semiotic, and agential; Orkney electrons make particular, situated futures. Drawing on an ethnography of how the future is imagined and made in Orkney this will be a performance of the Saga of the Orkney Electron. It is a performance that takes the generative poetics of landscape seriously: different places make different possibilities. It will tell of how the Orkney electron is forged at the edge of the infrastructural world, of its power, its family feuds, and its prophecies for futures yet untold.

114. (18) Bio-objects and bio-objectification - III

4:00 to 5:30 pm
Solbjerg Plads: SPs12

Participants:

Deferred Fertility: Private Oöcyte Banking. *Catherine Waldby, University of Sydney*

In the last ten years, human oöcytes have emerged as uniquely contentious reproductive tissues. On the one hand they are singularly obdurate in a technical sense – difficult to produce in multiples and procure outside the body, impossible to test or rank for viability and fertility, and difficult to bank successfully. On the other hand, they are the object of conflicting social and biomedical pressures regarding their uses and values. These pressures include; the growing body of medical evidence concerning the age-related decline in the fertility of oöcytes; increased demand for donated or vended oöcytes as a part of ART treatment; and the demand for oöcytes for stem cell research. As a result, ex-vivo oöcytes circulate in highly restricted ways and are attributed with a great deal of scarcity value. They have generally proved quite resistant to the gift system that regulates much of the transfer of human tissues in the developed nations, and with a few exceptions, move from donor to recipient through incentive systems, including high rates of compensation and frank payment. Because of these pressures, young women are turning is small but growing numbers to private oöcyte banking as a way to preserve and defer their fertility. This paper will present some preliminary data from interviews with clients and clinical staff in an Australian fertility clinic that offers private oöcyte banking. The paper will contribute to the STS concept of 'affordances' and 'tissue economies', and to the field of donation studies

Vital fluids: the generative dialectics and procreant contradictions of blood. *Nik Brown, University of York*

With reference to human blood, this paper explores self-undermining dialectical tensions between contrasting systems of value and valuing in bioeconomy. It elaborates on the way different vitalistic or generative properties articulate with and give rise to competing systems of value. More specifically, my suggestion is that bioeconomies and their allied systems of disembedding and appropriation are capable of prompting unintended counter-movements amongst those necessary to its logic. The empirical context for this discussion is drawn from bioeconomic worlds built around human blood, blood products and specifically umbilical cord blood. It examines the differing registers of practice and meaning brought to bear on the placenta, the umbilical cord and its fluids. Cord blood is the focus of highly contested and competing vitalistic values for a wide range of actors including neonates, birthing mothers, blood donors and wider clinical bioeconomies. At its most extreme, I argue, this is the precarious site of a dialectical self-undermining tensions between 'exchange-based' and 'use based' economies of value.

Performing the bioeconomy: reproductive medicine, genetic testing and neoliberism. *Vincenzo Pavone, CSIC - Consejo Superior Investigaciones Cientícas*

Recent advances in genetic studies and genomics have paved the way to the development and introduction of new medical technologies, which have had a far-reaching impact on the direction of biomedical research and discussions of healthcare policy prospects. Supported by a strong interaction between pre-implantation genetic testing and in-vitro fertilization, reproductive medicine not only is becoming a key element of the ongoing transition towards a more personalized medicine, it is also emerging as a rapidly growing tissue bioeconomy, where the regenerative capability of human gametes is a source of biovalue. To date, few studies have directed their analytical gaze to the social, economic, legal and political articulations that characterise reproductive medicine as a bioeconomy. This paper aims at exploring and discussing not only how bioeconomies

emerge and consolidate around given practices and related bio-objects, such as embryos and gametes, but also how are they performed and enacted. Analyzing more than 30 semi-structured interviews with IVF patients and medical staff in Spain, this paper also explores how neoliberal discourses on personalised medicine are effectively performed. As an in-depth reflexive study on local enactments of the bioeconomy, this paper speaks to ongoing debates, within and beyond science and technology studies, on enactment itself, scientific citizenship, local knowledge and the performativity of expectations. Trying to explore what it means to enact a bioeconomy this paper discusses not only how the bioeconomy is (successfully or unsuccessfully) performed but also the ongoing tensions within the wider neoliberal project of which the bioeconomy is a part.

The Bio-objectification of Gender in Insurance: Governing Difference, Equality, and Solidarity in EU Bio-economies. *Lisa Michelle Rebert, Maastricht University, Department of Health Ethics and Society*; *Ine Van Hoyweghen, Maastricht University, Department of Health Ethics and Society*

In 2011, the European Court Justice closed the Gender Directive's derogation allowing for differential insurance pricing and set forth a series of guidelines on unisex pricing in private insurance effective December 2012. In insurance, gender is a primary factor used in medical underwriting to inform the practice of risk selection. The realm of insurance is a site of intense medicalization of gender differences where gender is treated as a kind of medical condition indicating longevity, differential disease susceptibilities and outcomes, and quantifiable morbidity differences. However, little is known about how this medicalized version of gender is affirmed or mediated by the new EU guidelines and how key principles of actuarial discrimination, equal treatment, human rights, and solidarity are affected. Clearly, private life insurance has long been a tool of inclusion and exclusion via its process of risk selection and distributive mechanisms, which sets forth a series of questions relating to biological classification, difference, equality, discrimination, solidarity, and governance in EU bio-economies. Examining EU documents, insurance trade journals, and recommendations from equity bodies and consumer groups, alongside interviews with the aforementioned stakeholders, this paper further examines the practice of actuarial discrimination as it applies to gender. Initial analysis demonstrates that governing the issue of equal treatment often relies on evidence-based medicine in a way that leaves the practices and tools of actuarial discrimination intact. Through further analysis, this paper will trace these developments as a process of bio-objectification of gender at the crossroads of EU governance, insurance markets, and biomedical paradigms.

Can We Already Write a History of the Bio-Object? *Bettina Bock von Wülfingen, Humboldt Universität zu Berlin*

The bio-object is still a very open concept. It hereby helps to raise questions especially about the connection between nature and economy. If bio-objectification, apparently an important issue in 'configuring' life in the 21st century, is a process involving circulation, reification and (re)vitalization - has it always been there or is there a specific historic moment from that on bio-objectification started? This paper takes as a point of departure that economy plays a major role in the circulation, reification and –vitalization of what then becomes a bio-object. Nature as designed towards specific marketable aims existed much before the 19th century. This paper argues however that the connection between market, national economy and 'designed nature' might be understood as part of what shapes a bio-object. If this is so, there are specific historic developments that can be made out as specific historic backgrounds to bio-objects which therefore also play a major role in their 'functioning' today: Their quality as boundary crossers and challengers to traditional – and legal - concepts roots in late 19th century problems. This paper

contributes to the STS-study of the bio-object by applying historical epistemology to the process of bio-objectification.

115. (65) Political devices - II

4:00 to 5:30 pm
Solbjerg Plads: SPs13
Chair:

Jan-Peter Voss, Technische Universität Berlin
Participants:

The Politics of Objectivity. *Arlena Jung, Social Science Research Center Berlin*

Based on the preliminary results of a research project on food safety governance and labour market policy in Germany, Great Britain and the USA I will present a concept for analysing the politics of regulatory science. The main thesis I would like to present is that the following distinction is central to understanding the political function of regulatory science: the distinction between objectification practices (design) and decision making processes (displacement). Objectification practices are institutionalized arrangements that explicitly aim at producing the expertise needed for political decisions. The "objectivity" of the results of these processes is "guaranteed" by (i) procedural rules defining the legitimate means of testing assumptions, (ii) social criteria defining the role of the expert and (iii) cultural forms of symbolizing the neutrality of the results to their specific historic context of production such as quantification. Neither the "objectivity" nor the relevance of these results is, however, permanent. The closure achieved by objectivity practices is only temporary. The results of these objectification practices function as a boundary object, providing a common reference for the (de)legitimation of political decisions. Understanding the politics of regulatory science, thus, also means understanding the criteria at play in (de)legitimizing the results of objectification practices. The paper contributes to the current expansion of STS from its focus on issues such as the role of politics in science to the politics of science in policy.

Exploring experts-policymaking liaison through conceptual artifacts. *Chiara Carrozza, Centro de Estudos Sociais, University of Coimbra (PT)*

The public discourse about the role of the experts and expertise in policymaking seems to be dominated by the discussion about the two parallel and symmetrical phenomena of the scientization of policy and the politicization of science (Pielke 2007, Weingart 1999, Maasen-Weingart 2005). The convincement that public actions could and should benefit from applying a more "scientific" approach to public problems on the one side, and the perception that experts are getting more and more politically involved in the public life by equating scientific arguments with political arguments on the other, are nowadays common-sense. Despite being contradictory and implying opposite moral judgment regarding the role of experts (potentially beneficial or dangerous) in decision-making, the two narratives have something in common: they imply a similar instrumental view of experts' knowledge and adopt a dichotomous approach to science and politics. The paper discusses this argument reviewing some of the conceptual artifacts (such as the policy cycle originally developed by Harold Lasswell, the post-normal diagram by Funtowicz and Ravetz etc.) developed in the literature of the policy studies and STS and often used in policy-making. The aim is to underline how these conceptual devices plays a political role both outside academia - by framing expectations about the policy-making and democracy - and inside it - by compressing the opportunities for research questions sensitive to issues of power.

Governmental guidelines: Inside the Jurrasic Park of governmental policy tools. *Rolf Andreas Markussen, Narvik University College, Norway*

Policy documents are usually treated as tools representing the policy-makers' intentions, a presumption that configures practices of the policy relevant public as a target to policy devices such as action plans, charting tools, protocols or guidelines. Formulated policy is preordained prior to practice, and practice itself becomes an implementing activity. A plausible allegation against this presupposed demarcation between policy and practice is that it obscures the very practices involved in the making of such policy documents. Within this somehow unattended policy landscape, I have carried out ethnographic research on a group of Norwegian bureaucrats in their making of a governmental advisory guideline for teachers in schools, dealing with prevention of alcohol and drug related problems among pupils. According to the policy scripts, the guideline fits into a supply line of knowledge as a transmitting tool. It is made in order to govern teachers practice through the supply of scientific knowledge. However, its making reveals a significant shrinking pattern in terms of volume, imperative language and scientific content. What once set out to be a change-making guideline, four years later became "Suggestions for Learning Activities" published on a governmental website. Besides illustrating how governing power might include abstention from governance, the shrinking pattern also causes questions addressing the viability of monologic guidelines in a world where participation of the governed and distribution of expertise seem to be the political correct ideas. Perceived performative, do governmental guidelines impose specific modes of ordering expertise and expert hierarchies?

Political Devices & Transnational Assemblages. *Alejandro Esguerra, Berlin Graduate School for Transnational Studies, Free University Berlin; Daisuke Naito, Research Institute for Humanity and Nature, Kyoto, Japan*

Scholars of transnational politics tend to take for granted the materiality of settings in which global civil societal actors assemble, present themselves, negotiate, and agree upon transnational policies. Through the metaphor of theater or drama not only social action appears as data for analysis (Hilgartner, 2000). Also the venue or the "technical objects" reveal their part in the construction of transnational assemblages (Rheinberger 1997). The paper is based on ethnographic fieldwork at the General Assembly of the Forest Stewardship Council (FSC) in Kota Kinabalu, Malaysia in June 2011. For a week, transnational actors from various NGOs and business groups met to discuss the future course of the transnational certification organization, FSC. In the paper we focus on the "technical objects" and the practices of enacting the transnational and yet very local setting of this transnational assemblage. With Hajer we understand the setting as the "physical and organizational situation in which the interaction takes places, including the artefacts that are brought to or found in the situation" (Hajer 2009, 67). We claim that to consider the prerequisites of a smooth running assembly, is to turn these seemingly apolitical "technical objects" into political devices. Declaring the local setting in which transnational politics is enacted as political choices, then allows to examine their governing effects. We argue that by incorporating political devices, or the setting in the analysis of transnational assemblages is one way to re-introduce power to the study of seemingly horizontal new modes of governance in STS.

Politics of Graduated Response: The Making of Copyright Enforcement on the Internet. *Andreas Kuehn, Syracuse University; Milton Mueller, Syracuse University*

Copyright is a major but ambiguous force on the Internet. In a constantly changing space where laws are trying to catch up with evolving technologies, the enforcement of copyright has led to joint endeavors by rights holders and states to conquer online piracy. Copyright enforcement in cyberspace – consisting of interwoven networks of states, right holders, civil society, and technology – is at the center of this research. France's HADOPI

law combats illegal file sharing practices with a graduated response approach by first warning users and then disconnecting them from the Internet after having allegedly engaged in copyright infringement. We describe the politics of graduated response as it unfolds in the making of copyright enforcement, starting from the early ideas in the content industries, reception in the political arena, civil protests and transposition into law to technical deployment. Based on empirical work from interviews with French and European authorities, Internet activists and technology vendors, we describe the politics of graduated response. To examine the interactions and relations at play, we contrast Actor-Centered Institutionalism (Scharpf 1997) and Actor-Network Theory (Law 2003, Latour 2011) to gain theoretical and methodological insights from the making of copyright enforcement. On one side, this framework allows us to analytically observe distinct actors, actor constellations and modes of interaction in France but also its offspring in the European Union and to discuss policy outcomes. On the other side, by letting us conjecture about the larger struggle of right holders to secure their privileges and the double-edged role technology plays, STS helps to untangle heterogeneous networks and reveals the hidden politics at play. Thus, graduated response is just a small part in the larger discourse about Internet piracy which we attempt to untangle here. This research is part of a larger, U.S. National Science Foundation funded project at Syracuse University that draws from STS, Internet governance studies, and political science to examine co-production of technology and society in the shaping of fundamental governance principles of the Internet.

116. Promises and perils of sensor networks

4:00 to 5:30 pm
Solbjerg Plads: SPs14

The deployment of satellites for remote sensing, starting in the 1970s and 1980s, transformed many areas of the environmental sciences; satellite sensing became an essential component of scientific infrastructure. Changes in climate and in crops could be seen from above, enabling geospatial and temporal comparisons never before possible. Embedded sensor networks, which are the inverse of remote sensing with satellites, are transforming scientific practice in much the same way. Many small and discrete sensors can be placed in situ to study local conditions, providing data at far greater spatial and temporal detail than is possible with hand sampling of soil, water, or plants. The proposed panel will explore the changes wrought by the adoption of sensor networks, complexity of sensor networks, and the role of living beings in the sensor network from a variety of sensor network applications, including food industry, subsea oil, marine ecology, seismology, and astronomy. Sensor networks are more than just the sensors themselves, other structures have to be in place for them to function, including, for example, highway systems and professional networks. Living beings (including fish, livestock, and people) are part of sensor networks and human attitudes about sensors and other technologies are crucial to how they can function in networks. Papers cover the following topics: (i) use of sensor networks to capture rare phenomena, (ii) the role of representation when phenomena cannot be physically observed, (iii) infrastructural tensions in the implementation and adoption of sensor networks, and (iv) alternatives when adoption fails.

Chair:

Jillian C Wallis, University of California, Los Angeles

Participants:

Increasing the Odds in Opportunistic Science. *Jillian C Wallis, University of California, Los Angeles*

At Friday, August 11, 2006 at 15:30:40 GMT, Mexico City experienced a 6.1 earthquake. This was just weeks after a transect of seismometers installed across the country passing near Mexico City came online. The density of seismometers installed provided 10 times the resolution of the existing transect, and data was delivered to the seismologists in Los Angeles within hours of being collected. From this data, these researchers have a much clearer view of how the plates intersect. On the morning of March 8, 2011, millions of sardines went belly up in King Harbor Marina, Redondo Beach, California. Unlike many other water researchers the CENS group were collecting data even before the fish kill event, some 6 years before the event to be precise. By placing sensors at the harbor and visiting them every couple weeks to pull down data they were able to constantly monitor the site with infrequent visits. From this data, researchers were able to throw over the dominant theory of what causes fish kills. Sensor networks allow researchers to spread themselves thinner across more sites and capture higher resolution data than previously collected, both allowing researchers to make the most of rare phenomenological events. This paper will explore these two cases that demonstrate the different ways sensor networks are changing how science is done, from the equipment used to methods employed, the data collected to how it is used.

In a World of Representations: the Pragmatism of Performativity. *Eric Monteiro, Department of Informatics, University of Oslo*

The research programme on sociomateriality is based on a performative perspective i.e. a constitutive entanglement of material technology and human agency in sociomaterial practices. Representations thus become actively engaged in practice rather than passive re-presentations of data. Extending the programme of sociomateriality, our principal contribution is to analyse 3 strategies or heuristics through which sociomaterial performativity takes place. The 3 strategies (extrapolate when filling in gaps, harmonise when ironing out inaccuracies and abduct when coping with anomalies) demonstrate strong, pragmatic concerns that we discuss. We draw empirically on a longitudinal (2004-2011) case study of the subsurface community of NorthOil struggling to find oil and gas reservoirs deep below the seabed. Crucial data for the operation of the well comes from a vast and increasing network of sensors, measurement- and logging devices. A typical oil and gas well on the Norwegian continental shelf would contain about ten networked sensors and measurement devices. For the unmanned subsea wells, of which there exists more than 500 on the Norwegian continental shelf today, the data provided by sensors and measurement devices is the only source of data – subsea wells are run literally untouched by humans, solely based on sensors – thus motivating the academically challenging and practically relevant question of how to operate subsea wells efficiently and safely. Here representations are particularly central to work practices, as direct access to data is difficult and/or limited.

"We'll Meet the Meat": Food Safety, Sensors, and the Internet of Things. *Scout Calvert, Wayne State University*

In Douglas Adam's third book in the Hitchhiker's Guide to the Galaxy series, Arthur Dent and Zaphod Beeblebrox meet the dish of the day, a cow bred with the desire to be eaten and the willingness to say so. This science fiction classic presciently imagines the ultimate end of what has become known as "sourcing" in the restaurant business: knowing precisely where food was grown, by whom, under what conditions, and being able to say so on menus. Satirized in the sketch comedy series Portlandia, sourcing has ramifications for gourmet niche markets and small farmers as well as agriculture workers, food processors, contract farmers, livestock animals, exporters, industry advocates, and consumers. Source information is crucial to markets, livelihoods, and lives. It took weeks (and several false starts) for authorities to correctly trace tainted produce across a handful of European nations during an E. coli outbreak in 2011. It is also crucial to consumers: the E. coli outbreak sickened more than 4000 people and killed 50 in 16 different countries. The systems required to source all food, not just food from niche markets, are vast and multilayered, involving sensor technologies, ICTs, ownership agreements, stakeholder participation, governments, and trade agreements. Food chain

data tracing is a compelling component of the Internet of Things. This paper will examine the perils, promises, and infrastructural tensions of the Internet of Foods. What might happen when we meet the meat?

Temporalities of Mobility: When to assemble a sensor network and when to assemble a network of data. *Laura Wynholds, Information Studies Dept., University of California, Los Angeles*

Castells, in arguing for a new understanding of a network society, asserts that it creates a network of timeless time, where the sequence of past, present and future are blurred. In describing the development of science, Latour introduces the term immutable mobiles to refer to the idea of inscriptions that can survive changes of space and time without losing their meaning. He argues that these immutable mobiles allowed scientists to increase the scale of the observations that they could make sense of within their inquiries. Gray argues that technological advancements in sensors and data collection have facilitated a transition in scale that he refers to as a new paradigm of data driven science. In astronomy, the discipline has developed such that highly developed sensors are assembled into instruments, but sensor networks have not seen uptake nor advocates for their uptake. Instead, considerable investment has been made in assembling the inscriptions in the network post-hoc and at will through projects such as the virtual observatories initiatives. This paper looks at a handful of highly networked astronomy instruments, a virtual observatory network, and examines some of the differences that may have pushed astronomy to assemble their inscriptions into networks post-hoc rather than connect their sensors.

Discussant:

Christine L Borgman, University of California, Los Angeles

117. Reenvisioning/redesigning engineering education + Contemporary issues and the normative dimension of engineering education

9:00 to 10:30 am
Solbjerg Plads: D.2.20

Engineering is a technoscientific arena in which the basic structure of its educational system and even its underlying epistemologies shift in relation to changes in social and historical contexts. Unlike the sciences, in which both the standard for professional competence (a PhD) and fundamental epistemological assumptions have remained fairly stable, engineering, as an "applied" discipline, with close ties to national economic context and industrial workforce needs, have undergone significant changes in both the structural and epistemic dimensions even since the second half of the 20th century. The set of papers assembled for this session examine these issues in comparative perspective, focusing on national efforts to design a two-year (and later four-year) "engineering technology" degree program distinct from credentialed four-year engineering degree programs; local efforts at California Polytechnic San Luis Obispo to redefine a two-year, practice-oriented technician training program into a "practical" four year engineering degree program amidst structural changes in California's system of higher education; evolving standards, from the 1970s onwards, of rigor and objectivity as found within the Joint Entrance Examination system of the increasingly prestigious Indian Institutes of Technology; and questions of access and equity that remain a challenge for two-year pre-engineering and technical associates degree programs that continue to play an important part in the overall structure of the engineering workforce in the United States. Each of these studies, in a rather unique way, examines the role that patterns and expectations of social mobility—on the part of students as well as those designing these educational institutions—intersect with national and institutional visions and gendered identities to constitute the complex technoscientific arena of engineering education. + Engineering as a profession can no longer claim value neutrality in its work. Not only has the engineering profession, including its engineering education leadership, embraced a more broadly liberal and normative image for their profession including certain forms of support for gender equality measures, but STS scholars and Engineering Studies scholars in particular have entered into direct engagement with those within the engineering education community. Nevertheless, professions, and especially the rank-and-file of a profession resist change. The papers within this session adopt an analytical lens in considering the sources of this resistance, as well as the affordances and opportunities for integrating normative issues into both the content and structure of the engineering profession. It does so through a look both at the question of how "sustainability" or issues of "green design" are made accessible to engineering educators and engineering students; how the highly politicized discourse about climate change had differentially influenced engineering education and practice at an academic institution; how perceptions of gender equality politics and gender-neutrality claims in engineering complicate inquiries into the gendered aspects of engineering knowledge and practice; and the need for a "social justice assessment framework" for assessing renewable energy engineering curricula and pedagogy. Each of the papers strives to look for opportunities for discursive and/or practical intervention that make it possible to integrate normative considerations into new and emerging engineering identities.

Chairs:
Gary Downey, Virginia Tech
Aalok Khandekar, Maastricht University

Participants:
Legitimizing engineering technology education: Winston Purvine and the ASEE, 1946-1977. *Mark Clark, Oregon Institute of Technology*

The standard model for the history of American engineering education in the Cold War period (1945-1991) stresses the impact of Federal research spending in moving engineering schools in the direction of research-focused curricula. During World War Two, universities had begun to accept federal funding on a large scale as part of the war effort, in contrast to a general unwillingness to take that money prior to the war for fear of potential federal control. Universities proved willing to continue to accept federal money in the post-war period, setting up graduate programs in the sciences and expanding their research programs. As part of the larger effort to attract federal research dollars, engineering schools also set up and expanded graduate programs, particularly in the area of engineering science, and hired an increasing number of faculty with doctoral degrees. This, in turn, had an impact on undergraduate engineering education, which became more theoretical in focus so as to prepare students for graduate work and careers in research. This paper examines a lesser-known counter-trend that took place in engineering education during the Cold War period, the rise of engineering technology education. Engineering technology had its origins in the demand by employers for engineers trained to be private-sector job ready, rather than the research oriented engineers increasingly being turned out by mainstream universities. This ran counter to the primary trend in engineering education in the Cold War era, and so created a potential niche for those engineering educators willing to educate their students differently. This paper focuses on Winston Purvine, one of a number of engineering educators from this period who acted as entrepreneurs and set up engineering technology programs to serve the needs of industry. These men (they were all male) came from outside the mainstream of engineering education, typically having experience with World War Two-era industrial training programs and/or proprietary, non-accredited technical schools. Working largely at non-elite colleges and universities, they sought to define an alternate form of engineering curriculum that was grounded in practice, not theory. Purvine, the first president of the Oregon Institute of Technology, used the ASEE as a platform to gain legitimacy for OIT's degree programs and to create avenues for accreditation. As this paper will show, he grounded his arguments for inclusion on the basis of fairness, equivalency, and the need to set standards. Over time, his arguments proved successful, and engineering technology achieved institutional legitimacy, most notably the creation of an accreditation process virtually identical to that for conventional engineering programs.

'Learning by Doing': Cal Poly's evolving vision for practical training in engineering education. *Atsushi Akera, Rensselaer Polytechnic Institute*

California Polytechnic State University got its start as a two-year technical institute providing specialized, hands-on training for rural and working class boys interested vocational training in the mechanic arts. It was an institution that was regarded as providing these youths with the specialized skills necessary for the early growth of the California rural and agricultural-industrial economy. As the only dedicated technical school in the California State College system, Cal Poly occupied a unique place within the state college system that otherwise provided a second tier of opportunity for higher education centered on teacher training. During the interwar years, under Julian McPhee (President, 1933-1966), Cal Poly extended its instructional offerings to become a four-year degree granting institution, one that remained differentiated from the professional engineering degree programs offered by the University of California through a continued emphasis on craft-based, hands-on pedagogy, which McPhee frequently referred to as "learning by doing." During the phenomenal postwar growth of the state college system, Cal Poly experienced numerous opportunities to extend its technical degree program offerings, and to begin competing directly with the accredited engineering degree programs offered by other universities within, but also beyond the State of Cailfornia. This occurred amidst the intensive Cold War demand to expand

"technical 'manpower'." This talk examines the choices and opportunities, and the strategies by which McPhee and his successors navigated through the Cold War context in remaking their institution a jewel in the California State College system (California State University, since 1972). The talk concludes with a look at the current engineering and integrated engineering and liberal arts programs that show the continued influence of the early pedagogic philosophy behind the Cal Poly instructional program.

Subjective vs. objective: the problem of the IIT Joint Entrance Examination. *Shreeharsh Kelkar, MIT*

The Joint Entrance Examination (JEE), used to determine admissions into the prestigious Indian Institutes of Technology (IITs), India's elite undergraduate schools of engineering, was recently called "the mother of all exams" in the New York Times. In 2011, according to the JEE report published by the IITs, 468280 candidates took the exam, out of which 13196 were granted admission, a stunning success rate of less than 3%. The exam consists of three subjects: Physics, Chemistry and Mathematics, and the difficulty-level of the questions is very high. Based on how much they score, students are ranked in terms of an All India Rank (AIR). Getting into an IIT is not simply a matter of doing well on the exam, but a matter of being in the top. To get a school and major of one's choice, it is even more important to be at the very top: an AIR of 5000 has far less choices than, say, AIR 50. Students typically take the exam in their last year of high-school, and often spend more than 2 years preparing for it (sometimes neglecting their school-work). A highly lucrative and innovative "coaching" industry – a pioneer in pedagogical techniques – has evolved to intensively train students to take the JEE. The goal of this paper is to document the changing nature of the JEE since it began in the early 1960s. Till 1978, the JEE only consisted of "subjective" questions i.e. problems on which students were graded not just for their final answer but also for the steps they used to reach the solution. Multiple-choice or "objective" questions were introduced in 1978 and their proportion has increased steadily; in 2006, all questions were multiple-choice. Yet, this transition is not as simple as it looks: even as the questions themselves became "objective" in terms of how they were graded, every effort was made to make them more "subjective" in terms of restricting the ways in which students could tackle these questions. For example, negative marking (a wrong answer is awarded negative marks) was used creatively. Also, the JEE paper-setters produced novel forms of multiple-choice questions that were less "objective" (for example, those for which more than one choice is correct). I will argue that the trade-off between "subjective" and "objective" was in response to the increasing competitiveness of the exam. Responding to the increasing demand for transparency and objectivity, as well as trying to maintain their idea of "merit" even as new pedagogical regimes of coaching students for the JEE started to make their presence felt, the creators of the JEE transformed a political problem of transparency into a technical one. This technical problem was one of creating new kinds of questions and new kinds of criteria to determine "cut-offs" to separate the successful candidates from the rest. Understanding this process gives us an insight into how informal and civic ideas about "merit" are formalized and reified.

Into the wild? Effects of gender equality politics ongender studies ethnographic field work in engineering education cultures. *Tanja M. Paulitz, University of Graz*; *Susanne Kink, Queer STS - IFZ Graz*; *Bianca Prietl, University of Graz*

The paper is situated within constructivist Feminist Science and Technology Studies and aims at discussing the pitfalls of empirical ethnographic fieldwork in engineering educational cultures as the effect of current gender equality politics. Thus, it is generally committed to the goal of opening the black box of engineering which mostly regards itself as socially neutral and therefore also gender neutral. However, how to analyze gender norms underlying engineering practices and professional images, if the informants in the field strictly claim neutrality? How to reconstruct the ways actors in engineering educational cultures engender their professional work, their profession and their objects, if engineers increasingly find themselves confronted with the imperative of embarking on a governing discourse of gender equality. In Austria, as it may be the case in many other countries of the European Union, new measures of top-down gender equality politics in higher education have been introduced in recent years that have affected engineers at engineering schools too. One can say, they have affected them in a specific way, because more than other universities, engineering schools usually have to deal with very small proportions of women as students and as faculty. On the basis of qualitative empirical data the paper shows how the gender issue in engineering cultures is dominated by and limited to addressing the difficulties with the new legal requirements of equality politics (such as increasing the numbers, fulfilling quotas in administrative committees or following the legal regulations for parental leave). At the same time, engineering itself is more than ever presented as absolutely neutral and independent from any social shaping. Even more, professional practices and gender politics occur as highly separated topics when faculty in engineering schools talk about their work. Consequently, this situation calls for new approaches in empirical research in order to learn more about implicit gender norms. More specifically, more than ever today gender studies are no longer able to frame their ethnographic fieldwork as going 'into the wild' of an assumed 'native' engineering culture where discriminating gender stereotypes can be found easily and everywhere. It rather means to study a field that is itself already shaped by gender politics and thus requires new reflexive approaches to deal with this situation.

Discussants:

Amy E. Slaton, Drexel University

Park Doing, Cornell

118. (53) The day after Fukushima - I

9:00 to 10:30 am
Solbjerg Plads: D4 Aug
Chairs:

Fabienne Crettaz von Roten, Observatoire Science, Politique et Société, University of Lausanne

Niels Mejlgaard, Aarhus University

Participants:

The Gallic Village? Identity projects and Austrian responses to Fukushima. *Nicole Kronberger, Johannes Kepler University*

Identities both are about being and about becoming; as identity entrepreneurs individuals and social groups advance and co-construct identities in the making. This perspective emphasizes communication, social activity and agency. The specific choice of categories for understanding self and others must be seen as involving a strategic dimension. As such, future-oriented identity projects are intended to mobilize the in-group and to mitigate challenges by others. The conception of identity projects as strategic efforts also opens the way to ask what makes such projects successful: "success in realizing one project over another depends on imposing one version of identity over all other versions. That is, the very contingency of identity requires that it be presented as non-contingent, as self-evident, as not one version among many but as the only possible version" (Reicher, 2004, p.938). Identity offers typically are justified by culturally significant symbols, examples and metaphors, and by making reference to historical events that are used with the intention to give authenticity to proposed claims. Drawing on media, interview and survey data this contribution sets out to analyse

Austrian responses to the Fukushima accident with a focus on collective identity constructions. The dominant identity offer manages to draw diverse concerns together under one banner, mobilising considerable parts of the public to show resistance against the technology. Reicher, S. (2004). The Context of Social Identity: Domination, Resistance, and Change. Political Psychology, 25(6), 921-945.

Reconsideration of Modern Rationalism and Technological Versatile Principle after FUKUSHIMA. *Tetsu Ueno, Oyama National College of Technology*

The purpose of this paper is to answer the following question: how have Japanese citizens' ideas about the control of science and technology changed since the Fukushima nuclear plant accident that occurred due to the Great East Japan Earthquake and Tsunami on March 11, 2011? Despite popular public opinion's estimate, Japanese citizens are in fact less inclined to involve themselves in discussions about science and technology with professionals and specialists. In other words, since the nuclear plant accident in Fukushima, rather than recognizing that it is important for citizens to participate in the discussions contributing to decision making concerning science and technology, it seems that citizens are much more likely to leave the decisions concerning science and technology to specialists and professionals. This sentiment was ascertained from the transcripts derived from discussions with citizens in Tochigi, the prefecture next to Fukushima, in a unique process arranged by myself known as scientific technological ethics cafes; a process that has been operating since 2010. In light of the seemingly apathetic public sentiment, I propose a direction in which the science and technology communications in Japan should aim.

Impact of Fukushima in Switzerland: media coverage, public opinion and electoral behavior. *Fabienne Crettaz von Roten, Observatoire Science, Politique et Société, University of Lausanne*

Switzerland has a turbulent history with nuclear energy: many public demonstrations and popular initiatives on the subject (Favez and Mysyrowick, 1987). Today, four nuclear power plants are in service located in German-speaking part of Switzerland (40% of the total production of electricity). Before the accident of Fukushima, the topic of nuclear energy was increasingly present in media, public debate and political agenda, as after a ten-year moratorium accepted in 1990, the replacement of some nuclear power plants was requisite and the sites for nuclear waste were in discussion (public consultations were planned for 2011). Therefore this issue was considered as a key issue for political parties for the October 2011 federal elections. In this context, what was the impact of Fukushima on public debate, media coverage and public policy? Is there a lasting impact of Fukushima on public opinions about nuclear energy? More as Crettaz von Roten (2012) has showed cultural differences in perceptions of science, technology, and the environment, were there differences between the three linguistic regions? This presentation aims to answer those questions by examining media coverage of Fukushima and surveys related to nuclear energy before and after the accident (in particular to examine the influence of polls on public opinion and on policy makers). These results come partly from the research project "Monitoring Policy and Research Activities on Science in Society in Europe" (MASIS).

Notes from the debris field: participatory recovery planning in Tohoku. *Tyson Vaughan, Cornell University*

This paper presents initial analyses of ongoing ethnographic work on the tsunami-stricken coast of northeast Japan, where displaced residents, officials and technical experts are hashing out designs for the sociotechnical futures of their communities. They face a dilemma which was equally prominent in participatory recovery planning in Kobe and New Orleans: whether to reconfigure a built environment that is "technically

safer," or whether to reconstruct a community in which pre-existing social networks and ways of living are maintained as they were before the disaster. Plans that manipulate objects within technical frames of reference readily amenable to quantification and visualization — e.g., budgets, benchmarks and architectonic structures — tend to ignore the less tangible foundations of a community, such as human relationships, emotional bonds to places, or the rhythms of daily life. Yet experts and officials are disciplinarily inclined to favor such plans. However, as one resident said, "When we say the word seikatsu ('livelihood'), what that really means is umi ('the sea')." Moving away from the water or building ever more gargantuan seawalls merely separates the community from its economic foundation and source of its cultural identity. Moreover, such plans not only cannot guarantee residents' safety on their own terms, they naturalize a disciplinarily specific conception of "safety" that summarily renders alternative perspectives — such as holistic conceptions incorporating notions of social capacity and resilience — illegitimate. By comparing Tohoku with Kobe and New Orleans, this paper shows that the way such disputes are hashed out is culturally and locally specific.

119. (96) In search of "lines of flights" in/for/to/from Latin America - I

9:00 to 10:30 am
Kilen: K143
Chair:

Ivan da Costa Marques, Universidade Federal do Rio de Janeiro

Participants:

Agricultural biotechnology and seed companies in Argentina: unintended consequences of the commercialization of science. *Ana Maria Vara, Universidad Nacional de San Martin*; *Federico Vasen, Universidad de Quilmes*; *Agustin Piaz, Universidad Nacional de San Martin*

The "commercialization of science" (Mirowsky and Sent 2008) and the "new political sociology of science" (Frickel and Moore 2006) address a relatively new situation: the production of knowledge in a context of increasing relations between the academy and the industry, characterized by the privatization of not just science products but also of science basic entities and processes. A distinctive daughter of this period, agricultural biotechnology represents a privileged field to study the consequences of these changes. We explore one of the unintended consequences: the unexpected growth of a couple of Argentine seed companies; particularly of one that currently dominates a substantial portion of the genetically modified soybean market both in Argentina and Southern Brazil. This situation was favored by a series of peculiarities that characterized the adoption of GM crops in this country since the mid-1990s. Among those, the fact that Monsanto was not able to patent its glyphosate-tolerant (RR) soybean in Argentina has been crucial. In order to analyze these processes from a global perspective, we work on the terrain of intersection and dialogue between the aforementioned STS perspectives and the "world systems theory", strongly inspired by the Latin American "dependence theory".

Agrobiotechnology versus Agroecology: the role of women in Brazil and the potential for epistemic and sociotechnical contestation. *Márcia Maria Tait Lima, Universidade Estadual de Campinas - UNICAMP/Brazil*; *Vanessa Maria Brito de Jesus, Universidade Estadual de Campinas - UNICAMP/Brazil*; *Renato Peixoto Dagnino, Universidade Estadual de Campinas - UNICAMP/Brazil*

The article addresses paradigm shifts in the field of technologies for food production introduced by Agroecology. Doctoral

research projects carried out in Social Studies of Science & Technology and Philosophy of Technology, have suggested the need for an epistemology to be developed that is especially appropriate for the social movements that are connected to agroecological agriculture, which has been utilized in opposition to the technologies promoted by the Green Revolution. Agroecology can be understood as being informed by an epistemology that contests scientific dominance, and which values practices in which different forms of knowledge are put into interaction. It competes for space with agricultural practices that are based on implementing the new agricultural biotechnologies. Field research has identified a process of re-signification and appropriation of agronomical thought, contributing to the construction of practices that oppose the logic of technological dependence. The triangulation of qualitative research methods demonstrated, in the experiences analyzed, its potential for promoting the development of a variety of forms of knowledge, that deal with gender and environmental issues, and that provide the impulse for far-reaching social and cultural change. This is broadly in accord with the views of Boaventura de Sousa Santos on South Epistemology and Ecology of Knowledge. . The role of women in Agroecology is a notable feature of this discussion. It brings in theoretical and practical elements that could contribute to the analysis, and to the identification of actions that converge to technological trajectories that incorporate social, environmental and gender dimensions, more appropriate to the context of Latin American countries.

The cultural context of "superfood": Açaí in Brazil and Hawaii.
Ivone Manzali de Sá, National Museum of Rio de Janeiro/UFRJ; University of Hawaii

This case study traces what was at its base a myth and popular misconception about a convenient local foodstuff "traditionally" valued for warding off hunger among tribes of northern Brazil to a popular source of quick energy among active sportsmen - mainly surfers and ju-jitsu practitioners of Rio de Janeiro, to what eventually became a "superfood" for Americans. This presentation analyzes the circulation and subsequent transformation of knowledge and application associated with açaí (Euterpe oleracea Mart.), a palm native to Amazon region, as its use expanded from local to ultimately international arenas over the course of three decades. Specific considerations are given to its changing value as a "food" among rural and urban Brazilians (Caboclos, Ribeirinhos and Cariocas) and Americans living in Hawaii - a population completely divorced from the "Brazilian" experience. Contemporary qualitative and historical analysis of academic and popular media supplemented by field observation both in Brazil and Hawaii inform this discussion. Açaí has evolved from a simple "wine" to a dizzying array of products ranging from soaps to fruit drinks, dessert treats, and health supplements; from a food with basic nutritional value to one high in antioxidants, "anti-aging" qualities, and other therapeutic benefits that are yet to be delimited. The story of açaí cannot be divorced from its link to folk beliefs and "lay" science, commerce, mass media, and the ever burgeoning dietary supplement and "natural products" movements in the West. The role of each is considered as contributing to its popular adoption as are the implications of this phenomenon for local production and ecology.

The Story of AR in Mexico: The Birth of an Industry. *Sandra P. Gonzalez-Santos, Universidad Nacional Autonoma de Mexico, Instituto de Investigaciones Filosoficas*

Today, assisted reproduction (AR) is much more than just a set of techniques and technologies aimed at dealing with specific cases of infertility. Among other things, AR is a health service involving a large array of people, procedures, techniques, apparatus and protocols used by a variety of people for many different reasons, it is an industry with financing schemes, marketing strategies, and legitimising discourses, it is an

experience that has become part of the life of many individuals. AR has spread across the globe being subject to forces that are constantly reconfiguring it in all possible ways: material, procedural and symbolic. In this paper I explore how AR has been appropriated by Mexico and at how it has been transformed and (re)created by those who use, interpret and adapt them to their contexts and possibilities (Latour, 1987). Drawing on information gathered through four years of multi-sited ethnography, I focus on three moments: the arrival and development of AR, the establishment of the AR clinic and the emergence of the different types of AR specialists: the AR gyneacologist, the andrologist and the biologist. By describing the way AR was adopted and adapted by a particular socio-cultural context, in this case Mexico, I highlight the processes by which medical technologies are (trans)formed and (re)created when they move from one site and user to the next and suggest that this information can help think about appropriate medical, social, and regulatory frames.

120. Models and modelling - I
9:00 to 10:30 am
Kilen: K146

This panel explores how models and modelling operate in language and practice across scientific and extra-scientific sites. STS research on models in the natural and life sciences have emphasized that modelling creates dynamic and iterative connections between different things, people, and organizational sites. This scholarship has shown that models hold certain social forms together, by linking different lines of work, spaces, and species bodies. Meanwhile, models are also at work in the reproduction and transformation of social life through the cultural repertoires used to delineate social forms. Marilyn Strathern has, for example, shown how English ideas about kinship created a model for making persons and the future. This panel brings these two lines of inquiry regarding models and modelling together. We ask, for instance, how cultural tropes interact with and inform the craft work involved in modelling. We are interested in how "the real" is simulated in modeling work when for instance animals or cells stand in for diseases or patients and how practices of abstraction are involved in linking spaces and species bodies. We are equally interested in how modelling happens in non-scientific settings, for instance when technology becomes a proxy for the patient in clinical settings or when staged encounters stand in for real clinical encounters in the training of health care professionals . By bringing these literatures together, this panel contributes to STS discussions on modelling by comparing the social, material, discursive, aesthetic, spatial, and temporal aspects of making and using models in the reproduction and transformation of social life.

Chair:
Mette N Svendsen, University of Copenhagen

Participants:
Thinking through generic preterm biology. *Mette N Svendsen, University of Copenhagen*

As model systems, laboratory pigs serve as exemplars of human disease probed and manipulated in the search for genetic and generic similarities. This paper reports from an anthropological research project on the premature piglet as a model of the preterm human infant. Based on an ethnographic fieldwork among researchers and "their" piglets in a Danish perinatal pig laboratory we explore how the researchers "think through" the piglet as a model of generic preterm biology. When piglets stand in for human infants in experimental practice it becomes possible to exclude the real suffering and death of the human infant from the investigation of the diseased preterm organism. The piglets however do suffer and die in the here-and-now practices of the lab which is experienced as real and demanding, yet primarily handled through practices of de-animating the piglets making them into tools, not subjects. This conception of the piglet as a de-animated tool is also present in the researchers' scientific conference presentations in which the life, suffering, and death of the piglets become abstracted into biological data. If images of

full animated animals appear, it is in the form of cartoons and aesthetic photos of happy piglets assisting the researchers in their quest for better human health. In following the conception and development of the piglet model in different spaces, this paper discusses the practices of animation and de-animation involved in thinking through generic preterm biology and abstracting piglets into model systems, thereby paving their translation into clinical care.

Modeling the Human Through Animal Proxies in Experimental Laboratory Science. *Sharp Lesley A., Barnard College, Columbia University*

Animals are ubiquitous in experimental laboratory settings, standing in as proxies for humans, and thus conceived as legitimate models for anatomical, cognitive, and emotional realms of experience. But whereas the "animal model" is a phrase employed widely in daily scientific parlance—and seemingly without reflection or critique—animals are hardly, or merely, handled as generic categories or species but, rather, assigned a lively range of labels and associated responsibilities or forms of scientific worth. This paper interrogates the ways in which scientists organize animals into an eclectic set of social categories, ranging from generic "colonies" populated by interchangeable creatures, to the specialized "sentinel" animal, to those most dearly loved who are spared euthanization or "sacrifice" when they have outlived their usefulness. Of special concern here are the sentimental structures that guide human-animal relations in laboratory contexts.

How to assemble a monogamous rodent. Promiscuity, paternal care and other model behaviour in the biography of the Microtus ochrogaster. *Nicholas Stücklin, Laboratoire de sociologie, Université de Lausanne*

The prairie vole, Microtus ochrogaster (literally small ears, yellow belly) is a rodent inhabiting the US-American and Canadian Midwest. In the brain sciences, this smaller rodent has achieved notoriety as a highly social animal model, because unlike rats and mice, it is said, the prairie vole shows "social behaviours remarkably similar to those of humans, even displaying characteristics of monogamy such as long-term pair-bonding, care of offspring by both parents, and sharing of a nest even beyond the breeding season" (Curtis et al. 2010: 43). But are humans monogamous and biparental? Do they share their nest beyond breeding season? In fact, do prairie voles even do so? Curiously, the zoologists conducting the first studies on the prairie vole's behaviour in the 1950's considered the animal to be "promiscuous" and the males to show no interest for their young. By retracing the prairie vole's trajectory as an object of scientific interest in zoological and behavioural publications from 1957 to 2010, I propose to look at how it becomes monogamous in zoology, and how this status as a monogamous rodent earns it the rank of an accurate model for human behaviour in biological psychiatry. During these 50 years, the prairie vole's social life becomes richer, more complex and by the authors' terms more human. However, this ennoblement of ochrogaster conduct ultimately seems to be informed by a demand for quasi-human beings in research, whose complex yet unprotected lives are hoped to provide a gateway to the physiology of human behaviour.

Encountering pig patients and pig personalities. *Vibeke Pihl, University of Copenhagen*

The purpose of this paper is to examine how human-pig sameness and difference emerge when pigs are used as models of human patients in contemporary biomedical research. Using pigs as models of human patients are based on a need for an organism that is termed biologically similar to human patients although not being the same. This points to how a central aspect of model work in biomedicine consists in establishing and dissolving divides between pigs and humans. Based on an ethnographic fieldwork following the making of a pig model in biomedical

research on human obesity and type 2 diabetes, the analysis focuses on how model work depends on the making and unmaking of divides in multiple ways. The approach includes attention to how model work is arranged according to divides between places, researchers and animal technicians, the making of science and publishing of scientific work. In addition, the paper will highlight how different kinds of encounters between pigs and human actors are enabled through divisions of work between animal technicians and researchers. In encounters with animal technicians, pigs appear as individual personalities defined by their resemblance to human traits. On the other hand, pigs emerge as shapeable material and biological responses in encounters with researchers' intent on turning pigs into models of patients. Finally, the paper asks what the consequences of the particular divisions in the model work are for the involved humans and pigs.

Modelling Kinship: Donor Siblings, Genetic Relations and Family Life Online. *Carrie Friese, London School of Economics and Political Science*

Marilyn Strathern (1993) has shown how the reproductive model of English kinship has historically modelled for other areas of social life and thought. She has, for example, argued that the idea of nature coming before culture has created a basis for thinking about individuality and collective relations, tradition and novelty, diversity and generality, as well as past and future. However, Strathern notes a shift in these modelling patterns. For example, she contends that cultural ideas about diversity during the 1990s were no longer modelled on kinship, but rather upon cultural production. This paper builds on Strathern's work to ask what kinds of models are informing the ideas and practices of 'donor siblings' today, at a socio-historical moment wherein the reproductive model has been literalised and has therein lost its function as a grounding socio-cultural model. With donor siblings I refer to the relationships that children conceived using donor gametes and their parents are pursuing with other families created using the same donor. These relations have to date largely been forged through social networking websites. Whereas ethicists and psychologists have argued that this is a 'purely genetic' relationship, in a manner that is consistent with the reproductive model of English kinship, I argue the opposite. I contend that the network, rooted in social networking, models donor sibling relations. Through this argument I ask how the network model is reworking notions of kinship as a merographic category.

Discussants:

Andreas Roepstorff, CFIN

Jacob Metcalf, University of California, Santa Cruz

121. Sound studies: Technology and displacements

9:00 to 10:30 am
Kilen: K150

A burgeoning "sound studies" within STS promises to elucidate the role that sound plays in developing knowledge and experiencing an increasingly technologized world. With an increasing proliferation of the ways that sound is created, heard, and otherwise experienced, it is not only necessary to critically examine the relationships humans have to the things they make, but to examine the role of sound itself as a unique but powerful actor in those relationships. This panel is comprised of empirical examinations into a small handful of ways in which sound, ways of knowing, and technologies intermingle to create new understandings of sonic experience. We call attention to the practices of instrument builders, recording engineers, and computer-assisted audition and recommendation systems to show how new forms of sonic mediation have the potential to displace previously understood practices of listening to, making and understanding sound.

Chair:

Joseph Michael Guisti, Northwestern University

Participants:

Bending/Hacking/Breaking: The politics of figuring out how stuff works. *Joseph Michael Guisti, Northwestern University*

STS has increasingly focused on the experience of technology users, and lay actors of all kinds, while technology studies, more specifically, has been increasingly interested in the relationship between technology users and innovation. Meanwhile, the burgeoning field of sound studies urges social scientists to take seriously the auditory world and ways in which auditory events inform personhood. I join these concerns, then, with an investigation of hobby-scientists in the lay public who use sound to construct an understanding of technico-physical artifacts. I ask: how does hearing contribute to lay understanding of science and technology for audio hobbyists, and what is the potential for those auditory ways of knowing to expand lay engagement with the technico-scientific world? I argue in my ethnographic study that circuit benders—hobbyist aficionados of the 'creative short circuit'—follow a mixture of auditory and cultural cues to inculcate an embodied, practice-based electrical-engineering knowledge, troubling previous conceptions of expertise and innovation. As lay engineers who reconfigure audio circuits with a bare minimum of traditional engineering know-how and an often transgressive, bricolage approach to electronics, these circuit benders claim an engineering knowledge based on listening to the "ghosts in the machine." These auditory means of knowing, while described as "liberating" for some hobbyists, promise a democratization of technological knowledge, but are often transmitted within insular lay-expert networks and pose challenges to large-scale adoption.

Indirect users and digital audio technologies. *Eliot Bates, Cornell University*

One of the most significant transformations to audio engineering practices and musicianship (broadly conceived) came with the adoption of numerous digital technologies, a process that began in the late 1970s but by 2000 had revolutionized recording production worldwide. In particular, the introduction of affordable computer-based digital audio workstations (DAWs) opened up numerous possibilities for non-linear editing and signal processing and precipitated a paradigm shift in audio engineering. While there have been studies of certain techniques (e.g. Bayley's 2010 study of non-linear editing as a creative tool for contemporary classical recordings) or the genesis of these technologies (Théberge 1997), there has been little consideration of the impact of such technologies on the social structuring of recording work or the nature of musical competence. In this paper I suggest an approach to understanding all of the actors within studio environments as kinds of computer-users. As a case study, I will look at commercial recording studios in Istanbul, and projects entailing acoustic musicianship and extensive nonlinear audio editing. As I will suggest, beyond the engineer's obvious role in driving computer-based music work through a mouse-keyboard interface, studio musicians developed new modes of playing for/with the computer that show a keen awareness of the potentials for subsequent editing and signal processing, and arrangers/producers similarly developed new aesthetic paradigms and conceptualizations of musical and social interaction in relation to digital workflows. I will then propose an expanded concept of technology use that takes account of indirect users.

Hearing Taste: Computer Audition and Automatic Recommendation. *Nicholas Seaver, University of California, Irvine*

Networked music listeners are now faced with content libraries of unprecedented scale. Through streaming services such as Spotify or online music retailers like the iTunes Store, users are reportedly beset by "choice overload" — they are daunted by the options available to them and unable to find music that they will like. A number of music recommendation services have emerged in response to this problem. These services aim to model users' taste and present them with personalized listening material, filtering the contents of increasingly massive music catalogs. The algorithmic techniques which power these services fall broadly into two types: "content-based" filters make recommendations based on a track's audio content; "collaborative" filters rely on ratings data, recommending tracks rated highly by similar users. These types resemble two commonly opposed theories about taste: that it derives from the aesthetic qualities of objects or that it is better explained through social distinctions among groups of people. In this paper, I explore how this opposition is managed in the algorithmic practices of recommendation, drawing on preliminary ethnographic fieldwork with academic researchers in Music Information Retrieval. What cultural and sociotechnical systems enable the translation of musical sound into automatic recommendations? How are algorithmic recommenders made to hear for us? I suggest that a pervasive logic of "feature extraction," drawn from the field of machine learning, is used to mediate the apparent opposition between music, which can be "heard" by a computer, and social reception, which cannot.

Sound, Music, and Technoaesthetic Value in Experimental Musical Instruments. *Lauren Flood, Columbia University*

A musical instrument is a material object and a technical tool; it is also part of a social imaginary. A newly invented instrument always faces an uphill battle for relevance—a struggle that is chronicled in varying but increasingly overlapping ways in musicology and science and technology studies. This paper looks at new strains of thought in organology, the study of musical instruments, in the context of experimental instrument builders. I will draw from my ethnographic fieldwork on musicians who design and self-build musical equipment in New York City, arguing that these emergent technologies must achieve a number of criteria to attain technoaesthetic value—and thus become conduits for the way musician-inventors think about music—including playability, visuality, and perhaps most of all, musicality. I will explore the relationship between the material aspects of instruments and how the sound/music divide is defined and naturalized. How does one define an instrument capable of producing sound, music, or even noise, and how do such perceptions play out in the endeavors of builders and performers of these instruments? To what extent are instruments configuring the user and vice versa? I view the musical instrument as a material structure and examine the sonic concerns that enter the design process, whether newly formed or a retro-innovation. This research intersects with concepts of hacking, do-it-yourself/maker cultures, innovation theories, creative marginality, classification systems, and engaging technologies.

Found in translation: How music experts turn sound into evidence in the courtroom. *Michael S Mopas, Carleton University*; *Amelia Curran, Carleton University*

Copyright law is designed to protect authors from unjust appropriation of their creative expressions by others who would unjustly profit off their work. Although it is often debated whether the law makes appropriate considerations for emerging technologies, genres of music, favours established Eurocentric norms of music, or adequately acknowledges historical and on-going forms of imitation and borrowing, few studies trace what processes and strategies are actually deployed throughout a court hearing to demonstrate "substantial similarity". In response, this paper explores courtroom practices used to establish the substantial similarity between two songs. Using an ANT and post-ANT approach, we ask, what processes of translation does a song undergo in order to demonstrate similarities, differences, derivations and transformations? Of particular consideration are the ways the sound of the song is translated into other media (visual representation, algorithms), or certain aspects of the song are singled out for attention (stripped down to melody), in order to demonstrate the essential, or unique, aspect of the song. How

are these versions of the song shown to be the true 'self' of the song? What role do experts play in helping the judge and jury 'hear' the songs?

Discussant:

Trevor Pinch, Cornell University

122. Deliberating Nordic science, reconfiguring Nordic democracy - I

9:00 to 10:30 am
Kilen: K275

Throughout the history of science and technology studies (STS), "the political" has been of central scholarly concern, from the macro-oriented interest explanations of early sociology to more recent attention to the role of science, glossed as "politics by other means," in the construction of sociopolitical worlds themselves. STS scholarship has revealed public negotiations about what will count as legitimate knowledge as key sites for the contestation of the place of science and expertise in democratic societies, yet there has been less attention to the particular political histories and national trajectories that form the limits and possibilities of such debates. The Nordic countries, characterized by traditions of strong welfare states, particular styles of social democracy, and distinctive consensus-based modes of political deliberation and decision-making, offer a compelling context for scholars exploring the relationship between divergent political models and traditions and locally situated forms of scientific labor, discourse and governance. To this end, this panel will draw on ethnographic and historical research from a variety of scientific domains throughout Northern Europe in order to ask: To what extent are these Nordic political trajectories implicated in (and reformulated through) scientific knowledge production and science-based debates and deliberations across the region? How might a closer analysis of Nordic democratic engagement help us to understand the organization and regulation of scientific practices? Do Nordic examples of intersections or entanglements between science and politics, broadly defined, offer insights that might inform STS approaches to "the political" in other contexts?

Chairs:

Alison Cool, New York University
Amelie Hoshor, University of Gothenburg

Participants:

Swedish consensus politics: between technocracy and public participation. *Alison Cool, New York University*; *Amelie Hoshor, University of Gothenburg*

Sweden, with its long history of consensus politics, offers an intriguing context for re-examining science-based controversies. While Danish models of "consensusing" valorize the lay person as the epitome of unbiased knowledge, Swedish styles of deliberation--and their emphasis on expert knowledge--raise different questions about the boundaries of legitimate participation in science-related issues. Swedish democratic forms are often described as open, deliberative, and inclusive of multiple forums for public participation, yet at the same time characterized by a highly rationalistic approach to social policy. We explore the implications of this tension between inclusion and expertise/rationalism for public participation in two science-related controversies that played out in Swedish popular media. In the debate over the Metropolitan study (Metropolit) in the late 1980s and early 90s, and the so-called Gillberg affair over the DAMP diagnosis in the late 1990s and early 2000s, traditional expertise and its boundaries were challenged. Formal decision-making procedures were side-stepped, as stakeholders found other public platforms to raise questions about the appropriate boundaries of democratic participation in science-related matters. We argue that alternative and informal public forums have opened a space for interested actors to "re-politicize" scientific matters as social concerns, even as the strong legacy of Swedish social engineering continues to inform attempts to frame ideological problems in technical terms, thus making them amenable to scientific solutions. As a result, forms of political

and scientific expertise are often indistinguishable in practice, as science and politics converge into a single articulation of institutionalized elite rationalism.

Public trust in biomedical research in Nordic welfare society: A historical and sociological analysis. *Karoliina Snell, University of Helsinki*

In the Nordic countries, public policy has actively promoted research and business in molecular medicine, and responses of the public toward high-tech medicine like genetic testing and counseling, biobanks and stem cell research have been more favourable than elsewhere in Europe. On the basis of historical and empirical sociological analysis on Finland and Sweden I present an analysis of the supporting elements of the ethos of Nordic welfare for this 'trust'. I also discuss the transformation of public trust as research and development of biomedicine is essentially practiced in transnational networks of science and business. My paper consists of two parts. First, I make a short historical excursion in Sweden and Finland to point out some characteristics of Nordic welfare societies which may have prepared the soil for public trust and 'educated advocacy' of today's molecular medicine. Second, I present an analysis of the ways lay people rationalize over they trust and mistrust in biomedical research and express their affirmative or reserved attitude in different contexts. The analysis is based on survey data and focus group data on participation in biobanks in Finland and on the Nordic research literature on the same topic. My analysis shows clearly that the public trust has a firm basis in reliability of public institutions and authorities and in the idea of 'welfare circle' between the national research institutions and 'common good', e.g. improvement in public health. It also shows that this public trust may erode as high-tech biomedicine is predominantly promoted as an element of national innovation policy in Sweden and Finland and as transnational bioeconomy is increasingly seen to dictate biomedical research and its uses.

Genetic debate in Iceland – the politics of 'biovalue'. *Stefán Hjörleifsson, University of Bergen*

deCODE Genetics entered the scene in Iceland with plans for a nationwide database as a resource for genetic research. The extensive public debate in 1998 and 1999 about these plans was framed in terms of economic gain, healthcare benefits and national pride, but also research ethics questions concerning security and 'presumed consent'. A study of the subsequent mass media coverage of genetics in Iceland in 2000 and 2004 found that all media promoted optimistic industry-based information largely without critical questions concerning scientific uncertainty, health benefits, or ethical challenges (Hjørleifsson et al 2008). In a discourse of monetary gain and loss, sustained explorations of scientific, moral and cultural issues have little appeal. The public debate about deCODE relates to conspicuous features of sociopolitical culture in Iceland as well as in the other Nordic countries. Firstly, the tradition of public healthcare services involving nationwide databases for research-, treatment- and preventive purposes. Secondly, high expectations of technoscience, which have not been disturbed by crises as in many other countries. Thirdly, the belief that regulatory institutions and procedural research ethics principles provide sufficient safeguards against potential abuse of science. And finally, the growing approval of for-profit entrepreneurship in healthcare and biotechnology. In this sociopolitical situation, genetic research proposals can become a main ingredient in optimistic projections of the future – seemingly apolitical, while in reality promoting questionable assumptions, including the view that the human condition will improve in so far as man becomes a 'standing-reserve' for technology or 'biovalue'.

'Managementality' and the displacement of democratic capitalism in Norway. *Emil Røyrvik, SINTEF Technology and Society Work Research, Norwegian University of Science and Technology*

By analysing managerial rationality as a pacemaker of the (post)modern social order, this paper discusses how transformations in corporate 'managementality' (Sørhaug 2004) instantiate and reflect displacements in the political economic context of "democratic capitalism" often associated with Norway and Scandinavia. The paper is based on an extended ethnographic study of corporate management in the 107 years old Norwegian based globalized aluminum company Hydro. The company was founded the same year Norway got its independence in 1905 and the history of Norway and Hydro is intimately linked. Hydro has arguably been the most important industrial locomotive in the historical development of the Norwegian modern society and welfare state. And managers and employees in Hydro have historically perceived of their company as a vital social institution that has a much broader social and democratic mandate and justification than pure profit making. In general terms Hydro instantiates an example of what is known as democratic capitalism, in complement to other key forms of capitalism, such as US "competitive capitalism," British "personal capitalism," and German "cooperative capitalism", and we might add Chinese capitalism. In democratic capitalism a strong state combines with strong communalism and connects with the broadly based petit bourgeois and its ideals of equality and democracy (Sejersted 1993). A core question of this model has been how the economic domain can enable democratically participatory citizens and democratic societal development. In this view democracy is the overarching system value of capitalism (Slagstad 2001: 527), and this system has come increasingly under pressure during the last decades (Byrkjeflot et al. 2001). The roots of corporate management can be traced to engineering at the turn of the 19th century (Shenhav 1999), but it has later differentiated itself from engineering, and key managing concepts were translated from the "technical" field to the operations of the whole organization and disseminated throughout society. The paper traces how the broad neoliberal turn in Norway can be read through a shift in Hydro 'managementality'. The turn in Hydro also reflects a broader shift in managerial rationality globally, from an engineering based model of industrial management and capitalism to what Hyman Minsky describes as a 'money manager capitalism' (1996). The successive unfolding of the managerial revolution is a key driver in this development. Boltanski and Chiapello's analysis of the "new spirit of capitalism" underscores that what they label neo-management entails the significant transition from control to self-control, ensuring that self-control is achieved by subsuming the inner life—the emotions, values, and personal relations of workers—under productivity and profit motives (2007: 78–86). An additional part of the new 'managementality' (Sørhaug 2004) is that it also enables relations based on "mimetic desire", the "principle of desiring what you think others desire (cf. Girard 1977), and which makes people wanting to want" (Sørhaug 2004: 104). The paper explores some of the constraints, pressures and changes that have been happening with managerial rationality within Hydro and the Norwegian context of displacing democratic capitalism.

Discussant:

Juha Tuunainen, University of Helsinki

123. (05) Designing global health technologies in the Global South - I

9:00 to 10:30 am
Kilen: Ks43
Chairs:
Norman Schräpel, Institute of Anthropology and Philosophy, MLU Halle-Wittenberg
Richard Rottenburg, MPI Social Anthropology/University of Halle
Participants:

Short Panel Introduction by the Organizers. *Norman Schräpel, Institute of Anthropology and Philosophy, MLU Halle-Wittenberg*; *Richard Rottenburg, MPI Social Anthropology/University of Halle*
Short introduction to Open Panel 5

Counting, Reading, Sensing – The politics of standards and the (re-)shaping of diagnostic space in Uganda. *René Umlauf, University of Bayreuth*
In 2006 the WHO changed its guidelines making parasite-based diagnosis the new global paradigm for diagnosing non-severe cases of malaria. This shift is in line with current trends in Global Health to standardize treatment protocols and therapeutic patterns of endemic diseases in the Global South. In order to effectively implement these new guidelines into public health practice various processes of translation have to be performed. Currently, technical solutions in combination with scientific research form the center stage in this reconfiguration of diagnosis. Social science research has been mainly focused on the effects of newly emerging standards, with less attention paid to the underlying logics of existing biomedical standards in their double role as research tools and bio-political technology. This paper examines the workings of the so called gold standard – constituting the rock bottom to which new candidates for standards are compared – in its relation to newly emerging diagnostic devices. Its focus is on how the enactment of microscopy as a gold standard in clinical trials interacts with microscopy as a common diagnostic technology in the Ugandan health system. It will be argued that standards not only re-shape different technologies, their practical use and value, but create new diagnostic spaces. Malaria diagnosis unfolds along a changing typology of counting, reading and sensing – that fold into each other in multiple ways of detecting the disease – be it as invader of red blood cells visualized by microscopes, lines on rapid tests applied in mobile clinic, or as a feverish body in the home.

Innovating tuberculosis diagnostics: Tracing attempts from global to local sites. *Nora Engel, Maastricht University*
New diagnostics that can detect tuberculosis (TB) at the point of care are urgently needed. After decades of neglect the search for new diagnostics has received new global attention, actors and resources. As a result, pipelines are filled and the WHO has endorsed several new diagnostic tests, some of which have been heralded to revolutionize TB control. Yet, laboratory capacities in resource-poor settings are often too weak and the new tests too costly and/or dependent on sophisticated equipment. How can diagnostics be designed that work in different local settings? Drawing on ongoing fieldwork in India and at international conferences, this paper traces attempts to innovate TB diagnostics from global to local levels and reflects on how STS scholarship can contribute to those. It examines the production of evidence on the global diagnostic pipeline and on feasibility of new diagnostics for public TB control in India, and it reflects on attempts to initiate a dialogue among actors engaged in innovating diagnostics in India. The results reveal that there is an urgent need to improve underlying processes of innovation and that STS has important insights to offer. The search for new TB diagnostics in India is challenged by complex diagnostic and treatment landscapes, a non-conducive environment to innovation and diverse conditions that actors demand from a test. While the search for a point of care diagnostic test is ongoing, old pitfalls such as a belief in silver bullet technologies, a linear understanding of technology development and exclusion of local expertise remain.

Developing and implementing a new vaccine in sub Saharan Africa. *Janice E Graham, Dalhousie University*
A new meningococcal serogroup A conjugate vaccine is the first vaccine developed, manufactured and licensed in the global south for use in developing countries. Achieving biological

standardization at WHO in 2006, it was introduced across the country of Burkina Faso in December 2010. Using an STS informed ethnographic approach that followed the international and local actors, this paper will describe the circulation of expertize, of scientific and political actors and activities involved in the development, planning and implementation of the vaccine. The assemblage of standardization approaches relevant to the vaccine's scientific development, national and regional adaptations to systematic surveillance, communication and safety reporting, and subsequent ecosystem responses will be analysed. The roles and interconnections of local, national and international organizations, as well as multi-dimensional on-the-ground socio-cultural, historical, economic, and political factors that lead to differential health concerns and responses are examined, with attention to lessons learned and improvement on vaccine decision-making models. This longitudinal case study of socio-techno-scientific authority, expertise, agency and adaptive ecosystems response will be of interest to STSers interested in global North-South relationships.

'The watershed': Pioneers of obstetric ultrasound in Brazil. *Lilian Krakowski Chazan, Private Office*

This paper examines the construction in Brazil of obstetric ultrasound as a field of diagnosis and as an object of consumption since the 1970s, based on its history as told by some of its pioneers, analyzed and contextualized from a socio-technical perspective. As the history of the introduction and expansion of ultrasound technology in Brazil is yet to be written, we consider that this investigation can help improve our understanding of how this technology became so widespread, exploring the context in which the technology was introduced and inquiring into the meanings it acquired that differ from its original purpose. We have sought to map and understand how the technology was developed and appropriated and how its use was spread, taking as a premise that not only is society fundamental in determining the direction of technological development, but that technology itself shapes various aspects of the society that developed the technology. There are two aspects to be examined: the first is the technological innovation process, while the second involves the construction of a professional field based on a technological device. Both are non-linear processes and the aim, based on the premise that they were mutually constitutive, is not only to map them but also to understand how they were articulated and continue to interact in the present. The consumption of medical practices emerges as an element that articulates these two aspects and that, in turn, enables one to understand some rather curious developments that stray quite far from ultrasound's original purpose.

124. (90) The social life of organization theory - I

9:00 to 10:30 am
Kilen: Ks48

Chairs:

Signe Vikkelsø, Copenhagen Business School
Karen Boll, Copenhagen Business School
Paul du Gay, Copenhagen Business School

Participants:

How and why did 'task' disappear in organization theory? *Signe Vikkelsø, Copenhagen Business School; Paul du Gay, Copenhagen Business School*

'Task' and 'purpose' were once central concepts in organization theory. Organizations were understood as collectives of people, machines and ideas assembled around a basic goal, or raison d'être. Approached in this manner, it made little or no sense to talk about, evaluate and, least of all, intervene in an organization without an understanding of its concrete and practical business. Today, this basic orientation has become a rarity within the field. Indeed, it is something that increasingly seems quaint and

anachronistic, if not absurd, since it is now widely argued that the primary challenges facing organizations in the present cannot be adequately represented in relation to the idea of an organizational purpose or 'core task'. As change, innovation, process, flow and similar desiderata have come to dominate the theoretical lexicon in the study of organizations, so the idea of an organization as a distinctive sort of entity associated with a 'primary' task has dissipated or been 'disappeared'. In this paper, we trace the socio-material history of 'task', charting its shift from a key concept associated with an 'empirical stance' within organizational theory (seen as a practical science of organizing), to its current location within the field, where it is represented as, at best, a peripheral and 'purely instrumental' concept, by an organizational theory that has adopted an increasingly 'metaphysical stance' towards its object. We discuss the practical implications of this historical development for the manner in which 'the organization' is made an object of debate and intervention, and, in so doing, link this to the changing role and persona of the organization theorist, and to the idea of organization theory as an science as such. In this way, the paper aims to contribute to ongoing debates within STS concerning questions of performativity in economic and organizational life.

Organizing core tasks. *Karen Boll, Copenhagen Business School*

Civil servants conduct the work which makes welfare states functions on an everyday bases: Police men police, school teachers teach, and tax inspectors inspect. Focus in this paper is on the core tasks of tax inspectors. The paper argues that their core task of securing the collection of revenue has remained much the same within the last 10 years. However, how the core task has been organized has changed considerable under the influence of various "organizing devices". The paper focusses on how organizing devices such as risk assessment, output-focus, effect orientation, and treatment projects influence the organization of core tasks within the tax administration. The paper shows that the organizational transformations based on the use of these devices have had consequences both for the overall collection of revenue and for the employees' feeling of "making a difference". All in all, the paper is an investigation into how various (mundane) organizing devices interact with, influence, and shape particular organizational practices which are assumed to perform the well-functioning welfare state.

Men and machines. Aligning management and the human factor. *Maarten Derksen, University of Groningen*

Taylorism, also known as scientific management, may be considered one of the first major organization theories. In a sense, Taylor not only had to make 'the organizational' an object of his kind of theory and intervention, but had to get it accepted as an object of science and technology at all (of whatever kind). I will interpret the history of management between 1910 and 1925 in the light of these challenges, focusing on the alignment of management and what was called 'the human factor'. A major point of contention in the controversy around Taylorism was the charge that it reduced workers to machines and deprived them of, or went counter to a variety of capacities and characteristics that were thought to distinguish people from machines, and were often referred to as 'the human factor'. I will argue that the conventional view that the increasing influence of psychologists and other social scientists caused the 'humanisation' of management theory and practice needs to be amended. Scientific management was not less human than later approaches such as 'human relations', but it articulated the human factor differently, and aligned it to its own instruments and practices in such a way that it was at once external to them and essential to their functioning. This alignment of the human factor and management technique was challenged by industrial psychologists and other social scientists, but the question to what extent the human factor can be incorporated in management or is resistant to it, remained a major theme.

Disciplinary intention: Genesis of a French school of organizational sociology (1960-1970). *Alexandre Paulange-Mirovic, Université Paris-Dauphine, Paris*

This paper addresses the academic enterprise led by and around French sociologist Michel Crozier to form a French school of organizational sociology. Focusing on the 1960-1970 period, we associate a Bourdieu inspired theoretical framework to STS concepts to give a precise account of a strategy of disciplinarization. Combining a structural analysis of the field of French sociology and a study of individual trajectories, the paper renders an account of the social sources of this academic enterprise conducted outside and against the traditional French University. We identify a claim of jurisdiction on a particular domain of knowledge -"organizations"-, but also a claim of autonomy from general sociology itself. A socio-historical look at Crozier's research group reveals a collective attempt -not always successful- to standardize a package of knowledge and know-how. A close look at the concrete teaching and research practices and instruments (textbooks, case-studies, syllabi, research protocols and techniques) shows a rupture with the dominant academic standards in France. At last, we assess the institutional dimension of this unorthodox disciplinary stance, both in academia (the certification of a Master's degree at Sciences Po) and at the transnational level (the foundation of EGOS). Based on archival data and interviews, the paper contributes to the literature by both opening STS to the study of social sciences and offering an analysis of the genesis of the field of "Organization Studies" in France.

Leadership development programmes as social technologies coupling organization theory and practice. *Morten Knudsen, Department of Organization, CBS*

Today leadership is seen as a crucial issue for the future welfare state, with implications for its governance, its innovation as well as its production of welfare. Consequently, the public sector (in OECD in general and in Denmark particularly) has seen a remarkable growth in both in-house leadership development (LD) programmes and in formal leadership educations. Studies of LD programmes typically focus on outcomes concerning the individual leader and his/her skills. In this paper we will instead focus on the construction of such programmes. We observe the programmes as social technologies which contain and create expectations of "good leadership". Exchanged and translated by leaders and organizations, these expectations and practices transform leadership and thus also organizations. Organizational structures, social relations and roles, notions of tasks and change may all be affected by the new discourses, practices and leadership-ideals of the LD programmes. The LD programmes on their hand draw on scientific theory in the way they picture organizations and leadership. Organization theory delivers many of the discourses and practices constituting the LD programs. Thus LD programs today form an important link between organization/leadership theory and organizations. In this paper we will investigate what is meant by leadership development, what functions are ascribed to it, and how the leader/organization nexus is imagined and used. Danish policy discourses on LD as well as the discourses of LD programmes will form the empirical material to be analysed.

125. (13) STS and the socio-material constitution of later life - I

9:00 to 10:30 am
Kilen: Ks54
Chairs:
Alexander Peine, Utrecht University
Alex Faulkner, King's College London
Birgit Jaeger, Roskilde University
Ellen Moors, Innovation Studies, Copernicus Institute, Utrecht University, NL

Participants:

Introduction to the Sessions: The Socio-material constitution of later life. *Alexander Peine, Utrecht University; Alex Faulkner, King's College London; Birgit Jaeger, Roskilde University; Ellen Moors, Innovation Studies, Copernicus Institute, Utrecht University, NL*

Welfare technology innovation and the social constitution of ageing,. *Lene Otto, University of Copenhagen; Aske Juul Lassen, CEHA, UNiversity of Copenhagen; Julie Boennelycke, CEHA, UNiversity of Copenhagen*

This paper is part of a research project concerned with healthy ageing in Denmark (Centre for Healthy Ageing). Drawing on experiences from a public-private innovation partnership (PPIP) named No Age, this paper focuses on different ideas and images of the prospective, elderly user that are aligned through the innovation process (Jaeger 2011). We explore how different understandings of the elderly, active ageing and health meet and entangle in this specific innovation work? The ambition of No Age is to create welfare technology solutions for the elderly, together with the elderly, and the authors have participated to provide user-involvement in the innovation processes through ethnographic methods. In this paper we focus on contestations and negotiations between conflicting ideas of healthy ageing and elderly, and we argue that the innovation process entails a co-construction of technological solutions, their users, and the health issues that they aim at solving (Pinch et al 2003). The paper reflects on the use of ethnography in innovation of welfare technologies.

Designing for an imagined user: energy-efficient older-people's housing. *Alan Lewis, University of Manchester; Ralf Brand, The University of Manchester*

One solution to the problem of how to enable older people to retain their independence, popular with UK policymakers in recent years, is the creation of specialist housing designed specifically for the typical needs of older people. Implicit in the concept of specialist housing is the notion of a 'special' occupant, an imagined older person. This user representation is often inscribed in design features, such that the energy-efficiency performance of buildings equipped with low-carbon technologies depends upon the occupants' compliance with certain anticipated 'scenarios of use' or 'scripts'. Conversely the occupants' ability to control their thermal environment depends on the level of 'fit' between these scripts and the socio-material practices by which older occupants maintain thermal comfort. Currently there is little evidence to show whether these 'scripts' and occupants' everyday practices are compatible. Drawing on insights from social gerontology, and through semi-structured interviews with people involved in the design and management of older people's housing schemes, this paper explores how these representations of later life are constructed and inscribed in housing design. The paper also draws on semi-structured interviews with older people living in specialist housing to investigate the degree of compatibility between these user representations, as embedded in domestic heating technologies, and the daily practices by which occupants stay warm and keep cool in the home. The implications for energy use and occupants' thermal comfort are explored.

Thermostats and Telecare: tensions between choice and care in technological design for older people. *Louis Neven, Utrecht University; Sam Brown, Lancaster University*

Over the last decades, choice, control and autonomy have become keywords in the elder care sector as it is, for instance, argued that increasing the amount of choice makes services more responsive to the needs of older people. Ideologies of choice are also scripted into technological systems, which can come to

exemplify attempts to provide greater individual control and autonomy. In this paper we analyse such inscriptions in two empirical case studies. We analyse two care settings for older people in which technologies had been installed that specifically aim to facilitate choice and control. One case study focuses on the provision of individualised thermostats in UK care homes and the other on a pilot test of a telecare system in private housing in the Netherlands. We will show that these technological interventions actually lead to more work for carers, introduce new risks and have negative unintended consequences. We will show that in care practices a delicate balance between care and choice needs to be maintained, but in the design of these technologies for older people this balance was insufficiently reflected and so new tensions and problems were designed into the everyday life (care) practices. We nuance the assumption that the technologically mediated provision of choice is appropriate in all settings and argue that an ideology of choice, which fits in well with consumerist ideas that underlie many innovations, cannot be transplanted to the lives of older people without careful evaluation of the (care) practice that they will be introduced in.

Active aging with(out) technology at home and beyond. *Juan C. Aceros, Universitat Autònoma de Barcelona*; *Jeannette Pols, Amsterdam Medical Centre*; *Miquel Domènech, Universitat Autònoma de Barcelona*

Decision makers are engaged in a crusade against sedentary life style and in favour of "active aging". Technology is usually presented as an ally in this endeavour, and telecare devices are part of this active-aging-friendly technological "solutions". In Spain, telecare is part of the catalogue of services in the so called "Dependency Act". With their implementation, the achievement of "personal autonomy" in older people, and their "active incorporation into community" are expected. This paper asks what happens when telecare meets older people with their own ways of being "active". How is active aging (co)produced with and without telecare? In order to answer this question, the analyses of two home telecare installation processes are presented. The data are part of the field work carried out during an ethnography on telecare in Spain (mainly participant observation and interviews where used). In the cases presented, telecare does not fit with the "active aging" way of life of two older women. The paper shows how they try to ensure their homey orders and their usual moves beyond the household. While they are doing that, telecare scripts its own idea about where and how "active aging" may occur safely. In these person-technology meetings, situated ways of active aging are performed, but also challenged. The analysis dialogues with Domestication Theory and with material-semiotic accounts of care at a distance in later life.

126. (26) Future energy infrastructures: aspects of design and resilience - I

9:00 to 10:30 am
Kilen: Floor Ground floor - Ks71
Chair:
Gerhard Fuchs, University of Stuttgart
Participants:

Conflicts over the extension of the German power grid. *Mario Neukirch, University of Stuttgart*

In Germany a strong controversy on the extension of the 380kV power transmission grid is going on. Large energy companies, the energy agency and the federal government claim that this extension – in the way it is planned – would be necessary for integrating wind power into the existing energy system. Several projects of new 380kV power lines have been started. Most of them are delayed due to local resistance. People are against these projects because of potential health-risks, a loss of value for land and residential property, nature protection and other reasons. The

protest groups are supported by environmental organizations and local politicians. Beyond these local conflicts there is a broader controversy on the principal appropriateness and the purposes of grid extension plans. It is criticized that the real motivation is not the growing use of wind power, but the integration of coal power stations and the improvement of power-trading with neighboring countries. The study analyses the dynamics of this conflict from an actor view perspective. It uses the concept of strategic action fields (Fligstein/McAdam 2011) to analyse the viewpoints and power resources of actors, field developments and the results of conflicts. With this case study I like to contribute to STS by analyzing the influence of civil society on innovation and the development of large technical infrastructures and centrally steered big projects.

Re-designing energy infrastructures: local initiatives in Germany. *Nele Hinderer, University of Stuttgart*

The phase out of nuclear energy has opened up a window of opportunity for redesigning the traditional centrally designed and hierarchically structured energy infrastructure. The paper will analyze various local attempts in Germany in order to assess whether the local activities have the potential to change the incumbent order and to what extent they share a common idea about a new design of the infrastructure. The theoretical basis of the analysis is the theory of strategic action fields as developed by Neil Fligstein and Douglas McAdam. The theory of strategic action fields merges thinking from institutionalist organization theory and social movement theories. The theory of strategic action field seems especially suited for our purposes since it claims to answer the question, how and under what conditions relatively powerless actors come to mobilize and (re) organize fields – in our case energy infrastructures. Based on the current situation and the assumption that the field is already unstable and unorganized, the question arises whether there is an opportunity for a redesign towards (sustainable) energy infrastructures resulting from local initiatives. The requirements for structural changes are depending on a collective construction/attribution of threat or opportunity as a starting point of organizational appropriation depending on actors violating field rules with respect to acceptable practices and engaging in "innovative action" in defense or support of group interests. The empirical basis of the paper is the analysis of four local initiatives: Hegau-Bodensee, Neumarkt-Oberpfalz, Nordschwarzwald and Odenwald. Data will be obtained by qualitative interviews.

Grid Reinforcement for Power System Transformation - Design Controversies and Restrictions. *Doerte Ohlhorst, Berlin Free University*

The electricity grid expansion threatens to bottleneck a high share of renewable energies in the electricity supply, because it is subject to significant restrictions. Aim of the presentation is to give an insight into the complex design of high shares of renewable energies by a system-wide view on various technical, social, political, administrative and economic dependencies, interactions and constraints. The factors that affect the reinforcement and expansion of the electricity grid are designed as a socio-technical constellation, elaborated with the methodology of the 'constellation analysis'. By zooming into different parts of the constellation it will be shown that the current socio-technical arrangement is challenged by a number of different uncertainties and controversies. One part of the constellation shows the lack of acceptance for new electricity grids as a restrictive factor. The expansion and restructuring of the electricity network has met local resistance because it is associated with adverse effects. The lack of acceptance contributes to the delay of grid expansion. When investigating restrictions, the question of how to design the innovation processes arises. There are efforts to enhance participation in governance and planning processes, but this leads in part to new uncertainties. Restrictions and policies to address them are constantly challenged, reframed and reconsidered, because policy

making is a process that involves many actors and interests. Moreover, the issue of social inclusion and acceptance is closely linked to unsolved technical and economic questions.

Adoption of Sustainable Energy Technologies in London.

Anne-Marie Coles, Geenwich University Business School; *Athena Piterou, Brunel University*; *Audley Genus, Kingston University*

Adoption of micro-generation technologies is usually seen as having a beneficial contribution to sustainable development, particularly in urban environments which present specific challenges, not least relating to the heterogeneity of building and land use. These technologies offer the potential for distributed supply and consumption, resulting in reduced reliance on centralised energy generation. Small scale installations in buildings also appear to offer technological flexibility at the 'human' level, necessary for local participation in shaping the direction of sustainable development. This paper reports on a project concerned with identifying renewable energy and energy demand reduction projects in London. Initially, a database was compiled from publically available sources, focussed on the use of renewables at the level of individual, multi-occupancy buildings. The resulting dataset includes information on a number of different technologies that have been recently installed, expected outcomes and actors associated with each project. On the basis of these data the relations between projects, technologies and actors have been mapped as a social network, to demonstrate the flows of funding and expertise between the actors. The map enables identification of clusters through network analysis, an indication of socio-technical trajectories regarding sustainable energy in London. Measures of network cohesion/fragmentation indicate to what degree innovative activity is distributed. However, results indicate that large institutional actors on the supply side may become regarded as renewable energy experts rather than the social or community groups who have experience of technologies in use.

Reconfiguring international energy trade for a renewable future.

Jessica Crivelli, University of Zurich, Institute for International Studies

The future of international energy trade is currently under discussion in various world regions: – Offering cleaner energy without impacting negatively on the quality of supply, planning ahead on the nuclear phase out and pressures to restructure energy production, transmission and distribution facilities. The costs of failing are immense: a failure to adequately redesign the market and the associated technologies could result in power failures and thus damages to a broad number of vital areas of political, economic, technical and social life. In Latin America, countries like Argentina and Brazil have experienced severe energy shortages in the past and are since in the process of restructuring their energy sectors. They have discovered binational energy trade as a way to bridge the divide between future 'clean' national energy production and the current need for reliable energy supply. Could their experience inform the European debate? How can we translate Latin American insights for the European renewable energy market? The present paper investigates how renewable energy infrastructures intertwine with other areas of social and political life and uses the insights gained to sketch potentials and challenges of future international energy trading. By means of an in-depth case study of the planning and construction of the Garabi hydroelectric power plant between Argentina and Brazil, the author uses the productivity of key concepts from actor-network theory (e.g. Callon 1986a; Latour 1987, 2005; Law 1986) to allow for a better conceptual understanding on how the 'joint becoming' of the social, the political and the technical unfold.

127. (58) STS perspectives on patient safety and quality improvement in health care - I

9:00 to 10:30 am
Solbjerg Plads: SP112
Chairs:
Jessica Mesman, Maastricht University
Roland Bal, Erasmus University Rotterdam
Johan M. Sanne, Linkoping University
Participants:

Patient safety and organizational learning: With or without experience? *Kirstine Zinck Pedersen, Copenhagen Business School, Department of Organization*

The key trope of patient safety policy is learning. With the motto of going from 'a culture of blame to a learning culture', the safety program introduces a 'systemic perspective' to facilitate openness and willingness to talk about failures, hereby making failures into a system property. Within the mainstream safety orthodoxy the system is understood as a static and well-defined entity and the primary 'learning model' is to 'fix the system' by introducing standards, procedures and safety devices. The goal is to create a system as independent of experience and memory as possible. Drawing upon American pragmatism, situated learning theory and science and technology studies, the paper contrasts the notion of 'systemic' learning expressed by the safety policy program with notions of learning as a socio-materially situated practice. Based on fieldwork conducted in 2010 in a Danish university hospital, I propose that learning, and more specifically learning from critical incidents, should be understood as a practical and experience-based activity as well as an equally individual and social achievement, which is always formed in relation to the specificities of the concrete situation. Parting from this perspective, I further indicate how safety technologies, such as root cause analysis, might bring about learning not because of but in spite of their standardized methodologies and solutions. Hereby, the paper aims to contribute to debates within STS concerning questions of safety, risk and the relationship between standardization and flexibility in clinical practices.

From observation to learning and improving quality. *annemiek stoopendaal, phd*

Main arguments Improvements in long term care cannot be taken for granted. Practitioners in this sector do not change their daily routines easily. A Dutch nationwide quality improvement program was followed up by a regional program in which nursing students supported improvement teams in care organizations. Students helped teams to measure fall risks and incidents and were also trained to make qualitative observation reports of care situations. Their reports provided 'narratives of insight' in situational practices that were common to the front line staff. Nevertheless the observations worked out as 'strangers eyes' and several interventions were realized after discussing the reports. In another case study frontline workers recorded the environmental hazards, such as dangerous potholes in the pavement. The DVD was presented to and discussed with management, which provided ideas to increase external safety (Stoopendaal 2011). Methodology To obtain an understanding of quality improvements in healthcare we performed qualitative, ethnographic research methods. We provided several ethnographic case studies both in the nationwide and regional program (2006-2011) . Contribution to the STS literature We experienced that improvement practices are not 'rolled out' easily, specific knowledge, theoretical considerations, experiential depth, contextual specificity and social relationships matter (CF to Iedema 2011). Where Iedema uses video reflexity to capture both risks and creative solutions 'in situ', we'll foreground observation to learn from different ontologies of safety. What kind of knowledge is the outcome of observational practices with what consequences? Can we compare observation with the concept of transparency to improve patient safety?

Patients Know Better - what patients can tell doctors about

quality and safety of care. *Stans van Egmond, Rathenau Institute*; *Marjolijn Heerings, Rathenau Institute*; *Anneke M. Sools, University of Twente*

The patient has in recent years been assigned a more active and auditing role due to developments in the Dutch care sector towards demand driven and patient oriented health care. In line with ideas of competition in health care, the 'ideal' patient has become a well-informed and autonomous being. The question is, however, whether such standards for patients are feasible, and whether patients are sufficiently supported to exert these roles. Despite the existence of performance indicators, currently the Dutch patient lacks the means to make an informed judgment about hospital care. Moreover, hospitals are complex socio-technical systems that slowly adapt to the call for more transparency and the new position of the patient. This paper discusses the results of a narrative research design in which we collected and analyzed online stories of positive and negative experiences of patients with hospital care in the Netherlands. We address three questions. First, how patients and their loved ones experience the quality and safety of hospital care. Second, how these experiences can contribute to (the debate about) a further shaping of the autonomous and informed patients? And third, how the voice of the patient can contribute to an increase of the quality of hospital care? Furthermore, we want to discuss the effectiveness of our methodology as a useful tool to influence the (debate about) quality and safety of hospital care in the Netherlands.

Tracing Integration Techniques. *Miao Liao, Tsinghua University*

Early integration of social considerations into technoscience's development is an important component of governance of emerging technologies. The Socio-Technical Integration Research (STIR) project has developed a set of techniques to conduct laboratory engagements that are intended to support the practice of integration in the context of responsible development of technologies. While STIR techniques have been applied by 10 investigators in 20 laboratories across different disciplines and countries, it is not clear what kinds of adjustments have been made to these techniques under diverging culture backgrounds. By comparing cases of laboratory engagement in the STIR project, I seek to identify the conditions that limit, aid, and reshape the use of integration techniques in order to probe the potential for broad diffusion of these basic techniques.

128. (46) Mediated practice: insights from STS, critical theory and media theory - I

9:00 to 10:30 am
Solbjerg Plads: SP113
Chairs:

Anne Beaulieu, University of Groningen
Annamaria Carusi, University of Copenhagen
Aud Sissel Hoel, Department of Art and Media Studies, Norwegian University of Science and Technology
Sarah de Rijcke, Centre for Science and Technology Studies, Leiden University

Participants:

Representing Functional Neuroimaging: An Interdisciplinary Journey through Analysis and Practice. *Louise Emma Whiteley, Medical Museion, University of Copenhagen*

This paper will examine intersections of STS, media, and critical theory through the lens of science communication. I will argue that a focus on the questions raised by attempts to communicate with public audiences about science can help to ground interdisciplinary analyses of representation in the often-hidden question of effect. Conversely, I will suggest that bringing STS, media, and critical theory to science communication work can ground discussion of the ethics of public engagement in a richer understanding of the tools it invokes. To illustrate this argument I will summarize three different approaches I have taken to media representations of functional neuroimaging, spanning both research and practice: (1) A multimedia drama, Interior Traces, which aimed to encourage audience discussion through fictional vignettes that highlight the social and personal contexts within which a brain scan claims to speak about the mind. (2) A discourse analysis of print and online media texts that represent functional neuroimaging, focusing on the handling of images but also on sources of critical engagement. (3) A short film project and performative conference presentation which both aimed to communicate an STS concern; the processes of operationalization by which 'real-world' phenomena are turned into analytic objects for a brain scanner. In presenting these examples I will also reflect on the role of a science communication perspective in shaping my attitude to the ethics of both examining and engaging in mediated practices.

Public-formatting technologies and their displacement. *Andreas Birkbak, University of Copenhagen*

Recent research within STS (e.g. Marres, Latour) has followed Dewey's argument that the contemporary public is not a stable sphere, but rather "scattered, mobile, manifold" (Dewey 1927, p. 146). This paper aims to contribute to the research agenda of how publics organize under plural, socio-technical conditions. Based on a case study of a snowstorm on the Danish island of Bornholm that kept hundreds of islanders snowbound for a week, the study traces how media technologies were used to bring together the symbolic and material resources needed to translate the snowstorm from a private nuisance to a public issue. For about a fortnight, public service media as well as so-called social media overflowed with efforts to represent the snowstorm and its consequences. The paper argues that the different socio-technical materialities of these media technologies resulted in diverging ways of perceiving and public-izing the consequences of the snowstorm, and thus formatted the public in different ways. The analysis suggests that public service media, although designed as a home for 'the public', were less successful in producing sufficiently common understandings of the situation. In their place, Facebook groups emerged as a stabilizing technology for unruly publics, despite – or rather because of – the platform's original design intentions, which allowed for ongoing negotiation as to what could be deemed private obstacles and public issues. As such, the case is an exemplary displacement of design intentions that contributes to our understanding of how media technologies format the contemporary public.

A Popular Culture Perspective on Stephen Hawking's "A Brief History of Time". *Mircea Sava, University of Bucharest*

Among the various crossing points between Science and Technologies Studies and media and cultural studies, popular science – often described under the new label of science communication – is a subject which occupies a privileged position, offering fruitful conceptual exchanges between these disciplines and combined approaches. Using a perspective drawn upon popular culture studies and the newly established cultural studies of science and technology, the aim of this paper is to decipher and map the mechanisms through which Stephen Hawking's book "A Brief History of Time", in its many dimensions and media extensions, exploit the logic of popular culture in order to build a constellation of cultural products for science communication in a consumption society driven by media. Although a traditional medium of popularization, the popular physics book has adapted to the new realities of mass media in innovative ways. Focusing on three central concepts – the hero, the narrative and the spectacle –, this analysis will explore in what extent "A Brief History of Time" was designed ab initio as a complete product of popular culture, or it was later gradually displaced to this logic, as an attempt to better comply to the stakes of Public Understanding of Science and public

engagement movements. By the sequels of the book and the extensions it inspired on popular science TV channels and even on other media (as music, literature, cartoons etc), "A Brief History of Time" appears as deeply anchored into popular culture and it settled a distinct formula in science communication.

If you look like your passport photo, you are too sick to travel: conflicting photography paradigms. *Liv Hausken, University of Oslo*

Since the standardization of passport photography, passport holders have experienced and complained about what has been called the "distortion" of passport photography, that they are unflattering and does not look like the bearer. This experience addresses a clash between two traditions of photographing people, which we may call the artistic, and the scientific or technical. This paper will discuss this conflict as a divergence between perspectives on photography as a medium for the bourgeois portrait presenting the individuality of the subject and as a medium for authorities with a need to measure physical attributes. This paper will argue that the tension between these two photo traditions and their respective curricula should be explored as a resource for developing a better understanding of photography. Based in a media aesthetic tradition that combines perspectives on technology, aesthetics (perception) and mediation, this paper aims at showing how concepts, ideas and perspectives on photography from art history and cultural studies on one hand and science and technological studies on the other can be put into play for the benefit of them both.

Imprinting terror: Kittler, terrorism and the affordances of printing technology. *Mats Fridlund, University of Gothenburg & University of Copenhagen*

The paper explore the role of technology in the shaping of political expertise and practice with an emphasis on the role of media technologies in origin of modern terrorism. The central question of the paper is what enabling role printing technology played in the rise of modern terrorism in Russia by the end of the 19th century and its subsequent spread and globalization. In doing this the paper consist of both a general theoretical contribution to theories of technological shaping, as well as more specifically develop media and information studies within STS. The political shaping of printing technologies is studied using theories of technologies' sociomaterial affordances following the work of James J. Gibson combined with perspectives on the formative role of media technologies on the emergence of new collective discourses and individual subjectivities by German media theorist Friedrich Kittler. Empirical focus is on two forms of printing technologies used by 19th century Russian terrorists: the mechanical printing press and the chemical hectograph copying machine, the last which have been described as "that prime weapon of the revolutionary movement". While the printing presses can be seen as partly a products of the British Industrial Revolution, the hectograph was a technology made possible by the new science-based development of synthetic aniline dyes of the Second Industrial Revolution of the the 1870s. These technologies allowed different political affordances and produced different symbolic and materialist messages of terror enabling different forms of print terrorism which is discussed and compared in the presentation.

129. (79) On the road: journeys of innovations and prospects - I

9:00 to 10:30 am
Solbjerg Plads: SP114
Chair:
Kornelia Elke Konrad, University of Twente
Participants:

Space travel: constructing and contesting a solar photovoltaic (PV) niche in the UK (1970-2012). *Adrian Smith, University of Sussex*; *Florian Kern, University of Sussex*; *Rob Raven, Eindhoven University of Technology*; *Bram Verhees, Eindhoven University of Technology*

Whilst the research, development and use of PV can be traced back to space satellite programmes in the 1950s, explorations for its terrestrial potential began after the energy crises of the 1970s. In this paper we provide a history of its development in the UK, where, after a further four decades of fitful innovation, and various twists and turns along the way, PV has recently undergone a rapid boom. However, it is a contested boom, with complaints about cost leading to policy revisions that once more threaten PV prospects. Based on 14 in-depth interviews and documentary analysis, we explain the tenacity of this 'hopeful monstrosity' along its journey. Even now, like many 'sustainable innovations', PV remains at a competitive disadvantage in existing markets; and relies upon policy to express the environmental and social values PV claims to embody. Whilst policy dependence emphasises development focused within the nation state, the PV journey in the UK includes detours through European research programmes, into space satellites, periods in African villages, as well as help from German industrial policy. A concept central to strategic niche management, and key to technological innovation systems, is the provision of spaces favourable to sustainable innovation. Yet their construction is rarely interrogated and their influence on directions of travel is obscure. Our analysis suggests prospective and retrospective narratives about PV resonating with broader discourses and interests explain how protective spaces emerge, stabalize and decline over time; and how the characteristics of those spaces shaped the journey PV has taken.

Prospects for solar technology: the role of demonstration projects. *Raimo Lovio, Aalto University, Helsinki*; *Eva Heiskanen, National Consumer Research Centre*

Demonstration projects can serve several roles in generating attractive prospects for innovation. At the first stage, "path finder" demonstrations (Femenias 2004) can serve as a testing ground to evaluate a technology for a particular application. The history of technology has also shown the importance of high-profile demonstrations directed at the general public. Showy demonstrations, like those deployed by Edison to promote electrical lighting, have been termed "technological dramas", which serve to shake stakeholders out of their conventional logic and envision the future potential of the new technology (Lampel 2001). At the second stage, demonstration projects can serve as "field trials" to improve performance and reduce costs (Hendry et al. 2010), as well as to create credibility for and networks around the new solution (Geels and Kemp 2012). At the third stage, "way winner" demonstrations (Femenieas 2004) function as a way to bring innovative solutions into the mainstream and thus reinforce the new path. However, there is evidence that demonstration projects often fail in generating positive expectations or remain isolated (van Hal 2000). Our paper examines various types of demonstration projects organized in Finland during the latest decades in the area of solar technology in housing. We analyze high-profile projects that have aimed to shape public opinion. We also look at more low-key projects organized by industry players and aiming to work as field trials and to mainstream solar energy. By analyzing the successes and failures of these projects in generating attractive prospects, we identify implications for STS literature and practitioners.

Exploring the role of environmental discourses in the twists and turns of innovation journeys. *Per-Anders Langendahl, Open University*; *Matthew Cook, Open-University*; *Stephen Potter, Open-University*

Innovation journeys are the subject of a growing literature. Among other things, such accounts draw attention to the role of prospects in the form of visions and expectations in shaping innovation journeys: how these change over time and redefine

directions of progress. This contribution focuses on an innovation journey undertaken by a firm from the UK food and farming sector to address its environmental performance. It draws on an in depth longitudinal case study in which ethnographic methods such as participant observation were used. Within the case study environmental innovation is conceptualised as a social process that plays out over time: one involving individuals working together to conceive and create new practices, develop or delete existing ones, in relation to their imaginings of 1) environmental problems and performances required to resolve these 2) how combinations of humans (subjects) and technologies (objects) that form the basis of practices are expected to behave to produce such performances. This contribution draws attention to how various competing discourses discursively produce these related sets of subjects, objects and performances and render them legitimate or otherwise at certain times in the innovation journey. It draws attention to the idea that the environmental innovation journey does not proceed easily along a linear path: from plan to implementation. Rather that environmental innovation journeys are characterised by twists and turns which are partly shaped by various competing environmental discourses.

The Trajectory Is on the Map, but We Miss the Pathways. *Tommaso Ciarli, SPRU, University of Sussex; Ismael Rafols, University of Sussex; Daniele Rotolo, SPRU-Science and Technology Policy Research, University of Sussex*

How do specific technologies emerge? How do we represent past technological trajectories, and how does this help us in understanding the range of possible technological directions? A large number of contributions have discussed the dynamics of technology and/or of scientific knowledge from different disciplines -- evolutionary economics, STS, science policy, management and history. The empirical description of technological trajectories is strongly linked to the disciplinary focus and associated tools. Some tell rich narratives (Hughes, 1983; Noble 1984), weave qualitative socio-technical networks (Latour, 1993) or institutional tapestries (Geels, 2002), while others focus on performance measures (Grubler , 2012), cognitive maps (Noyons, 2000), or quantitative network descriptions (Verspagen, 2007). In this paper we confront different research traditions and discuss whether or how they can be combined to produce quantitative analyses of technological trajectories and innovation pathways. We first survey the different literatures on the main aspects that shape technological trajectories -- cognitive, performative, political, etc. We then survey the aspects that have been captured so far by quantitative methods of mapping trajectories. Looking at how the included aspects differ between qualitative and quantitative approaches, we discuss how these differences can be reduced by including in new quantitative methods of mapping trajectories critical aspects that are currently overlooked. The paper provides researchers in technology studies with an understanding of the relation between the representation of technological directions (mapping) and their (qualitative) explanations. We argue that integrating more explanations in the quantitative mapping of trajectories improves our understanding of the dynamics of technological change.

130. Making science public? Design and displacement in the context of science/public engagement

9:00 to 10:30 am
Solbjerg Plads: SP205

Despite numerous internal disputes and methodological differences, the field of STS may be said to share in the collective project of 'making science public'. The ethico-political implications of tacit assumptions in scientific knowledge claims and socio-material entanglements in technological practices for governance, boundary-making and forms of order and disorder have been widely studied in STS research. In recent years, this work has been linked to new forms of practice such as experiments in public participation, anticipatory governance, responsible innovation, and related modes of engagement between science and wider publics. However, as regimes of publicity and modes of public engagement multiply through the activities of research funders, scientific organizations, policy actors, commerce, non-governmental groups and novel boundary-spanning partnerships, how should we think about the project of 'making science public' and the role of STS in this endeavour? How does the design of modes and activities of engagement mediate science and the public, and what forms of inclusion or exclusion are facilitated or hindered? What are the lessons for STS from recent experiments in anticipatory governance and the creation of new ethno-epistemic assemblages and material collectives? How are publics conceptualized and created, and what does 'making public' mean in these contexts? Drawing on a range of empirical and theoretical resources, the papers in this two-part session will explore these questions. The agenda for a new 5-year Leverhulme-funded Research Programme led by the University of Nottingham (UK), Making Science Public, will be introduced in the course of the session.

Chair:
Sujatha Raman, University of Nottingham

Participants:

Convening Public Science: Regimes of Publicity and the role of STS. *Sujatha Raman, University of Nottingham*

In STS, the articulation of elements that initially seem invisible, taken-for-granted or excluded (e.g., underlying assumptions of both an epistemic and material nature) is central to the understanding of 'publicity' or publicness as a phenomenon of concerted action around science and technology. However, there are a range of different ways in which activities related to science represent themselves and are represented as public. For example, publicness around science may be conceptualized in terms of the norms of a collective public good funded through the state, the limits of which STS researchers have examined. By contrast, the market is represented as a mechanism of making science public in research-funders' discourse. In this talk, I examine different ways in which science is being made public (through privatization, scientization and what might be called mechanization) and contrast them with a distinctive STS interest in revealing the invisible or "not only detecting what is there, what is given in the thing we are studying, but also to think about what is not included in it and about what this thing could become" (de la Bellacasa 2010). I will consider some key concerns around public participation as a mode of making science public and examine how the idea of publics being 'convened' (Barnett 2008) may help address these problems. Finally, I will briefly introduce the ways in which some of these issues will be taken forward in the new Leverhulme Programme (2012-2017), Making Science Public.

Latour's' 'new collectives' as a radical mode of engagement for making science public. *Judith Tsouvalis, Lancaster University*

In this paper I reflect on how relations between science, publics, and 'things' are conceptualized in the design of what Bruno Latour (2007) calls 'new collectives'. Central to Latour's' proposal is his argument that political representations of Nature (or the material world) have for too long been assigned to parliaments and states ('Politics'), while epistemological and classificatory representations of Nature have been left to Science. Through Science, Nature is represented in Politics as 'matters-of-fact'. New collectives are Latour's' strategy to bring about a convergence of things that are still nowadays predominantly considered as conceptually and politically separate. 'New collectives' offer a radical new model for science-public relations. After setting this scene, I want to consider more closely the shift proposed by Latour in the design of new collectives from matters-of-fact (produced by Science) to matters-of-concern ('matters' that draw together a concerned 'public' that passionate discuss, debate, and disagree about them). This shift, I will argue,

is highly relevant to the project of 'making science public' as it puts centre stage the question of politics. Latour perceives of Science as a depoliticizing force, a concern echoed in the growing body of literature on 'post-politics' and 'post-democracy'. I will reflect on these critiques and on Latour's' proposal of 'new collectives' in this paper in order to try and respond to this panel's' question of: How does the design of new modes and activities of engagement mediate science and the public, and what forms of inclusion or exclusion do they facilitate or hinder?

Anticipatory Governance as a form of making science public.
David H. Guston, Arizona State University
Drawing from work at the Center for Nanotechnology in Society at Arizona State University, this paper will examine the genealogy of 'anticipatory governance' and assess experiences with this mechanism as a form for making science public.

Exploring the abilities of 'engagement tools' and their users in biofuel research. *Robert Smith, University of Nottingham*
Research funders are increasingly mandating more embedded assessments of the ethical and social implications of research programmes. The European Commission and the UK Engineering and Physical Sciences Research Council (EPSRC) discuss this in terms of a 'Responsible Innovation' agenda but similar moves are also observable in the range of procedural recommendations from the Biotechnology and Biological Sciences Research Councils (BBSRC) under the banner of 'Science in Society'. Drawing on semi-structured interviews with prominent Civil Society Organisations (CSO) in the field of biofuels, this paper explores CSOs' and research funders' constructions of responsibility in R&D and highlights a number of tensions in this domain. On one hand, funders appear to encourage responsible science and technology development, yet they simultaneously appear to maintain a range of assumptions about the structures and institutional interactions necessary to make use of research. Furthermore, many of the issues associated with biofuels relate to uncertainties about the impacts of the technology implementation, are arguably best addressed at a structural level, for example, through research funding decisions. Rip (2006) highlights the inability of individual actors "to do much more than modulate what is going on anyway". Given this, and in the context of the current re-alignment of the research funding system towards greater economic returns and research assessment, to what extent are tools such as 'upstream engagement' and 'midstream modulation' able to make biofuel research 'more public'?

131. (51) Hacking STS: bio-hacking, open hardware development, and hackerspaces - I
9:00 to 10:30 am
Solbjerg Plads: SP207
Chairs:
Johan Söderberg, LATTS/IFRIS ParisTech
Alessandro Delfanti, University of Milan
Eric Deibel, Institut Francilien Recherche Innovation Société (IFRIS-CEPN)
Participants:

Biohacking and the meanings of openness in the life sciences.
Alessandro Delfanti, University of Milan
Most accounts of free and open source software have been pointing toward the idea that those practices are ambivalent, as they seem to be able to sustain both radically alternative and neoliberal approaches to software production. Free and open source software embodies very different meanings of openness and is often a tool for the creation of new markets. In fact, in the software world, open source approaches have proven to be sustainable, or even more profitable alternatives to other

appropriation models. Today's phenomena such as citizen science and amateur biology are deeply indebted to software cultures and practices. This paper, based on media analysis and participant observation of the citizen biology movement DIYbio (Do-it-yourself biology), analyses the relationship between biohacking and openness. STS research on biohacking often depicts it as a set of practices that open new spaces for public participation to science. Yet in most media accounts this emerging movement represents what the Bay Area hacker movement represented in the 70s for computer science - the prodrome of a whole new market. What does "openness" mean to biohackers and what strategies do they pursue in order to promote it? In this paper I show that biohacking fully embodies the ambivalence of free and open source software, as it encompasses a new open frontier to science entrepreneurship and a collective practice based on sharing and participation. Yet both these tendencies are part of a countersymbolic order, since they challenge today's life sciences' distribution of power.

Practicing Science Without a License: DIY-BIO as Feminist Science? *Clare Jen, Denison University*
An emerging do-it-yourself movement of amateur molecular biologists seeks to decommodify current research system structures. Networks of individuals and collectives seeks to "empower" "citizen scientists" with low- and high-tech tools to access their bodies' biological data, that is to "biohack" into a seemingly impenetrable global and local conglomeration of government and corporate scientific economies. DIY-BIO is hailed by mainstream news media and practitioners as democratizing science; biotechnologies once unattainable, and the bioinformation they help produce, are now within an everyday person's reach. This paper answers whether DIY-BIO holds promise as feminist science practice and, in turn, whether it can be an on-the-ground, digitally-networked, practical and grassroots arm of the women's health movement. How can DIY-BIO provide more accessible spaces-places to enact social justice-oriented scientific literacy? Or, is DIY-BIO another wave of biomedicalization to fetishize costly technologies and sub-cellular valuations of "life?" To address these questions, this paper conducts a discourse analysis of the following social worlds: (1) mainstream news media's coverage of DIY-BIO activities; (2) DIYbio's online presence, including its website, blog and Google group; (3) and my own feminist laboratory work in a "DIY-BIO"-framed, classroom biology lab. This paper contributes to STS literature by using a feminist perspective to compare two "citizen science" movements in the biomedical and biotechnology arenas. This analysis works with biomedicalization (Clarke et al, 2003), politics of life (Rose, 2001), naturecultures (Haraway, 2003), "witnessing" (Shapin, 1999; Potter, 2001), feminist theory in science (Spanier, 1995; Roy, 2004), and women's health as speculative fiction (Kapsalis, 1997).

Reinventing the device – socio-technical systems in Afghanistan. *Melanie Stilz, Dublin City University*
Particularly vivid demonstrations that the producers vision of consumers and consumption practices is inherent part of the design (Woolgar, 1991) can be found in most developing countries where consumption practice is tied to different realities. Most technological artefacts are produced in and designed for consumers in the "Western World", embedded in an increasingly complex but transparent technological infrastructure. But "for all their potential wonders – technologies are only as good as the material, social and institutional structures in which they are embedded" (Morley, 2007: 239). There are various studies dealing with the social shaping of technology during its development and production (Mackenzie & Wajcman, 1985; Pinch & Bijker, 1987; Woolgar, 1991) but few empirical examples how these embedded practices sometimes collide with realities they are not designed for or how in turn they provide unexpected opportunities. For western technophiles like me,

images of hardware hacks might come to mind, reinventing technology and by this sometimes creating the prototype for the next popular gadget. Hacking however also depends on a certain expertise and experience, which makes it hard for most Afghans to adapt the concept to new digital technology. Yet examples from motorized vehicles and buildings but also mobile phones and ICTs in education show that hacking in a sense of "adaptation of technical systems" is far from unknown. This paper wants to give several examples of technology adaptations in Afghanistan that do not follow the "embedded design". Technical systems are adapted and combined according to financial capacities, infrastructural conditions, cultural conceptions and local needs.

Synthetic DNA and Open Source: an alternative to the commodification of life? *Eric Deibel, Institut Francilien Recherche Innovation Société (IFRIS-CEPN)*

this paper explores the introduction open source in synthetic biology, specifically the case of the BioBricks Foundation. BioBricks have rapidly become iconic for analogies of open source in informatics with the life sciences but are also exemplary for the market relations that are characteristic for synthetic DNA. Accordingly he analogy with open source in informatics has as its context the formation of a market for the design of synthetic compounds that are (re-)materialized using DNA in informatic formats that is in the public domain. Subsequently the paper analyses the relationship of the activities of the BioBricks Foundation (and closely related forms of experimentation) and the applications that accompany the production of knowledge in the field of synthetic biology. It will be argued that the comparison of the free availability of BioBricks with open source in informatics is highly selective and limited, mainly referring to an 'interface' between the availability of DNA in informatic formats and terms of engagement with the wider world that are self-defined, for example in respect of patenting, safety requirements and applications with humanitarian aims. The paper ends with a discussion of analogies with open source that would go beyond this "freedom to operate" for synthetic biologists, emphasizing a potential to remove restrictions on the usage of DNA in any format, whether as a source code, genetic sequence, as seeds, biodiversity or other forms of living material.

Automating amatuers. *Johan Söderberg, LATTS/IFRIS ParisTech*

In the case study I propose to present, I have been following hobbyists who are developing a range of computer-guided machinery tools dedicated for home-use. One of those projects is called Rep-rap. It is an open source 3D printer which "prints" objects in plastics. I have made 22 interviews with people involved in the Rep-rap project and followed discussions on forums and blogs over a period of more than 2 years. The hobbyists vision is to develop a factory possible to run on top of the kitchen table. The chief, technical principle behind Rep-rap is to guide the movements of a machinery tool with the help of a computer. It is basically the same principle which underpinned much of the automatisation of the heavy industry in the second half of 20th century. Previously, the movements of the machinery tool had been guided by the human machine operator. To master this process required many years of training and practice. The de facto knowledge monopoly of the workers was the basis of strong and militant trade unionism. Subsequently, the computer guided tool machinery was introduced with the intent to break this strenght. When the same technical principles are now being explored by hobbyist, organised labour has been defeated to the point that the very memory of industrial conflicts has disapeared. The people developing the open source 3D-printer tend not to place themselves in continuation with this history of labour struggle. Their rationale for inventing the technology is completely different than the old one (i.e. lower cost and fight trade unionism). My ambition is to trace the historical

continuities across the discontinuity in the development of this technology.

132. (19) A scripted emergence for life? - III

9:00 to 10:30 am
Solbjerg Plads: SP208
Chairs:

Rebecca Ellis, Lancaster University
Claire Waterton, Centre for the Study of Environmental Change (CSEC), Department of Sociology, Lancaster University

Participants:

Underground life: Drills, rocks and biological activity. *Filippo Bertoni, Universiteit van Amsterdam*

What is life? To answer this question within STS, we should be attentive to the practices that allow to ask it and the specific affordances of different answers. To do so, this paper follows the activities of the Iberian Pyritic Belt Subsurface Life detection project (IPBSL), a research project of the Centro de Astrobiología of Madrid University that is searching for subsurface life forms in the subsoil of the area of the Tinto River. Attending to the research practices of IPBSL, the paper explores the notion of life in the version enacted by astrobiologists digging for life. Searching for life, here, means searching for (traces of) biological activity. This notion unhinges life from its textbook definitions, bounded and rendered dogmatic by their own generalizations and their removal from practices. Simultaneously, it reminds us that life is never completely fluid and out of bounds. Rather, it is (inter)dependent on the specific affordances of situated materialities. This offers us the empirical grounds to take on Deleuzian agencement and, yet, to stress the importance of the boundedness of material enactments of life in practices. In this way, we are reminded that the question of what life is cannot be answered in a univocal and definitive way, but rather in multiple, empirical and situated ones.

Biodiversity soup and sensing ambiguous signs of life. *Rebecca Ellis, Lancaster University*

This paper explores how biotic life may be apprehended and valued without name or identity amidst recent interest in feminist and STS scholarship around how to sense a merging of material and text in bio-geo semiotic systems (Kirby 2011). For most taxonomists committed to slowing down rates of species extinction, the very notion that the significance of biological species might not rely upon accurate naming and can be potentially reduced to number is sacrilegious. Indeed naming species tends to be coterminous with remembering and valuing the mark they made or still make on this planet. It may then seem surprising that the Barcoding of Life Initiative, designed to speed up the accurate identification of all species, has ventured into territories of environmental monitoring. In such contexts habitat quality is sensed through clumped quantifications of absolute diversity in which the species unit is of ambiguous value. Drawing upon interview material with barcoding taxonomists and bioinformaticians, this paper documents ongoing negotiations concerning the different ways in which DNA fragments as instantiations of life both count within and exceed techno-mediated semiotic systems. I ask whether it is possible to perceive organisms reduced by number to also be liberated by number in that their mattering potentially exceeds the conventional constraints of taxonomy. As such, biodiversity soup might provide a timely example through which to learn how to perceive a coming together of the worldliness and language of the world (Hoffmeyer 2008, Kirby 2011).

Statistics from the Fringe to the Forefront: Investigating the Molecular Boundaries for Health and Disease. *Nadine Levin, Oxford University*

Many STS scholars have documented the ways that genomic

knowledge and technologies have shaped clinical research. Comparatively little research, however, has explored the ways that statistical practices pervade the technologies and experimental configurations that more broadly constitute the diverse forms of clinical research. In this paper, I draw on one year of ethnographic research in a laboratory investigating "metabonomics" (the "omics" study of metabolism), in order to explore how statistical practices are increasingly used to explain and define disease processes in laboratory and clinical settings. To begin, I focus on a case study of an attempt to combine and contrast molecular metabolic (bioinformatics) data with histological (pathology-based) images of the brain. I show that as statistical practices—algorithms, models, visualizations—render tissues into a series of biochemical signals, health and disease are expressed as mathematical patterns of similarity and difference. Consequently, I argue that the role of statistics in clinical settings is changing: while statistics has traditionally been used to support clinical measurements, it is now intrinsic to the molecular practices that researchers use to draw the boundaries between health and disease. Situating my case study within the broader movement of molecular technologies into clinical settings, I show how statistics is being "redesigned," such that pathological models of health and disease are displaced by mathematical, molecular enactments of patterns and structures. Ultimately, I argue that statistical practices, in only capturing certain types of biological information, struggle to delineate the boundaries for clinical symptoms and grades of disease.

Design through displacement: Understanding life in the digital age. *Sabina Leonelli, University of Exeter*

How are digital technologies for the dissemination and analysis of data affecting current conceptualisations of organisms in biology? To answer this question, this paper brings together research on the development and impact of digital databases and modelling tools in biology, and research on the history and epistemology of the use and significance of model organisms in the lab. Laboratory research on model organisms requires a physical displacement of specimens into controlled, standardised conditions; as well as designing extensive infrastructures with the purpose of sharing, analysing and visualising information about those specimens. Organisms are thus standardised and controlled in multiple ways at different levels of abstraction. I argue that the use of digital tools to visualise and study the wealth of data collected on specific organisms is shifting biologists' perception of the spatial, temporal and integrative dimensions of life; and, at the same time, the material and situated nature of the specimens from which data are collected and of existing practices of data handling pose serious constraints to the epistemic claims made by proponents of a data-driven 'Fourth Paradigm' in the biological and biomedical sciences.

133. (82) Ethnography of socio-material collaborations - I

9:00 to 10:30 am
Solbjerg Plads: SP210
Chairs:
Katharina E. Kinder, Lancaster University
Petra Ilyes, Goethe University Frankfurt am Main
Participants:

The Field Site as a Tool: Insights in Privacy Protection Mechanisms of OSN Users. *Andreas Kramm, Departement of Cultural Anthropology and European Ethnology at Goethe University, Frankfurt am Main; Andreas Poller, Fraunhofer Institute for Secure Information Technology SIT, Darmstadt*

Recently many studies expand our understanding of users' conceptions of privacy in OSN (Online Social Networks) and corresponding behavior. This paper adresses the question of what

methods may be considered adequate for investigating in users' conceptions of privacy and their interactions with OSNs' privacy settings. We suggest that we may grasp users' complex privacy control mechanisms by collecting ethnographically elicited data and technically elicited in situ data. Alongside privacy controls provided by OSNs, users seem to rely on self-developed privacy protection mechanisms. This finding is grounded in empirical data deriving from an ongoing interdisciplinary research cooperation between the Fraunhofer Institute for Secure Information Technology SIT, Darmstadt, and the Departement of Cultural Anthropology and European Ethnology at Goethe University, Frankfurt am Main. In this study we use a mixed-methods approach. Semi-structered interviews give insights in users' concepts of privacy and their interaction with privacy settings. The software tool ROSE (Readout Tool for Online Social Environments), which we developed in the course of our study, provides us with technical data about users' actual privacy settings. Moreover ROSE permits users to comment on sharing decisions in situ. Our proceeding contributes to STS literature regarding the stabilization of technical artifacts as a social process. Technical actors affect human actors and vice versa. Users' conceptions of privacy and their resulting situative usage interact with the design of OSNs' privacy settings. We propose a methodological approach to examine how human and technical actors shape online communication.

Wiki-based Networks and Communities of Practice in Cultural Heritage. *dagny stuedahl, InterMedia, University of Oslo; Anders Mørch, University of Oslo*

Social media are expected to support online participation for co-creation of content. In the cultural heritage sector this means that amateurs in addition to professionals increasingly are embracing social media places to negotiate issues of authenticity, trust and power (E. Waterton 2010). The encyclopedic knowledge space of Wikipedia (Bruns 2008) allows for indexing, categorization and taxonomies to be jointly developed, and may give opportunities and constraints for transformation of cultural heritage discourses. The question arises if social media may again lead to new forms of communities of practice (Lave and Wenger 1991), which may range from infrastructural resources to spaces for epistemic collaboration (Akrich 2010). How this influences the intersection between institutions and practitioners in the cultural heritage sector, is yet another issue. Studies of virtual communities in the cultural heritage sector show how emerging online communities are increasingly seen as supplementing institutional knowledge (Affleck and Kvan 2008). Several collaborative approaches are explored to establish partnerships between communities and institutions in ways that allows institutions and communities to work on an even footing and to augment the leadership role played by community groups (Perkin 2010). In seems therefore relevant for studies of innovation to focus on the amalgams of arrangements that practitioners choose to engage in when designing new practices with social media. We will in this paper argue that wiki-based knowledge building activities involve negotiations of conflicting logics. This is based on an ethnographic longitudinal study of wiki-administrators and local historians as they communicate to find ways to structure and organise historical material according to a common and sustainable format.

Co-designing an online learning environment. *Petra Ilyes, Goethe University Frankfurt am Main*

This paper is concerned with assumptions that with new web technologies users will increasingly be co-designers and co-developers. It argues that this is less a technological matter but, rather, that dynamic socio-material associations of human beings, technical devices, and textual elements are decisive factors. Evidence is presented based on findings of an ethnograpy of the design and implementation by students of an online learning enviroment. The student designers' intention was that users of the environment - their fellow students - should also be its co-

designers and co-developers. The ambition was that they would be able to build, and continually adapt, their own learning environment according to their needs. They inscribed their vision in the technical object, the learning environment, which was conceived as a collaborative, adaptive, interactive, experimental, democratic, self-organising bottom-up-system. However, the students who were supposed to use and co-design / co-develop the system did not "come forward to play the role envisaged by the designers". The paper draws on the view that associations proposed by designers only stabilize if the various actors accept the roles that are assigned to them. In the case in point, this did not happen, and the system did not stabilize. The paper wants to make a contribution to studies of co-designing online learning environments that has not yet attracted much attention in STS. It suggests that an STS perspective is important in order to understand why online learning environments as socio-material artifacts stabilize or not.

Collaborative Re-Articulations: Ethnography of Information Practices in Educational Research. *Christoph Schindler, German Institute for International Educational Research (DIPF)*

Since a couple of years ethnographic research is established in several fields of design, accompanied by debates about its potentials and boundaries. Thereby, the submission of ethnography to a rigid design planning is problematized and its sensibilities for design-usage relations are emphasized. Recent information policy agenda about Cyberinfrastructure, e-Research or Research Infrastructures carry these debates into the realm of scholarship: research itself becomes an explicit object of design with anticipated and articulated digital futures. This paper connects studies of articulation work to multi-sited and collaborative ethnographic accounts, exemplified by a four year conducted ethnographic study in the field of educational research. Therein, five educational research projects have been followed, focusing information practices that are situated materializations of research data in interaction with re-arrangements of researchers, programs, apparatuses, and schools. In this study a collaborative ethnographic approach is used to establish a modeling language for visualization (UML) as a "trading language" (Galison 1997; Deeb, Marcus 2011) and a space of ongoing re-articulations in the research process. The paper describes the deployed collaborative ethnographic approach in detail, arguing for its potential of articulating creative and problematic aspects in doing and designing research.

Keeping Players in the Game. Mediations and Management of Heterogeneity in the Users-Producers Relationship. *Vinciane Zabban, LATTS - Paris Est University*

Among others ICT's areas, videogames have been the center of a particular interest for the development of co-design practices. Their communities of technophiles and creative users have provided large amounts of content, tools and even alternative softwares for better gaming experiences. The prominent role of participatory audiences in game development has also raised the issue of the displacement of authority on the game, specifically for online game worlds (Taylor, 2006). Researches have highlighted the necessity for producers to reckon with their users - especially as they provide a game service. However, few studies have yet addressed the diversity of the social identities of gamers, nor the mediation in game worlds of their controversial practices and conflicting representations. To take account of users relations to the game world is not trivial. Users diversity also lies in their unequal ability to be heard, not to mention that developers have their own heterogeneous representations of users and of their needs (Oudshoorn Pinch 2003). This communication proposes to contributes to STS studies on the users/technology relations by questioning first how this heterogeneity is expressed and managed through technical and human mediations, secondly, how these processes are related to the issue of authority on the

game world, and how mediations contribute to maintain a distance between "players" and "developers". My work relies on a large and original fieldwork conducted by participating observation in the development of a French online game universe and broader investigation on the production and use of this "virtual world".

134. (86) Displacement and classification

9:00 to 10:30 am
Solbjerg Plads: SP212
Chairs:
   Daniel Bischur, University of Trier, Germany
   Stefan Nicolae, University of Trier
Participants:

A praxiography on the making of pre-trial psychiatric reports. *Hilde Tjeerdema, Rijksuniversiteit Groningen*

Autism spectrum disorders (ASDs) and particularly Asperger's Syndrome (AS) have started to play a role in the forensic setting. The idea that people suffering from AS can be more prone to delinquent behavior has become incorporated into everyday forensic practices. In this paper, the results of a 'praxiographic' study of the making of pre-trial psychiatric reports (in Dutch: Pro Justitia Rapportages) will be given. In the Netherlands, the judge or the public prosecutor can order such a psychiatric report to gain information about the mental state of the defendant. It is interesting to focus on how forensic psychiatrists and psychologists who advise legal bodies construct the causal link between AS and delinquency. How do they do it? What kind of translation processes can be identified, i.e. from the psychiatric examination to the expert's notes and from these notes to the final report? Which diagnostic instruments are used and how? These are relevant questions because forensic experts operate in a scientific and theoretic vacuum; little is known about the relationship between AS and delinquency. For example, the more general question whether people with AS are more prone to delinquent behavior is difficult to assess because of methodological difficulties. Those difficulties can in turn be traced back to variation in diagnostic practices. In court however, such difficulties disappear from sight. This paper aims to bring them back into the light.

Becoming a 'pre-symptomatic' patient. *Tabea Eißing, Sociology*

The paper draws on empirical findings concerning ambivalent pragmatic consequences in medical care settings and in the life world that result from being classified by predictive genetic tests as a 'pre-symptomatic' patient. I argue that classification by predictive genetic tests leads to displacement, which reveals itself in new forms of medical status, self-identity and new responsibilities. On the basis of the reported experiences of so-called 'pre-symptomatic' patients affected by Hereditary Breast and Ovarian Cancer drawn from the ongoing social science research project "Genetic Discrimination in Germany", I describe the ambivalent experiences of being genetically classified that arise in medical care settings and in the life world. The reported experiences enable me to show the ambivalent impact of being classified as 'pre-symptomatic'. On the one hand, I illustrate experiences of stigmatization, incomprehension, reproaches and adverse treatment that occur in medical care settings as well as in the life world. In the familial context, for example, 'pre-symptomatic' patients have to justify themselves because of the possibility that they may pass on their genetic risk to their children. On the other hand, persons get access to preventive interventions through their classification as 'pre-symptomatic' in medical care settings. These findings lead to a discussion of how classification by predictive genetic tests creates new forms of medical status and self-identity, new inscription practices of one's own responsibility for disease and genes, and the differing experiences and expectations associated with being classified as

'pre-symptomatic'.

Displaced Legitimacy - pain and practices in health care action. *Lena Eriksson, University of Gothenburg*; *Kyra Landzelius, LIME, Karolinska Institutet*

When fibromyalgia became a recognised diagnostic category in the early 90's it was hailed as a great victory by patient organisations and parts of the medical community. Not only did the problem now have a name, it had an official number. This was believed to ensure recognition and legitimacy for sufferers' in health care systems previously geared to endlessly referring patients or rejecting their complaints as imaginary. Here, we present preliminary findings from a Swedish study of the management and understanding of pain, specifically in relation to the workplace. While an officially recognised category, fibromyalgia does not successfully tie in with existing structures and practices in the Swedish health care system. It is, as such, a failed classification in that it does not provide the inherent force of recognised taxonomy that is often assumed in standardisation studies. We discuss what a patient needs to do, and to be, to succesfully navigate a health care system and how this ties in with basic epistemological criteria for disease and illness. Furthermore the increased emphasis on workplace and 'work ability' in Swedish medico-clinical practice is analysed. With this contribution we aim to add to the lively field of standardisation studies, as well as current debates regarding the role and meaning of practice in STS. The work draws on a 3-year study of the understanding and management of pain in relation to fibromyalgia and the workplace. The project is funded by AFA Kollektivföräkringar and combines documentary analysis with in-depth interviews and observational studies.

The medical expertise of patients' complaints lodged within the mechanism for out-of-court settlements created by the French law (4/03/2002). Using classificatory tools and being a classificatory practice ? *Winance Myriam, INSERM*; *Barbot Janine, INSERM*; *Parizot Isabelle, CNRS*

In this paper, we would like to focus on the medical expertise of patients' complaints lodged within the French mechanism for out-of-court settlements (created on the 4/03/2002). In this process of evaluating complaints from patients who consider themselves (or one of their relatives) to have been victims of a medical accident, the medical expertise seems to be a key moment: the expert is asked to analyse the provided care to the patient and to evaluate the damage that resulted from care. This task appears as combining many types of knowledge: the empirical knowledge on the singular case, the scientific knowledge of the concerned speciality, the practical knowledge of the expert (which results from his/her medical practice), the medico-administrative available tools (as the list of bodily damages). In this paper, we will analyse the medical expertise as using and displacing classificatory tools and as being itself a classificatory practice. Our analysis will be based on the medical report given by the expert and on interviews that we conducted with medical experts.

Constructing the Market for Traditional Medicine in Burkina Faso: Transitions and Continuity in Practices of Displacement. *Natewinde Sawadogo, The University of Nottingham*

In Burkina Faso, like in most African countries, the official status of traditional healers is still insecure, although the attempt to organise the practice goes back to the colonial period. The aim of this paper is to examine the evolution of displacement practices involved in the organisation of the occupation of traditional healing in Burkina Faso from the colonial period to present. In particular, it aims to reconstruct the regimes of displacement practices, analyse the shift from one regime to the other, and their limitations. Using ANT, I argue that the instability of the traditional healers' current status is a result of a failure of

displacement practices. The process of translation of classificatory mechanisms requires shared values and interests, thus making its success contingent to the configuration of the relevant actors. This configuration has not only been variable throughout the history of the construction of the market for traditional healing in Burkina Faso; but also at every stage, the actors (human; non-human) who made themselves the obligatory point of passage have never been able to enrol all the other relevant actors; when the former succeeded, they were not able to mobilise the latter. Archives, secondary data, and data from interviews are used for this paper. The analysis reconstructs through the framework provided by ANT. Through the relative autonomous spheres it involves, the study of occupational conflict can contribute to the understanding of translation.

135. (38) Energy, practice and personal lives: design and displacement in the everyday - I
9:00 to 10:30 am
Solbjerg Plads: SP213
Chair:
Catherine Butler, Cardiff University
Participants:

Interventions in practice: technology, transitions and the displacements of agency. *Karen Bickerstaff, Exeter University*

Delivering on the UK's ambitions for achieving a low carbon energy transition will not only require the application of novel low-carbon technologies but also the fostering of radically different relations of agency between people, technologies, and infrastructures. Yet policy attention remains overly focused on the large-scale diffusion of technology and on persuading individual consumers to make the 'right' choices without attending to the ways such changes reconfigure social identities, personal responsibilities and relations of agency or control. In this paper, we discuss the findings of a longitudinal qualitative study of a series of five UK based schemes that have sought to deliver energy efficiency in the home, but do so through an implicit or explicit concern with changing the social practices that underpin energy consumption. Critically these schemes embed varying conceptions of agency and the distribution of agency between social and technological actors. Our aim in this paper is to trace the (un)intended consequences of these different socio-technical models of change and particularly to address the ways in which displacements of agency have important implications for transformation in social practices and ultimately for the delivery of low carbon transitions.

Stacking wood and staying warm: The rhythms of domestic wood-based heating practices. *Jenny Rinkinen, Aalto University School of Economics*; *Mikko Jalas, Aalto University School of Economics*

The maintenance of comfortable indoor temperature depends on technological systems and human labour in various configurations. In Finland, wood-based heating remains common in detached houses and stands for one option to further lower the carbon emissions of the housing stock. However, broader use of wood is frequently compromised over concerns over time demands and convenience. In this paper we present a study of the socio-technical arrangements of using chopped wood as a source of heat in detached houses. The study is based on large, pre-existing Finnish diary material in which respondents have described the course of two winter days, in February 1999 and another in February 2009. Analytically we pay particular attention to the rhythms and temporal cycles that organise this activity. These range from the two-year cycles of acquiring and drying wood to the frequent daily refuelling of fireplaces and boilers during cold winter days. These rhythms mesh with paid work, child rearing, socializing and longer periods of absence. Having established

such forced rhythmicity of everyday life, we focus on the conditions that these systems are nevertheless viewed as convenient and apt. Convenience of these heating arrangements depends on mixed sources and various stocks of wood, buffers and ways to store heat, multiple heat sources but significantly also on the social network of involved humans and on the flexibility of comfort expectations. This study contributes to the practical understanding of energy consumption and provides insights to building bottom-up policy approaches within energy and climate policies.

Energy Consumption, Biography and Self Design. *Catherine Butler, Cardiff University*; *Karen Henwood, Cardiff University*; *Karen Parkhill, Cardiff University*; *Fiona Shirani, Cardiff University*; *Nick Pidgeon, Cardiff University*

It is now widely recognised that people consume services made possible by energy, rather than energy itself. This recognition makes concepts associated with studying consumption more generally highly relevant as any interpretation of energy consuming practice necessarily entails a focus on the consumption of things and activities that require energy. Previous theory and research has fore-grounded the idea that consumer goods and services are put to work in the production and reproduction of the self, making the self a matter of 'design'. In this context the reduction of energy consumption cannot be achieved through simple exhortations to consume less since the reinvention of the 'self' is implicated in any reinvention of consumption. In this paper we take up these concepts of self 'design' in the analysis of biographical narratives derived from interviews conducted as part of project examining energy demand reduction through a biographical lens. First, we will unpack the extent to which concepts of self design are borne out in the data. Second, we will examine the ways that processes and actions associated with reducing energy consumption are made consistent with or pose threats to conceptions of the self. Overall this paper will contribute to the STS literature through building understanding of the connections between processes of self making and (re)design and the processes of societal transformation associated with reducing energy demand.

Energy Autonomy: The Example of a bioenergy village in Southern Germany. *Franziska Sperling, University of Frankfurt*

New sustainable energy technologies in Germany are strongly supported by the Erneuerbare-Energien-Gesetz (EEG) which is committed to the use of renewable energy. The regulations are restricted to the generation of electricity. EEG plant operators are guaranteed a fixed price for their electricity and network operators are under an obligation to use it as a priority. This has proven a strong incentive for the installation of wind parks, biogas plants etc. Particularly within the area of production of renewable energy, it seems that such a structural change involves on the one hand chances and risks concerning the land use, on the other hand it comes along with far-reaching consequences for the everyday environment of villages. This paper points out the extent of contingency that new possibilities of decentralized energy production are facing. With the example of a bioenergy village in a conventionally agricultural dominated area in Bavaria, I want to illustrate how the village supplies itself with energy using the biogas-technology. People therefore hark back to resources such as solidarity and confidence. By using these social mechanisms the inhabitants themselves drive the growth of technology. Therefore they reach their own independence from big energy companies and act in a sustainable way. In this paper I additionally argue that it is necessary to rethink the new kind of materiality of energy. The tight connection of production and consumption of energy, its localization in the immediate environment of the people give reasons for asking for a new concreteness of energy as such.

The Social Life of Energy. *Tom Roberts, Kingston University*

"You can't manage what you don't measure" is an old adage which has gained a new currency amongst technologists and policymakers within the field of energy demand management. But although the quantification of energy is essential, there is a danger of reifying smart technology and information provision in ways that obscure important social folk quanta (Kempton and Montgomery). A growing corpus of social science research suggests that our relationship with energy is more complex and that monitoring alone is an insufficient driver of behavioural change. Drawing on evidence from "Smart Communities" – a community action research project in Kingston-Upon-Thames which looks at how a community shapes and adopts new low-carbon norms and practices – I argue that greater attention needs to be given to understanding the 'social life of energy'. While this includes the visual aspects of energy use in the home made salient through monitoring, it also encompasses the corporeal, kinaesthetic and affective ways energy is given meaning within everyday life. In developing this argument I draw on experiences from the project such as how schoolchildren have successfully engaged with energy, not only through science and maths, but also through drama workshops and pedal-powered generators (connected to light bulbs, keyboards and inflatable monsters!). Such social meanings of energy, I suggest, are experienced beyond the school gates within households and communities. Studying the social life of energy and how it complements more traditional technical understandings is likely to offer fruitful insights within both STS and behavioural change agendas.

136. (59) "This planet is doomed": on the entanglements of science fiction and technoscientific artifacts - I
9:00 to 10:30 am
Solbjerg Plads: SP214
Chair:
Michael Bennett, Northeastern University School of Law
Participants:

A design for living : metaleptic devices and trends of gnostic imagination in contemporary science-fiction. *Frederic Claisse, University of Liège*

As a narrative pattern and a cultural motif, the confusion between fictional worlds and reality traditionally leads to metaphysical arguments about liberty and destiny. Despite their drawing heavily on scientific imagination and technoscientific artefacts, science fiction movies exploring that theme never really broke with the way it has been treated since Calderon de la Barca's "Life is a dream": the hero's quest leads him to doubt his own identity and dispute the ontological status of the world he lives in, leaving him and the viewer perplexed as to the ultimate nature of things. Yet, in the last fifteen years, an increasing number of science-fiction movies renewed that interrogation, notably by placing the issue of design at the centre of the plot: fictional worlds are not only denounced as fictional, but also shown as works in progress, literally rebuilt according to the plan of not-so-hidden designers acting as demiurges. In "Dark City", "Vanilla Sky" or, more recently, "Inception" and "The Adjustment Bureau", the emphasis on design and architecture together with the use of computational metaphors result in the promotion of one particular world to the status of "reference" universe, to be held as more "real" than other, fabricated and computed worlds made accessible by sophisticated devices operating as metaleptic instruments (such as Neo's cable plug or the "bio-ports" in "ExistenZ"). This paper wishes to explore this shift towards "gnostic", Matrix-like science-fictional narratives, particularly in relation to the dramatic development of networking and surveillance capabilities that occurred during the same period.

Open Futures: From Monopoly to Engagement. *Robert*

Dingwall, Dingwall Enterprises; *Murray Goulden, University of Nottingham*; *Stuart Reeves, University of Nottingham*

Imagined futures play an increasingly prominent role in shaping the present, whether in policy responses to climate change, corporate technology roadmaps, or STS's own critiques of expectations and unfolding phenomena. Using case studies from these disparate fields, we begin by identifying examples of the future as a device for shaping possibility and understanding in the present. Our three case studies are: 1) The UK government's 2050 Pathways Calculator, which offers the promise of user generated futures, but not without constraint. 2) Technology design in ubiquitous computing, in which visions of the future are ossified into sets of canonical technological subdomains which in turn come to redefine the interpretation of the vision. 3) The medicalisation thesis in social science, which assumes a single techno-economic pathway into the future. In these performative visions the process of realising the future becomes black boxed, the future itself an output of largely technical processes in which political choice has limited or no role. The talk will outline alternative uses of the future which open up possibility, particularly in the form of science fiction narratives which, through the creative embedding of science and technology within social contexts, liberate rather than constrain. It will highlight the crucial role that such creative imaginaries have played in realising past futures, and how they might be used to engage the public in worlds yet to materialise.

New Hope for the Dead: Changing Visions of Apocalypse in Science Fiction Cinema. *Langdon Winner, Rensselaer Polytechnic Institute*

From the machine-smashing proletarian revolt in Fritz Lang¹s ³Metropolis² to the scenes of ecological collapse and social disintegration depicted in countless movies of recent decades, science fiction film makers have been obsessed with the possibility that the projects of modern civilization might result in disaster. How have themes of this kind evolved over the decades in ways that both mirror real world concerns and keep ticket buying audiences glued to their seats? What patterns emerge from the topics, plot lines and thematic twists the films express? Are hopes that science fiction might help us ³come to our senses² and ³save the world² still as strong as in earlier periods, for example in 1950s flicks about prospects for nuclear holocaust? Or have today¹s post-apocalyptic and zombie movies reached new levels of moral pessimism, political resignation and box office busting Shadenfreude?

Epic facts. The rhetoric of evolution in Weimar school books. *Constance Sommerey, Maastricht University*

Teaching evolution was not self-evident in early 20th century Germany. On the contrary, biology as a school subject had been banned from secondary education in 1882. When Darwin's theory entered Germany, it rapidly spawned controversies over evolution and its relation to religion and education. Whereas convinced evolutionists called for a prompt abolishment of religion in school curricula and its replacement by evolution, the church and conservatives were appalled by such a heretic idea; schools were to equip students with a Christian moral backbone, not to convert them to materialism and atheism. These battles would last for over 40 years. When the ban on biology for secondary education was finally lifted by the Weimar ministry of education in 1925, school book authors had to choose how to rhetorically present this socially and politically sensitive topic. Should students only be familiarized with 'bare' facts of transformative development or should they be persuaded into accepting evolution? Whereas some authors contented themselves with presenting isolated facts, others saw the need to causally conjoin these facts to present a complete and concomitantly convincing account of evolution. This paper argues that the effort to persuade students into accepting

evolution simultaneously implicated its elevation into a new epic of creation. The enduring juxtaposition of evolution and religion in Germany had culminated in their incommensurability. If evolution were to be persuasive, it concurrently had to surrogate the biblical version of creation. This paper illustrates how a spiritual rhetoric enabled school book authors to convincingly portray evolution.

137. (85) Unruly matters - the queer side of things - I
9:00 to 10:30 am
Solbjerg Plads: SP216
Chairs:
Sebastian Mohr, Centre for Medical Science and Technology Studies, University of Copenhagen
Marie-Louise Holm, Tema Genus, Linköpings universitet
Participants:

STS and Sexuality: Why the silence? *Georgina Voss, Faculty of Arts, University of Brighton*; *Simon Jay Lock, UCL*

In this paper we will explore what is queer - or not - about the current state of research across science and technology studies, and why this might be so. At present, STS could be accused of bolstering scientific heteronormativity by ignoring the mutual construction of science and sexuality. We have conducted keyword analysis of papers from four major STS journals, alongside a literature review of corresponding books in the area to examine the trends in research around sexuality across the field. Our analysis shows that to date there has been relatively little research which explores the interactions between queer sexualities, scientific knowledge and/or technologies, despite the presence of a well-developed literature on gendered (hetero)sexuality, science and technology. What little work has been done tends to focus on diseases and disorders affecting queer people (e.g. Epstein 1995); and queer women's usage of reproductive technologies (e.g. Mamo 2007). Where STS has engaged with the debate around social construction, it has done so from a communication perspective rather than an epistemological one, as seen in the literature on the 'gay gene' debate. We argue that this has had the unfortunate effect of focusing on sexuality as a marginalised identity at the expense of work addressing its constructed nature. STS perspectives have great potential for unpacking how historical and contemporary technosciences have contributed to societal constructions of sexual identity and behaviour while also being mutually shaped by them: we argue that there is still much work to be done.

Mobile Flirting in "Gay- Smartphone- Partnerships". *Thomas Josef Heid, Ludwig- Maximilians- University Munich (LMU)*

"Congratulations! You and your iPhone were meant for each other." Latest smartphones have become an omnipresent, constant "partner" in everyday life of an increasing number of people. My Munich Master theses, based on approaches of Science & Technology Studies, investigate ongoing changes of daily routines of selected smartphone- users by exploring their experiences with the multiple tasks and practices which this device and its "apps" offer them. The methodical basis of my fieldwork covers qualitative interviews, collected narrations about for ex. embarrassing, amusing or dangerous daily "adventures" with smartphones, as well as participant observations, virtual ethnography, and self-experiments as a new user. The assumptions of Actor-Network-Theory, which approach smartphones as a non-human entity with anthropomorphic attributes, provide a special perspective on the interplay between devices as "actants" and their users and treat both "partners" as equal in establishing networks and relationships. My presentation will focus on "digital cruising" and changes in "virtual-real" flirt- and dating- practices affected by smartphone usage. My field of observation is everyday life of gays in Munich who use applications such as Grindr to flirt and

arrange dates with other gays close-by whenever and wherever they want to do so. My research results will provide examples, how an "invisible", constitutive role of technology affects the queer actors' daily grinds, their culture of flirting and the "communities'" interpersonal relationships. How does a gays' smartphone take up the place of the intimate, preferential "partner" in a life of multifaceted "people- smartphone- double partnerships"?

The queer seed - Explorations of the mattering of sperm. *Sebastian Mohr, Centre for Medical Science and Technology Studies, University of Copenhagen*

The queer seed - Explorations of the mattering of sperm Sebastian Mohr - Centre for Medical Science and Technology Studies, University of Copenhagen - semo@sund.ku.dk Sperm is unruly matter, behaving not quite like as supposed to at potentially any given moment: defying contraceptives and diagnosis of infertility, turning techno-scientific and standardized assessments of its quality into performative becomings, changing from an enticing and lustful substance into matter out of place (Douglas 1966) within an instance, transgressing bodily and intimate boundaries, challenging notions of kinship and establishing new ways of thinking the family, evoking gendered conceptions of the world while simultaneously laying open the vulnerability of heteronormative masculinities, and opening up cyborg narratives (Haraway 1991) of the human as part of in-vitro spermatogenisis. Based on an analysis of the very different roles and functions of sperm in the contexts of sperm donation and fertility treatments, research in the field of in-vitro sperm, narratives of sperm as part of popular culture and art, meanings of sperm as part of sexual practices and public health strategies this presentation wants to explore the queer side of sperm. Understanding sperm as material-discursive (re)configurations of the world (Barad 2007) the aim is to combine queer and feminist insights on materiality with science and technology perspectives on mattering (Law 2010) thereby contributing to a discussion about what queer STS might mean and what possibilities such an approach could offer for the interrogation of bodily materialities.

Queer ageing and norms of success: Successful ageing through the perspective of the monstrous. *Morten Hillgaard Bülow, Medical Museion and Center for Healthy Aging, University of Copenhagen*

In recent decades a growing concern about ageing populations has made the ageing body a site of increased medical intervention and political attention. Since the 1980s conceptual frameworks such as 'successful ageing', 'active ageing' or 'productive ageing' have been formulated by ageing researchers to construct 'new gerontologies' that have emphasized biological indeterminacy, the role of social and environmental factors, and individual possibilities for managing old age. Taking its point of departure in Margrit Shildrick's queer notion of 'the monstrous' and a historical investigation of specific parts of recent ageing research, this paper explores the concept of successful ageing and the ontological and normative claims about ageing it contains. It is my argument that the conceptualization of successful ageing both opens up for a queer reading of ageing bodies and material bodily processes, and concurrently exposes prevalent norms of ideal embodied subjects in Western societies. I base this argument on two observations. First, that 'successful ageing' researchers have argued strongly against gerontological understandings of ageing as a natural process of inevitable decline, and have instead pointed to, done research on, and produced knowledge about, the vast variability, material unruliness and social construction of ageing bodies/subjects. With its corporeal ambiguity, fluidity and "troublesome lack of fixed definition", ageing in itself seems to challenge the normalized ideal of 'the body'. And second, that 'successful ageing' has functioned as a normative framework for the (self- or medical) governing, 'optimization' and 'normalization' of self-

same ageing bodies. Something which calls for queer critique and ethical considerations.

138. (09) Care in a self-managed world - I
9:00 to 10:30 am
Solbjerg Plads: SPs03
Chairs:
> *Ger Wackers*, Narvik University College
> *Ingunn Moser*, Diakonhjemmet University College
> *Hilde Thygesen*, Diakonhjemmet University College

Participants:

Care@distance: new in/dependencies in the care collective. *Ingunn Moser, Diakonhjemmet University College; Hilde Thygesen, Diakonhjemmet University College*

Telecare, or the provision of care at a distance, is a hot topic on the welfare-political agenda, in the context of the ageing of society. Currently a number of different telecare-technology constellations are tested out in Norway as in many countries in Europe. Examples of telecare are automatic alarms and sensors that detect predefined events, such as falls, and medical monitoring technologies that makes it possible for chronically ill persons to transfer data relevant for the treatment of the illness to the treating doctor or team, for instance at the local hospital. What these telecare technologies have in common is that they come with a vision of independence and self-managed care, as tasks and responsibilities are transferred from healthcare professionals to elderly citizen living at home. In this paper we draw on data from ethnographic studies of telecare practices in a Norwegian context, and more specifically; on the use of tracking devices (GPS) in dementia care, to explore if and how these ideals are realised in practice. The paper argues that the passive monitoring which is implied by the use of GPS creates new and multiple forms of in/dependencies, not only for the old citizen, but for various actors that compose of the care collective. As such, the paper contributes to discussions about the ethics of new care and welfare technologies.

Person-Centred Care and the New Management of Illness in Sweden. *Doris Linnéa Lydahl, University of Gothenburg, Department of Sociology and Social Work*

In January 2010 the University of Gothenburg Centre for Person-Centred (GPCC) care was established in Sweden, with strategic government support for investment in medical research. This initiative confirms the growing concern with patient-centred care in healthcare research in recent decades – but with one significant transformation. With GPCC the concern with patient-centeredness has been displaced by one with person-centred care. I shall discuss this displacement or translation of patient-centeredness and analyse the new problematisation of care to which person-centeredness is presented as the solution. Focussing on the challenges associated with a growing population of ageing persons suffering from chronic, long-term illnesses, person-centred care is presented as a credible panacea and a universal cure for the combined medical, social, political and economic ills besetting contemporary Swedish healthcare. Within GPCC, person-centred care is not only discussed as leading to more effective and efficient healthcare delivery (decreasing the number of required hospital days while simultaneously improving patient satisfaction) but also, more generally, as rendering an ungovernable amalgam of healthcare problems governable. It will be outlined how person-centred care aims to reform the subjectivities of healthcare-personnel and patients alike in order to enable both to become more accountable and self-managing in their actions. It will also be discussed how new e-health technologies of accountability, information and communication play a significant role in facilitating a person-centered realignment of healthcare. Such a realignment is presented as necessary in order to utilize a more cost efficient,

qualitative and responsible management of chronic long-term illnesses.

Designing for Discipline. *Bethany Hipple Walters, Erasmus University*

In the Netherlands, a recent funding shift towards disease management programs (DMPs) has led to the redesign of healthcare for chronically ill patients. This redesign, conducted through studies and led by (often external) project leaders, focuses on systematizing care at the GP level by retraining clinicians, creating reportable information systems, monitoring the practices of providers, and developing defined care protocols for caregivers and patients. This work investigates the undercurrent of discipline in the study, design and implementation of DMPs. Through interviews conducted with project leaders and professionals in 22 practice groups, this research explores how the study of DMPs, as well as the design and implementation by project leaders and caregivers, serve to more easily monitor and discipline caregivers and patients via study instruments, through meetings, by measuring performance internally, through the development of new care pathways, and through the funding (or not) of activities, including funding through study subsidies and through health insurers. While the 'new' method of systematic care for chronic disease is favored by many, the oversight and discipline implicit in both the study and in the redesigned is clear and comes from many sources, including oversight from the funding organization and researcher, monitoring of the GPs by the project leader, and the surveillance of patients by caregivers and researchers. By looking at the study influence as well as the program design, this research contributes to STS by building on Foucault's work on discipline, as well as on David Armstrong's work on change and implementation in healthcare.

Calculating good care – the distribution of competence in an economized health care setting. *Lydia-Maria Ouart, Department for European Ethnology, Humboldt University Berlin, Germany*

In my presentation I will elaborate on the distribution of competence in today's home care services for ill and elderly people. Actors involved in home care services find themselves in a constant struggle with different demands of the care sector, most importantly the demand to deliver care in economically efficient ways and the obligation to follow more and more 'expert standards' which define the 'quality' of care. By describing the practices that evolve around these demands I want to show how the competence to decide what is 'good care' is distributed between a range of very different actors, who possess unequal power to set political and professional benchmarks concerning the design of future care arrangements. Among the actants that take part in this constant bargaining are not only human beings but also printed forms, guidelines, charts, computer software, etc. I want to know how actants that embody economic knowledge such as calculation, budgeting and accounting devices take part in this struggle for competence. The presentation is based on participant observation in home care services in Berlin that I am carrying out in the context of my PhD thesis on economization of care. I have been working in the offices of two home care services and accompanied nurses during their work for several months. In my analysis I am drawing on the growing field of STS research on care as well as works on standardization and economization.

Letting stories breathe: narrative and experience of asthma. *Ana Filipa Queirós, Centre for Social Studies, Associate Laboratory of University of Coimbra*; *Joao Arriscado Nunes, CES University of Coimbra*; *Carlos da Silva Barradas, Centre for Social Studies of the University of Coimbra*; *Rita Serra, Centre for Social Studies*

Narratives of experience provide unique materials for exploring the ways in which subjects make sense of illness whilst building a link between their experiences and medical knowledge. The project "Evaluating the State of Public Knowledge on Health and Health Information in Portugal" within the Harvard Medical School-Portugal Program on Translational Research and Health Information, funded by Portuguese Foundation for Science and Technology, seeks to explore new approaches to the experience of asthma patients as they are articulated in narratives, through an adaptation of the McGill Illness Narrative Interview (MINI) schedule as its main tool. This presentation aims at discussing the preliminary findings drawn from narrative interview analysis conducted in Portugal – Hospital São João of Porto, with patients of the Immunoallergology service. This component of fieldwork allowed us to identify and characterize: in detail, (i) what counts as health knowledge; (ii) what are the different patterns of description and explanation; (iii) different experiences of living with the condition and the engagements with health care services and health professionals; and (iv) the different forms and strategies for managing the disease. Self-management is particularly relevant if we take into account the existence of a 'chronic disease paradigm' associated with asthma that, to some extent, allows the individual control and management of this disease and results from different forms of combine medical knowledge with the personal experiences of the asthma.

139. The properties of materials and the ownership of things

9:00 to 10:30 am
Solbjerg Plads: SPs07

This session explores the intimate relationship between the material form of artefacts and the way in which they become (or resist becoming) subject to property rights. The material texture, granularity, consistency, inertness, durability, portability or feel of a thing will often shape the manner in which it will be circulated, exchanged, shared, or privatized. And vice-versa: appropriating material objects often requires changes in their physical constitution. The panel draws on cases in art, media, law and science to explore this dynamic relationship between materiality and ownership, focusing particularly on how transitions between different physical states open up new political and aesthetic vocabularies of appropriation.

Chairs:

Javier Lezaun, Institute for Science, Innovation and Society, University of Oxford
Fernando Dominguez, NYU

Participants:

Partial possessions and the evanescent materiality of media-art. *Fernando Dominguez, NYU*

This paper explores how the emergence of media art is redefining the regimes of property upon which contemporary art museums have traditional relied to distribute value and rights. It will specifically contend that media-based artworks disrupt the kind of material reference upon which relationships of property have been typically predicated in the museum. Drawing on ethnographic examples gathered at the Museum of Modern Art in New York, the paper will show how, unlike traditional paintings and sculptures, media- artworks cannot exist as autonomous and isolatable 'objects', but rather exist as 'functions' that depend on complex and obsolescent material and technological configurations. The paper will argue that the distributed and evanescent nature of media artworks means that they can only exist as partial possessions, that is, as liminal objects of property simultaneously belonging to different property regimes which resist being fully appropriated and owned. The paper will conclude by exploring how these partial possessions require differential processes of appropriation and ownership that challenge the core institutional logic of the museum.

Dissecting "Archival bodies": Extracting and Editing Historical

Documents. *Mario Wimmer, ETH Zurich*

"Archival body" is a notion German speaking archivists used at the turn from 19th to 20th centuries to describe the very character of what one may call 'paper organism', i.e. a particular network of files addressing one another representing past actions and events. In my paper I shall focus on two aspects of archival work in the early 20th century, first, the processes of extracting and copying historical documents, and, second, the publishing of records at the Prussian Privy State Archives in Berlin (i.e. the re-organization of papers, the various material transformations in editing practices, and the art of symbolic appropriation of archival material). By looking into the double-biographies of these paper objects as files and historical documents, I will show that historiographical practice did not perceive the "archival body" as a whole, but instead singled out documents by transforming them into 'sources' of a past reality. This change between different epistemic environments not only transformed their material and symbolic form, but the structure of ownership. Drawing on Bruno Latour's concept of "factishe," I will suggest a model for the analysis of historical knowledge and describe as to how bureaucratic rationality and historical imagination spoke to each other.

Insect matters and the metamorphosis of property. *Javier Lezaun, Institute for Science, Innovation and Society, University of Oxford*

The patenting of insects reminds us in a particularly poignant way of the relationship between biological transformation, territorial control, and ownership. Turning an insect into a private object implies that entomological features become attributes of a property form; the insect's vectorial capacity – its efficiency in bringing into contact multiple species – gives the legal category unexpected potency and reach. The paper uses the example of genetically modified mosquitoes to revisit long-standing arguments over the ownership of insects and its relationship to territorial boundaries and physical containment. Transgenic mosquitoes have attracted a great deal of attention after their experimental release in Grand Cayman and Malaysia. Used to reduce populations of pathogen-carrying counterparts, they are subject to patent protection, and, like genetically modified plants and animals before them, enmesh those that come into contact with them into new sorts of property relations.

Social Movements as Epistemic Communities: The Case of FINRRAGE. *Stevienna de Saille, University of Leeds*

In social movement studies, the status of credible knower might be held by the movement's intellectuals, but expertise is usually considered to be a property of individuals outside the movement, rather than part of a collective identity negotiated through producing knowledge for "the cause". By using Knorr-Cetina's concept of knowledge as epistemic practice, it becomes possible to question the relationship between the processes activists use to generate belief in movement truth-claims, and those used to generate belief in scientific facts. Drawing upon archival documents, published works, and lifecourse interviews carried out with twenty-four women affiliated with The Feminist International Network of Resistance to Reproductive and Genetic Engineering (FINRRAGE), this paper will use case study methodology to analyse the processes by which the network tried to create an international epistemic community to generate knowledge about the displacement of women from subject to object of reprogenetic technologies during the initial period of legislative debate in the 1980s. The purpose is to provide some much needed clarity to the study of knowledge production in social movements, and to reconfigure STS questions around the function of expertise(s) to better theorise movement organisations as knowing actors in scientific controversies. It also provides an opportunity for re-examination of some of the foundational feminist arguments around issues which are still of pressing concern: the use of female bodies as sites for biological experimentation, commodification of women's reproductive organs and labour, and the exacerbation of women's inequality in a global biotechnological market.

140. Studies of expertise and experience: SEE and the third wave (Part I)

9:00 to 10:30 am
Solbjerg Plads: SPs08

The original Third Wave of Science Studies paper appeared in print in 2002 and continues to rank as one of the most cited and downloaded articles to be published in Social Studies of Science. This double session illustrates how that call for Studies of Expertise and Experience (SEE) has developed over the intervening decade. The aim of the session is twofold. First, it brings together work that draws on the Third Wave approach, particularly the distinctions between different kinds of expertise, in order to illustrate the range of topics to which these technical distinctions can be fruitfully applied. Secondly, the papers presented demonstrate how the programme that was first sketched in 2002 has developed in new and unexpected ways, to include topics as diverse as research methods and political philosophy. The double session is split into two panels. The first panel examines the implications of the Third Wave and the emphasis it places on tacit knowledge, with papers discussion research methods, scientific collaboration and workplace training. The second session is more policy-orientated, with papers focussing on political philosophy, climate change and policy-making under conditions of controversy.

Participants:

Probes versus surveys and the methodology of the social sciences. *Harry Collins, Cardiff University*

There is a difference between a survey and – a newly introduced term – a 'probe'. It is a matter of the way social things relate to natural things. This difference does not seem to have been discussed in the research methods literature, at least not in a way which makes it a distinguishing, feature of the social sciences. In this paper, I will argue that the difference should be a salient feature of the philosophy and methodology of the social sciences. The need to distinguish between a survey and a probe does not relate to traditional concerns with error but with the problem of uniformity. Where the topic of investigation can be assumed to be uniform then large scale random samples are unnecessary as a relatively small, haphazardly chosen sample can provide all the data required. This is true for both natural and social sciences but has particular importance in the latter, where it justifies the use of in-depth small sample studies to explore the shared, collective tacit knowledge that binds social groups together. The distinction was developed during the course of on-going Imitation Game research, itself inspired by the 2002 Third Wave paper and the idea of interactional expertise. The distinction between probes and surveys will be illustrated by showing how it is used in Imitation Game research but the application is much wider.

Jedi Mind Tricks: Professional Tacit Knowledge Transfer in Medical Education. *Alexandra Vinson, University of California, San Diego*

Expert medical work is enabled by a foundation of tacit knowledge that is acquired through immersion in a social group—professional socialization during medical school. Past approaches to studying professional socialization have emphasized the aspects of medical education that cause changes in the subjectivity of medical students, thus showing how the proper affect of the professional is established, but this emphasis on subjectivity obscures the practical aspects of doctoring that enable professional participation. This paper seeks to ethnographically investigate the relationship between the tacit knowledge of physicians and the daily practices of doctoring by observing full-fledged physicians as they teach medical students to interact with mock patients. It emerges that physician teachers use various methods to explicate their contributory expertise, but that a gap remains between the meta-☐ discourse of teaching and the tacit knowledge that underpins the teachers' everyday

medical practice. This gap exposes the difference between tacit knowledge, which can only be acquired through personal experience, and explicable knowledge, which can be transmitted in a classroom setting. Medical students remark that the teachers' have a magical ability to secure patient compliance and the students term this "doing Jedi Mind Tricks." This presentation will draw from Collins & Evans' Studies in Expertise & Experience (SEE) to discuss the role of "Jedi Mind Tricks" in the transfer of professional tacit knowledge during the socialization of medical students.

Interactional expertise and collaboration between paleoceanographers and paleo-modellers. *Tiago R Duarte, Cardiff University*

Paleoceanographers use archives found in the oceans, such as marine sediments and corals, to reconstruct past oceans and past climate. They are empirically-oriented scientists and spend most of their time collecting samples in the field, analysing them in the lab, and interpreting the results. Paleo-modellers, on the other hand, are not involved with data production. They seek to model past climates on computer models. Their research activities include writing models' codes, developing equations that synthesise climatic processes, running their models, and debugging them. These two groups of scientists have very different skills sets but have been increasingly collaborating and producing knowledge together. Using interviews with experts in both paleoceanography and paleo-modeling and on participant observations of scientific meetings, this paper examines how these two groups of scientists collaborate. Although there are still some misunderstandings in the interactions of paleoceanographers and paleo-modellers, they have successfully worked together in a large number of projects. I argue that this is because they share the same 'language' so that they have a general understanding of each other's practices. Furthermore, they share an understanding of the earth system and of the physical and chemical processes that bring about changes the climate. In other words, even though these communities have different contributory expertise they share the same interactional expertise in past climates.

Discussant:

Robert Evans, Cardiff University

141. (77) Urban assemblages and cosmopolitics: contributions for an ongoing debate - III

9:00 to 10:30 am
Solbjerg Plads: SPs10
Chairs:
Anders Blok, Copenhagen University
Ignacio Farias, Social Science Research Center Berlin
Participants:

The urban thing. Urban agency and purification in a long term perspective. *Bert De Munck, Centre for urban History, University of Antwerp*

Urban historians increasingly pay attention to the agency of material and socio-technical aspects of nineteenth and twentieth-century cities, but the shift from the early modern to the 'modern' city has remained underexplored – notwithstanding Bruno Latour's claims about purification processes in seventeenth and eighteenth century Europe. How did new subject-object relationships impact upon the ultimate decline of the early modern city's typical features such as urban citizenship and city walls? One way to explore this is through a focus on the city as a privileged economic unit. While early modern craft guilds often enjoyed considerable political clout on an urban level, their privileges, regulations and instruments were related to specific ideas about the city as a material and political reality. Product standards were regulated at the urban level, expressed

with trade marks explicitly referring to the urban context and guaranteed by the master's political status as a freeman to the city - which was in turn obtained by learning on the spot. This specific type of 'agencement' presupposed a very 'material' way of thinking, with the value of products located in the raw materials used and the masters' 'embodied' skills, but at the end of the ancien régime the scientific revolution and enlightenment thinking witnessed processes in which products became dead, commodified matter (instead of a creation of artisans in touch with the Cosmos) while the masters' skilled bodies became a type of instruments (rather than political 'corpses'). This paper will examine this shift through a close reading of rules and regulations, products and instruments (including hall marks and trade marks) and ideas of guilds and other economic actors and institutions for the seventeenth through the nineteenth century.

Small businesses in the city: assembling the commercial urban space. *Alexandre Mallard, Centre de Sociologie de l'Innovation. Ecole des Mines ParisTech*

The objective of this communication is to investigate the role of small businesses of retail trade and services in the urban dynamics. An important aspect of contemporary urban assemblages is their economic dimension: the design of urban structures like streets, buildings, equipments engage various processes of framing and overflowing (Callon, 1998) between commercial (consumption and services) and non commercial activities (moving in space, walking around, meeting people, etc). The role of small businesses in these processes is quite unknown. The urban inscription of small businesses has traditionally been considered from the point of view of the competitive struggle between small retail trades and supermarket distribution, a struggle that has contributed to frame the opposition between city centers and urban outskirts. However, small businesses refer to a large spectrum of activities, which cannot be grasped through this simple opposition. They encompass a great diversity of material inscriptions of the commercial activity in the city space (shops, offices…), of forms and scales of mobility generated (for the entrepreneurs as well as for their customers), of modalities of economic coexistence and competition. The communication will draw on qualitative and quantitative surveys concerning small businesses (Mallard, 2011) to explore this diversity and qualify their role in contemporary urban dynamics. It aims at bridging perspectives in STS, economic sociology and urban research.

"Additive" as analytical concept and actant for advocacy. Studying movie-making urban agents in Gothenburg. *Joakim Forsemalm, Gothenburg Research Institute, Gothenburg University*

In chemistry, the "additive" is a substance that is intentionally added in small amounts to alter the characteristics, of colors, for instance. In my paper, this concept will be used to discuss the complexity of urban and regional sustainable development, more specifically a process gathering around twenty different organizations around a common agenda – to raise awareness and opinion about safety, accidents and community. To do this, an information film was produced in twelve minority languages – for the movie themes to be as widely spread among senior citizens in Gothenburg as possible. But when the movie was made, it needed supporting discussion guide, and then a tote bag to carry it in. The movie became internationally known and was competing at EU-supported networks for safety prevention. The cut-out scenes then became the base for another movie – this time with the theme "age-excessing meetings". Could "additive" be a concept useful to map and write, as in this case, "urban sustainability cultures"? How could this concept work alongside ANT/STS-concepts like assemblage, actor-network or action-net (cf. Latour 2005, Farias and Bender 2010 and Czarniawska 2009)? The study analyzed, is based on a shadowing methodology of around twenty production meetings, a movie

premiere and screenings for seniors in Gothenburg and from around the world. The objective has been to evaluate the process and to supply a scientific analysis of the process. For the partaking organizations, "additive" has become part of the co-op narrative vocabulary, giving them a better position in regards to local political bodies.

On site and en route: Urban assemblage and the articulation of the prehospital emergency arena. *Yutaka Yoshinaka, Technical University of Denmark; Signe Pedersen, DTU Management Engineering*

This paper explores urban assemblage through a relational ontology to infrastructuring, with the so-called 'prehospital' realm of emergency care and intervention as a fulcrum of inquiry. Outside the immediate setting of the hospital lies a vast expanse of events and space where livelihoods unfold on a daily basis. Home, offices as well as semi-private or public spaces such as apartment complexes, pavements, motorways and train stations, at the time of medical emergencies, may be transformed into concrete sites of engagement by paramedics and ambulance workers. Rather than just backdrops to such intervention, relatively familiar surroundings in the urban landscape become juxtaposed and shift, occasioned by situations where lives are at stake. Based on an ethnographically informed study, we address how accessibility to medical care in such an 'urban workspace' is being negotiated through the ever transforming assemblage of prehospital intervention. The materiality and relationality which unfolds in the interaction between rescuer experience, medical equipment and aids, as well as coordination with other bystanders and surroundings form part and parcel of the 'workspace' being articulated. The papers contribution to STS is to further an inquiry and discussion as to the enacted, shifting and emergent character of the urban setting, in relation to prehospital intervention. The urban assemblage, despite seemingly obdurate physical and cultural preconditions that the urban setting bears, are just as conducive to improvisation in the unfolding in rescue work. We are interested in exploring the distribution and enactment of prehospital intervention practices in this urban framing.

Constructing the Main Artery of Urban Gray Assemblages: A Case Study of the Seoul Metropolitan Railway. *Sung Won Kim, Seoul National University*

This paper examines the history of the Seoul Metropolitan Railway from 1970 to 2011, a railway 825.2km in length and now boasting 522 stations. The main argument is that the Seoul Metropolitan Railway has played an important role in constructing urban gray assemblages in Seoul. The urban gray assemblages, a notion that is derived from applying Actor Network Theory (ANT) to urban studies, is defined as a heterogeneous human and non-human actor networks that reassembles the ecological and socio-technical relations for proliferating construction. Unlike urban green assemblages, the expansion of urban gray assemblages weakens the sustainability of the urban ecology. Urban gray assemblages in Seoul have expanded in connection with the co-construction of new towns, satellite cities, and the Seoul Metropolitan Railway. Changes in housing cultures, transportation, landscapes, land values, life styles, etc., have interacted with the extension of the Seoul Metropolitan Railway in urban gray assemblages. Through the literature review and qualitative interviews, two questions will be illuminated: first, how have heterogeneous actors been reassembled in the construction of Seoul Metropolitan Railway? Second, what are the similarities and differences between Seoul and Tokyo Metropolitan Railways in urban gray assemblages? This paper will provide the evidence that illuminates the Seoul Metropolitan Railway from the viewpoint of cosmopolitics in urban gray assemblages.

142. (73) Critical studies of interdisciplinarity - I

9:00 to 10:30 am
Solbjerg Plads: SPs12
Chair:
   Mathieu Albert, University of Toronto
Participants:

Knowledge Ecologies and "Supple" Objects in Interdisciplinary Gender Research. *Christine Virginia Wood, 3122180462*

This paper examines the evolving connections between local departmental ecologies and knowledge production in an interdisciplinary field in the social sciences and humanities - women's and gender studies programs in the U.S. Data are historical records from four women's and gender studies departments in the U.S. and semi-structured interviews with affiliated professors. In their formative years in the 1970s women's studies programs were relatively homogenous in content and structure. Scholars across sites defined the purpose of women's studies similarly: to address the lack of research on women and analyze social problems affecting women. Gradually scholars incorporated a broad range of analytic categories in women's studies' agenda, including gender identities, masculinities, and sexualities, but because the process of expansion was uneven, scholars across programs adopted diverse understandings of the priorities of research on women and gender. I attribute this differentiation to the "suppleness" or definitional pliability of the analytical categories "women" and "gender." The article melds work in science studies on knowledge ecologies with studies of the development of academic disciplines as organizational forms, to understand how departmental conditions affected differences in the conception of research on gender across universities in the U.S.

Boundary-Blurring Work: Designing Computer Science as an (Inter)discipline. *Janet Abbate, Virginia Tech*

Boundary-work has become a standard framework for analyzing how actors construct distinctions between science and non-science or between rival disciplines. Interdisciplinary fields such as computer science complicate the conventional view of boundary-work as a process of demarcation. Research in these fields proceeds by blurring the boundaries between disciplines or between science and technology; yet to retain legitimacy and status, practitioners must simultaneously assert their inclusion in "science" as a distinct domain. A particular concern among computer scientists has been to challenge the separate-and-unequal status of "pure" and "applied" research by advancing a conception of science in which building artifacts is an integral part of building theory. This paper examines the emergence of computer science as an irreducibly interdisciplinary field, focusing on efforts to define and defend the scientific identity of computer science from the founding of the first academic departments in the 1960s to the present. Sources include editorials in CS journals, statements by officers of scholarly societies, speeches by prize-winning researchers, and model curricula aimed at articulating and standardizing an intellectual agenda. I also inquire into the power relations underlying computing researchers' efforts to be recognized as scientists. Boundary-work is generally assumed to be motivated by a desire for status and resources; yet computer scientists have long possessed—in abundance—the rewards associated with successful sciences, including their own academic departments, dedicated government research funding, and scientific honors. That they still feel compelled to assert their legitimacy reveals the entrenched power of disciplines as an organizing principle within science.

Accomplishing interdisciplinarity: regimes of practice in the production of knowledge. *Susan Molyneux-Hodgson, University of Sheffield*

This paper reflects on the lifestory of a large research project that assembled a wide variety of disciplines. For four years, computer

scientists, ecologists, sociologists, civil engineers and planners were amongst those who engaged with a set of challenges that centred on urban rivers, water governance and sustainable regeneration. Using a multi-sited ethnographic approach, I will explore the terms of my own and others' engagement in the research process and inspect the everyday practices of research in order to trace how the notion of inter-disciplinarity became simultaneously endorsed and denied. I will demonstrate some of the shifts in the form and character of inter-disciplinary interaction over time and give consideration to the emotional labour that is involved when working alongside unfamiliar epistemic cultures. Issues that come to fore through the analysis include: dynamics of power (personal and epistemic); devices for integration (such as models and concepts); and roles to be played (e.g. the 'pure' scientist and the 'good' housewife). The paper will thus address three key concerns of interest to the STS community: how is the notion of inter-disciplinarity given meaning in the day to day workings of a research project? What is construed as 'success' in such a collaborative endeavour? And what are the implications of these for understanding current modes of scientific knowledge production?

Constructing interdisciplinary identities in science magazines: Visions and expectations. *Carlos Adrian Cuevas Garcia, University of Nottingham*

In the 21st century interdisciplinary research is no longer new. Rather it is taken for granted and perceived as contributing to solving major social and scientific concerns. However, such expectations pose various epistemic, cultural and institutional challenges for interdisciplinary researchers. Various perceptions and metaphors describe what an interdisciplinary researcher "looks like", what her characteristics and interests are, and how the world is for her. It is common to read that interdisciplinary researchers have a certain mindset, wear multiple hats, and understand different disciplinary languages. The issue is that such visions are not only produced by researchers themselves but may also be imposed by institutions or funders. This research contributes to STS critical studies of interdisciplinarity by examining the ways interdisciplinary researchers construct self and identity within a network of positive and negative expectations spun between institutions, disciplines and individuals. Methodologically, it is grounded in discursive psychology, as it is interested in 'the way versions of self and identity are constructed as factual and fitted into people's practical activities and interactions' (Edwards and Potter, 1992: 127). This framework will be used to analyse articles focusing on issues around interdisciplinary work and published in Science, Nature, Scientific American and New Scientist between 2000 and 2012. It is intended to identify interpretative repertoires and other rhetorical elements used to describe, support, critique and construct visions of interdisciplinarity, interdisciplinary researchers and interdisciplinary research institutions. This research is part of a larger project comparing text and talk produced by interdisciplinary researchers, institutions and funders.

143. (40) The construction of social computing: design and displacement of hybrid relationships

9:00 to 10:30 am
Solbjerg Plads: SPs13
Chairs:
Maurizio Teli, Ahref Foundation
David Hakken, School of Informatics, Indiana University Bloomington
Vincenzo D'Andrea, University of Trento
Participants:
Communities of Innovation and Social Software: Lessons from PLATO. *Guillaume Latzko-Toth, Université Laval; Steve*

Jones, University of Illinois at Chicago

How, and under what circumstances do sociocomputational systems emerge so as to become successful, creative hybrid collectives? Purposeful design is not the only approach to creating computer applications for human collaboration, as suggested by our research on one of the most influential platforms in social computing: PLATO (Programmed Logic for Automated Teaching Operations), a precursory educational computer platform developed at University of Illinois at Urbana-Champaign (UIUC), before the Internet era. As part of this project, we did a qualitative analysis of a set of archived electronic messages posted in the early 1970s to the "General Interest Notes" forum, used by developers and users of PLATO IV to discuss various issues--from design to appropriate use. An interesting aspect of PLATO is that it was not originally conceived of as a tool for mediated social interaction, but as a computer-based education system. How was this system reframed as a collaborative platform used for educational purposes? Drawing on Hippel's work on user communities (Hippel, 2001) and on Tuomi's concept of "network of innovation" (Tuomi, 2003), we suggest that PLATO users and developers formed a community of innovation, that is, a community of practice gathering users and developers, and focused on the creation, improvement, and expansion of an artifact. Bolici & Virili (2009) note the mutual influence between the social network--"design network"--and the "network artifact" it produces, in a co-evolution dynamics. Our case study shows an interesting co-evolution of PLATO as both an artifact and a community.

Social media and self-evaluation: On numbers, data and temporalities. *Carolin Gerlitz, Goldsmiths, University of London*

This paper focuses on the increasing prevalence of devices for self-evaluation in the context of social media, that is tools that allow users to make sense of the activities and data they produce in social media platforms. While platforms focus on creating climates of immediacy and now-ness, they offer little access the past, to retrospectively search and make sense of one's data. This lack has lead to the emergence of numerous self-evaluation tools, offering a re-organisation of data, activities and temporalities. The primary focus lies on the performative capacities of such tools, as suggested in the work of Power, Strathern and Espeland, showing that the measurements they create are not designed to capture a separate reality, but function as framing devices, inviting some types of awareness, and action while ruling out others. The framing dynamics are explored by focusing on the production of numbers as enumerated entities (Verran 2010), drawing attention to how numbers are never simply abstractions, but construct relations and temporalities, most particularly through algorithmic rankings and dynamics of ordinality. The role of numbers is understood in relation to dynamics of mediation and medium-specificity (Rogers 2009). Self-evaluative tools not only draw on data and activities specific to social media platforms, they also allow for new modes of organising these activities, data and temporalities. The interlinked movement of numbers, media and selves in self-evaluation is explored as dynamic assemblage, opening up engagement with selected intervals of the past, in order to create climates of anticipation and future orientation.

Dwarfs without giants? Decentralisation and re-centralisation in Internet-based services. *Francesca Musiani, Mines ParisTech*

Recent years have witnessed numerous attempts, founded in academic research and start-up contexts, to build "alternative" Internet-based services - search engines, social networks, data storage facilities - on a peer-to-peer (P2P) architecture. This implies a shift in development choices from a client-server approach to a repartition of tasks and/or workloads among

equipotent nodes in the system. This paper explores how decentralization is envisaged, qualified, defined and implemented by developers of P2P Internet-based services. It builds on two case studies - a peer-to-peer search engine and a distributed data storage system; it builds on, and aims at contributing to, the STS literature on infrastructures and architectures as social and political artefacts. The paper addresses the different modifications that, over time and depending on the intended use of the application, have concerned the presence and the role of a central server in the two case studies: from the repeated tentatives to eliminate it completely, to the acknowledgment that specific functions are better served by a gradual reconversion to a (more) centralized model. The paper aims at showing how - at the very same time when developers are supposedly aiming at simply "getting rid of the server" in order to enhance the specificity and originality of their products with respect to their widespread, more famous rivals like Google or Facebook - these de- and re-centralization approaches lead to a reshaping and rethinking of the very definition of what a server is and what it does, ranging from main backup and safeguard for otherwise distributed data, to primary node assuring the redundancy of a network of nodes/users, or again, to the guarantee of the application's stability in the bootstrapping phase.

Scanning the Social Brain? the emerging use of web-based visualizations as tools for social exploration. *Anders Koed Madsen, Copenhagen Business School*

The tools through which people make inquiries about society are central to the way they come to understand it and the possibility of harnessing ´big data´ are currently giving rise to a set of semi-automated tools that promise new ways to organize social inquiry. They work by programming algorithms to harness massive amounts of behavioral data on the web and synthesize it into manageable visualizations of the social. On the basis of interviews and document analyses this paper provides an analysis of the ways in which such visualizations are constructed and made sense of by project leaders across the areas of public governance, advertizing, military intelligence, strategic foresight and the social sciences. The theoretical framework of the paper is grounded in Social Construction of Technology, Actor-Network Theory and Software Studies in order to focus analytical attention on technological and discursive elements that are playing an influential role in the ´production-chain´ behind these new tools. Looking for similar elements across different industries allows for identifying ´core elements´ that are inevitably salient when constructing visualizations. Similarities in the way these elements are approached will be defined as signs of ´stabilization´ in the trend of visualizing big data whereas elements and approaches that are unique to subsets of cases and specific professional cultures will be denoted as ´flexible add-ons´ to these core elements. By following the process of organizing the meaning and use of these emerging tools the paper intend open up these assemblages and specifically ponder the role of algorithms in organizing visibility.

144. (55) War and the human: innovations and interventions - I
9:00 to 10:30 am
Solbjerg Plads: SPs14
Chair:
Kenneth MacLeish, IHHCPAR, Rutgers University
Participants:

"Resiliency" and the Problem of Soldierly Personhood. *Kenneth MacLeish, IHHCPAR, Rutgers University*

This paper is a critical examination of some of the discourses deployed to institutionally manage the effects of posttraumatic stress on U.S. soldiers who have served in the wars in Iraq and Afghanistan. Posttraumatic stress disorder is by far the most familiar interpretive frame for these experiences, but other, avowedly non-medical paradigms can be just as problematic and constraining in their assumptions about the effects of violence, the nature of personhood, and the governance of human life. This paper, based on fieldwork with soldiers at the U.S. Army's Ft. Hood and a critical reading of Army and scholarly literature, examines one such paradigm: resiliency, which has recently been enshrined in the Army's force-wide Comprehensive Soldier Fitness behavioral health program. Eschewing the allegedly iatrogenic effects of psychiatric diagnosis and treatment, resiliency training offers an appealing but unproven set of techniques for enhancing human capacity and "fitness" to make soldiers "better before deployment," in the words of Army Chief of Staff George Casey. Against the background of everyday life at a military installation, I examine resiliency's quixotic synergy with military corporate culture and bureaucratic logic. I show how it functions as a technology of self-governance in which characterological traits are instrumentalized as malleable quantities that supposedly protect individuals from the shocks of intense and disturbing experiences. Resiliency resolves the contradiction between the "exceptional" character of war and the organized, routine exposure of soldiers to violence; in the process, it reveals the uneasy relationship of liberal polity and personhood to war violence.

Warring Identities: American Veterans Making Sense of Postwar Identity and Health. *R. Tyson Smith, Brown University*; *Gala True, Center for Health Equity Research*

This paper analyzes the identity struggle that American soldiers of recent wars face when they reenter the civilian world. Health science on returning veterans typically analyzes data from medical records on diagnoses, symptoms, and treatments. Instead of focusing on veterans' mental health struggles and diagnoses (like PTSD), we propose that veterans' mental health must consider the instability of identity during their postwar lives. We understand individual identity to be fundamental to health and well being and find that veteran's health struggles partly stem from human struggles to make sense of "Who am I?" Drawing from participant-observation data and twenty-four life story interviews of recent American veterans, the paper investigates how veterans make sense of these struggles (or give meaning to them), under what circumstances this is this done, and what impacts there may be for mental health. The contrast between the participants' identities as soldiers and their identities as civilians causes identity strains. These identity strains—what we term "warring identities"—have important consequences for mental health and the science of trauma.

Design and displacement in the military-entertainment complex. *Lucy Suchman, Lancaster University*

Taking its inspiration from critical studies in the history, culture and politics of technology, this paper will examine contemporary infoldings of persons and machines within what James Der Derian has named 'MIME-net', the military-industrial-media-entertainment network. Popular discussion of these developments tends to perseverate on defining boundaries (for example, between the game world and the real) and positing causal relations (for example, between media and their effects). My focus in this paper is on the logics and material practices of remotely-controlled weapon systems (particularly armed drones and weaponized robots), focusing on the concept of 'situation awareness' as a central legitimizing premise. Drawing from reports in investigative journalism, military documents, and critical scholarship, I examine connections between the emphasis in military and security discourses on keeping 'our' bodies safe through so called network-centric warfare, and the project of cutting the networks that might bring our wars too close to home. These connections are multiply configured, as some bodies become increasingly entangled with machines, in the interest of keeping them apart from the bodies of others. I offer the beginnings of an argument regarding the essential and

inescapable tension between a commitment to distance, and to the requirements of 'positive identification' that underwrite the canons of legal killing. This tension holds not only for those involved in command and control of the front lines (the focus of the military's concerns), but also for those of us responsible as citizens for grasping events in which we are, however indirectly, morally, politically and economically implicated.

Dangerous games: the role of videogames in shaping American military culture. *Alcides Eduardo dos Reis Peron, Campinas State University*; *Rafael Dias, Campinas State University*

The paper explores the relationship between entertainment softwares – specifically of "modern warfare videogames" developed for commercial consoles – and the development of a military culture and new military technologies by the USA. The analysis is based on the premise that these videogames, explicitly oriented towards entertainment, have a more subtle effect on shaping the military culture by presenting war as a trivial experience that blends itself with effective simulation tools and advertisements for military enlistment. It is thus shown as a common – even if still violent – event in human history. Based on concepts and methods derived from Science and Technology Studies (STS) and Game Studies literature, we seek to expand the current views of American hegemony and its relation with the industrial-military complex by taking these questions into the realm of videogames, which is generally overlooked by STS. Based on the analysis of the mediated, fictional and social spaces (Nitsche, 2008) of games such as "Battlefield" and "Call of Duty: Modern Warfare" series we argue that military entertainment is becoming an increasingly important appendix of the American industrial-military complex, particularly by familiarizing players with the military culture, discourse and technologies. By immersing themselves in increasingly realistic gaming experiences that often defies the boundaries between fictional entertainment and reality, they tend to be more susceptible to absorbing these elements. Thus, warfare is embedded in culture not through the violence represented in videogames, but rather by the realism and the complexity of the experience.

Mors ex Machina: On Autonomous Systems and the Rules of War. *Theo Vurdubakis, Lancaster University*; *Brian Peter Bloomfield, Lancaster University*

A common feature in many of the wars that have ushered in the 21st Century is the extensive use made of robotic systems. Armed Robotic Vehicles and Unmanned Aerial Vehicles, for example, are now being deployed or being developed by many militaries from the 'first world' and beyond. Although today's robotic systems are, on the whole, operated remotely, there is a widespread expectation that, like financial market systems before them, such technologies may in the near future acquire considerable autonomy in making life-and-death decisions. For instance, USAF's (2009) Unmanned Aircraft Systems Flight Plan 2009-2047 predicts deployment within this timescale of fully autonomous aerial vehicles, in which humans will play the role of "monitoring the execution of decisions" rather than actually themselves making those decisions: "advances in AI will enable systems to make combat decisions and act within legal and policy constraints without necessarily requiring human input" (p.41). Against this backdrop, the present paper offers a critical discussion of the research programme led by Ronald Arkin (2009) (funded by the U.S. Army Research Office) that focuses on the development of an "ethical governor" which will enable future autonomous military systems to use lethal force while adhering to the rules of war more closely than human combatants. Arkin (2009a;b) and his co-workers argue that unlike (human) soldiers, who due to their embodiment and associated behavioural drives/imperatives/flaws cannot maintain adherence to their own ethical codes, suitably programmed "ethical robots" will be exempt from fear, anger or stress-induced scenario fulfilment. For this reason, they can not only be entrusted with life-or-death decisions but can also be relied upon

to identify and report human violations of the rules of war. Accordingly, the paper discusses the "ethical warrior robot" as an instance of how ostensibly "technical" matters serve as the means for articulating and rhetorically rehearsing the various philosophical antinomies and moral conflicts characteristic of occidental (post?)modernity.

145. (67) Technologies of the self - I
9:00 to 10:30 am
Solbjerg Plads: SPs16
Chair:
Christopher Salter, Concordia University
Participants:

Technologies of the self and nonmodern ontologies: the cases of meditation and cybernetics. *Antonio Carvalho, University of Exeter*; *Andrew Pickering, University of Exeter*

We are interested in technologies of the self - assemblages, set-ups, practices, performances - that bear upon transformations of selfhood (inner states, subject positions, cosmological visions). Especially we are interested in technologies that serve in one way or another to erode modern, self-contained and dualist selves, and to elicit different sorts of nonmodern subjectivities, including their corresponding ethical, social, political and psychosomatic arrangements. We report briefly on two sets of studies, of Vipassana (in the tradition of S. N. Goenka) and Zen meditation (following Thich Nhat Hanh's Order of Interbeing), and of various cybernetic technologies of the self (paying particular attention to the history of British cybernetics from the 1940's onwards). Through a multi-faceted research methodology, involving ethnography, semi-structured interviews and historical analysis, we seek to draw out especially the connections between nonmodern inner states and nonmodern forms of social action and organisation - Vipassana and embodied "education"; Zen, pacifism and social engagement; cybernetics and countercultures. Our aim is a posthumanist exploration of the politics of the self, or, conversely, the further development of a posthumanist ontology that includes states of the self and nonmodern forms of experience. Key Words: technologies of the self; ontology; meditation; cybernetics

Biopower in the Age of Well-Being: The Ontology of Mindfulness Practice. *Francis Mckay, University of Chicago*

If biopower means the governance of life itself, what happens when "life itself" gives way to talk about "the good-life"? How does a teleology of well-being, as opposed to one of health and normality, alter scientific interventions? In STS, such questions have been raised recently in relation to technologies of enhancement. Yet, such accounts presuppose a particular ontology of the human, for each suggests a tendency toward somatization, i.e., a tendency for people to think of, and act on, themselves in terms of their body. This too entails a de-psychologization process, or the direct mapping of the self onto the molecular body and thus the erasing of a psychological ontology. I will question these ontological presuppositions of biopower through an ethnographic study of mindfulness practices. Mindfulness, a Buddhist inspired meditation technique, has gained a reputation over the past thirty years for its ability to enhance certain biological and psychological capacities. What I will show is that mindfulness reverses the above trend, revealing instead psychologization and de-somatization effects. After describing the ontological presuppositions of mindfulness, along with the practices that support it, I will note how it changes our understanding of biopower in the 21st century by suggesting a general shift in the science of well-being, one from biopolitics to a psychopolitics, and thus from the ontological privileging of body to one of mind. I will then end by saying how all this affects notions of transhumanism and techniques for transforming the self in contemporary society.

Pharmaceuticals and Technologies of Self/Control. *Scott Vrecko, University of Exeter*

Gilles Deleuze has famously argued that as a result of new forms of science and technology—including 'extraordinary pharmaceutical productions—we are witnessing a shift away from the 'disciplinary society' described by Foucault, and the emergence of 'societies of control'. While Deleuze offers a set of intriguing preliminary ideas for developing a "socio-technological study of the mechanisms of control", notably absent from his discussion are any reflections on the novel forms of subjectivity that arise in relation to such mechanisms. This paper extends the analysis of control societies to include an account of how new technological forms of governance may transform self-understand, experience, and everyday practices; and it considers these somewhat abstract ideas in relation to a concrete case study pharmaceutical 'enhancement.'

Neoliberalism, Psychiatric Pharmaceuticals, and Ideal Selfhood. *Michelle Dillon, University of Washington*

The doctrine of neoliberalism propagates a culture of fear, authority, consumerism, and privatization. The neoliberal model of selfhood includes the "subjective turn," (Heelas & Woodhead, 2005) hinging upon an assumed fundamentality of uncovering a so-called true self that requires maintenance and defense to be fully actualized. Pharmaceutical advertisements rely on a neoliberal narrative of achievement through consumption, exhorting viewers to use pharmaceuticals to become healthier, happier, and more socially acceptable. In pharmaceutical advertisements, particularly those for psychiatric medications, all subjects are portrayed as possessing the resources to access the products and thereby the capacity to achieve a fulfilling life. Thus, the rhetoric of empowerment is co-opted while, simultaneously, responsibility for health management is transferred from institutions to the individual and the present crises in healthcare are presented as obsolete. This paper studies the semiotics of selfhood, race, class, and sex in advertisements for psychiatric medications to argue that boundaries between individuals are at once blurred and also set into sharp relief; here, identity is presented as fundamentally malleable and yet in constant crisis and deprecation. Using the knowledge of the tenets of neoliberalism, we can begin to deconstruct the presentation of mental life in media and to shift the popular discourse of selfhood and body integrity away from the achievement of objective, circumscribed normality and toward a new understanding of identity.

Brain Technologies of the Self. *Jonna Brenninkmeijer, University of Groningen*

Neurofeedback – a form of biofeedback that gives people feedback on their own brain activities – is an increasingly popular technique to work on the self. People use neurofeedback for various purposes, from achieving peak-performances or improving meditation skills, to treating mental or physical disorders. According to clients and practitioners, doing neurofeedback allows them to become, accept, stand up for, or think as, themselves. Such statements raise the question what that self is, and how the relation between the person doing neurofeedback, the self that is being worked on, and the brain waves that are central to the process should be interpreted. Based on my interviews with clients and practitioners, on observations in neurofeedback clinics, and on client reports, I will argue that doing neurofeedback constitutes a new kind of self. To do neurofeedback, people first make a distinction between their selves (I) and their brain (it), and thereupon all kind of psychological, biological, technological, and sometimes spiritual entities emerge that start working upon their selves, lives, and histories. That is to say, doing neurofeedback – at least for some people – constitutes a new ontology of oneself.

146. Meaning-making and political displacements

through the "Internet of Things"

11:00 to 12:30 pm
Solbjerg Plads: D.2.20

Today, an international crowd of researchers, engineers, policy makers, activists and entrepreneurs are gravitating around a perceived new technological frontier that is currently most commonly known as the "Internet of Things" ("IoT"). The IoT paradigm implies a condition where people constantly interact with a variety of computationally enabled devices and systems, which have disappeared into the background of their daily lives (Shepard 2011). Objects tagged with RFID chips, mobile sensor technologies, GPS software, wireless connections, satellite systems and databases are all aspects of this "Internet of Things." Being configured materially and conceptually in the highly diverse institutional context of academic and independent research labs, technology corporations, government-funded think tanks, funding agencies and grassroots movements, a common discourse of IoT as enabling citizen empowerment and self-governance permeates these settings. This discourse informs substantially the material design of objects that make up the Internet of Things, but manifests in these different contexts in different ways. This allows us to raise new questions about the terms on which discursive understandings are "designed for" or "taken into account." This panel seeks to facilitate a discussion among engaged IoT researchers from a variety of disciplines and institutions regarding the material and conceptual dispersion of IoT throughout these institutions. The papers convene around two central questions: how does the IoT techno-social framework set conditions for meaning-making ? Second, what kind of power is at stake in the IoT given the fragmented institutional and cultural contexts in which this technology is shaped?

Chair:

Dawn Nafus, Intel Labs

Participants:

Public Laboratory for Open Technology and Science: Civic Science Engagement as Grassroots Advocacy. *Shannon Dosemagen, Public Laboratory for Open Technology and Science*; *Sara Wylie, Massachusetts Institute of Technology*

In this paper we examine how members of our opensource hardware research and development community are making and using Do-It-Yourself research tools. In this talk we discuss how Opensource Hardware and Software contributes to the development of what we term "Civic Science". Civic Science has been described by Fortun and Fortun, as science that questions the state of things rather than merely serving the state. Environmental Sciences that enable citizens to study the world around them are seriously underdeveloped. Over the course of the 20th century, the sciences, even the field sciences, professionalized in such a way as to harden the distinction between laymen and experts, restrict participation in scientific inquiry to universities and laboratories. Michelle Murphy and others have described how this process has lead to the development of a regime of imperceptibility around environmental health issues. Public Lab is attempting to develop an alternative mode of scientific research, based on civic science principals, which stresses the development of low cost, easy to make research tools that are tailored to addressing pressing environmental health issues and are adaptable and adoptable by participants. Opensource software and hardware are central to facilitating the development of this research model. We describe two case studies, first the adaption and adoption of balloon mapping approaches in environmental justice work and second the development and testing of low cost tools for detecting hydrogen sulfide.

The Internet of Things and the Negotiation of Space. *Ilze Black, School of Electronic Engineering and Computer Science*

In this paper we address some phenomenological work by Merleau-Ponty about the relation between mathematical objects and the lived experience of the people using those objects: we

apply it to the development of the Internet of Things, and particularly the involvement of the open source framework Pachube and developing communities around environmental sensing. The Internet of Things is, at least, concerned with assigning internet locations to a multitude of items (domestic appliances, environments and the like) which do not fall into the usual categories of internet-present entities (namely, people and institutions); consequent upon this, it is also concerned with developing (or at least encouraging the development of) protocols for the items newly connected, or about to be connected, to the internet. Mathematical objects do not change in the same way that physical objects do, and neither are they made of other things in the same way as physical objects. So here we see the following problem. The traditional internet, as usually conceived, has to do with locations in its own (unashamedly metaphorical) space; the Internet of Things, on the other hand, is concerned, as well as that, with locations in physical space. Both of these have to be negotiated, and, in addition, the boundary between physical and metaphorical must also be negotiated. Through the study of language and ethnography of this particular community of makers and users of IoT this paper will address the question how, does this negotiating occur? Our findings suggest that one way to negotiate this problem would be to give these positions essences in the phenomenological sense: that is, to develop language for these positions, which had human-scale designators.

From Data Aggregation towards Behavioral Change: political-philosophical assumptions of IoT. *Dorien Zandbergen, Leiden University, Leiden, The Netherlands*

This paper seeks to disentangle the different political and philosophical logics that underlie Internet of Things projects. In particular I will focus on the hopeful discourse that informs many IoT projects –the SENSEable city project Trash Track and Pachube's Air Quality Egg project being only two of many examples – that data gathering and representation done by citizens in the public domain will lead to "behavioral change." Yet, within and between different IoT projects there is great diversity regarding the envisioned trajectories that lead from data aggregation towards this behavioral change. In this paper I distinguish four trajectories that are quite different in their philosophical-political implications. First, there is a "traditional left-wing" approach that calls upon citizens to present their data to political representatives in order to create better regulations. The second is a "gnostic" approach, emphasizing the "immediate", quality of data visualizations as being able to generate higher forms of awareness affectively. Third, there is the classical positivistic approach towards data as able to speak for itself and to automatically translate into efficient policies. And finally there is the radically skeptical approach that emphasizes the empowering aspects of the process of data collection more than the actual outcomes: this process makes citizens conscious of the biased nature of "data" and will make them more skeptical towards data representations more generally. In this paper I explore the potential of such categorizations for informing critical debates regarding the possible empowering potentials of IoT.

147. STS engagements with Science Centers: Bringing broader implications to the museum floor

11:00 to 12:30 pm
Solbjerg Plads: D4 Aug

Over the past several decades STS scholars have developed a number of ways to think about the broader implications of science and technology. These perspectives are not only useful in an academic context, but also to people making decisions in their daily lives and to societies charting a collective future. Typical STS literature, however, is not very accessible to a lay audience and most members of the public are unaware of even the basic lessons of STS. This panel will explore a new initiative to bridge this

gap – a series of joint projects between Arizona State University's Center for Nanotechnology in Society (CNS) and the Nanoscale Informal Science Education Network (NISE Net, an international network of 300 science museums and research institutions dedicated to engaging the public in nanotechnology). The panel will describe and reflect on efforts to present the broader implications of science and technology on the museum floor through posters, hands-on activities, a series of interactive forums, a facilitated game, and a museum staff training program. Presenters will explore the challenges and opportunities in transforming the American science museum from a top- down source of scientific expertise to a place where members of the public are seen as legitimate experts who should be part of the discussion about the future of science and technology. While much of this work focuses on nanotechnology, the lessons learned through these efforts are much more broadly applicable.

Chair:

> *Jameson Wetmore*, Arizona State University

Participants:

The Intersection of Science and Society: Museum-research center partnerships engaging the public in conversations about nanotechnology and society. *Brad Herring, Museum of Life and Science, Durham, NC*

Museums are changing the way they reach and educate their audiences. Historically, museums explored well-established sciences whereas now there is a movement towards educating our audiences on emerging science and technologies and their social and ethical implications. Museums are uniquely positioned because they already bring together science, the public, and education and have the potential to be a driving force in preparing the public to make critical decisions that affect our future. The Nanoscale Informal Science Education Network (NISE Net) has developed an ongoing partnership with the Center for Nanotechnology in Society (CNS) at Arizona State University designed to create professional development strategies and educational products for effectively engaging visitors in conversations about the relevance of nanotechnology in their lives. This presentation will focus on this museum-research center partnership, the educational hands-on experiences designed to foster conversations around the future implications of emerging technologies and a current assessment of museum staff towards this pedagogical change.

Whose Nano is it Anyway? Exploring the equity implications of nanotechnology through an interactive game. *Jameson Wetmore, Arizona State University*

Technologies are frequently touted as unalloyed goods that will benefit all, but STS scholars have clearly demonstrated that the costs and benefits of new technologies are never evenly distributed. For some groups the benefits of a particular technology are abundantly clear and this can make it difficult to envision what is given up by developing it. To convey this basic idea, CNS-ASU and NISE Net collaborated to develop a card game. In it every player is given a character and two technology cards. They must interact with other players to find technologies that would benefit their character. Because the characters are based on the current economic/social/geographic/gender distribution of the world and because the technologies are all nano-enabled devices (which are largely developed by rich westerners), the needs of the characters and the benefits of the technologies rarely match. The game encourages players to reflect on the needs of the world as a whole and the priorities of those who develop new technologies. The game is more than a critique of the status quo, however, as players are encouraged to find inventive ways to help their characters and even design new technologies that would be beneficial. The equity card game is an example of how basic STS lessons can be conveyed in an engaging way and generate broader discussion that may eventually inform the public debate.

Engaging with Environmental Policy at Zoos: the Science,

Policy and Citizenship Program on Biodiversity. *Ira Bennett, Arizona State University*

In support of the UN Decade on Biodiversity, Arizona State University's Consortium for Science, Policy and Outcomes (CSPO) will partner with zoos and aquariums to engage high school age students across the nation in a dialogue about science, public policy, and biodiversity. The Science, Policy and Citizenship Program on Biodiversity will help students learn about the complexities of bringing science into the policy realm. By engaging with experts in both the technical and policy aspects of biodiversity issues facing Americans, and by deliberating with each other and with decision makers as ordinary citizens, they will discover for themselves the challenges at the intersection of democratic policy making and biodiversity science. By introducing these topics to students who are about to become voters, we will highlight the importance of science and technology decisions in all of our futures, as well as show the messy reality of democratic politics when there are competing values at play. Having students think about global stewardship, corporate interests, environmentalism, the economic impact of regulation and international cooperation in the context of the need to protect biodiversity will equip them to productively engage in a broad range of difficult science-meets-policy issues such as climate change, nuclear proliferation and food security. The presentation will explore the mechanical issues of working with teens and a building a large-scale parallel engagement and will also look at intellectual outcomes from the teen participants.

Nano and Society: training museum staff to engage in conversations. *Rae Ostman, Sciencenter, Ithaca, NY*

At the same time that scientific professional societies such as AAAS are seeking to enhance communication among scientists, engineers, and the public for the greater good, science museums are positioning themselves as venues where this dialogue can take place. As museums embrace the challenge of engaging the public in significant local and global issues, we are finding that we need to reconceive our typical models of public engagement and our understanding of the role of the museum and the public in these interactions. The Nanoscale Informal Science Education Network (NISE Net) and the Center for Nanotechnology in Society (CNS) at Arizona State University are working together to develop a variety of resources to prepare science museums for this shift, including: new kinds of educational experiences that give the public an equal role as experts who can (and do) make decisions related to science and technology that help shape our future; new approaches to training museum staff and volunteers to allow for more open-ended and conversational interactions; and new professional development resources to help museums implement these materials. This presentation will focus on a series of workshops and follow-up activities for museum staff, jointly planned and implemented by NISE Net and CNS and involving dozens of science museums across the United States with the aim of encouraging more discussions about the broader implications of science and technology on the museum floor.

148. (96) In search of "lines of flights" in/for/to/from Latin America - II

11:00 to 12:30 pm
Kilen: K143
Chair:

Ivan da Costa Marques, Universidade Federal do Rio de Janeiro

Participants:

Designing curriculum, displacing knowledge: A postcolonial technoscientific approach to circulation of theories. *Leandro Rodriguez-Medina, Universidad de las Americas Puebla*

Although curriculum design, knowledge production and international circulation of ideas are topics widely analyzed in STS, the intertwined relationships between them in specific cases have hardly been studied. This research focuses on the reception of Niklas Luhmann's theory in Mexico and Chile in a comparative perspective. However, unlike reception studies, this paper uses a postcolonial technoscientific approach according to which (1) the reception acknowledges and somehow reproduces a global structure of centers and peripheries; (2) the reception is a process with textual and non-textual (material) dimensions, both of them affecting the receiving field; and (3) reception is a process that shapes the local field (e.g. curriculum design) by displacing local knowledge to a secondary role. By focusing on reception of foreign theories we can observe the entangled relationship between teaching, research and the organization of peripheral academic fields. In order to show how foreign knowledge has affected curriculum design and peripheral knowledge production, the reception of Luhmann's theory will be studied through in-depth interviews with scholars in Mexico and Chile who were responsible for translating Luhmann's works and organizing conferences and journals' special issues about the German sociologist. Those interviews will help us observe the material dimension of reception as well as framing this theoretical contribution in relation to local social and political theories. Interviews will be complemented by textual analysis of Luhmann's theory of society, trying to identify its pertinence to understand Latin American societies.

Occupational Therapy and the productivist way of life: contributions to creating lines of flight. *Elizabeth Maria Freire de Araújo Lima, University of São Paulo*

Occupational Therapy (OT) is a domain in the field of disciplinary practices, related to what Foucault (1999) called biopolitic. Its principle of occupation, according to Soares (1991), was the maintenance or recover of the productive ability, shaping and preparing bodies and lives to join the capitalist world of work. M. Iwama (2003) argues that OT continues to develop into an international movement based on Western modes of thought and living, based on the centrality of production to human life and health. In Latin American, because of its social and political circumstances, practices and theorization on OT opened a growing debate (GALHEIGO, 2010), what led to the questioning of the hole of human activities in health production in the context of the Integrated World Capitalism (IWC). Accordingo to Félix Guattari (2000), in the IWC, human activities have been captured by the logic of values based on profit, on exploration of all existing resources and on general equivalence. Between the human activity that increases potency of life and produce health and the human activity that threatens the life itself, there is a game. If the human activity is responsible for alterations in the life of the planet never witnessed before, it will also be in the core of a transformation in the ways of living, relating and inhabiting which make life possible. This implies a reconfiguration of the relations among capital, human activities and means of production of subjectivity related to systems of value located at the root of productive assemblages.

The leeway for construction offered American laptops in Nigeria. *Lars Bo Andersen, Aarhus University*

In 2005 a group of American researchers from MIT launched the One Laptop per Child (OLPC) initiative. The initiative ambitiously aimed at equipping every (poor) child with a laptop so as to empower them educationally, politically, and socially in the information society. To this end OLPC designed a laptop based on research from the MIT Media Lab. The pedagogical work of Seymour Papert and Alan Kay was translated into software for learning while Nicholas Negroponte's work on the information society helped guide principles of design and deployment. As such, the laptops were shipped with not only bits and bytes, but also with a certain view on technology, education, and future society. Although originally targeting countries such as Nigeria, the vast majority of these laptops ended up in Latin America. Most notably in Peru and Uruguay. A small portion,

however, did end up in Nigeria through a collaborative effort by Danish and Nigerian actors. This paper illustrates how, contrary to common belief, these laptops did not arrive as ready-to-implement materialisations of MIT research. Using multi-sited ethnography and Actor-Network Theory I have followed the Nigerian project, observed how the laptops arrived in a fragile state, stripped of most MIT heritage, and had to fight for existence within a certain 'leeway for construction' offered to them by non-MIT actors. And since the laptops did not manoeuvre well within this leeway, they remained semi-stabilised, only partially constructed, and as such threatened on their continued Nigerian existence.

Taking a 'Southern Mindset' Seriously: New Directions for Studies of National Innovation Systems. *Pierre Delvenne, Université de Liège (SPIRAL)*; *François Thoreau, University of Liège*

In this paper, we engage with the widespread and influential approach of National Innovation Systems (NIS). We discuss its adequacy to non-OECD countries, especially in Latin America where it tends to be reified. Although the NIS approach is meant toaddress the most pressing needs of the economies it applies to, we argue that it would benefit from developing a more encompassing scope, which allow for integrating greater diversity and complexity. By retracing the history of regimes of science, technology and innovation in Latin America, we explore the following paradox: whereas numerous Southern scholars urge the pressing need to develop an innovation agenda for Southern countries with a "Southern mindset", they continue to heavily rely on a reductionist version of the NIS-approach that prevents such a "Southern perspective" to fully emerge. This has some impact on the actors willing to use NIS more reflexively, while it also affects the efficience of science, technology and innovation (STI) policies in non-OECD countries. There are many ways to avoid such a pitfall. We formulate a research agenda that includes three suggestions for further engaging NIS both conceptually and practically, each of them enabling distinctive contributions to the field. Using analytical perspectives such as world-system analysis, postcolonial STS and postdevelopmentality, we argue, might benefit both to scholarly work about NIS, but could also allow for a better articulation with STI regimes in Southern countries.

Western scientific circumscriptions and freedoms of action in Latin America. *Ivan da Costa Marques, Universidade Federal do Rio de Janeiro*

Steven Shapin underlines the metonymic character of the relationship that makes "that to which scientists naturally have, or have worked to secure, effective access … to stand for that to which they cannot, or do not yet, have access." The West produces immense parades of scientific claims. Scientific claims achieve credibility in a process in which Western laboratories and centers of calculus have the last say, since usually the 'Rest of the world' lacks the resources to build the counter-laboratories that are necessary to raise and enact scientific controversies. Once they achieve credibility, scientific claims start to "act as a shorthand for the natural world and we forget, or are obliged to ignore, the defeasible metonymic relationship and accept the claims as simply corresponding to the real states of affairs that are their reference and their point." (Shapin, 2010:23). To take a stand that is strange to scientists or adverse to scientific claims hence becomes equivalent to taking a stand against "reality." Such a stand becomes a non-sense since the life-world is regarded as framed by scientific claims and references. The final result is that local knowledge, if it fails to be palatable to scientists, is discarded in a space of worthlessness. I present some disparate examples of lines of flight Latin Americans find to get away from the ontological and political circumscriptions of Western scientific frames of reference: math student and complaining teacher; poor woman – what are you going to do

with the prize?; "native" workers at the factory; computer cloning in the 1970s; multi-mixture nutritional activism.

149. Models and modelling - II
11:00 to 12:30 pm
Kilen: K146
Chairs:
   Mette N Svendsen, University of Copenhagen
   Carrie Friese, London School of Economics and Political Science
Participants:

Wireless patients and their doubles. *Julie Christina Grew, University of Copenhagen*

Telecare technologies that are used for monitoring patients with chronic diseases create what has been referred to as 'the wireless patient' (May et al. 2005). In Denmark all patients with an implantable cardiac defibrillator (ICD) are connected wirelessly to the clinic. The device in their chest stores and transmits data via a home monitoring box to a remote database accessible to clinicians. Patients and clinicians, devices and humans, the home and the hospital are linked and form a wireless network. Based on ethnographic fieldwork in two Danish hospitals this paper explores the configuration of 'the wireless ICD patient'. By following a number of patients through hospitalization, implantation, in-clinic follow-ups, and wireless home monitoring it is shown that the ICD patient is done in multiple ways: A number of doubles are being created as part of the configuration of the wireless ICD patient. These doubles are not just passive copies, but models that stand in for the patient, simulating the embodied, biographical patient in clinical interactions. The clinical encounters maintain a notion of the original authentic patient and several doubles, yet what appears as the authentic patient shifts: In some practices authenticity appears in the person standing in front of the clinician, in others authenticity appears in the ICD. This paper will address the confusions and complexities associated with the wireless patient. It will point out how wirelessness contests the notion of the patient as an embodied, biographical person and simultaneously reproduces a notion of patient authenticity.

"Efficiency," "Fit," and the Clinical "Real" in Standardized Patient Scenarios. *Janelle S. Taylor, University of Washington*

This paper examines how considerations of educational "efficiency" and "fit" intersect with considerations of "realism," in the scripting and development of scenarios to be performed by "standardized patients" (SPs). SPs are people hired to portray patients in staged clinical encounters with health professions students. In recent years, educational institutions charged with training health professionals (doctors, nurses, dentists, pharmacists, physical therapists, etc) have come to rely more and more on SP performances – and less and less on "bedside teaching" – in teaching and assessing clinical skills. This new emphasis on SP performances raises important questions concerning how these performances model the clinical "real." In this paper I draw upon ethnographic interviews to describe how the scenarios that SPs perform get scripted and developed. The people involved in making these scenarios share a commitment to the idea that they should be "realistic." When they go about making them, however, they begin not with questions about representation, but with questions about pedagogy. They begin by identifying the learning goals, as well as the knowledge-base expected of the students who will take part. Not only should SP scenarios "realistically" model clinical reality, in other words, but they should present that reality to students in measured ways that are carefully tailored to their educational trajectory. Each SP scenario (ideally) presents students with conditions and situations from which they can learn something new, that fits well into their

course of training – building upon what came before, leading up to what came after. This concern for pedagogy excludes certain kinds of frustrations endemic to "bedside teaching," and well documented in ethnographies of medical education from decades past – including, notably, the frustration of dealing difficult patients (referred to by students as "crocks"). In this paper, I query how representational "realism" interacts with pedagogical considerations of "efficiency" and "fit," in the development of SP scenarios. Specifically, I wish to ask: is anything important or valuable potentially lost, when SP scenarios as models of the clinical "real" are shaped by considerations of "efficiency" and "fit"?

Mid-nineteenth century healing electricity: redesigning nature through the medical body. *Christian Carletti, Sphere, CNRS - University Paris Diderot 7*

What type of interactions between experimental practices, business ambitions and social expectations justified research on electricity during the mid-nineteenth century and contributed to its continuous epistemological re-definition and determined its ascent and finally its success? In order to answer this question this paper will focus on the human body, which ever since the discovery of electromagnetism was perceived as permeated by new electric currents. These currents were 'revealed' by physicists, studied by medical experimentalists in their relationship with physiology, and applied to patients by means of machines made by technicians and used by skilled medical electricians. The relationships among these several actors will be faced by focusing on the debate on the role played by electricity for medical purposes. In particular, the phenomenon of the muscular contraction induced by the electrical stimulation of a motor nerve, which dated back to Haller and Galvani, became crucial once more in the mid-nineteenth century, triggering an international controversy. In this debate the body becomes a field where physics, physiology and healing practices interact. Electricity, on the other hand, does not appear as an anonymous object of the physical world anymore: on the contrary, it is seen as something slowly being taken apart and then put back together, as the consequence of a dialectic process between the human machine described by the experimental medicine and the electrical machine improved by ever more specialized technicians.

Designing Health Care: Early Telemedicine and the US Health Care System. *William Arthur Craige, Durham University*

Telemedicine – most broadly defined as the use of telecommunications technology in health care delivery (Conrath et al. 1983) – first began to emerge in its modern form in the USA in the 1950s and 60s, but it was not until the early 1990s that telemedicine truly 'took off' as an important element of health care planning and research. This paper, derived from an on-going research project and grounded in Actor-Network Theory, draws upon research publications, archival data and interviews with early telemedicine developers to construct an account of the early development of telemedicine, with a specific focus on the importance of design. In particular, it will be argued that the design of early telemedicine systems was closely related to conceptions of how the health care system in the US was - and should be - designed. While one version of telemedicine was conceptualised as being integrated into the existing health care system without engendering significant changes, an alternative conception placed telemedicine at the centre of a radical reorganisation of health care delivery along rationalised lines. In examining this early period of telemedicine's development, this paper contributes to the existing scholarly work on telemedicine which, in the social sciences, has focused primarily on the post 1990 period.

Discussants:

Jacob Metcalf, University of California, Santa Cruz
Andreas Roepstorff, CFIN

150. From here to eternity: Socio-technical challenges to managing radioactive waste for the long term

11:00 to 12:30 pm
Kilen: K150

Countries around the world that have nuclear programmes have growing inventories of long-lived higher activity wastes; with the prospect, in some, of further expansion due to the decommissioning of nuclear facilities or the construction of new nuclear power stations. These wastes are currently stored in especially designed bunkers, but the real challenge lies in maintaining a safe management of these wastes for an inestimably long period of time. International organisations such as the IAEA or the OECD's NEA have long considered geological disposal to be the solution to this problem, and many countries today are committed to geological disposal, either as an explicitly adopted policy choice, or as a result of decades of dedicated research into this particular option. Despite a history of controversy and conflict, some of these countries today are close to implementing geological disposal, after changes in approach to policy implementation (and even to its formulation) have restarted stalled siting programmes and transformed deadlock into dialogue and even into consent. Where this may be seen by the nuclear sector as the end point to the societal challenge of finding a place to implement its preferred solution, leaving only manageable technical challenges, from the perspective of science and technology studies the challenges ahead remain significant and inherently socio-technical in nature. The papers in this session examine some of these socio-technical challenges, both in specific national contexts and in comparative perspective, to contribute to a critical understanding of long-term radioactive waste management and geological disposal as policy and practice.

Chair:

Anne Bergmans, University of Antwerp

Participants:

Socio-technical challenges to geological disposal: insights from a comparative review of 14 national contexts and an agenda for research. *Peter Simmons, University of East Anglia; Catharina Landstrom, University of East Anglia; Anne Bergmans, University of Antwerp*

Many nations with established nuclear energy programmes are currently investigating, and in some cases implementing, programmes for the disposal of higher activity radioactive wastes in deep geological formations. Such programmes have aroused controversy and even conflict in many of these countries, which has led in many cases to the adoption of alternative strategies, including the use of volunteerism, participatory decision processes and community benefits. Viewing long-term radioactive waste management as a socio-technical process turns analytical attention to the ways in which 'societal boundary conditions' (including public concerns, but also, for example, political and economic constraints) are related to its environmental, technical and regulatory boundary conditions and even to specific aspects of geological disposal facility design and development. This paper will explore these issues by drawing upon a review of socio-technical challenges faced by long-term management of higher activity radioactive wastes in 14 national contexts. The paper highlights some of the most significant challenges, using these to examine the ways in which social and technical processes are entangled or coproduced. By the application of a socio-technical perspective the paper aims to contribute to a critical understanding of long-term radioactive waste management and geological disposal as policy and practice, and to propose an agenda for further research.

Conflictual issues in nuclear waste disposal as discussed in major print-media in Germany and Switzerland –the development of a societal problem, 2001-2010. *Sophie Kuppler, Karlsruhe Institute of Technology*

Both in Germany and Switzerland, governments attempt to

manage the conflict on nuclear waste management (NWM) by organising dialogic events. The aim of these events is for the public to enter into dialogue with experts and politicians responsible for selecting and building a nuclear waste disposal site. Experience from past attempts to build such a repository in Germany suggest that in order to mitigate the social conflict, it is not sufficient to organize such events, but the conflict lines, which structure the debate, need to be understood as well. This means that the broader societal debate, not limited to participants and stakeholders, needs to be observed. In order to capture this debate, the media reports on NWM are a good proxy. The media have gained increasing importance in policy making as they serve as an agent passing topics and meanings between those in political power and the public. Topics discussed in the media are thus likely to gain attention from both politicians and the public and hence play a crucial part in the public conflict. In this paper, a qualitative and quantitative analysis of media coverage of issues related to NWM in Germany and Switzerland will be presented. The analysis covers two major newspapers per country over a period of ten years each (2001-2010). The starting point of the analysis corresponds with the time, when dialogic events started to gain increasing importance both in Germany and Switzerland. As a result, an analysis of how the topics discussed in the public and the persons involved in the discussions have changed over the years and what the implications are for nuclear waste policy making will be presented

Social learning and confidence in long-term radioactive waste management: the safety case and double loop learning.
Bettina Brohmann, Oeko-Institut; *Beate Kallenbach, Oeko-Institut*; *Anne Minhans, Oeko-Institut*

Behaviour is shaped by existing infrastructures, institutions, social norms and structures. For changes in behaviours to last –at the individual or the institutional level - they need to be supported by their environment. In other words, change that does not 'fit' with these broader systemic dimensions is difficult to sustain and spread. Social learning here is seen as "necessarily social and political and entailing institutional change" with an emphasis on "negotiation and interaction among a wide range of actors, subject to conflicts and differences of interest and power" (Russell and Williams, 2002). In the context of long-term radioactive waste management, within a safety case regime which includes social criteria, different levels of social learning may be identified. The paper will discuss examples of planning and management situations where 'double loop learning' (Argyris & Schön, 1974) is crucial to build and sustain confidence in long-term safety and in organisational and institutional structures. In particular it examines the regulatory safety case as a 'living document' and tool that should support the regular updating and optimization of knowledge about and safety of a geological disposal project. The paper demonstrates how such an optimization process over the long period from planning to closure of a repository affords special learning techniques that support: transfer of knowledge over generations; adaption of the project to new findings in the different stages of the project; adaption of the project and of safety assessments to new requirements due to societal demands, international experience, progress in the state-of-the-art in science and technology, etc.

The making and sustaining of stakeholders and democratic closure in nuclear waste management. *Linda Soneryd, Score (Stockholm Centre for Organizational Research)*

In recent years, public participation has become a yardstick for the quality and legitimacy of governance across a number of policy domains, and nuclear waste management is not an exception. The importance of stakeholder involvement for a successful siting process is today widely recognised. The starting point for this paper is the assumption that engaging stakeholders in planning and decision-making involves the active shaping of participants as stakeholders, that is, making participants realise their stakes and interests in a given issue as well as maintaining stakeholder identities through-out the process. The focus of this paper is on the one hand the 'soft technologies' (the involved expertise, models of communication etc.) that are used in order to make and sustain stakeholders in nuclear waste management in Sweden, and on the other hand how such soft technologies interact with 'hard technologies' and particular methods for nuclear waste siting. The socio-technical challenges that emerge in this interaction will be discussed in relation to long-term perspectives in two ways. First, the planning process itself is usually stretched out in time, for example in the case of the Swedish planning process for finding a solution for a final storage of nuclear waste has been going on for more than 30 years, which may result in particular challenges to adapt the participation technologies involved to different phases of the process. Secondly the idea that stakeholder involvement also meets democratic ideals potentially collides with other ideas that underpin nuclear waste management, the idea of the nuclear waste storage to be a final solution to the waste problem, for example. After closure the facility for storing the waste is expected to be safe for an indefinite time and without surveillance. This is often an argument put forward in terms of taking future generations into consideration, but it is more seldom discussed in terms of 'democratic closure'. Another socio-technical challenge related to stakeholder involvement in nuclear waste management is thus how far into the future stakeholder identities stretch and whether the closure of the facility also means the end of democratic discussions and stakeholder involvement.

Managing uncertainty: socio-technical challenges of geological disposal in Finland. *Anna Matilda Nurmi, University of Jyväskylä*; *Matti Kojo, University of Tampere, Finland*; *Tapio Litmanen, University of Jyväskylä, Finland*

Finland is one of few countries where geological disposal of spent nuclear fuel (SNF) is approaching the construction phase. The nuclear waste company Posiva will apply for a construction license for a repository for SNF in 2012 and the disposal of SNF is predicted to commence in 2020. Until now the timetable has been modified only once. Thus, the Finnish societal context seems to provide a very stable plinth for settling the back end of nuclear power. We argue that by focusing on the socio-technical order one can analyse why socio-technical challenges of geological disposal of SNF are tolerated in Finland. The objective of this paper is to indicate socio-technical challenges of geological disposal and to analyse the tolerance of uncertainty from the perspective of Finnish socio-technical order of SNF management. At a general level socio-technical order can be seen to consist of the most powerful actors from the industry, engineering, science, the public sector and a regulatory framework and the procedures in relation to SNF management. The paper is based on a previous study focused on socio-technical challenges of SNF management in Finland. The analysis of challenges is based on three different sets of data: 1) review of Finnish social-science literature on disposal of nuclear waste 2) selected statements for a Decision-in-Principle 3) six interviews with experts.

151. Deliberating Nordic science, reconfiguring Nordic democracy - II

11:00 to 12:30 pm
Kilen: K275
Chairs:
   Alison Cool, New York University
   Amelie Hoshor, University of Gothenburg
Participants:
   The Icelandic Database Project and Scientific Citizenship.

Vilhjálmur Árnason, University of Iceland

In sociological literature, scientific citizenship is sometimes depicted in such a way that its distinctive normative nature is lost. A good example of such analysis is Rose's and Novas' (2004) discussion of "biological citizenship" which describes citizen activity in terms that are characteristic of the consumer. They take the Icelandic project of a genetic population database as one example to demonstrate how the citizenry was transformed for the creation of biovalue. This is an interesting example of citizenship because of the strong willingness of the Icelandic people to participate in the project. While most critics approached the issue from a protective position, emphasizing the rights of individual participants to privacy and consent, the general public adopted a more communitarian position of benefit held by spokesmen of the company and majority of politicians. This included both the economic benefits associated with employment opportunities for well-educated scientists and the medical benefits that would be reaped from the project. In the language of Rose and Novas, most Icelandic citizens seem to have gone willingly and even enthusiastically into "the service of biovalue", hoping or even convinced that the project would generate both wealth and health. While this analysis is in many ways realistic, it is important to counteract it by a guiding vision of democratic citizenship. From the viewpoint of deliberative democracy, the Icelandic case shows both a lack of the major background conditions that enable people to exercise the capacities essential for scientific citizenship and the institutions necessary for public accountability.

Sensing the remote North: Satellite technology, science and state procurement. *Nina Wormbs, Royal Institute of Technology*

This project aims at investigating and analysing the efforts to survey and display the environment by means of remote sensing by satellites in Sweden in the period 1972-2000. Remote sensing has a long history but with the advent of satellites it became possible to cover vast amounts of the globe and get long time series; a new temporal and spatial resolution of the North was possible. The commercialization of the endeavour was difficult and only happened very late in the studied period. The need for environmental surveillance did not, contrary to what one might expect, provide a market for these kinds of services. Instead, it was housed within a state-owned company and remained part of national policy and state procurement and hence part of the official political system. Questions pertaining to the focus of the panel include the role of this technology development in relation to regional policy and development. Under what paradigm and with which arguments were remote sensing considered a state endeavour and how did this change over time? Were there conflicts regarding state involvement in this anonymous technology, or was this rather seen as a common good, much like roads or telecom and hence part of the welfare state? And finally, when eventually commercialized, was that process actually mirroring the on-going privatization or were there specific reasons?

Policy negotiation and argumentation in Finnish debates around energy technologies and green innovation. *Tuula Teräväinen, University of Helsinki*

Through an example of recent Finnish policy debate around energy technologies and green innovation, this paper discusses how certain historically constituted and culturally embedded modes of policy negotiation and argumentation shape and are shaped by national level politics. On the one hand, particular state orientations, in Finland the "technology-and-industry-know-best", with respective politico-institutional structures and historically developed modes of negotiation tend to define the boundaries, legitimate participants, and credible forms of argumentation in national policy debates. On the other hand, various actors contribute to shaping politics by employing

particular contextually embedded policy styles in specific questions and debates, thus having a formative influence in state orientations and discursive and politico-institutional structures. In the Nordic context, the traditions of the welfare state and the consensus-seeking policy orientation, combined with the more recent emphasis on the knowledge-based economy and green technology, have importantly shaped national politics. Yet country-specific politico-economic and historic-cultural features imply that the model of Nordic social democracy might provide an insufficient understanding of the functioning of democratic politics across countries and policy sectors. Building on constructionist neo-institutionalism, discourse theory and the agonistic conceptualisation of democracy, this paper addresses this problematic from a Finnish perspective. It discusses the basis of legitimacy for various arguments and forms of knowledge production concerning green technology as shaped by Finnish historic-political trajectory and science-society interplay, and provides insights into a broader sociological debate concerning the mutually constitutive relationship between politics and polities.

Discussant:

Kristin Asdal, Centre for technology, innovation and culture (TIK), University of Oslo

152. (05) Designing global health technologies in the Global South - II

11:00 to 12:30 pm
Kilen: Ks43
Chairs:

Norman Schräpel, Institute of Anthropology and Philosophy, MLU Halle-Wittenberg
Richard Rottenburg, MPI Social Anthropology/University of Halle

Participants:

Contested knowledge: medicine and law in postcolonial Korea. *EunJeong Ma, Pohang University of Science and Technology*

Ever since Western knowledge was introduced into Korea in the late nineteenth century, through Christian missionaries and through Japanese colonial agents, two systems of knowledge have periodically clashed in public spheres. The tension between western knowledge and traditional knowledge became intense, in particular, in the terrain of medicine in postcolonial Korea. As the new Korean government amended colonial legal systems, traditional Oriental medicine (OM) and Western biomedicine (WM) were under the purview of policymakers. Practitioners of both medical blocs struggled to inscribe their medical and scientific expertise into public policies. They strongly associated their knowledge systems with the ideals of emergent civil democracy in order to gain political, social, and epistemic power in the public arena. They explicitly and implicitly invoked colonial experience, and emphasized the sustained presence of OM as standing evidence of "national medicine"—a Korean cultural institution that survived Japanese rule. The WM side, shored up by policy makers and lawmaking legislators, invoked the ideal of value-free, objective science to channel their medical and pharmaceutical authority into institutional reasoning for regulatory agencies. Such discursive "remembering" is no less important than "actually happening," since such remembrance of the past is an expression of present-day concerns. Accordingly, this paper reconstructs postcolonial medicine through the intermediary of medical practitioners' recollections of OM and WM and discusses the ways in which global North and South issues are intertwined and unfolded in the postcolonial naion-building processes.

Constituting cancer genetics, public health and clinical need in

Brazil. *Sahra Gibbon, University College London*

Over the last ten years cancer genetics has become an integral part of public/private health care in many Euro-American societies. The incorporation of genetic testing for the two breast cancer susceptibility genes BRCA1 and 2 as a 'standard of care' for those at 'high risk' of developing the disease is just one illustration of the work of standardization that is making some genetic technologies routinized aspects of health care delivery in many national arenas. The growing crisis of cancer in resource poor contexts in the Global South raises political and ethical questions about how and which technologies should be made available as part of public health interventions. This paper draws on ethnographic research in Southern Brazil examining the nascent field of oncogenetics working with and alongside patients, families and health care practitioners. It illustrates how the politics of (genomic) health are being negotiated in relation to technological imperatives associated with transnational cancer genetic research attuned to population difference and regional socioeconomic disparities that reflect a lack of basic health care for large numbers of the population. It reflects on the way different ethical, social and political concerns and agendas are mobilised in efforts to incorporate cancer genetics or to contest its utility in developing country contexts such as Brazil.

Health promoting improved cookstoves: Co-creation in the Global South. *Signe Pedersen, DTU Management Engineering*; *Rikke Premer Petersen, Aalborg University Copenhagen*

As stated in the session proposal the user in the Global South is often perceived as a passive recipient of science and technology from the West. We see the same general tendencies within STS. This paper addresses the question of how to develop technologies with an actor-inclusive design-approach. Using a co-creation inspired methodology with the design process at the center of attention we have worked with the development of a health promoting improved cookstove for rural women in Nepal. Inviting various actors such as users, family leaders, local NGOs and even governing bodies into the design process we have taken a step towards braking with the notion of the passive recipient. Our approach applies ethnographic methods and deep dialogue interviews with props to understand the culture and cooking practices and in collaboration turn these insights into a new stove concept. Our empirical findings have unfolded inscriptions in existing improved cookstove and uncovered clashes with traditional cooking practices in Nepal. For example so-called solar cookers are problematic when introduced in areas where the daily meals are traditionally cooked at times where the sun is not present. We claim that it is crucial to ensure that the inscribed features of a new technology do not work against the practice in which it will take part, but rather build on it. In this paper we argue that actively involving the actors from the Global South may result in development of more locally anchored technologies, breaking with the STS perception of the passive recipient.

Globalizing Quality – exploring Danish "Pratical Diabetology" at work in Indonesia. *Annegrete Juul Nielsen, University of Copenhagen*; *Henriette Langstrup, University of Copenhagen*

Tackling chronic conditions has in the recent years been framed as equally a local and global challenge. In the context of Danish innovation discourse, the global dimension of this challenge has been translated into a local export opportunity for service innovation and welfare technologies. This discourse follows a well-known narrative in which the South is the recipient of (medical) innovations produced in the North. In this paper we will develop a conceptual and methodological approach to the study of medical innovation that will enable an exploration of "localizing" and "globalizing" of chronic diseases and medical innovation without predefining the location or scale of possible

effects. The case addressed concerns a Danish developed quality assurance tool for diabetes treatment implemented in Indonesian clinics. This tool is developed by experienced Danish physicians and has been promoted as a modest innovation that may export knowledge of "Practical Diabetology" to developing nations experiencing an increasing burden of chronic diseases. Following the establishment of connections between Indonesian physicians, pharmaceuticals, Indonesian government agencies, computers, daily practice, clinical evidence, Danish innovation policies, and Danish welfare, we want to place our study "…in the interstitial zone of collaboration and friction" that characterizes the building of infrastructures (Winthereik & Jensen, forthcoming). By conceptualizing the health innovation as infrastructures, that at any given moment in time connects a number of distributed and heterogeneous actors, rather than as discrete technology, we want to provide ourselves with the opportunity to identify transformations that may take place at any point in the assemblage.

153. (90) The social life of organization theory - II

11:00 to 12:30 pm
Kilen: Ks48
Chairs:

Signe Vikkelsø, Copenhagen Business School
Karen Boll, Copenhagen Business School
Paul du Gay, Copenhagen Business School

Participants:

Set your creative forces free! The liberated body as a hybrid managerial tool. *Bent Meier Sørensen, Copenhagen Business School*; *Kaspar Villadsen, Copenhagen Business School*

Critical studies of new forms of flexible, delegating and even artistic forms of management demonstrate how power relations between employees and management do not dissolve but rather re-configure. This paper addresses this problematic by exploring how an artistic form of allegedly 'non-hierarchical' and aestheticized managerial practice reconfigures power relations within a creative industry. The key problematic is 'governmental' in the sense suggested by Michel Foucault in as far as the manager's ethical self-practice—which involves expressive and 'liberated' bodily comportment—is used as a means for culture management in the company. Critical management studies indebted to Foucault have largely examined the problem of government through ethical self-practice by studying managerial technologies and programs evident in textual documents or, to a lesser extent, architectural arrangements. The analysis in this study exploits a much more rarely used potential in CMS by placing the managerial body centre stage in the analysis, observing it as 'a discursive statement' in its own right. Empirically, this is done via an analysis of video material produced by the film company Zentropa about their apparently eccentric Managing Director. At first glance the essential message to the employees may be read as 'set Your creative forces and potentials free!; a statement which activates a semantics of liberation of artistic creativeness and rebellious transgression of conventions. It is suggested, however, that the manager's bodily comportment activate and oscillates between a more complex web of managerial rationalities including sovereignty, discipline and pastoral care. It is further suggested that this managerial hybridity renders difficult, or even closes off, conventional forms of contestation and resistance against managerial authority.

A non foundational study of organizing devices in nascent companies. *Juan Felipe ESPINOSA CRISTIA, 447551592160*

The paper looks for a contribution to the important STS group of literature about 'devices' (Muniesa, 2007, Jensen 2010). As has

been shown, devices act as instruments and practices that transform their heterogeneous network and compose a future based on the alignment of the actors and their domains. So within the develop of this paper, objects like diagrams of potential distribution channels, spreadsheets of total cost estimations and the specification hierarchy of a new product are being studied as a set of particular devices that participate in the collective creation of people accounts and the future of organizations. The empirical data comes from a group of sites: a Chilean biotechnology company and two medical devices companies located in West Midlands of UK. What these sites have in common is the condition of novelty of the technologies/products and the organizations. The author uses an ethnographic 'mindset' approach and follows a non foundational point of view, scrutinizing the construction of the founding premises of organizational theory. The observed 'organizing devices' are arranging and connecting the heterogeneous network of objects that permits the management of the novelty in those organizations. Furthermore, some of these devices are 'virtual objects" therefore contain 'all the differences as real potentials' and brings organizational theory to the practice.

Tensions and contradictions of the concept of organization as applied to universities: the case of USP-east. *Maria Caramez Carlotto, Universidade de São Paulo*; *Sylvia Gemignani Garcia, Universidade de São Paulo*

The establishment of a new campus by the University of São Paulo in a peripheral area of São Paulo city, Brazil, is analyzed as an empirical case of the tensions between the organizational conception and the institutional particularities of the university, revealing the internal contradictions of the concept of 'organization' as applied to universities. Based on this, we explain the conflicts that opposed university professors and leaders during the implementation of a school created to promote the local socioeconomic development. The case also shows the influence of the Brazilian political culture on shaping the globalizing process of academic change. The case study is empirically based on: (a) fifteen in-depth interviews; (b) the minutes of the Central Council of USP; (c) USP reports and opinion reports and (d) USP-East academic and administrative documents. A critical documentary analysis of official papers was mobilized to reconstruct the factual history of the USP-East project. The interviews were made to access the categories and perceptions of the main actors involved in the clash, notably USP-East professors and leaders. Our objective is to offer a case study from Brazil analyzing a clash where the university's social engagement initiative is undertaken in the context of organizational reform . We investigate the implementation of a new campus of University of São Paulo (USP) in a peripheral area of the city as an empirical case highlighting the contradictions between the modern organization concept and the academic institution. In analyzing this tension, we intend to reveal both the theoretical problems and practical difficulties implied in the contemporary global reforms that postulate the organization concept as an ideal for university functioning. By doing that, we demonstrate how the core characteristics of the organizational idea, when applied to the university, can collide, highlighting an internal contradiction – and, in this case, inconsistency – within the abstract ideal of the modern organization.

Socio-technical standards and the notion of patient-centred care. *Laura Lippert, Research Unit of General Practice, KU*

A wide range of organization scholars have taken a critical stance towards technical management ambitions to achieve control through measurements. In a number of theoretical and empirical contributions the case has been made that health care performance measuring technologies may produce a narrow focus in practitioners on compliance with technical (biomedical) aspects while diverting attention from interpersonal aspects of care. Along that line, the implementation of a new electronic

quality assessment technology in general practice in Denmark has caused concern that pressure to improve performance according to standardized measures might result in the sacrifice of patient-centeredness. Attempts to avoid that effect have comprised the inclusion of electronic reminders regarding patient-communication. Preliminary findings from a qualitative study following nine general practices indicate that patient-centeredness is, indeed, affected during consultations guided by the technology. No unequivocal relation has been found, however, between the degree of patient-centeredness and an increased focus on biomedical aspects. Rather, decreased attention to patients as individuals appears to be linked to those elements of the technology that integrate interpersonal aspects of consultations in the standardized scheme. Against that background, the paper discusses whether – and, if so, how – the introduction of standardized performance measurement in general practice is likely to alter general understandings of what patient-centred care should be taken to mean. Furthermore, the paper addresses the question of how current academic understandings of human communication as a socio-technical activity might have affected the design of the technology, and how such effects be expressed at the level of consultation.

The Inquiry into the Interactive Relationship between Bureaucracy and ICT (Information and Communication Technlogy). *Wanki Paik, The National Academy of Sciences, Republic of korea*; *Seoyong Kim, Ajou University*

This paper examined the relationship between bureaucracy and ICT (information and communication technology). As ICT has developed, it has not only changed all of people's life but also enhanced organizational effectiveness. Even if there were lots of researches which analyzed the ICT's impact on organization in private sector, there were few studies in public sectors. Therefore, our studies will focus on the interactive relationships between bureaucracy and ICT in public organization. First, we will analyze how bureaucratic characteristics--- such as hierarchy (Hierarchy of Authority), professionalism (Technically competent participants), and red tape (Procedural devices for work situation or rule governing behavior of positional incumbent), which concepts have been discussed by Max Weber, Carl Friedrich, Robert Merton --- have impact on information system's utilization and its effectiveness related with reducing the time for work and enhancing the quality of decision making. Second, we will analyze how ICT influences the bureaucracy which concerns with hierarchy, red tape and sectarianism. The analytic model will include, as independent variables, not only information system's factors but also individual user's attributes which include technology user's motivation, ability and demographic characteristics. Our analysis will be based on the survey data collected from civil service officers. We expect that our research will contribute to specifying the interactive dynamics between bureaucracy and ICT.

154. (13) STS and the socio-material constitution of later life - II

11:00 to 12:30 pm
Kilen: Ks54
Chairs:
Alexander Peine, Utrecht University
Alex Faulkner, King's College London
Birgit Jaeger, Roskilde University
Ellen Moors, Innovation Studies, Copernicus Institute, Utrecht University, NL
Participants:

Engineering the Fitness of Older Cancer Patients for Chemotherapy. *Peta S Cook, University of Tasmania, School of Sociology and Social Work*; *Alexandra McCarthy,*

Cancer Services Southern Clinical Network; Queensland University of Technology, School of Nursing and Midwifery; Patsy Yates, Queensland University of Technology, School of Nursing

Cancer is primarily a disease of the elderly—the older the person, the greater their risk of developing cancer. These patients have the same right to access cancer treatments as younger people, however, little is known about the best way to assess their suitability for chemotherapy treatment. One potential process of assessing the ability of older patients to cope with, and benefit from chemotherapy, is a Comprehensive Geriatric Assessment (CGA). What constitutes CGA, is open to interpretation and the precise form varies from one context to another. Furthermore, CGA's usefulness as a predictor of fitness for chemotherapy and a determinant of actual treatment is not well understood. CGA was recently trialled in a large cancer service in a major hospital in an Australian capital city. One to two hour interviews were conducted with a range of medical staff involved with the project, as well as five patients enrolled in the trial. The aim of the trial was to qualitatively determine what a model of care incorporating CGA might look like and how it might work if it was embedded as routine practice within this cancer facility. Drawing upon actor-network theory, our findings reveal how CGA, through its design and use, is made a tool and science. Our study provides an improved understanding of the role and operation of CGA, including the subject-object multiplicity of 'fitness for chemotherapy', and sheds light on how older patients with cancer can be best supported.

Futures of Alzheimer's Disease and early diagnostics: comparing two anticipatory practices. *Yvonne Cuijpers, Utrecht University; Harro Van Lente, University Utrecht; Ellen Moors, Innovation Studies, Copernicus Institute, Utrecht University, NL; Anna Laura Van der Laan, Twente University*

Western societies are aging and with the rising number of aging persons, the prevalence of Alzheimer's Disease is becoming an increasingly important phenomenon. Early diagnostics is one of the promising domains of biomedical research on AD. Foresight and TA offers formal methods for governance of innovation, but are always part of ongoing fragmented and pluralistic anticipation processes. We compare and contrast two cases of assessment of early diagnostics for Alzheimer's Disease. First, we consider a highly formalized assessment process, Health Technology Assessment, and investigate how it constructs futures of AD and how it delineates the role of early diagnostics. Second, we consider a form of informal technology assessment which is taking place in informal meetings of patients, caregivers and local professionals. In both cases we systematically investigate the following questions: (i) how is AD conceptualized? (ii) what futures of AD are addressed? (iii) what is the role of early diagnostics in future of AD? In both assessment practices Alzheimer's Disease has multiple meanings. In addition, multiple generic storylines about future ways of dealing with AD appear to be available. We discuss how participants in assessment practices draw from generic storylines to propose specific futures and to constitute different meanings of early diagnostic instruments for AD. Concluding, we discuss how these local practices are related to the broader societal context of AD. In particular, we consider how learning takes place within the two assessment practices and how this diffuses to other settings, such as policy making and professional health care.

Experiencing aging through ICT. *Tiina Helena Suopajärvi, University of Oulu*

The concepts of old and aging are embedded in socio-cultural practices. The way society defines 'elderly' affects the individual experiences, but nevertheless, how individuals experience their own age and aging varies. In intensely digitalising societies, like in Finland where my study is located, the digital literacy affects especially the oldest citizens if they feel incapable of learning, or refuse to learn, the computing skills. Though on the infrastructural level all citizens might have access to the Internet, and thus to public and private e-services, both the economic and social structures might prevent elderly citizens from utilizing them, and therefore put them in danger of marginalization. In my presentation I'll discuss the ways the aging citizens, i.e. people over 65 years, experience their own age and aging through ICT by analyzing the interviews I've made with the elderly citizens of Oulu. In these ICT biographies people talk about the histories of, as well as their current mobile phone and computer usage, but also their perceptions on the information society and the ubiquitous spaces they occupy. Aging and ICT are tightly entangled in these narratives, but I will also discuss the other intra-actions (Barad 2007) taking place in them: how does, for example, gender performances, educational and occupational backgrounds, social relationships, and mundane mobility come into being in these entanglements? Do elderly citizens consider ICT as an agent in their lives which, for example, affects their sense of privacy and self-determination (Suchman 2007); and what kind of sociomaterial realities they live in?

Participatory Technology Development for the Elderly: The Odd Phenomenon of Bending User-Expertise into a Non-User-Orientated Engineering-Resource. *Diego Compagna, University of Duisburg-Essen, Faculty of Social Sciences*

The Scenario-Based Design as an instrument for participatory technology development – according to the euphoric descriptions in the literature (e.g. Carroll 1995; Rosson/Carroll 2003) – at first sight offers significant potential for an early inclusion of future users. In the course of a three-year research project this method has been examined as a procedure for a participatory technology development (the application of two service robots in a station-ary care facility for the elderly). In the process, particularly two predetermined breaking points became visible, which, in respect of both the scenario development and the role of the users during the pilot applications, infiltrated the ambitious aims of the procedure: The technical limitation and the scenarios' 'independent existence' lead to an imbalance in fa-vour of the designers' interests and orientations during the scenario modelling, whereas the pilot applications are marked by the purpose of a user configuration rather than a tech-nical adaptation to the social context. The particular significance of the scenarios can be described as 'Obligatory Passage Points' (Callon 2006): they represent constitutive hubs in the network formation of the innovation programme. Likewise, unintended phenome-nons and those which impede the intention of a demand-orientated technology develop-ment are identifiable. The social scientists and designers fostering the exchange are trans-lated by the dominant programme of the efficacious and authoritative scenarios, whereas the potential users (senior citizens in a nursing facility) are being reconfigured (Woolgar 1991) and will join the process as 'border crosser' (Bowker/Star 1999; Suchmann 2007).

The elderly women farmers who outwit preconceived ideas of aging. *Yasuko Kawatoko, Daito Bunka University*

Aging is to be an autonomous device that works for human beings to enjoy life with other people or nature in a lovely way, just like eating, talking, sleeping, and so on. As human beings are put under a commodity economy, aging is transformed into a "need" that ends up by being a commodity. 'Aging' is now socio-materially constructed as the "problematic" life stage with the decline in health, increasing dependency, and loss of productivity. In this paper I try to produce counterevidence against the "problematic" aging, and explore the possibilities for our 'convivial' later life. Through the ethnographic research of the participatory observation and interviews, I describe the life of old women farmers in a mountainous village who engage in agriculture in conjunction with ICT, and manage profit-earning

works. Their average age is over 75. Each farmer picks leaves from her growing trees and flowers in her farmland, packs the leaves, and sends them to the market. The quality of produce or the amount shipped is managed by ICT, and each of the farmers needs to communicate with the ICT managers about evaluations of her work or market trends. I show that there is a connection between purpose in life and placing importance on crops for shipping or getting a positive evaluation for one's produce in the context of being engaged in agriculture with pioneering use of ICT. I argue that what is 'convivial' life for the elderly, and under what kind of socio-technical arrangements it can be performed.

155. (26) Future energy infrastructures: aspects of design and resilience - II

11:00 to 12:30 pm
Kilen: Floor Ground floor - Ks71

Chair:

Gerhard Fuchs, University of Stuttgart

Participants:

Contested rivers: Dam(n) policymaking in China. *Louise Lyngfeldt Gorm Hansen, Copenhagen Business School, Asia Research Center/ Sino-Danish Center for Education and Research*

In recent years, hydropower and the sustainability of large hydropower projects has become a contested field. While for example hydropower companies maintain that hydropower is a renewable and sustainable source of electricity, a number of NGOs sharply question this assumption. The paper explores policy making, decision drivers and framing of large hydropower projects in China. Hydropower is a complex and interesting field to explore as the consequences go beyond the immediate locality and interacts with local as well as the global contexts. Inspired by Tsing (2003) and Zhan (2008) the paper explores translocal connections through ethnographic fieldwork at a global water conference and preliminary fieldwork at chosen locations on China's Nu River. The Nu River is one of the last undammed rivers in Asia and runs through China close to the Chinese-Burmese border, then flows into the Andaman Sea after running through the Thai-Burmese border. In 2003, a cascade of up to 13 dams were approved by the Chinese government, however, as of yet no dams have been built due to a prolonged controversy between Chinese government officials, Chinese and international environmental NGOs, the media, social and natural scientists and Chinese hydropower companies (to name a few). The paper maps different actors' framing of the issue to gain a deeper understanding of the complexities of hydropower policymaking in China, as well as map the local consequences of global policymaking about large hydropower infrastructure projects. The paper contributes to ongoing debates about environmental framings in science and technology studies.

Same Technology, Different Outcomes: The Case of Waste-to-Energy Incinerators in the United States. *Jordan P Howell, Michigan State University*

Waste-to-Energy (WtE) incinerators dramatically reduce the volume of solid waste entering landfills while simultaneously providing a reliable source of both electricity and heat. In spite of these benefits, and in spite of commendations from the federal environmental protection authority attesting to the technology's potential to avoid or mitigate environmental problems, the use of WtE remains limited in the United States. However, the geography of WtE is highly uneven, with some states housing multiple incinerators while others have rejected them outright. In this paper, I examine the social construction of barriers limiting deployment of WtE in the United States and contributing to the uneven adoption of this technology. Based on original research into regulatory, corporate, and activist archives, complemented by field studies of incinerator facilities, I argue that three primary controversies recur amidst the decision to adopt or reject WtE: a continued fear of environmental dangers, an unglamorous 'image', and economic disincentives created by both energy and solid waste markets. I illustrate how these controversies were mobilized and closed in relation to a case study of Maui County, Hawai'i, USA, where an incinerator was planned but later scrapped in favor of other waste management and energy technologies. With this paper, I contribute to ongoing debates within STS about the geographies of technology adoption as well as the relationships between government, corporations, and 'the public' in light of emerging environmental protection and sustainability concerns.

Transformative Governance in Energy Infrastructures: Carbon Caption Storage and Photovoltaics. *Gerhard Fuchs, University of Stuttgart*

The proposed paper looks at the processes of innovation in three countries. Two process of technology development are analysed with relevance for the potential transformation of energy infrastructures: photovoltaics (PV) in Japan and Germany, CCS (Carbon Capture and Storage) in Norway and Germany. The four cases are different with respect to techological options chosen and each shows a specific governance profile which is not linked to characteristics of the specific technology, but rather the specifics of the coalition of powerful actors favoring the respective technology and the relationship between incumbent and challenger actors in the specific strategic action field. The cases are also different with respect to the success of technology development. CCS is Germany is a failure, but successful in Norway. PV in Germany was a success story, but the further development is now open to question. Japan supported PV more continuously and incrementally. While PV in Germany is more of a bottom up model, the other examples are top down.

Decentering Consensus & Linear Rationality in Public Engagement with Science and Technology. *Edwina Barvosa, Center for Nanoscience and Society, UC Santa Barbara*

As the deliberative turn in techoscience has gained momentum, efforts in upstream public engagement with science and technology (PEST) have revealed that conflicts and convergences in the viewpoints of scientists and publics during contemplation of uncertain science futures raise the opportunity to deliberate imaginatively on fundamental questions of "how shall we to live together?" (Kearnes 2006). This development exceeds the creation of policy-related consensus emphasized in current consensus conference models. It also calls for insights from beyond linear rationality from aesthetics, affect, attachment, ethics, democratization and other considerations (Kuruvilla & Dorstewitz 2009). This paper contributes to STS by theorizing new (re)designs in public engagement that go beyond forging 'licensing' policy consensus. Drawing on agonistic models of deliberation, poststructuralism, and Foucauldian and subaltern femininist accounts of critique and transformative technologies of the self, this paper theorizes an alternative model of PEST. Not a one-time event, this PEST is a cyclically performed array of social practices in which diverse actors are brought together in numerous ways (deliberative encounters, emergency simulations, interactive visual media events) that foster gently agonistic engagements. These creative engagements can result in crafting useful syncretic viewpoints (Cormick 2012) and other outputs, including: enhanced social cohesion (bonding/bridging capital), new social imaginaries, critiques of social-scientific practices, and hybrid modes of collective perception and judgment on matters of technological and scientific significance. This theory will be developed through an example of possible upstream deliberation on potential transformation of future energy infrastructures, focusing on nuclear phase out and Charles Perrow's classic Normal Accidents.

156. (58) STS perspectives on patient safety and quality improvement in health care - II
11:00 to 12:30 pm
Solbjerg Plads: SP112
Chairs:
Jessica Mesman, Maastricht University
Roland Bal, Erasmus University Rotterdam
Johan M. Sanne, Linkoping University
Participants:

Invisible work: a resource for patient safety. *Julia Quartz, University of Rotterdam*

This paper argues that invisible work is both an indispensible resource for patient safety and a source of vulnerability. Drawing on ethnographic research from a Dutch hospital, I show how invisible work – i.e. work that is enacted tacitly, practiced informally, performed unconsciously, or kept backstage consciously - helps health care professionals in their strive to generate situated safety practices in complex clinical settings. This paper analyzes how ward-based intermediaries (e.g. clinicians, ward managers and nurses) try to generate a reasonable fit between national safety requirements and ward-based restrictions by help of invisible work. I highlight how they domesticate safety requirements by informally enrolling actors and networks, and by actively yet invisibly shaping and adapting safety scripts to local requirements. Invisible work is a creative resource for patient safety, and it is exactly the invisibility of these strategies that enables professionals to entertain them. However, the very feature of invisibility generates new risks to patients' safety, too, as doing things invisibly generates a leeway for unrecognized drift. Invisible work, then, is an important resource for situated safety and simultaneously a practice that generates (unexpected) vulnerabilities. Theoretically, the notion of invisible work contributes to patient safety research, as it depicts patient safety as an emergent property and a diligently negotiated and localized compromise, which is enmeshed with values and politics. Unraveling patient safety as a situated accomplishment and as a set of existing but unnoticed competences, however, never generates invulnerable conditions.

Follow-the-practice: an approach to improve patient safety?
Jessica Mesman, Maastricht University

Since the 2000s the classic approach of 'follow-the-actor' has been supplemented with the methodological frame of 'follow-the-practice'. In my presentation I will discuss if and how the 'follow-the-practice' approach can contribute to the improvement of patient safety. By using 'practice' as analytical lens instead of object of analysis, this paper investigates the locus of patient safety on an intensive care for newborns. The aim of this study is to explicate hidden competences – i.e. exnovation - regarding safety and infection prevention in particular. An important methodological tool in this project for data collection as well as data analysis is video-reflexivity. In this analysis attention will be paid to the multiplicity of practices related to infection prevention. This dimension, as I will show, refers to more than interconnected activities. Multiplicity is also about action, meaning continuously changing patterns which result in what Cooper and Fox call 'connectedness-in-action'. The question this presentation aims to answer is in what way an understanding of this connectedness-in-action contributes to the improvement of infection prevention By combining the 'practice turn' and the interventionist approach (video-reflexivity) with the principle of exnovation, this project aims to contribute to the refinement of STS methodology in the field of science, technology and medicine.

Safe medication both for patients and practitioners? On patient safety through design and STS. *Ana Maria d'Auchamp, Danish Technological Institute; Yutaka Yoshinaka, Technical University of Denmark*

In this paper we engage the study of medication safety, as a point in case in discussing the interstices between patient safety, design and STS. The backdrop of the paper is an ethnographically informed inquiry into medication practices involving toxic drug compounds with a high focus on patient safety, which are also potentially harmful to personnel through accidental exposure during preparation and dispensing the drugs. A patient safety focus solely on 'the proper medicine, in the proper dosage, at the proper time, and to the proper patient' neither encompasses the collective and distributed character of what heterogeneous interlinkages and tensions medicating patients' entails, nor of doing so 'safely'. A query into safety 'for and by whom', 'where and when', and 'how', opens up for a diverse array of issues which impinge upon, and potentially displace, patient safety as an isolated event and focus, towards issues of domestication, across multiple settings, i.e. within as well as beyond the confines of the concrete setting of the medication practice. Through an examination of the design, procurement and use-practices of a particular 'single-use' medication dispensing device in the preparation and administration of cancer drugs and antibiotics, the paper addresses how heterogeneous issues feed into, and qualify the articulation of medication safety in situ. Our paper aims, hereby, to contribute to the discussion of medical practice through which to scope and frame (patient) safety as part and parcel of issues such as knowledge, accountability and repertoires of practice, and thus suggest alternative strategies for enhancing patient safety.

Redesigning responsibility: Hepatitis C prevention in sexual partnerships. *Suzanne Fraser, University of NSW, Australia; Carla Treloar, National Centre in HIV Social Research, University of New South Wales*

Hepatitis C is a blood-borne virus that affects the liver. In the West, most transmission occurs through the sharing of equipment used for injecting drugs, and most sharing occurs between sexual partners. Despite this, little is known about how injecting practice, including equipment use, is negotiated in these partnerships. This presentation draws on the work of feminist science studies theorist Karen Barad, and interview material collected in a pilot study, to illuminate these issues. Responsibility for avoiding transmission has long been conceived individually, as have measures intended to aid individuals in fulfilling this responsibility, such as the distribution of clean injecting equipment. This individualising tendency has been criticised for inequitably responsibilising disadvantaged people. This presentation proposes a different approach to prevention. Rather than treating hepatitis C as a bounded, ontologically stable object that pre-exists its encounter with individuals and the material objects they use in injecting, it formulates it as phenomenon, as made in intra-action with other phenomena, including social relationships and material objects. In turn it sees transmission in new terms; as a question of social relationships and of object design. This approach leads to at least two nested innovations in prevention, both underway in a new Australian research project: 1) the development of prevention measures aimed at partnerships rather than individuals, and 2) the design of a new injecting 'fit-pack' that treats the partnership as a primary unit of address and resourcing. The presentation will discuss these innovations, closing by considering the politics of this shift in focus.

157. (46) Mediated practice: insights from STS, critical theory and media theory - II
11:00 to 12:30 pm
Solbjerg Plads: SP113
Chairs:
Anne Beaulieu, University of Groningen
Annamaria Carusi, University of Copenhagen

Aud Sissel Hoel, Department of Art and Media Studies, Norwegian University of Science and Technology
Sarah de Rijcke, Centre for Science and Technology Studies, Leiden University

Participants:

Dreamwork, compositionism and design: toward a multi-sensorial materialism in technoscience. *Cameron Michael Murray, York University*; *Alasdair McMillan, York University*

Scholars in science and technology studies (STS), media studies, feminist philosophy, cognitive science, and the anthropology of science have developed a range of tools for theorizing the multiplicity of bodies, subjectivities, and spaces - both physical and virtual - that shape and are shaped by technoscientific research. Some of the foremost STS scholars, including Bruno Latour, Donna Haraway and Isabelle Stengers, as well as lesser-known figures like Vilém Flusser and Vinciane Despret have sought to focus attention on embodiment, situatedness, and sensation, while calling for non-traditional, non-textual modes of scholarly creation. Each describes their project in somewhat different terms: Haraway's 'dreamwork,' Latour, Despret, and Stengers' notions of 'articulation' and 'composition,' or Flusser's 'philosophy of design.' Our presentation seeks to draw out some of the most important common themes in the work of these theorists, reading them as contributing to a vibrant, lively form of materialism which crosses boundaries between STS and media theory, as well as artistic and scientific practice. Taking these theoretical articulations as a starting point, we describe our efforts (and those of others) to create material, multi-media compositions which open new paths for collaborative research across disciplines. Significantly, these are never truly complete, and there exists a multiplicity of avenues for interlinking and redesigning such compositions in the interest of producing socially, politically and ethically conscious technoscience. Ultimately, we wish to show how this work highlights the always already mediated, multi-translational, multi-sensorial potentialities of scholarship, design, and, more broadly, multi-species global citizenship.

The Medium is the Measure. *Aud Sissel Hoel, Department of Art and Media Studies, Norwegian University of Science and Technology*

The phrase "the medium is the message" was famously coined by Marshall McLuhan in his 1964 book Understanding Media: The Extensions of Man. The point McLuhan wanted to make was that the social impact of media or technologies have more to do with the new scale they introduce into human affairs than with the content they convey. Media extend the senses and transform patterns of perception; they organize existence and human action by accelerating, shaping and controlling previous functions. What has not been sufficiently recognized, however, is that McLuhan was getting at a new kind of mediating agency that scrambles brute cause-and-effect relations. To emphasize this, I make a twist on McLuhan's slogan and coin the phrase "the medium is the measure." By configuring media, or as I shall put it, mediating apparatuses, as measures, I seek to develop an understanding of the mediating role of instruments in science that is no longer based on representationalist beliefs. As others have noted, the measuring technology and the object often enter together. (Galison 2004) What I propose is that material apparatuses participate in the establishment of the identity conditions (Rheinberger 1997) that, at one and the same time, delineate the contours of the object of knowledge and enable its comparability. Thus understood, mediating apparatuses acquire ontological import through their at once generative and revealing viewpoints. The paper contributes to STS through its consideration of the inner connections between methods of measuring and observation and the contribution of material media in identity-formation.

Blinks and Blips: EEG and the Recalcitrant Body. *Sarah Ann Klein, University of California, San Diego*

How are people transformed into legible subjects for experimental psychology/cognitive science? In this paper, I tackle this question by examining the particularities of the experimental procedure in a cognitive science laboratory that uses EEG (Electroencephalography) to study language processing in human adults. In this laboratory, researchers monitor computer screens displaying representations of the subject's brain waves, not in order to interpret results (which requires statistical analysis of all experimental trials), but in order to ensure that the subject is providing them with 'clean' enough data to be usable. Because of the particular sensitivities of the EEG apparatus, what defines a "good" subject is largely given by the subject's ability to control semi-voluntary bodily processes, such as blinking. This paper focuses on 'schooling' processes at play in interactions between the researchers, subjects, and technologies. Over the course of several months, I used participant-observation and video to gather my data. Bringing together approaches from laboratory ethnography and post-humanist STS with performance and critical theory (Taylor, Schechner, Butler, Foucault), I analyze the performing body's "recalcitrance" to scientific study (Latour/Despret), as it is instantiated and mediated by EEG technology. I argue that mediated recalcitrance plays a central role in the schooling of "good" subjects. In addition to contributing to the STS literature as an empirical study of people studying other people, this paper explores how the interdisciplinary field of performance studies can contribute to analyses of of scientific practice.

Inside and Outside the Black Box – Epistemological Interrelations in Medical Software. *Kathrin Friedrich, Academy of Media Arts Cologne*

Media theory and STS just recently started to analyze software programs that mediate between the machine-readable data and its human-amendable surface on the computer screen. In many scientific fields software shapes the practices, epistemic routines and also material logistics (Manovich 2008). But it is itself inscribed and designed by social, economical and technological processes (e.g. Coopmans 2010) and gives the computer's black box an aesthetical and operative 'face'. Since software ties together quite different ontologies, operations and epistemologies, it is analytically challenging to unravel this complex 'knot' (Berry 2011). The paper will investigate an exemplary software program applied in diagnostic radiology to open up new vistas for both media theory and STS. Therefore, I apply concepts of technical (Nake 2008) as well as material semiotics (Law 2009) to explore how significant media practices unfold on the basis of software. Material semiotics often does not penetrate the digital surfaces of technologies in science, whereas technical semiotics analytically tends to concentrate on the micro-level investigation and remains within the 'borders' of the computer processes. Combining both approaches offers valuable insight into the mediating and mediated practices that software constitutes in science: within and beyond its own borders, inside and outside the black box.

"Nature" in the Expanded Field: Limits of Anthropomorphism. *Max Liljefors, Lund University*

The natural world - here, "nature" - is no longer a static given, but a rapidly expanding realm inseparable from the progressive visualism of the sciences (Ihde). Through visualization instruments (Latour), from space-based telescopes peering through deep space to the infancy of the universe, to neutron spallation sources penetrating nano-reality, new magnitudes of the natural world unfold around the human observer, as a succession of doors slammed open, one after another, revealing hitherto unknown vistas of reality. And at the same time, through bioimaging techniques, "nature" tunnels into her, ever deeper into the fabric of her being, on the cellular, genetic, molecular, and

neuronal levels. In the face of these developments, this paper will examine the limits of anthropomorphism in the conceptualization and representation of "nature", such as the notion of "the gaze" (of a human observer of nature, or of nature's gaze on humankind). It will propose an alternative, systemic approach to the new visualities of "nature", contrasting the anthropocentric notion of "vision" to that of systemic "visuality". The paper will go on to discuss the blurring of the distinction between natural and social ontology (Searle); and between visibility and visuality (Didi-Hubeman); the eclipse of the seeing subject in systemic visualities; and the problem of ecological ethics in a de-anthropomorphized natural world.

158. (79) On the road: journeys of innovations and prospects - II

11:00 to 12:30 pm
Solbjerg Plads: SP114
Chair:
Lise Bitsch, University of Twente
Participants:

Creating designs as effective boundary objects in innovation journeys? *Severine van Bommel, Wageningen University*; *Laurens Klerkx, Wageningen University*; *Bram Bos, Wageningen UR Livestock Research*

In innovation processes, prospects are often seen as a strategic tool to connect multiple actors. They are perceived to be flexible enough to have meaning in all social worlds, and stable enough to travel back and forth between them. In other words, effective prospects are seen as boundary objects and it is thought that these boundary objects can be designed . This paper analyses the innovation journey of the Rondeel poultry husbandry system , in which a prospect- a design in the form of a "masterplan" or "prototype" - was purposefully created as a boundary object to support the innovation process. The analysis indeed reveals the role of the design as a boundary object in creating mutual understanding among diverse actors during the innovation journey of the Rondeel and mobilizing support. But while some aspects of the design remained relatively stable, other aspects constantly changed as: 1) the design had to be adapted to the in-house technology and capabilities of the development consortium; 2) many new challenges emerged during the innovation journey itself which had to be incorporated. Each new development direction meant a renegotiation of the design and the network of actors that came along with that. To what extent can prospects be created as boundary objects to facilitate innovation journeys? The analyses shows that the Rondeel design was not a fixed end-product: it was constantly reinterpreted and strategically renegotiated in interaction, acting both as an inclusion and exclusion device for actors and options during the innovation journey. Although sometimes exclusion was beneficial to the process, it also sometimes caused lock-ins. The need for interpretative flexibility, the difficulty of establishing an optimum interpretative flexibility and the (unintended) consequences of exclusion nuance the view that designs can be purposefully created as effective boundary objects . We end by discussing the term boundary "object", which suggests a stable and passive entity. We argue that it might be better to talk about "boundary subject" since designs constantly change and exert agency themselves while the innovation travels through time and across different spaces.

The transformative journey of a product idea and the stabilising role of particular knowledge objects. *Liv Gish, Technical University of Denmark, DTU Management,*; *Chistian Clausen, Aalborg University Copenhagen*

An increasing focus on companies' ability to innovate has developed over the last decades. Especially the work with ideas is perceived as a central activity in the innovation process. In this

line Van de Ven (1986) characterizes the process of innovation as: "the development and implementation of new ideas by people who over time engage in transactions with others within an institutional context". In this paper we will develop an understanding of how such transactions unfold over time. This is done through an analysis of the development process of the "A" labelled Alpha Pro circular, launched by Grundfos, a Danish pump manufacturer. We will especially pay close attention to how ambitious visions, trends in society, new technologies, as well as new constructions of users and markets have influenced the engineering designers' work with ideas over time. However, this journey has not been without disputes and controversies. But instead of perceiving these disputes as obstructing we argue that they should be viewed as constructive controversies which offer the opportunity to yield new perspectives and outcomes for the future. Moreover, contrary to common presumptions in innovation management the journey of a product idea is seldom a stable or linear endeavour (Akrich, Callon, Latour 2002). Perceptions of what constitute a relevant product idea seems to transform several times before stabilized in a viable and marketable product. But if we say the content and identity of a product idea is not stable, how can this transformation be characterized and understood? What is the stabilizing or transformative role of particular knowledge objects in this process and how do they interact with, defend themselves from or enact institutionalized frames and dominant understandings in established organizational practices?

Promises and Practices: Press, Pennies and Power in Canada's Genomics Sector. *Ellen Balka, Simon Fraser University*

In Canada, as elsewhere, genomic technologies have inspired discourses of great promise, and spawned numerous expectations (as well as services to meet those expectations). At the same time, funding infrastructures have been created to coordinate and manage the flow of cash required to carry out genomics research, in hopes of achieving goals outlined in popular press, funding pitches and the scientific press. In this paper, I report on results from a content and discourse analysis of Canadian print news coverage of human genomics, which is considered in relation to modes of organization and practice in scientific work in human genomics in Canada. Using the tools of a political economic analysis of communication (Mosco, 2009) including an analysis of economic flows in genomics research in Canada, as well as an analysis of structures which emerged to support genomics research, I discuss the complex interplay of the discourses of genomic promise in relation to modes of organization and practice in scientific infrastructures in Canada's genomic sciences research sector. In addition to the mixed method analysis of press coverage of genomics in Canada, the analysis presented emerges from documentary analysis techniques and interviews with genomic scientists.

Negotiating expectations in the encounter between genomics and common disease research. *Lise Bitsch, University of Twente*; *Kornelia Elke Konrad, University of Twente*

The encounter of medical genomics and research on common diseases like asthma, cardiovascular disease and diabetes is part of a highly dynamic innovation process. On the one hand, medical genomics promises a future of personalized medicine, with new data being produced at an impressive speed every day. On the other hand, research areas of different common diseases consist of actors rooted in a variety of 'epistemic cultures' (Knorr Cetina 1999), who are faced with the expectations of genomics as well as the growing production of 'genomic data'. In our paper we present a conceptual framework for capturing and analysing how actors in common disease research assess, reproduce or modify expectations of genomics. Common disease researchers are largely in the position of 'selectors' of genomics' promises (Bakker et al. 2011). Selection entails more than a yes/no decision, as promises have to be integrated and adapted to specific epistemic cultures in common disease research. We

conceptualise these points of encounter as 'spaces of assessment', where an 'innovation journey' (van de Ven et al., 1999, Rip and Schot 2002) may take turns in new directions or simply pass by. The main thrust is to understand the assessment and production of future expectations as a central dynamic of the journey (Van Lente and Rip 1998; Brown et al. 2000; Borup et al. 2006). Scientists do not only produce new knowledge, but also envisage a future world, in which this knowledge may become part of novel societal practices (Kay 1998; Wynne 2005). Drawing on discourse analysis we examine how story-lines become interlocked as actors negotiate the content of expectations in relation to their epistemic cultures.

Conferences: A Bricolage of Technology Configuring Events. *Hajar Mozaffar, University of Edinburgh*

The literature on STS has long-term development in user's role in configuration of technology. At the same time, following biographies of artefacts over time and space have been highlighted as an effective approach in study of technology (Pollock and Williams 2008, Hyysalo 2010). The current study addresses the interactions between user, vendors and other actors in collective situations as they move over time and locale. This study uses a longitudinal approach to investigate the dynamics of conferences organizes by user communities as technology configuring events. In this study three consecutive years of conference series held by one of the UK's largest ERP user communities has been scrutinized through observations, semi-structured interviews and historical document analysis. The study uses a biographical approach to follow temporal and spatial evolution of different types of technologies examined in the conferences. The findings show the roles of user-organized conferences in shaping the technology. Hence we present a typology of processes offered in them. At the same time, we propose that conferences are locales with bi-directional influences on artefacts and user simultaneously. Hence we call them the 'spiral' of technology configuring events. Finally this study stresses on the importance of the biography approach in study of complex systems and indicates how examination of conferences can be exercised as a unique methodological advantage for researchers who are interested in studying dynamics of technology evolution.

159. Back to the future: why should we promote public engagement with science?

11:00 to 12:30 pm
Solbjerg Plads: SP205

The explosion of new forms of public engagement with science and technology while positive in many respects, has also been overshadowed by a focus on the means and processes of engagement. The how has trumped the why and there has been insufficient systematic reflection on what all this activity has achieved. As part of preparations for a special edition of Public Understanding of Science, for publication next year, this session would bring together a few of the invited contributors to the issue, all leading scholars in the field, to provide both empirical analyses of engagement and governance practice and normative arguments about future directions. This session is intended to spark debate among STS scholars and all those with an interest in the changing relations between science, technology and society.

Chair:

James Wilsdon, SPRU, University of Sussex

Discussants:

Brian Wynne, University of Lancaster
Sheila Jasanoff, Harvard University
Alan Irwin, Copenhagen Business School
David H. Guston, Arizona State University
Maja Horst, University of Copenhagen

160. (51) Hacking STS: bio-hacking, open hardware

development, and hackerspaces - II

11:00 to 12:30 pm
Solbjerg Plads: SP207

Chairs:

Johan Söderberg, LATTS/IFRIS ParisTech
Alessandro Delfanti, University of Milan
Eric Deibel, Institut Francilien Recherche Innovation Société (IFRIS-CEPN)

Participants:

Can Your Grandmother Use it?: Hackers becoming Entrepreneurs. *Zane Kripe, Leiden University*

This paper explores the intersections of hacker and business cultures suggesting that the tension that arrises between these domains traditionally seen as in direct opposition to one another is one of temporal focus. While hackers prefer delivering the best possible technological solutions, the business logics requires delivery of technological solutions that can be utilized right now and often have little to do with technical mastery. This research is based on an ethnographic account of a 100 day technology accelerator program in Singapore that brought together 50 tech savvy people from different parts of the world to develop their ideas into investable technology businesses. The requirements set by the potential investors (large amount of users and evidence of revenue) and the methodology propagated by the organizers of the accelerator (Lean Startup methodology introduced by E.Ries that requires rapid prototyping based on direct customer feedback) created a tension for the geeks as instead of focusing on a technological sophisticated innovation they had to interact with their potential customers, understand the practices that form their every day lives and build their product that responds to the problems of 'now' with solutions that are familiar to their users. In a wider context this work analyses the temporal tensions that are endemic to neo-liberal economy and how the temporalities are manipulated and replaced in the process of designing a technological product for global market.

Cultivating a creative workforce: Making innovation in a Shanghai hackerspace. *Silvia Lindtner, University of California, Irvine*

"China is open source in practice. This is different from the West where open source only exists in theory. Here, the actual maker in the factory is involved, the workers. Our hackerspace in Shanghai is getting at this. It's going to be a hackerspace with Chinese characteristics." This quote is taken from an interview with one of the co-founders of a hackerspace in Shanghai conducted during ethnographic research in 2010 and 2011. It illustrtes that ideas of openness manifest in relation to particular political, economic and historical contexts of technology production rather than translating seamlessly across sites or in a linear fashion from West to East. In this paper, I trace how ideas of openness and innovation in the Shanghai hackerspace unfold in relation to China's current politico-economic project of building a creative nation. Government officials and policy makers in China today promote technology and science to enable of a new form of cultural production, a move from its image of "made in China" to "created in China". Cultural development, here, rests on the training and cultivation of a high quality workforce. I illustrate how the hackerspace simultaneously aligns and critiques this narrative of cultivating a creative workforce. While it promotes itself as providing the practical toolkit for training this creative workforce, it opposes the linear path promoted by officials and large corporations. This work contributes to studies of peer production and innovation in action. I draw upon work on sociomateriality of technology production and debates around non-professional expertise.

Is an FBI agent a DIY biologist as any other? *Tocchetti Sara, London School Of Economics*; *Sara Angeli Aguiton, CSO*

Sciences Po CNRS

In 2004, the artist and activist Steve Kurtz was arrested by the FBI and charged for building biological weapons in his home laboratory. Four years later, the Do-It-Yourself Biology community was created to promote amateur biology in community labs. Risks associated to the biohacker practices were flagged as safety concerns and "biosecurity threat". But, rather than the repression used in the Steve Kurtz's case, the FBI's approach of the DIY community was made through "outreach" and "education". A closer look to these cases could question us on the change of the security approach: How to understand the FBI "outreach"? How this relation had shaped the biosafety/biosecurity culture of the community? And how this relation transformed the amateur space? We will study significant "tests" of security that have perturbed the FBI's early position (2003-2009) leading to the re-composition of a different apparatus of security (2009-2011). We will discuss the reactions of the community towards this "policing engagement" and its effect on the institutionalization of the DIYbio movement. Finally, we will propose hypothesis to understand the FBI "benevolent surveillance" on the new arena of "legitimate practitioners" of biology.

Mobile phone repair networks in Kampala, Uganda: the role of 'hackers'. *Lara Houston, Lancaster University*

The huge growth of mobile telephony in sub-Saharan Africa over the last decade has inspired this ethnographic study of mobile phone repair shops in Kampala, Uganda. Repair shops are part of a socio-material infrastructure that enrolls handsets in Ugandan networks, and keeps them working. Perhaps surprisingly, 'hackers' and 'crackers' form part of this infrastructure too. This paper describes hackers who produce tools: software programs and hardware devices that allow repair technicians to reconfigure mobile phones. Hackers form part of the community of repair in two ways: the tools that they produce materially enable (and constrain) the possibilities for repair in Kampala. A discussion of tool design raises familiar themes about access to information, as hackers work with (or around) proprietary systems. Secondly, technicians also interact with hackers via online message boards, where rivalries between worldwide hacker 'teams' are performed. These frictions are also enacted through the design of tools that 'crack' or 'kill' others. The materiality of these conflicts is important: repair practices are foreclosed by broken tools, or opened up by free access. This paper also discusses the narration of hacker identities by Kampalan repair technicians: an unusual and interesting group of hacker tool 'users'. Given that practices circulate across repair and hacking, it's revealing to note how differences between the two domains are enacted. This analysis draws on anthropological work by Coleman and Golub (2008), which describes hacker identities and their relationship to liberalism, and Kelty's (2008) ethnographic work on hackers, 'geeks' and 'recursive publics'.

161. (19) Re-shaping, reclassifying, unsettling, life - IV

11:00 to 12:30 pm
Solbjerg Plads: SP208
Chairs:
Rebecca Ellis, Lancaster University
Claire Waterton, Centre for the Study of Environmental Change (CSEC), Department of Sociology, Lancaster University
Participants:

Do-it-yourself biology: domesticating biology through creative workarounds. *Morgan Meyer, Ecole des Mines de Paris - ParisTech*

An increasing number of enthusiasts are today setting up rudimentary laboratories in their garages, kitchens, or basements to carry out experiments in molecular biology. This paper analyzes the spatiality and materiality of do-it-yourself biology (or garage biology) and examines the various kinds of boundary-work manifest in recent discussions and debates. Specific techniques and objects are necessary to turn the private home into a site where experiments can be carried out. The paper shows that the affordability, the availability, but also - crucially - the mutability of objects are important. We observe objects being transformed, donated, remade, combined, replaced, imitated, bought secondhand, etc. In particular, people frequently rely on 'creative workarounds' around objects (to transform and combine them in novel ways) and around institutions (to circumvent established university-industry business linkages). Do-it-yourself biologists also use various communicative devices - websites, blogs, open source tools, forums, videos - to share knowledge and objects and to overcome boundaries. Drawing on interviews and an analysis of these communicative devices, this paper will show how the 'domestication' of molecular biology is made possible.

Engineering life: Synthetic biology and the order of things. *Emma Frow, University of Edinburgh*

Synthetic biology has been gaining momentum and visibility over the past decade as an approach to biotechnology that prioritizes the use of engineering principles and practices in order to design and make new organisms. By breaking down living organisms into collections of standardized genetic 'parts,' synthetic biologists propose a way of re-ordering the natural world so as to make it more amenable to human design and control. How does this proposed ontology for life intersect with other, existing ways of knowing and doing? And what is at stake in choosing to adopt this set of discourses and practices? Synthetic biology has potentially far-reaching implications for how we understand and use biological systems, and raises challenging questions about the making, commodification, and containment of life. In practice, several frictions are becoming apparent as this engineering-led vision of biotechnology is being articulated in relation to more biologically grounded understandings and practices for working with living organisms. This paper explores spaces where the proposed ontology of synthetic biology is bumping up against other ways of ordering, interacting with, and valuing life. Through an examination of discourse and practice in synthetic biology, I trace how scientific, ethical and legal thinking are undergoing ontological clarification and mutual adjustment as the field develops.

Back to "ontological politics" – Revisiting the dynamics of definitional struggles on GMO's in Europe. *Pierre-Benoît Joly, INRA; Marc Barbier, INRA, UR1326 Sciences en Société, F-77420 Champs-sur-Marne, France*

Classification, "sorting things out", creation of categories, etc. are among the foundational social activities as demonstrated by sociologists and anthropologists since the early XXth Century. Among various streams of research, the sociology of social problems has for long pointed out the key role of definitional struggles in the construction of polity, politics and policies. On the other hand, legal scholars point out the key role of the activity of "qualification" for the definition of the reality in the "world of law". Some STS scholars (Law, Mol, etc.) have coined the notion of "ontological politics". This oxymoron nicely conveys the idea that what we consider as "real" should not be taken as given but has to be studied as a construct, the result of struggles, contestations and negotiations. Inspired by ANT, this notion underlines that the reality we live in is performed in many ways and that the reality itself is multiple. The limitation is that, as we live in a common world, they are many situations where one of the definitions of the reality has to be adopted. The core objective of this paper is to reflect on this, taking seriously social, political and institutionalised processes through which reality is performed and (eventually) a single definition is imposed. The case of GMO's is a good candidate to explore these issues

because, on the one hand, since the 70's definitional battles are back again in a variety of settings and, on the other hand, the issue of plurality is explicitly raised.

Making meat informed: the trace of survival. *Nick Bingham, The Open University; Stephanie Lavau, University of Exeter*

During our ongoing ethnographic exploration of how meat is currently made safe in the UK, we have been struck by how much emphasis is placed on matters of survival, that is, on the materialities that survive the journey from farm to fork. With concerns for food safety in mind, EU and UK authorities have been radically reordering and remaking meat such that it has an 'identity' which is preserved through its various travels and transformations, an identity that is recorded and available for recall. To be legal, to be counted as safe, meat is now required to be traceable through the invention of new ways of making life matter, marks including food chain information that travels with animals to slaughter, health stamps on carcases, and EU identification marks on packaging. This enormous amount of work is considered worthwhile because other things already survive with the flesh of meat, other less welcome, more pathogenic forms of life, microbiological travelling companions that can leave marks of their own in the bodies of unwitting consumers. This paper takes the opportunity offered by the session to reflect from a broadly enactment-based STS perspective on two aspects of the new version of meat that results from these moves. First we propose that meat is an ontologically different sort of thing now that it is an increasingly extended, informed material. Second, we propose that thinking through survival complicates in interesting and generative ways the notions of life and death that animate current discussion of the 'bio'.

162. (82) Ethnography of socio-material collaborations - II

11:00 to 12:30 pm
Solbjerg Plads: SP210
Chairs:
Katharina E. Kinder, Lancaster University
Petra Ilyes, Goethe University Frankfurt am Main
Participants:

Designing Security: Socio-Technical Border Arrangements. *Sebastian Sierra Barra, Goethe University Frankfurt*

In December 2009, the Final Report of the European Security Research & Innovation Forum asserted the necessity of a "systemic approach to security" (ESRIF 2009: 16). This proclaimed approach is named "security-by-design" and has to be understood as a comprehensive program to develop new "technical" and "social solution" systems. In this concept biometric devices play a central role. Focussing on biometric technologies I will discuss the emerging digital data-bodies as a result of socio-material collaborations. To run biometric systems one needs both: templates and physical bodies. Thus, I suggest, the relationship between physical and digital data bodies can be questioned ontologically. This ontology is a distributed one, dispersed and stored in databases and irreducible to the biological or physical dimension of "our body" only. To be active today, to participate in social environments it is inevitable to activate your data-body. Methodologically, I will combine two different approaches. On the one hand, I will use STS to analyse the socio-technical border arrangements. On the other hand, I understand this special example of reassembling social life as a shift from "biopolitics" to what I call "infopolitics". Although the relationship between STS and poststructuralist theory is quite difficult I claim that both perspectives can be brought together in a very productive sense.

Working with Nature: Emerging practices of soft coastal protection. *Friederike Gesing, University of Bremen*

Coastal erosion and the need to make decisions for the future in a climate-changed world is becoming a major issue for coastal nations. During the second half of the 20th century, coastal hazard issues that have been challenging property and infrastructure of OECD countries were mostly addressed by installing hard protection works. In the context of climate and coastal change and under the influence of sustainability concepts however, the economical, ecological, and socio-cultural effects of hard coastal protection measures have come under scrutiny in a number of industrialized countries, and so-called "soft" practices of coastal protection have been gaining momentum during the last two decades. A variety of measures are framed as soft protection, ranging from large-scale engineering interventions relying on innovative materials or enhanced computer modelling capacities, to low-tech but labour-intensive dune restoration carried out mainly by volunteers, or planning tools like managed retreat. Drawing on insights from a multi-sited ethnography of soft protection measures in Aotearoa New Zealand, the paper analyses how coastal protection works through a complex assemblage of human and non-human actors, technologies and things, changing policy frameworks, knowledge practices and discourses, including a more dynamic understanding of coastal systems fostered by the still relatively young discipline of coastal science. Coastal protection is shown as a prime arena for the co-construction of natural and social worlds, with a variety of soft protection practices materializing as a shared discourse and practice of "working with nature, not against it".

Ethnography of the future: Researching ubiquitous computing for design. *Katharina E. Kinder, Lancaster University*

Defining the relationship between ethnographers and designers within research and design projects often leads to conflict or oversimplification of ethnographic results. Ideally, ethnographers would like designers to become "epistemic partners" with whom we collaborate in the production of anthropological knowledge, even if our ultimate aims of analysis are different (Holmes/Marcus 2010). Ubiquitous computing also poses the question of how to research future technologies that cannot yet be observed in actual use. Designers' focus on the future is admittedly an inherent paradigm of the ubiquitous computing idea (Dourish & Bell 2011), but the challenge remains of how to answer the question of what ubiquitous computing's role is in organizations, when the concrete technologies often have not yet met their intended application setting. I suggest that the main challenge for ethnographic research for ubiquitous computing is how we can theoretically frame the ethnographic study of application settings to allow for this 'future problem' and I have developed and applied such a framework. I will show how to apply strategies such as focusing on the actors' perception of technologies in their emergence, looking at precursors within the setting, and framing the technologies as part of socio-technical assemblages. My framework allows focusing on the actual dynamics, changes and challenges that occur with ubiquitous computing's rise within organizations, such as, e.g., new accountability challenges (Boos et al. 2012). It also enables a productive redefinition of the relationship between designers and ethnographers aimed at adding to the accounts of self-reflexivity within STS.

Experiences and constraints - patterns of socio-technical interaction. *Valentin Janda, Technische Universität Berlin*

My Contribution reports on a study of the interactions between a voice control device and inexperienced users. Following implications from G.H. Meads pragmatism a certain interactional pattern comes to light (Mead, 1934). This refers to process-oriented approaches that are also central to the cfp, namely that socio-material collaborations should be viewed as an on-going process forming rigid consequences for future design and technology. On a conceptual level, the contribution suggests rediscovering pragmatism as an analytical resource to regard every act as cause for a certain experience. Founded on

experiences the characteristics of the interactional counterpart are anticipated. Anticipation or role-taking is crucial in performing following acts. Every actor generates his own experiences and knowledge in an on-going process over and over approved and revised through his actions. From this analytic perspective, two central implications of dealing with objects are highlighted: The always subjective setting of action and immutable constraints located in the object (Pickering, 1999). This vantage point gives room for different ethnographic approaches like video-analysis and analysing logfiles. As the analysis pointed out, learning to use new technology consists of applying experience from well-known situations, regardless if that experience derives of social or technical interaction. Adapted experiences are gradually replaced by actual experiences. As a result, design is not only shaped by material constraints but also through practice. Therefore design is never finished, its characteristics are produced and reproduced in physical action upon it (O'Connor 2005). Overall design regimes benefit from the persistence of certain experiences on the mirco-level.

Cognitive Ethnography: Socio-material relations in a new light.
Samuel Tettner, Maastricht University

With this paper I propose that a useful framework to understand the social-material collaboration between scientists and artifacts is the socio-cognitive. By cognitive I mean the processing and analysis of information (done both by humans and cognitive artifacts such as computers) to produce representations of knowledge. One such theoretical framework is distributed cognition, as first proposed by Edwin Hutchins. The work of Hutchings has been adapted to understand scientific practice before (Giere 2006, Nersessian 2003). Studies which try to understand both the socio-cultural and cognitive aspects of science together have used cognitive ethnography. I look at online research collaborations, sometimes referred to as e-science as large distributed cognitive systems. To that end, I look at the efforts of the Citizen Cyberscience Centre through a cognitive ethnographic methodological frame. The CCC is an organization co-hosted by CERN and the UN which partly aims to "To develop citizen cyberscience applications targeting research on humanitarian and development issues as well as fundamental science, by coordinating collaborative projects between scientists from North and South". Cognitive ethnography allows us for example to understand the individual and relational history of use that artifacts have, referred as biographies by Nersessian et al. (2003). Since distributed cognition is a task-oriented process, its application to understand scientific production allows us to have a problem-solving focused and procedural account of knowledge production. This, according to Giere (2006) allows us to have empirical ways for normative evaluations of science. *This paper is adapted from my Master's thesis, through which I will investigate the issues in more depth

163. (86) Displacement and classification - II
11:00 to 12:30 pm
Solbjerg Plads: SP212
Chairs:
Daniel Bischur, University of Trier, Germany
Stefan Nicolae, University of Trier
Participants:

Surely you're cooking Mr. Feynman! Science in the kitchen and its metaphors. *Massimiano Bucchi, Dept of Sociology, University of Trento*

Bringing "Science in the Kitchen" has become a very popular strategy to communicate science in book, games, science centres and TV shows. The ideology of 'science in public' lying behind this strategy is interesting for a number of reasons. It does not offer, as much 'public science' tries to do, 'the wonderful', 'the miraculous' or in general, something quite beyond the everyday

experience, leaving the audiences with their mouth wide open. Rather, it inserts science into one of the fields that to the people's experience most clearly embed everyday life: the kitchen. Thus, science colonizes an area that is generally recognized as the privileged territory of common sense. Scientific knowledge is not presented in antithesis to common sense, it does not seek to subvert it as it has become typical of public presentations of science especially since the huge public impact of this century's revolution in physics. Science is here placed alongside common sense, ready to take it by the hand and 'upgrade' it by enlightening the theoretical significance of unconsciously adopted practices. Apparently only a curious and funny aspect, the presentation of cookery as science is revealing of a significant, although often neglected, ideology of the relationship between science and common science. Furthermore, when read in parallel with the complementary description of science as cookery in different historical contexts, it adds another important angle to our understanding of the strong connections existing between public communication of science and core scientific practice.

Classifying the Unclassifiable. Towards a Sociological Approach to Plastination. *Stefan Nicolae, University of Trier*

Gunther von Hagens' „Bodyworlds"-Exhibition and the process of plastination are usually considered as an example illustrating controversial ways in which boundaries between human and non-human are questioned, discussed, and interpreted. The reason lies in a diffuse status that is attributed to plastinates and which enhance new theoretical perspectives on the human-artifact relationship as well as on the multiple displacements involved in it. Hence, classifying dead bodies as plastinates presents itself as highly problematic. My presentation depicts only one aspect involved in this dispute: the traceable displacements in classification by means of which professionals anchor the plastinates within a general, but nevertheless "technical," view which both conduct and justify their work. I, firstly, introduce a distinction between the plastinators' work on the body of a donor and the their work on the categories, through which the plastinate is discursively framed. Given the concatenations between these two approaches to the dead body, the distinction should maintain its primarily analytical profile and advocate neither a spatial, nor a temporal succession. Drawing on this twofold work of plastinators and taking up Bruno Latour's notion of a "circular reference," I will subsequently follow two levels on which displacements in classification function. On the one hand, I show how the particular classificatory practice leads the process of plastinates' production up to a specific view on their materiality; on the other hand, I will shed light on the role played by classification of plastinates for structuring plastination's description by professionals.

Non-Standardization in Science: Discontinuities in Genomic Taxonomies of Race. *Aaron Panofsky, UCLA; Catherine Bliss, Brown University*

A paradox of the post-genomic era has been the simultaneous genetic critique of the concept of race with the proliferation of genetic research mobilizing racial categories and tracking racial differences. STS scholars have discussed the "categorical alignment" of governmental racial standards with in biological and medical research and the subsequent molecularization of race. An implication is that the scientific standardization of racial categories has served to build the authority of genetics. In this paper we make the opposite argument: geneticists have authority over race through the non-standardization of racial categories. We draw from two data sources. First, we use interview data with prominent geneticists to show their ambivalence about the implementation of particular racial classifications. Second, we use a content analysis of the population labels used in articles in Nature Genetics in 1993, 2001, and 2009 (the years immediately following the Human Genome Diversity Project, the Human Genome Project, and the International HapMap Project (Phase

II)). We find that geneticists use no fewer than eight distinctive taxonomic systems (racial, ethnic, national, regional, continental, linguistic, etc.), the diversity of categories employed increases over time, and geneticists often mix several taxonomies in the same publication. Thus, non-standardization is the norm in the deployment of racial categories in contemporary genetics research. STS scholars have shown that standardization is an important tool for the extension of scientific power and authority; we conclude by arguing that nonstandardization can also be an important source of power in certain circumstances.

Categorizations in Reflecting Animal Experimentation. *Daniel Bischur, University of Trier, Germany*

Routines in working with animals actually change the very perception of them. ''Natural animals'' are turned into ''analytical animals'', a resource of a row of mathematized data (Lynch). Nevertheless, scientists refer to their laboratory-animals in various ways. The paper tries to systematize different ways in which scientists relate to "their mice" by looking at a series of interviews with researchers of an immunology laboratory. In talking with researchers in an immunological laboratory they rely on a variety of different semantics to describe their own working and relating with animals. This paper wants to evaluate the way in which those notions of the laboratory-animals can be systemized according to certain categories of (a) animals, (b) states of animals, (c) experimental practices with animals, and (d) relations of the scientists towards animals, and how those different references to animals are related to certain displacements of animals in the laboratory and its social practices of knowledge production.

Chimerical Ontologies: On the varied classifications and displacements of 'ethicality'. *Lucy Clare Bartlett, Said Business School, University of Oxford*

As the organisers of this sub-theme indicate, the mutual dynamics of classification and displacement, and therefore 'production' of 'fact', have historically been a topic of considerable scholarly exploration. However, as yet we have relatively less insights on how this interconnectivity stabilizes (even if temporally) into a particular 'classification'. This is especially so with regard to engagements based on STS sensibilities. In response, this paper offers an analytical and theoretical 'discussing' of the temporal process of classification and on-going displacement as it concerns the messy 'object' of 'ethicality', an adjective value which has become prevalent in Western life and has strong commercial aspects. I enter this 'discussing' by engaging with research material gathered during extensive ethnographic stays in 3 self-avowed 'ethical organisations': an ethical start-up, an ethical confectionary company, and an ethical consultancy. By drawing on particularly telling empirical accounts from the field, the paper explores how both processes of classification and displacement were found to be ontologically multiple. In particular, I argue that it is the very overlapping and continually unclear boundaries between the varied classifications and displacements of 'ethicalities' that are their greatest 'success'. Indeed, in examining this fully intertwined process, the object of ethicality was found to be messy and chimerical: both and neither what it is and what it is not. This was so even as it appeared solid and homogenous at the point of 'use' to the ethical-users of my investigation, who used and draw upon the classified object of ethical in a multiple of ways.

164. (38) Energy, practice and personal lives: design and displacement in the everyday - II
11:00 to 12:30 pm
Solbjerg Plads: SP213
Chair:
Karen Henwood, Cardiff University

Participants:

Exploring sociotechnical imaginaries of electric utilities within the renewable energy transition. *Jen Fuller, Arizona State University*

This paper sorts through some of the intersections between utility companies, representations of renewable energy, energy policies, and publics. Electric utility companies are in a unique position as key institutional actors in the global energy transition to engage with publics and businesses about renewable energy. Literature on sociotechnical imaginaries along with elements of critical geography anchors my study theoretically. The bulk of the essay maps these concepts onto visual and narrative representations of renewable energy through utility company literature and popular culture in Arizona. This study examines how utility companies design images and texts which work to enroll citizens into a new sociotechnical system through appealing to certain subjectivities. As renewable energy technologies are promoted others may be displaced, perhaps along with old habits of mind. Utilizing ethnographic methods and discourse analysis, I aim to unravel the motivations behind utility company advertisements as well as to understand the impacts of the marketing materials produced. Examples of primary materials analyzed are mailings, billboards, posters, public appearances, and company websites. Themes emerging from the study include: portrayal of renewable and energy efficient technologies as "natural", efforts to entrench these practices into American mythology, and how these materials and popular references work to implicitly promote policy directives. This research contributes to STS literature by providing an empirical case study of social imaginaries and fusing elements of human geography with STS. Additionally, it addresses the role of utility companies as educators within energy transitions.

Zero emission buildings and development of professional (energy) operation culture: Learning and professional development in operation of large buildings. *Helen Jøsok Gansmo, STS, NTNU*

Who can/should/could guide the energy management and operation of the complex building systems? How do they learn and exchange experiences? How is knowledge created and transferred among whom? Parag and Janda (2010) find that different middles have important roles and functions as enablers, mediators and aggregators in transition processes to low carbon societies since their positions provide them with agencies and capacities to move, facilitate and support the transition process in ways separating them from governments and individuals. Nevertheless, the middles need harnessing in terms of ensuring that they are provided with enough and right information and also resources to perform their agency and capacity roles. This paper will investigate empirically the middles of energy management and operation of the complex building systems through qualitative interviewing, shadowing and participant observation. Aune, Berker and Bye (2009) separate energy consumption and comfort management in residential buildings from office buildings since users of non-residential buildings usually have no personal responsibility for the amount of energy consumed and because energy (saving) technologies in non-residential buildings usually are complicated to manage. On the other hand, new residential zero emission buildings are likely to contain complex technologies beyond the operation capacity of residents, which may indicate an increasing importance of energy management operators in all sorts of buildings. Hence the relevant middles for this study are related to large (near) zero emission non-residential buildings and housing cooperatives.

Designing Active Demand in electricity systems: co-constructing users and technologies in the home. *Dana Abi Ghanem, Tyndall Centre, University of Manchester; Sarah Mander, Tyndall Centre, University of Manchester*

Active demand (AD) technologies and principles are put forward as one of the main strategies for achieving higher efficiency in electricity systems and maintaining security of supply. Innovations and practices in this field posit a transition pathway that envisages electricity consumers as "active participants in electricity markets and in the provision of services to the other electricity system participants" (Belhomme et al., 2011). Taking the case of a research and development project for AD currently taking place in Europe, this paper reports on early findings involving the design of AD principles and technologies, and their trial in households at two different European sites. The project involves collaboration between different types of actors (energy suppliers and distributors, universities, manufacturers, etc.) and involves the design and development of technological solutions to facilitate consumer participation, as well as allow the contribution of demand, in power system markets. Given the central role of consumers in this imagined socio-technical landscape, this paper uses data from interviews with the project's scientists and engineers to delineate the role of the electricity user as conceived through the design of AD. In doing so, we explore the concepts and technologies of AD, and their envisaged role in electricity systems. The paper highlights how different configurations of the user in the context of household electricity consumption construct and constrain transitions towards low-carbon electricity supply and demand.

Solar Transitions: Policy learning and emerging socio-technical configurations in off-grid solar electricity supply in India. *Harald Rohracher, IFZ - Department of Science and Technology Studies, University of Klagenfurt; Kirsten Ulsrud, Department of Sociology and Human Geography, University of Oslo*

Almost 20% of the world population and 25% of the households in India do not have access to the electricity grid with serious impacts on economic development opportunities, education or public health. In particular, this is a problem of rural areas which are often difficult and economically less profitable to reach by the central electricity grid. However, these off-grid regions also offer opportunities for alternative forms of electricity supply. Village-scale electricity supply based on mini-grids and a central photovoltaic (PV) power plant is a form of rural electrification where India has gathered more experience than most other countries. However, achieving a wider dissemination of such systems will depend on developing appropriate policies and institutions, organizational forms for operating such systems and socio-cultural practices of using these technologies and embedding them in everyday life. In this presentation we analyse different cases of solar electricity supply in remote Indian villages as socio-technical systems embedded in wider cultural and institutional contexts. We put particular emphasis on the different socio-technical configurations characteristic for these cases and the learning processes which can be observed to date at different levels: in organizing the implementation process, in developing institutional support structures as well as in operating and using these technologies. . As India is currently embarking on a large-scale programme for the implementation of solar technologies in its "Solar Mission", we ask which kind of lessons can be drawn from our socio-technical analysis for policies aiming at an increased use of solar technologies in remote rural areas.

165. (59) "This planet is doomed": on the entanglements of science fiction and technoscientific artifacts - II
11:00 to 12:30 pm
Solbjerg Plads: SP214
Chair:
Michael Bennett, Northeastern University School of Law

Participants:

The Social Construction of Race in Pre-Golden Age Science Fiction: Smith and Weinbaum. *Christopher Leslie, Polytechnic Institute of New York University*

This paper explores the extent to which science fiction operated as a scientific public sphere and, as such, might be seen as evidence of the social construction of science. In the early days of U.S. science fiction, writers use alien beings as a mechanism of estrangement for the current rhetoric surrounding the rhetoric of scientific racism that was still prevalent in the early part of the twentieth century. In stories from before the golden age that employ characters of different races, such as E. E. Doc Smith's _Skylark of Space,_ one regularly sees an effort to defeat biological determinism, so that humans are depicted as wily and able to defeat their more powerful and organized aggressors. The conflict between the humans and the Nevians in Smith's 1934 serialized novel _Triplanetary_ further develops this theme of relativism and clearly refers to the science of difference. Stanley G. Weinbaum's story "A Martian Odyssey" contrasts different groups of tool-using and non-tool-using creatures to suggest that the culture concept is primary in determining sentience. In all these cases, the unity of the human species is asserted; the supposedly extreme geographic difference on Earth have not produced the truly different species one sees in interstellar space. In creating these images of genuine difference, I argue that these authors are attempting to illuminate is the social construction of race by applying the goals, key problems, and testing procedures to an unknown specimen (the alien) and thus how conclusions about polygenism would be supported.

Science fiction as resource in lay citizens' talk about nanotechnologies. *Claudia Schwarz, University of Vienna*

With the proliferation of public engagement on emerging science and technology, the question if and how science fiction and futuristic scenarios could be employed to stimulate lay people's imagination about socio-technical futures and their ethical, legal and socio-political implications has gained relevance. This paper tackles this question empirically by analyzing the role that references to science fiction and futuristic scenarios play in lay citizens' talk about nanotechnologies, focusing on how they are developed, mobilized and negotiated in debate. Nanotechnologies are a particularly interesting case to explore this, because they are heralded as the essential 'future technology' and are surrounded by manifold, often controversial, futuristic scenarios. By drawing on material from four discussion groups with adult citizens and three discussion groups with pupils from a secondary college for electronic data procession, all from the Austrian context, it will be shown that although references to sci-fi were made and futuristic scenarios were developed at certain points in the debate (e.g. when discussing the moral aspects of human enhancement), they mostly failed to encourage longer exchanges and more profound explorations of ethical and socio-political issues. The reasons for this will be reflected on the basis of a comparison with resources that were grounded on a more locally shared repertoire of experience. Finally, practical conclusions on the potential and limitations of employing science fiction and futuristic scenarios in public engagement settings will be drawn from the analysis.

"Fantastic Voyage" and the Construction of a Nanoengineering Discipline. *Emily York, University of California, San Diego*

In a new undergraduate nanoengineering major at the University of California, the faculty construct an historical narrative of the discipline that highlights the role of the 1966 science fiction film "Fantastic Voyage" in introducing the world to nanomedicine, and in popularizing a 'nano dream' that faculty are currently realizing in their research. Students are frequently reminded of this film in conjunction with encouragement to follow their nano dreams. "Fantastic Voyage" becomes a device through which nanoengineering constitutes itself as a new technoscientific

discipline, establishing disciplinary history and providing the field's newest members with a cultural reference through which to understand and communicate their new identity. In this paper, I treat the nanoengineers' claim of disciplinary heritage seriously, and therefore I examine what "Fantastic Voyage" communicates about nanoengineering by drawing on a discursive analysis of the film, as well as a two-year ethnography of the new nanoengineering department and major. I argue that the film is enrolled in the institutionalization of this field but also contains within it the possibilities of displacing the central tenet of the nanoengineer, namely, that nanotechnologies allow for precision and control in the 'nanoworld'. Moreover, the central premise of the film raises significant ethical questions which are not addressed in the curriculum, highlighting the absence of any explicit instruction on nanoengineering ethics in these introductory courses. This paper contributes to STS literature on technoscientific disciplinary formation, professionalization, and the intersections of science and science fiction.

Discussion of the characterization of sci-fi films on innovation capacity of science & technology. *Yiming Wang, Tsinghua University*

Science is inseparable from fantasy. There is always an inherent link between science fiction film and science & technology. Sci-fi film can also reflect one nation's ability of present Science & Technology. Its method and level of producing and design reflects one country's ability of science and technology, e.g. using computer graphics, 3D technology and the design of virtual world as computer. Without the support of these science and technology, it is hard to make wonderful films. At the same time, the sci-fi film often produces a predictable expectation to stimulate the scientific research to achieve innovation and make the real prediction after the film published. For example, invisible technology and the clone technology first show in science fiction novels and films. By analyzing the sum of sci-fi films and the sum of patents of China and US (1995-2010), a great gap in sci-fi films area between China and America is revealed. Further conclusion can be made that there is a certain degree of positive correlation between the sum of sci-fi films and the innovation capacity of science & technology (patents), so in some sense,the sum of sci-fi films can characterize the innovation capacity of science & technology. Furthermore, the causes of the current situations of China's sci-fi films are reflected, such as Chinese traditional culture, eastern and western thinking differences, the recognition of imagination and the Chinese people's scientific literacy At the end, some suggestions are proposed.

166. (85) Unruly matters - the queer side of things - II

11:00 to 12:30 pm
Solbjerg Plads: SP216
Chairs:
Sebastian Mohr, Centre for Medical Science and Technology Studies, University of Copenhagen
Marie-Louise Holm, Tema Genus, Linköpings universitet
Participants:
Queer perspectives on neuroscience and psychological studies. *Julian Anslinger, Queer STS - IFZ Graz; Birgit Hofstätter, Queer STS - IFZ Graz; Jenny Käfer, Queer STS - IFZ Graz; Lisa Scheer, Queer STS - IFZ Graz; Anita Thaler, Queer STS - IFZ Graz; Magdalena Wicher, Queer STS - IFZ Graz*

Drawing on various discussions about knowledge production and expertise in STS (e.g. Jasanoff 2003) our paper will combine a queer perspective with the concept of Geschlechterwissen ('gender knowledge'; Wetterer 2008) in order to analyse the types of gender knowledge that find their way into psychological studies and neuroscience, and via media to public. Our paper

raises the question of whether a queer perspective is useful for the analysis of scientific gender knowledge and how it could be used empirically (Hofstätter & Wöllmann 2011). Two examples of psychological studies, in this case on the relationship between 'sex' and cognitive abilities (Nyborg 2005, Weiss et al. 2003), have been analysed in the tradition of feminist science critique, complemented by a queer focus on (1) assumptions and hypotheses, (2) methodology and (3) the interpretation of results, posing the questions: What kind of theoretical approach to 'sex' and gender do the researchers follow? Are there any indications of the researchers' personal gender knowledge? What methods do they use in their studies? Which results are being emphasized and which ones are being ignored? Finally, after criticizing the construction of a sexual binary in the respective psychological studies, the paper discusses methodological consequences as we agree with Henry Minton who states: "Queer theory has its relevance for psychological theorizing and practice because it adopts a position of inquiry that is decentered from the norm" (1997, p.349).

Interspecies Art. *Desiree Foerster, Heinrich Heine University Duesseldorf*

Discourses on life and death, subjectivity, exclusion and belonging can no longer be held without considering the forms of biopolitics as they show up under the influence of biotechnologies and life sciences. My paper will deal with these challenges on following levels: The opening of new spaces, conditions and perceptions of life, which lead to a renegotiation of knowledge, but also the consequences for society, politics, and companionship, resulting from the re-creation of life, and the change of concepts of otherness, community, responsibility, relationships / networks (...) across species boundaries, beyond the current definition basis. I will show how artistic productions and strategies deal with social outcome of technobiopolitics, make them aesthetically perceptible. They show the not tangible, the object being that cannot be captured in the context and (not only in) relationship to others – it is the unpredictable and uncontrollable which also relates to the work of many artists, dealing with the issues of biotechnologies and interspecies relationships. Artists deal with new contexts, new life forms, new networks and the negotiation of it means living together. They show the out-of-control, the unexpected and the process inherent in communication, interaction, public life, and companionship. In consideration of these works we can reflect possible consequences for us, for those who see themselves as a part of the challenges of life. In this they take part in making clear that we need a new methodology in order to understand life, subjectivity and otherness today. Herein lies the contribution of the arts to the STS literature.

Queer Desiring Machines. *Katrin Köppert, Graduate Research Programm "Gender as a Category of Knowledge", HU-Berlin; Patricia Treusch, PhD student Technical University, Berlin/PhD Research Unit: "Gender as a Category of Knowledge", Humboldt-Universität zu Berlin*

According to feminist posthumanist scholars as exemplary Rosi Braidotti, the era of advanced capitalism comes along with a nearly obsessive fascination of all 'new' and a total faith in it's benefits (Braidotti 2006). The delight for fusion is immense and it comprehends multiple syntheses on a scale from nano to giga, e.g. technological enhancement, body implants and anthropomorphic machines. The envisioned and (partly) realized transgressions of mostly bodily boundaries imply particular standards, norms and functionalities. But what is the nexus between transgressions of the human self in its cultural imago as well as its (bodily) modes of existence and hegemonic power relations? We would like to bring forward queer_feminist STS by exploring this nexus through structures constitutive to a desire to exceed the human self. Our aim is to explore the desire's lines of flight (Deleuze 1996) to transgress and therefore overcome

vulnerability, finitude and mortality through prostheses, (self-)enhancement,artificial companions, etc. Our approach brings together the notion of queering as the deconstruction of heteronormative regulations and the notion of desiring-machines (Deleuze 1977) as a figurative thinking tool to conceptualize agency non-anthropocentric. Introducing this concept of queer desiring-machines, we intend to discuss the following: • to deconstruct the concepts of human self through a diffractive reading (Barad 2007) of transgressions, • to contest normative regulations through the queer desiring-machine itself in its quality of being at a the same time a sedimentation of meaning as well as meaning-making figure. Drawing on queer politics, we take the concept of queer desiring-machines and it's power to affect to open up possibilities of articulation of a queer desire for non-normative refigurations of bodies as monstrous, pervert, grotesque or expressive. Barad, Karen (2007): Meeting the Universe Halfway, Durham: Duke University Press Braidotti, Rosi (2006): Transpositions, Cambridge: Polity Press Deleuze (1977): Anti-Ödipus. Kapitalismus und Schizophrenie, Frankfurt/M.: Suhrkamp. Deleuze (1996): Lust und Begehren, Berlin: Merve

167. (09) Care in a self-managed world - II
11:00 to 12:30 pm
Solbjerg Plads: SPs03
Chairs:
Ger Wackers, Narvik University College
Ingunn Moser, Diakonhjemmet University College
Hilde Thygesen, Diakonhjemmet University College
Participants:

Adolescence as medical form of life: looping-effects of reframed notions of health and therapeutic agency. *Stefan Reinsch, Charité-Universitätsmedizin Berlin*

Since 1990, the paradigm of "inherent health" has been replaced by a notion of illness in which bodies are inherently ill and a precarious self arises that needs constant maintenance to keep symptoms at acceptable levels (Dumit 2002). During roughly the same period, new concepts in doctor-patient interactions such as 'shared decision making' assume that patients are willing to, and capable of, making decisions about their health (Charles et al. 1999). I will explore some long-term dynamics and looping effects of these reframed notions of health and therapeutic agency through a study with 15 adolescents with Cystic Fibrosis (CF), a fatal chronic disease, and their caregivers that I followed ethnographically over a one-year period. Specifically, I ask how adolescents and clinicians navigate between the Widerstandsaviso of the failing body and adolescents desire to lead what they consider a "normal life". I describe how adolescents experiments with material and temporal aspects of the(ir) diseased body tie together with expert knowledge, medical devices, therapeutic practice and social relationships. The implications are threefold. These forms of "doing CF" oscillate between logics of care and choice (Mol 2008), which are inseparably intertwined. They redefine what is normal for CF on a practical as opposed to a discursive level, which leads to a contestation of traditional forms of clinical knowledge. At least some of the adolescents – so I claim –become experts of an emerging "medical form of life" (Rose 2007) that feeds back into their relations with clinicians and researchers, their body and fellow patients.

Visualising self-management: generating, analyzing and making practical use of photographs. *Lotte Huniche, University of Southern Denmark; Birthe Dinesen, Aalborg University*

This paper explores the analytical and practical potentials of participant generated photographs on managing everyday life with severe chronic disease and telehomecare. This distinction is made in order to address questions of how to understand

photographs as informative as well as formative, as empirical materials as well as vehicles for bringing about changes in clinical practice. The photographs were generated 1) in order to contribute to research on the management of everyday lives and difficulties with COPD, 2) as part of a process of user driven innovation on the development of technological solutions and delivery of health care. We argue that the analytical and practical potentials of photographs for these diverse purposes are deeply embedded in and dependent on the wider context in which photographs come about and are purposefully put to use. The task of photographing was introduced to patients as a cultural probe during a meeting of a user panel in Telekat, a research and innovation project involving self-monitoring. We place ourselves within the analytical tradition of visual ethnography of viewing photographs as cultural texts, representations of ethnographic knowledge, and as sites of cultural production, social interaction and individual experience (as represented for example by Sarah Pink) and discuss how diverse analytical and practical potentials of photographs e.g. as representation of material reality, self-representation, reflective sounding board, communicative tool, part of social life, etc. may contribute to understandings of self-management with COPD and development of clinical practice.

From self-management to self-enhancement: the challenges to become an 'autonomous user'. *Daniel López, Universitat Oberta de Catalunya; Rocco Bellanova, LSTS- Vrije Universiteit Brussel & CReSPo- Facultés universitaires Saint-Louis*

While 'user autonomy' is increasingly put at the centre of the services, monitoring systems are rendered ubiquitous, and a panoply of actors are getting involved to gather, qualify and decide upon all sort of data. Indeed, turning user autonomy into a solution entails to set the self as a problem to be framed according to the answers that each arrangement proposes. However, in those arrangements we find different enactments of 'user autonomy'. According to studies on telecare and telemedicine, we can sketch autonomy as self-management, in which the users have to be in control of care-delivering. But, drawing on two case studies based on a brain-training service addressed to older people, and a gym-training monitoring system, we show the enactment of a slightly different autonomy, definable as 'self-enhancement'. While both kinds of 'user autonomy' share the tension between the claimed centrality of the user and the collective arrangement of actors involved, the 'self-enhancement' mode seems to be characterized by the need to prove (your)self in challenges. In particular, these challenges are multiplied in daily-life activities, and transform walking, biking, or playing video and board games into mini-tests not only to confirm but also to raise the threshold of perfectibility. Drawing on ethnographic and documental research, we present the commonalities and differences between these two deployments of 'user autonomy', and the implications for the care of the self.

Infusion pumps, professional guidelines and self-managed terminal sedation at home. *Ger Wackers, Narvik University College*

Exploring the conditions for dying at home, this paper contrasts an autoethnographic account of the use of terminal sedation at home with the logic of palliative sedation for the dying inscribed in professional guidelines of the Norwegian association of physicians. In the home care situation terminal sedation affords the performance of a dignified, self-managed death. Whether the administration of drugs impacts on the time of death is a non-issue. In the professional guidelines terminal sedation is scripted as an intervention that shall only be applied as a measure of last resort in the case of intractable suffering that cannot be alleviated by other means. All measures taken or not taken shall be geared towards avoiding having an impact on the time of death and making sure that the incurable disease can be singled out as the

cause of death. The generally accepted principle of proportionality between the severity of an intervention and the severity of symptoms is translated into an argument about physicians' moral duty to participate in the reduction of a patient's consciousness, and therewith life experience, only when this is balanced by an equal amount of intractable suffering by the patient. The ethical integrity of the medical profession seems to take priority over and displace the needs of the dying patient. With the assistance of the palliative team at a local hospital providing the programmable infusion pump, applying terminal sedation at home inverts the displacement.

Knowledge, ignorance, and displacement in end-of-life care in Switzerland. *Corinna Jung, IBMB*

Objective: The presentation focuses on the provision of palliative care for cancer patients in their final stage of life who decided to die at home. It examines the reasons for and influences on their choice. It will be especially questioned if patients were aware of existing health care structures (like hospices). As well, it will be analysed in what way new health care structures like the DRG-system (diagnoses related groups; this system was introduced in January 2012) have an impact on their decisions. Methods: Triangulation of literature research, quantitative analysis in form of a random sample of cases of death, and qualitative semi-structured interviews with patients and caregivers. Presented Results: are the framework conditions of end-of-life care are in Switzerland and its quality as well as various influences on the patients' decision making. The focus lies especially on the lack of sufficient primary care resources and the ignorance of patients concerning alternatives to hospitals. Contribution to STS literature: Regarding our society as a "post-social science society" (Knorr-Cetina 1998), the networks around societal problems like finding appropriate provision of care and dealing with death and dying (Glaser/Strauss 1965) will be examined. The literature corpus about knowledge, new ways of knowledge (Gibbons et al., 1994; Nowotny et al. 2001) and ignorance (Böschen/Wehling 2004) will be taken into account.

168. (64) Challenges in studying technologies of democratization - I

11:00 to 12:30 pm
Solbjerg Plads: SPs05
Chair:
Christopher Gad, IT-University of Copenhagen
Participants:

Controversies regarding E-Voting & Counting Technologies and the Question of Public Control in Democratic Elections. *Randi Markussen, IT University of Copenhagen*

Information technologies are considered an important instrument in modernizing the public sector, including democratic elections. Many European countries, such as Denmark, are planning to introduce various versions of E-voting and counting technologies,while some versions of them are in use in countries such as France and Great Britain, for instance. Other countries, such as the Netherlands, Ireland and Germany, have stopped electronic voting with voting machines. The Supreme Court in Germany argued in 2009 that the use of electronic voting machines in parliamentary elections was unconstitutional as long as it was not possible for citizens to exercise their right to inspect and verify the essential steps of the election. Electronic voting and counting technologies challenge basic democratic ideas of public control of parliamentary elections as it is currently practiced in many countries, including Denmark. In my presentation I'll focus on how public control is presently performed in Denmark, and how the introduction of electronic voting and counting technologies may influence Danish democratic culture.

Exploring citizenship in the digitalization of the Danish electoral system. *Andreas Laumand Christensen, IT University of Copenhagen*

Digital voting has in recent years become a focal point for high expectations and heavy investments of many governments worldwide. There is currently growing political pressure in Denmark to experiment with, and to implement, electronic voting technology in the national electoral system. This paper explores how this development connects formal conceptions of e-voting technology with substantive values attached to matters of democratic practice and citizenship. Building on literature in science and technology studies – especially developments in actor-network theory and approaches to issues of public engagement and governance – the paper aims to contribute to an understanding of the kinds of citizenship that are emerging in the techno-political arena of e-democracy in general and e-voting in particular. By drawing on field observations and interviews with Danish policy actors, the paper explores the way e-voting technology is employed, both as material object and as discursive trope, in political practice and processes. The focus is on the role strategic and socially contingent definitions and boundaries of e-voting technology play in the construction of various forms of citizenship. The paper pays particular attention to how these performances of citizenship relate to conceptions of expertise, democracy, and power. How are such notions reconfigured and with what effects in the production of subject positions and meanings associated with democratic practice and citizenship?

Imagining human enhancements. *Kjetil Rommetveit, University of Bergen*

Narrow frames on policy problems have been seen to neglect the cultural and political sources that sustain and motivate public engagement exercises (Wynne 2003). This talk will present results from a European project (www.technolife.no) designed to engage with citizens' imaginations in the field of converging technologies and human enhancements. Technolife made a short movie about publically controversial issues related to human enhancements and placed them in an online forum. A number of interested and concerned parties were invited to take part in a discussion of social and ethical aspects of enhancement technologies. Many reacted to the movie and started out discussing the issues broached by it. Gradually, however, issues became displaced as discussions evolved and new concerns were introduced. Two tendencies stood out: first, participants kept returning to issues of societal justice. Many were dissatisfied with the present state of institutions in the West, and many held politics in low esteem. Next, the digital domain emerged as a main resource for imagining developments and change, including societal reform and political action. I finish my presentation with some reflections on the focus on the imagination and the possible use of social and technical imaginaries for the purpose of engagement exercises.

Pathways to high intensity democracy: Between protests and participatory budgeting devices. *Ana Raquel Matos, Centre for Social Studies*

Scientific knowledge and technology are implicated in almost all policy decisions alongside ethical, economic, cultural and political concerns. This raises all sorts of questions explored in STS and in political theory. Drawing on two empirical case studies this paper will review how work in STS resonates with work in political theory that seeks to advance "high intensity forms of democracy" (Sousa Santos, 1998). It will be argued that a combined approach helps to identify key mechanisms that require consideration by academics, activists and democratic reformers. The first case study analyses the protest movements against the closure of maternity wards in Portugal in 2006 and 2007 at the initiative of the government, which was founded on an expert evaluation of existing arrangements. The second case study analyses the use of a participatory device in urban planning in Belo Horizonte, Brazil. Comparing these cases raises

important questions about how 'participatory citizen', 'publics' and 'citizenship' get constituted and evolve and which understandings about science, politics and expertise inform such processes. Comparison allows for a sharper understanding how various forms of knowing come to flow together in the process (alignment) or, on the contrary, get juxtaposed with one another (proliferation). And what does that imply for actors' identities and institutional framings and mechanisms in operation. How do some forms of experience become 'substantive', 'relevant' or 'true' while others are ignored or dismissed as 'emotional', 'unfounded', 'irrelevant', 'disturbing' or 'non-scientific'? What do the mechanisms implied mean for understandings of citizenship and democracy?

169. (35) Competing visions of energy systems transitions: contributions to "Smart Grid" - I

11:00 to 12:30 pm
Solbjerg Plads: SPs07
Chair:

Jennie C. Stephens, Clark University

Participants:

Transformative potential of visions and strategies: ICT firms in the field of smart grid technology. *Sabine Erlinghagen, Eawag / ETH; Jochen Markard, Eawag / ETH; Volker Hoffmann, ETH Zurich*

The electricity sector is confronted with a series of sustainability challenges due to increasing demand, massive (re-)investment needs, depletion of natural resources, climate change, nuclear risks etc. In the future, we might see far-reaching transformation processes in the sector and smart grid technologies can play a major role here. For the development of a smarter electricity grid, information and communication technologies are crucial, which is why start-ups as well as incumbent players from the ICT sector have entered the electricity sector. The new entrants bring specific technological know-how but also innovative visions, strategies and business models to the table. These novel resources, strategies and visions may represent a major contribution to the transformation of the energy sector. In our paper, we will analyze the transformative potential of ICT firms in the field of smart grid technology. Our findings are based on a survey of more than 450 smart grid projects in Europe, an in-depth analysis of selected pilot projects in which ICT firms play a major role, and a series of expert interviews with strategy makers in leading firms in the field. We find, among others, that entrants from the ICT sector have gained influence in the energy sector and drive transformation through novel technological solutions, innovative visions and novel business models. As a strategic reaction incumbent energy sector firms have recently acquired many start-ups specialized on communication technology. While energy incumbents thus have expanded their technological competence base, they have not yet fully exploited their learning potential with regard to new services and business models.

The Smart Nirvana: old visions of the new smart energy consumer. *Yolande Strengers, RMIT University*

Visions of smart energy futures have been constructed as a unified technological utopia – a Smart Nirvana – whereby residential consumers are framed as micro-resource managers who undertake analyses of their consumption on a daily basis, and make efficient choices based on their needs, attitudes and lifestyle expectations. This vision of ordered, controlled and consumer-driven consumption overlooks the everyday social practices through which resources are consumed, and the ways in which consumer expectations and needs are established and transformed beyond the preferences and desires of individual consumers. This paper argues that technological visions can be both productive and misleading. It demonstrates that visions of

the new smart energy consumer contain old ideas from past technological utopian visions, which have failed to eventuate as their advocates intended. In particular, the assumptions and characteristics of control, efficiency, security and choice have remained remarkably consistent in past and present technological utopian visions, and are consistently desired in visions of the Smart Nirvana. The paper warns that by promoting these characteristics to consumers and attempting to replicate them in smart technology policies and programs, governments and electricity utilities may undermine their ability to address the resource and environmental problems of peak electricity demand and climate change – instead establishing a new wave of consumerism focused on 'smart stuff'. The paper concludes by suggesting alternative characteristics for the Smart Nirvana that may have more productive outcomes for the resource and environmental problems facing the electricity sector.

Smart Grid Standards: exploring the role of public policy in creating order and reducing diversity. *Sachiko Muto, Delft University of Technology, TU Delft, NL*

The development of an agreed set of standards has been identified as a prerequisite for realizing the vision(s) of a Smart Grid. At a fundamental level, the complexity of the system makes interoperability critical if pilot projects are to scale in any meaningful way. On both sides of the Atlantic efforts are therefore under way to develop standardisation road maps in order to identify gaps and avoid overlapping activity. Given the high degree of public interest accorded to the Smart Grid, these efforts are taking place with a significant amount of government involvement. Traditionally – because it has been seen as important to ensure that innovation is not hampered by premature standards-setting or lock-in to inferior technology – governments have been reluctant to interfere, relying instead on industry self-organization. In this paper, we take the current efforts in the EU and in the US to make strides on Smart Grid as a starting point for exploring the debates on the proper role of public policy on ICT in general and standards in particular. Comparing the US and the EU we use Critical Discourse Analysis to analyse how the policy of government leadership on Smart Grid standardization is made to fit with the dominant neoliberal ideology which sees the proper role of government as merely an enabler of the market. Given the increasing role of ICT in solving societal challenges, the research will contribute to our understanding of the nature and the extent of public sector involvement in this sector.

Regional Differentiation of Smart Grid Pilot Projects in the United States. *Tarla Rai Peterson, Texas A&M University; Jennie C. Stephens, Clark University; Adrienne Strubb, TAMU; Elizabeth Wilson, University of Minnesota*

The energy sector faces a challenge of integrating logics from diverse stakeholders in responding to the urgent challenges of climate change. Smart Grid electricity systems are critical dimensions of a transition toward energy sustainability, yet great variation exists in visions and articulations of these systems. To better understand how socio-political contexts shape Smart Grid, and thereby influence energy policy, we conducted focus groups and interviews with influential actors who have participated in demonstration projects in three electricity transmission regions within North America: The Midwest Independent System Operator (13 US state; Manitoba & Ontario, Ca), the New England Independent System Operator (6 US states; Quebec & New Brunswick, Ca), and the Electricity Reliability Council of Texas. The scale and scope of each demonstration project differs, and the inclusion of regulators, policy-makers, technology developers, scientists and engineers, and community leaders who work with environmental advocacy groups and relevant businesses, provides both project specific insights and insights on the different regional contexts within which these demonstration projects are developing. Working from categories

identified in the Socio-Political Evaluation of Energy Deployment (SPEED) framework, we analyzed transcripts of focus groups and interviews conducted in each region. Our analysis provides the basis for outlining social networks associated with Smart Grid, and thus, clarifying the socio-political context for deployment of Smart Grid in these regions.

170. Race and genetic variation: Projects and practices in different nations

11:00 to 12:30 pm
Solbjerg Plads: SPs08

This session will explore where, when, and how "race" and DNA interact in projects taking place in several different nations. Some of these projects are engaged in medical research, some in forensic practices, some in reconciliation projects, and all in some way in productions of ancestry, kinship, and belonging. We examine how "race," genomics and DNA have different histories and manifestations in different locations. Our aim is to compare and contrast the variations in forms and engagements in different locations to better understand local productions and to avoid universalizing any single one.

Chair:

Ramya Rajagopalan, University of Wisconsin-Madison

Participants:

How to conceive (dis)continuities of biological race? *Tino Plumecke, Frankfurt University, Faculty of Social Sciences, Center for Biotechnologies, Nature, and Society*

After the Human Genome Project, there has been a growth of race research and modifications of models of race using genetic tools. Although declarations of the end of biological race have often been made, the concept of race remains central in international life science projects and in applied genetics such as commercial ancestry tests and the Human Genome Diversity Project. In the German speaking countries the term race (Rasse) is still haunted by its use as a leading term of extermination politics under the Nazis. As a consequence the German term is rarely used in German science. However, racialized concepts are used in medicine, forensics, epidemiology, and commercial ancestry tests. In this paper, I will give an overview of the practices of conceptualization of human difference in the contemporary life sciences in the German speaking countries. From a science studies view there are some difficulties in analyzing the use of race in science. In the German context as well as in the international literature, analyses of race are mostly divided into two modes of thought. On the one hand there are interpretations of racial concepts as continuities of old concepts of race. On the other hand there are analyses which highlight a discontinuity or radical break with traditional meanings. In my analyses I look behind these two seemingly antithetical positions and ask for an appropriate consideration of race in the life sciences. Therefore, a science studies perspective can help to resolve this dichotomy and enable a broad view for making sense of human diversity.

Confounded Categories: Is the HapMap a Race-based Project? *Joan Fujimura, University of Wisconsin*

This paper examines the history and current uses of the Haplotype Mapping Project, which was organized by an international consortium of biomedical researchers who are attempting to catalog genetic variants in human genomes. Some scholars have argued that the HapMap Project was/is a race-based project, while others have argued against that view. This paper examines these multiple perspectives by focusing on two sets of practices: how the HapMap samples (HapMap 1-3) were collected, and how the HapMap samples have been and are currently used in population genetics and biomedical genetics. The paper will examine whether, where, and how "race" is used in collection practices and in the consequent biomedical research. The primary aim of this study is to write a history of the HapMap

Project from multiple perspectives to understand if and how this world geographic project is read within the context of U.S. race relations and race theory, and if and how U.S. race relations and race theory are read back onto world geography and history.

Face and Race in Forensic Identification. *Amade M'charek, Universiteit van Amsterdam*

The use of DNA has become an established and routine practice in criminal investigation in many parts of the world. Meanwhile, technological developments have produced novel venues for forensic DNA. It now figures not only in the courtroom for the purpose of identification, but also in the hands of the police investigator for the purpose of generating a suspect. One of these novel uses is aimed at making faces. It is aimed at inferring externally visible characteristics (EVCs), such as hair, eye and skin colour, on the basis of a DNA sample left at the crime scene by an unknown suspect.   In this paper I will contrast this novel practice with two other practices of face making: forensic facial reconstruction based on the skull, and forensic sketches and computer aided photofits based on eyewitness accounts. Contrasting these practices will highlight the pulsing tension between the making of an individual and a collective (racial) identity. It will show that race is at the heart of these practices. Drawing on the topological (a special) notion of time of Michel Serres I will analyse multiple versions of (old and new) versions of race in current day forensic practice. Secondly I will argue that faces are not done and finished when they leave the lab or the table of the forensic sketch artist. While moving form these locations to society and back, additional markers are mapped onto faces elucidating an ongoing entwinement between (racial) categories of science and of society.

National genetic heritage: anti-racist science and the making of difference. *Catherine Nash, School of Geography, Queen Mary, University of London*

This paper considers the intersections between the science of human genetic diversity and the politics of national belonging. Accounts of a country's demographic past reconstructed through contemporary patters of genetic variation take up and play upon longstanding interests in collective national origin stories of ancient settler groups, and ideas of continuity and change, purity and mixing, isolation and contact. Focusing on accounts of genetic variation, history, ancestry and identity in Britain, this paper traces the ways in which accounts of a national 'genetic heritage' are methodologically and discursively entangled with the question of who counts as British despite their anti-racist multiculturalism. The aim of these projects is not to characterise a national genome nor identify a homogenous indigenous population. Instead, a pre-modern geography of regional genetic diversity is counter-posed to a pattern of genetic diversity that is the product of modern immigration. This paper traces the ambiguous and contradictory ways in which correlations between ideas of cultural identity and genetic distinctiveness are both challenged and suggested in recent accounts of 'genetic heritage' in Britain.

Engineering Slavery to Cure a Disease Called Freedom. *Darla Thompson, Cornell University*

The title of my paper is inspired by the work of the prominent New Orleans physician Samuel Cartwright, who argued that a disease called drapetomania caused slaves to runaway (1851). Though not explicitly proposed by Cartwright, a common "cure" for frequent runaways was the use of iron collars. Using ex-slave narratives, I focus on what it meant to live and work under grueling conditions amplified by the use of collars, particularly those with projecting spikes, horns, and bells. I argue that iron collars served through their visibility and design to delegate and displace (Latour, 1992) the need for overseers. These technologies replaced the need to fully immobilize slaves who attempted to resist the terms of their enslavement by running away. Instead, iron collars' maintained the labor of the enslaved

in cities and on plantations, and as Cartwright advocated, made sure that slaves were cured of their maladies and remained working for the benefit of the world economy (1851). Slaves in iron collars, whether labeled mad by physicians or prone to rascality by overseers, were ensnared by practices and rhetoric that medicalized and penalized resistance to domination.I demonstrate that taken together, the intertwining assemblages of racialized medical rhetoric and practices, tools and their makers, slave bodies and their users, formed a socio-technological system that supported the development of antebellum New Orleans and the production and distribution of southern commodities. My work contributes to the history of racial science, medicine, and technology.

171. (77) Urban assemblages and cosmopolitics: contributions for an ongoing debate - IV

11:00 to 12:30 pm
Solbjerg Plads: SPs10

Chairs:

Anders Blok, Copenhagen University
Ignacio Farias, Social Science Research Center Berlin

Participants:

Copenhagen: urban space and mobility from 1950 to 2050.
Andrés Felipe Valderrama Pineda, Technical University of Denmark

Climate change is increasingly framed as an overarching problem, which should be addressed at all levels of social life. Cities have been articulating their own responses in terms of different visions, plans and strategies towards sustainability. Local action is deemed global in importance given that soon more than three quarters of world's population will live in urban settings. Thus, any type of replicable successful urban development can have planetary impact if successfully replicated. Scholars from various fields are beginning to articulate these processes as sustainable transitions given that they entail the aggregation of technological, scientific and social changes. In this paper we discuss one such approach that emerged from the fields of STS and Evolutionary Economics: the Multi-Level Perspective (MLP). We applied the MLP to make sense of the urban transitions in mobility that have happened in Copenhagen since 1950 and the visions outlined until 2050. Through the study of this case we find that the MLP should be adjusted to account for the following analytical challenges: first, to account for multi-technological regimes of mobility; second, to account for past, present and future in the same analytical register; third, to account for the ways climate change and sustainability are articulated as central elements in visioning and planning for cities; and fourth, to account for the spatial and cultural dynamics that co-evolve with technology and produce and re-produce the urban.

Assembling Urban Sustainability: New Urbanism in Coastal California and the Portland Metro. *Erik Nielsen, UCSB*

In this paper, I deploy urban assemblage analysis to examine the biogeographic, demographic, and organizational dimensions of urban sustainability. Following the recommendation of Brenner et. al. (2011), assemblage analysis is used here as a methodological approach to explore the interactions between social and material actor-networks. Assemblage analysis emphasizes the importance of not only social actors, the typical subject of sociology, but also non-human actors that often end up acting through human representatives. I believe this approach can be useful for not only studying, but also addressing the many different social and ecological challenges facing urbanity. This study explores actor-networks that promote "new urbanism/smart growth" on the Central Coast of California and the suburbs surrounding Portland, Oregon. New urbanism is a land-use strategy that combats automobile-dependent suburban sprawl by encouraging compact higher-density housing and transit-oriented development. It also advocates for the protection of agriculture and other environmental amenities. In this study, I use GIS and comparative logic to map and contrast assemblages of both physical geography and socio-demographic characteristics in a total twelve cities. I then focus on the actor-networks involved in the urban development process of several building sites in two of those cities: Santa Barbara, California and Gresham, Oregon. Interviews are conducted with civic officials, environmental activists, developers, and architects to determine the assemblage of network associations involved in the development process of a number of "new urbanist" building projects. This paper contributes to STS by examining the linkages between urban design and the political economy of urban development.

Challenging Research on Neighbourhood Images and Urban Development through Assemblage Thinking. *Isabelle Schoepfer, University of Fribourg, Switzerland*

In this paper I will show how assemblage thinking enacted my research on neighbourhood images and urban development. I will present the main results and knowledge gains from my research through my theoretical approach of thinking urban space in a framework of assemblage thinking. The notion of neighbourhood image refers to the perception and subjective knowledge of a place, composed by a whole of features andmeanings that one can associate to a place or to a neighbourhood. They perform decision-making processes of urban dwellers, and contribute therefore to socio-spatial transformations of the city. As I understand a neighbourhood image to be a process of constant becoming in which a multiplicity of elements are (re)assembled and interact, I draw my theoretical perspective from the DeLandian approach of deleuzian assemblage. Considering neighbourhood images as assemblages of human, non-human, expressive and material components, allows a more in-depth understanding of images. My methodology is also inspired by assemblage thinking (Law 2004). I use a diversity of qualitative and quantitative methods – subjective modelling, photo-elicitations, map drawing on a GIS interface, and survey – in order to grasp different human and non human practices related to neighbourhood images. The diversity of methods performs the multiplicity ofneighbourhood images and allows me to look at these processes of constant becoming, by means of the experiences and everyday life of inhabitants of the Swiss cities of Geneva and Zürich.

Unstable Ground: The Politics of Urban Assemblages. *Austin Zeiderman, Stanford University*

Analysts of urban governance once objectified the world being governed, as if that world were inert and stationary. Recent engagements with STS have reversed this trend by drawing attention to the agency of urban populations and environments within emerging forms of techno-political authority and expertise. We are now aware that the people and things subject to techniques of urban governance play an active role in their own governing, at times complicating, at others facilitating, and sometimes even inciting governmental thought and action. And we have come to recognize infrastructures, environments, and built forms as active participants in urban politics. However, what is the political force of the urban assemblage? Does an explicit acknowledgement of the hybridity of technical and social expertise, the porosity of the boundary separating expert and non-expert knowledge, the blurriness of the line dividing users and producers of urban space, and the entangled relationality between governors and the governed lead to more egalitarian, inclusive, or just cities? Drawing on two years of ethnographic fieldwork and archival research in Bogotá, Colombia, this paper examines how the emergence of risk management as a technique of urban governance reconfigures the terrain of political engagement in the city. It argues that rather than presuming that an assemblage approach to urban studies rests on stable political ground, we must analyze how specific urban assemblages are

harnessed (and harness themselves) to particular political projects and to what effect.

172. (73) Critical studies of interdisciplinarity - II

11:00 to 12:30 pm
Solbjerg Plads: SPs12
Chair:

Barbara Prainsack, Brunel University

Participants:

Strategize or Perish: Social Scientists and Humanities Scholars Working in Faculties of Medicine. *Mathieu Albert, University of Toronto*; *Ayelet Kuper, University of Toronto, Wilson Centre*; *Sarah J Whyte, University of Waterloo*

Many funding agencies and research institutions have recently undergone restructuring to intensify interdisciplinary research. These policy encourage the formation of research teams as well as centres, networks and even whole domains of research in which intellectual communities seek to combine diverse theoretical perspectives and methodological approaches. Such communities, organized around an explicit interdisciplinary ethos, have created opportunities for social scientists and humanities scholars within the field of health research. However, these opportunities come with accountabilities that may shift the knowledge production practices of these scholars. Scholars from the social sciences and humanities are often accountable to the evaluative mechanisms (e.g., promotion committees) of medical faculties.

Interdisciplinarity as a rhetorical device in boundary-work. *Pia Vuolanto, University of Tampere, Finland*

The presentation analyses how interdisciplinarity is used as persuading device in boundary-work situations. Discourse analytic and rhetorical methods of STS are used to analyze two controversial episodes concerning fasting and therapeutic touch. The efficacy of fasting became an issue as a PhD dissertation on fasting was accepted in the department of nursing science at the University of Tampere in 1996. During the same year, therapeutic touch was questioned as a Master's thesis in nursing, in the same department, received the annual "flim-flam" award given by the Finnish association of skeptics. In the first episode interdisciplinarity was used as a rhetorical device to promote disciplinary independence, to specify distinctions between different disciplines and to extend the disciplinary view beyond the traditional scope of medical sciences to alternative treatments. In the second episode interdisciplinarity was used as part of disciplinary identity-work to restrict the power to define the scope of nursing research and to legitimate the disciplinary status of nursing among stronger and traditionally more powerful medical sciences. The study shows how interdisciplinarity is used as a means to articulate disciplinary independence and relations with other disciplines. Interdisciplinarity appears as a power mechanism to restrict disciplinary independence and mark the boundaries of science. The study also reveals the vulnerability of academic status in a newly organised applied social science discipline establishing its relations with other disciplines. The study draws on previous studies of interdisciplinarity (Klein, Julie Thompson 2009. The Rhetoric of Interdisciplinarity) and boundary-work (Gieryn, Thomas 1999. Cultural Boundaries of Science). Key words: interdisciplinarity, scientific boundary-work, rhetoric

Discourses of interdisciplinarity and the changing topography of higher education: Implications for knowledge-makers. *Maria Athina (Tina) Martimianakis, University of Toronto*

Interdisciplinarity is promoted by funding agencies, governments and professional associations as a way to address important and pressing social problems. Few studies conducted from within engineering or medicine, have challenged this rationale or have explored how interdisciplinary collaborations relate to broader socio-political considerations. This study addresses this gap by exploring 1) How the discourse of "interdisciplinarity" is construed in popular and institutional texts within these two knowledge fields, and 2) How the discourse affects the work of faculty and administrators working in medicine and engineering at one research intensive university. An archive of texts was assembled, including policies, government and institutional reports, academic literature, popular press, institutional websites and newsletters. A critical Foucaudian discourse analysis of these texts provided a specific historical context for interviews conducted with 20 faculty and administrators. Subsequently, a situated analysis of how discourse is embodied and experienced was developed and applied to the whole archive. The analysis revealed that four inter-related statements make-up the discourse of interdisciplinarity in its popularized form: diversify-collaborate-innovate-integrate. Participants reported many every day practices that link back to this discursive logic. Administrators also spoke of shifts in institutional practices, particularly how they account for their activities to stakeholders. Analysis revealed that interdisciplinary collaborations are implicated in management approaches that capitalize on the value individuals place on 'making a difference'. The interdisciplined subject is caught up in discourse that equates acting in an entrepreneurial way with acting morally, that is, engaging in knowledge making activities that help answer questions of social importance.

Neighbourhood, moral economy, and dissident interdisciplinary research. *Christine Aicardi, Department of Science and Technology Studies, UCL*

Despite much talk about interdisciplinary knowledge production over the past decade or so, relatively few empirical case studies have examined attempts at actually doing it. Moreover, these predominantly fall under the banner of what could be broadly characterized as engineered interdisciplinarity, i.e. research projects and centres that have been established with interdisciplinarity as an explicit goal. The present paper focuses instead on a distinct, rather grass-root category of interdisciplinary research. I term it dissident in that it challenges established research traditions, but borrowing from literature on interdisciplinarity, it could alternatively be described as critical interdisciplinarity, interdisciplinarity in agonistic/antagonistic mode and following a logic of ontology, or Scientific/Intellectual Movement. The paper's empirical basis is a 3-year study of a research group in the field of Artificial Life, conducted using a combination of ethnographical fieldwork and bibliographical analysis. Its aim is threefold: (1) to benchmark findings about their interdisciplinary ethos and practices against relevant scholarship; (2) to present the results of an inquiry into the cultural identity and social organization of the group, which have led to define a notion of neighbourhood and to characterize its moral economy, including its recruitment and enculturation processes; (3) tying up these conclusions, to demonstrate a strong correlation between their dissident interdisciplinary research and the form of life that sustains it. It brings both methodological and empirical contributions to the critical study of less visible forms of interdisciplinary research, and has a reflexive import for the practice and sustainability of STS research.

173. (55) War and the human: innovations and interventions - II

11:00 to 12:30 pm
Solbjerg Plads: SPs14
Chair:

Kenneth MacLeish, IHHCPAR, Rutgers University

Participants:

Secret Devices of Security Publics. *Nisha Shah, University of Ottawa*

Recent scholarship in STS and across the social sciences and humanities examines how tangible things participate in the emergence and legitimation of publics. Attention has focussed on conspicuous objects such as art, architecture and mundane everyday devices. Amongst the most pervasive public objects are those related to security – weapons – the devices societies use for their defence. While publics privilege openness, security operates through secrecy: weapons development, even in democratic societies, is frequently classified information, an official secret. Uncovering how publics are interwoven with their material means of security, this paper demonstrates that weapons' visibility – their overt justification and use – evoke regimes of secrecy. Developing a theory of virtuous objects, I apply methods from archaeology and ethnography to examine the objectives of security surrounding three prominent weapons technologies in Western democracies (cryptography, atomic bombs, drones) and show why invisibility has become instituted as a vital component of public life. Overall, I attempt to extend discussions of objects as actants by demonstrating how and why specific regimes of secrecy are embedded in weapons design, and how weapons development helps to shape the publics it defends.

Collateral Damage and the Invention of Technology. *Frederik Ferdinand Rosén, Danish Institute for International Studies*

In war, collateral damage is the incidental or unintentional injury or harm caused to persons or objects that are not lawful military targets at the time of occurrence. Collateral damage is lawful as long as the force is not excessive in light of the overall military advantage anticipated from the attack. It is firmly established in customary international law that collateral damage is exempt from liability. Nevertheless, collateral damage has turned into a contentious moral and strategic problem in current warfare. A great deal of current weapon technology and war governance tools are shaped to minimize the fully legal category of death we call collateral damage. This paper schetches out the deep complexity of the category of death and suffering labeled collateral damage. It demonstrates how collateral damage is not a euphemism, a utilitarian weighing, an accident or a sacrifice of civilians, but an age old and most peculiar category of death and suffering that remains an unresolved puzzle to theology, philosophy and political and legal theory. In fact, only two forms of authority have historically been entitled to make a claim to collateral damage, which is God and the State. As such, the category of death and suffering we today label collateral damage offers a most important perspective to the history of weapon technology and military governance: in fact, collateral damage is today the perhaps most important concept in weapon designs.

Red Cross' first design and its displacement in the Spanish civil wars of the 1870s. *Jon Arrizabalaga, IMF-CSIC, Egipcíaques, 15 E-08001 Barcelona, Spain*; *Guillermo Sánchez-Martínez, Universidad Pública de Navarra, Pamplona, Spain*; *Juan Carlos García-Reyes, IMF-CSIC, Egipcíaques, 15 E-08001 Barcelona, Spain*

The 1864 Geneva Convention was designed to provide a safeguard for wounded soldiers in campaign, and sanitary facilities, either civil or military, to relieve them. It was an effect of the 1863 Geneva Conference, that was aimed to articulate civil societies in order to overcome the deficiencies of military health services in the face of modern international warfare. This Convention resulted in promoting the civil societies of the Red Cross movement. Spain signed the Convention in 1864, and less than ten years after was shaken by two simultaneous civil wars, namely the Second Carlist War (1872-1876) and the Cantonal war (1873-1874). Although civil wars were not contemplated in the Geneva Convention, the Spanish Red Cross (SRC) was determined to relieve the wounded on all the sides in these wars under neutralisation –a principle adopted in Geneva regarding international wars. This meant a successful displacement of the object of a newly erected technology, both legal and medical.

Neither this intervention of the SRC nor its implied displacement have been previously examined. The means through which SRC came to perform this displacement are outlined. It is suggested that the case provides evidence (1) that technological solutions involving ideologically motivated values could be instrumental to endorse those values under different ideologies, by consolidating them as new operational values; (2) that these values, which have been alienated from their original ideology, could become institutionalized on embodied technologies; and (3) that this institutionalization could consolidate those values and technologies as cultural elements on mutual interdependence.

Finding America Hidden Behind Hiroshima. *Robert Jacobs, Hiroshima City University*

On 6 August 1945 US President Harry Truman introduced Hiroshima to Americans as an important Japanese "Army base." This misrepresentation of a city of 300,000 would characterize succeeding American visions of the target of the first nuclear attack in history. Through the late forties Hiroshima was used to express anxieties over the developments of the modern technologies of war for the future of humankind. In August 1949 the first nuclear test of the Soviet Union changed the usage of the name Hiroshima yet again. Now, Hiroshima had come to represent American vulnerability and likely victimhood as a potential nuclear target. Articles discussed "Hiroshima U.S.A." and bemoaned that American cities might become the "next Hiroshima." A particular fixation on imagined attacks on New York City and other major American cities filled newspapers, magazines, novels, radio shows, film and television. The use of the name Hiroshima returned to American's visions of their own vulnerability in the wake of the 911 attacks. Widespread use of the term American Hiroshima referred to what was imagined to be an inevitable nuclear attack on the United States by Al Qaeda spawning websites, YouTube videos and conspiracy books. What was lost in this discourse was the city of Hiroshima itself, and those who both died and who live there. This paper examines these symbolic depictions of Hiroshima as it evolved during the Cold War, and now in the post-911 era.

174. (67) Technologies of the self - II
11:00 to 12:30 pm
Solbjerg Plads: SPs16
Chair:
Andrew Pickering, University of Exeter
Participants:

Self by Design: Personal-Tracking Applications and Life as Self-Transformation. *Natasha Dow Schull, MIT*

The past decade has seen numerous academic and popular treatments of the ways in which people are tracked by governments and corporations, and how such tracking might threaten personal identity, liberty and privacy. This paper at once complements and departs from this literature, exploring questions that arise when individuals apply digital tracking tools and techniques to themselves, treating their own habits, bodies, moods, and thoughts as objects to scrutinize, modulate, and transform. What do digital forms of self-tracking, self-care, and self-governance reveal about changing understandings of the self, and how do they remake subjectivity? How do their specific technical affordances mediate the new enactments of selfhood — or, in ontological terms, new ways of being — they entail? How might scholars in science and technology studies most productively approach this phenomenon? I will begin to answer these questions by focusing on the case of the Quantified Self movement and its personalized data logging and analysis applications. Drawing on ethnographic research and interviews conducted with participants in this movement — many of whom design and redesign the very applications they use — I suggest that they are not simply managing and transforming their lives with these tools; more than that, they are performing a

technologically-mediated mode of living that we might think of as "life as self-transformation."

"Changing your life": Transformations of the self within practices of losing and keeping weight. *Michael Penkler, University of Vienna*

Body weight is for many an important focus in everyday life and a source of constant worries and concern. People who have successfully lost weight and maintained it often describe weight-loss as both consequence and cause of far-reaching alterations: They experience it as the source of a more balanced and active self, as part of a process in which they regain control over their own body and get in tune with their own nature. But losing weight and maintaining it also requires many transformations like altering daily routines, developing novel relations to food and exercise, acquiring new habits and desires and unlearning old ones. Drawing on a multi-method ethnography, narrative interviews and focus groups, my aim in this paper is to develop an understanding of practices of losing and maintaining weight as constituting a set of socio-material transformations and entanglements. Building on post-humanist and neo-material theories, I will analyze how practices and technologies like counting calories, assigning values to foods, and learning to "listen" to bodily cues entail specific ways of relating to the self, the body, and the world, as well as novel ways of perceiving, of being attentive, of affecting and being affected. I will put an emphasis on how subjectivities emerge within practices and technologies connected to weight, and on how change is enacted and stability achieved within such processes - e.g., when people modulate their everyday practices, their bodies and desires, and their life worlds in ways enabling a new, more disciplined or more natural self.

Readjusting the self: measurement devices and their effects on well-being. *Minna Ruckenstein, National Consumer Research Centre*; *Mika Pantzar, National Consumer Research Centre*; *Toni Vanhala, VTT Technical Research Centre of Finland*; *Veera Mustonen, National Consumer Research Centre*

Technological measurement devices enact particular kinds of subject positions and concerns. Inspired by this conventional wisdom stated by STS scholars we collected a rich empirical data tracking the daily lives of thirty people. Contextual data from wearable and mobile sensors (e.g., audio, acceleration, and GPS location) and self-report data (e.g., mood, and stress) was combined with qualitative data gathered before, during and after the test period. In this paper, we discuss preliminary findings of the effects of measuring devices to notions and ideals of self. For our research subjects new data streams represent an opportunity to enhance their well-being through learning more about their bodies, minds, and everyday practices; they see self-monitoring offering powerful tools for change. We discuss what kinds of ideas and practices self-monitoring promotes. In terms of well-being, one of the stated flaws of self-measuring is its focus on singular self and predefined aspects of well-being. People recognize that their well-being is contextual; it emerges in relations between people and pets, for instance. The technology-enhanced body suggests a more rational and legible human being, a body that reports to the self. People believe that they can learn to rethink and readjust their selves and doings with technologies. Yet, profound transformations remain utopian, because these technologies can only read and report individual aspects of self and well-being.

Anorexia and Bulimia as Technologies of the Self: "Semiotic-Material Actors" in "Fluid Spaces". *Maria Gonzalez Aguado, University of Vienna/ CSIC Instute of Philosopy*

I address the relationship between medical technologies and the Internet in the enactment of subject positions in the promotion of anorexia and bulimia (A/B) as lifestyle choices. I focus on the role that the cyberspace has in the conversion of A/B's medical categories into technologies of the self. I explain how an STS analysis of on-line pro-eating disorders groups illustrates how the Internet has become a privileged locus for the communal enactment of corporality and the prominent role that the displacements of certain biomedical technologies (body monitorization technologies, diets, medications, and diagnostic categories) have in the emergence of new subject positions. In my presentation on the cyberspace's performative character in the negotiation of A/B on the Internet, I will discuss the four methods employed in my STS project: * virtual ethnography of the so-called Pro-Anorexia and Bulimia Movements on the Internet; * digital tools of data visualization; * textual analysis of personal narratives in the form of autobiographies, and * epistemological analysis of existing diagnostic and clinical research literature on ED I will tackle the Internet as a "fluid space" that brings about disruptions in "dominant epidemiological paradigms", which is performed by and performs subjectivities re-articulating elements from the off-line world with new ones. For doing so, A/B's DSM medical categories will be understood as "material-semiotic actors" which hold and reproduce certain bodily ideals and practices as well as senses of individuality. My analysis will explain how members of these virtual communities negotiate a common identity as bulimic and anorectic re-interpreting and displacing medical discourses and technologies. I will describe how these subject positions are enacted on-line through discourses about daily practices such as eating, body monitoring or exercising. Further in my analysis, I will address how emotions are mobilized within these communities and beyond their frontiers in order to find out how these subject positions impinge upon pro-eating disorder groups' members off-line lives.

175. (34) The epistemic and political authority of expertise in environmental governance - I

2:00 to 3:30 pm
Solbjerg Plads: D4 Aug

Chairs:

Silke Beck, Helmholtz Centre for Environmental Research
Eva Lövbrand, Linköping university

Participants:

Shifts in Epistemic Communities around Nature Governance: The Seemingly Paradoxical Convergence of Sustainability and Extraction. *Veronica Davidov, Leiden University College The Hague*

This paper explores the the links and disjunctions between two key epistemic communities in the field of environmental governance: the fields of expertise around "sustainability" and around "resource extraction." Both categories are invoked and implicated in the discussion of the range of outcomes in conversations and policy debates about climate change and biodiversity. On one hand they represent two opposite, alternative to each other trajectories of environmental governance; on the other hand, the new epistemologies of governing nature through paradigms like PES (Payment for Ecosystems Services) or REDD (Reducing Emissions from Deforestation and Forest Degradation) increasingly collapse the purported difference between the form of nature governance based on ecosystem integrity and inalienability and the one based on alienability and financialization. My paper will discuss the implications of this epistemic shift, using as a broad case study domain the understudied, and seemingly paradoxical, yet widely-occurring phenomenon of the co-presence of ecotourism and resource extraction in close geographic proximity to each other. How is the current expertise on nature governance contributing to the emergence of this phenomenon, which challenges the familiar analytical and classificatory categories deployed in discussions of

how (and by whom) nature should be used? Are new forms of expertise or new types of epistemic communities necessary to understand such convergences of previously "incompatible" trajectories in the governance of nature?

Complex, contradictory and creative expertise in forest biodiversity protection. *Taru Peltola, Finnish Environment Institute*

Following the global concern for the loss of biodiversity, biological knowledge has become central in environmental governance. STS has addressed various aspects of the data-driven nature of conservation, ranging from knowledge infrastructures to citizen involvement in knowledge production. This paper focuses on how biological knowledge is applied in forestry, one of the most threatening socio-economic practices to biodiversity. Drawing from a case study in Finland, carried out as an ethnography of forestry expert practices, I analyze how expertise is mobilised for conservation through the use of information systems, guidelines, training courses and the social dynamics of the expert community. Since the mid 1990s, biodiversity has been normalised in Finnish forestry through legislation, certification and voluntary contracts. Nature protection is implemented outside protected areas, involving privately owned commercial forests. Therefore, biological values need to be identified and located prior to any planned forestry operations. Forestry experts have developed new knowledge practices and techniques to implement the policy goal. Expertise and authority are, however, complex achievements. Forestry experts are enrolled to fulfill two contradictory policy goals: the homogenization of forest habitats for improved forest growth for industrial processes and the securing of the heterogeneity of these habitats. Although they have developed various creative strategies to navigate this political landscape, their authority is constantly evaluated and constructed in relation to the diverging policy goals, thus making their expertise unstable and questioning the linear assumptions of the science driven solutions to the loss of biodiversity. Biodiversity expertise is necessarily pluralistic, decentralized and heterogeneous.

Performing the Forest: Carbon Accountability and the Politics of REDD Monitoring, Reporting and Verification Practices. *Aarti Gupta, Wageningen university*; *Eva Lövbrand, Linköping university*; *Esther Turnhout, Wageningen University*; *Marjanneke Vijge, Wagening University*; *Ingrid Visseren, Wageningen university*

In recent years we have seen the rise of a range of methods, tools and expert practices to monitor, report and verify (MRV) stocks and flows of carbon in tropical forests. Many of these carbon accounting practices have developed in parallel to, or as a direct result of, the multilateral climate negotiations on REDD+ (Reducing Emission on Deforestation and Forest Degradation). REDD was first introduced within UNFCCC negotiations in 2005 to give developing states financial incentives to contribute to the mitigation of climate change by reducing national deforestation and forest degradation rates. This paper uses a conceptual approach at the interface of science and technology studies and governmentality studies to take stock of the growing body of literature about REDD+ and the MRV systems attached to this governance arrangement. The paper aims to assess which expert discourses dominate current REDD+ debates and what these discourses tell us about how forests are imagined and rendered accountable within the UN climate regime. In particular, we assess scholarly critique against the use of instrumental forms of carbon cycle expertise and the technicalisation and simplification of forests produced by REDD+ MRV systems. We advance the concept 'carbon accountability' to denote both the range of practical ways in which carbon is taken into account and hereby comes to constitute or perform the forest in global climate governance, and critical calls for more accountable forms of carbon cycle

expertise in the REDD domain.

Sanitary markets: food safety regulations and the purification of the capitalist exchange of foodstuffs. *Carlos Novas, Carleton University*; *Michael S Mopas, Carleton University*

Ever since the passage of the UK Food Adulteration Act in 1860, regulatory authorities in a number of jurisdictions have been concerned with ensuring that the exchange of foodstuffs is not tainted by vendors who wish to increase their profits through adulterating the foods they sell. This paper is concerned with exploring the role that food safety regulations play in sanitizing or purifying the profit motive in relation to the capitalist exchange of foodstuffs. Rather than focusing on the range of bacterial or chemical entities that can contaminate the food supply, this paper focuses instead on how municipal and provincial food safety regulations work to ensure that the profit motive does not prejudice the safety of the food supply. This paper draws upon Bruno Latour's work on purification and Michel Callon's recent work on markets.

The role of boundary organizations in the social status of climate change knowledge. *Anna J Wesselink, University of Leeds*; *Robert Hoppe, University of Twente*; *Rose Cairns, University of Leeds*

On the rise since the 1980s, the status of climate change knowledge has suffered a steep decline since climategate. A plethora of institutional forms has emerged whose remit is to link climate change science to policy making. These are best understood as boundary organisations where science and politics intertwine. The article outlines a multi-level conceptual model which demonstrates how context is crucial to understanding how boundary organisations operate, and how they affect the co-production of knowledge and policy for climate change. Current literature on boundary organisations highlights a number of emergent research themes, dealing with values and frames, uncertainty, knowledge conflicts, scaling, policy-oriented learning, trust, and institutional architecture. These will be illustrated through a cross-national comparison in a number of countries and internationally. Although boundary organisations can be demonstrated to have had a significant effect on the rise and fall of social status of climate knowledge (and the concept thus has considerable descriptive and explanatory value), the context-dependent nature of boundary arrangements leaves limited scope for a prescriptive vision of the ideal boundary organisation. It is becoming increasingly apparent that 'one size fits all' policy instruments such as Kyoto may not be the best or only mechanism for dealing with climate change; likewise the diversity of context-specific ways in which scientific knowledge is made authoritative for public use suggest there can be no one-size fits all boundary organisation for facilitating science-policy interactions.

176. (96) In search of "lines of flights" in/for/to/from Latin America - III

2:00 to 3:30 pm
Kilen: K143
Chair:

Ivan da Costa Marques, Universidade Federal do Rio de Janeiro

Participants:

Scientific culture and the scientist entrepeneur. *Rafael de Almeida Evangelista, Labjor/Unicamp - Universidade Estadual de Campinas*; *Marta Mourão Kanashiro, Labjor/Unicamp - Universidade Estadual de Campinas*

The apparent rejection or cautiousness from the lay public on some scientific policies - seen as "correct" and "logical" by the western science - has been understood by some analytical trends as a sign of lack of "scientific culture" by the public, or due to a

gap between an humanistic tradition and a more scientific approach (Snow, C.P.). Using this image about the "problem", it is emerging some proposed models for science communication. They indicate the need for empowerment and / or participation of the society in relation to the universe of science. The Internet also has been presented as a solution or line of flight for the appropriation of science and technology today, seen as a more democratic and egalitarian space or vehicle of communication and action, and also seen as a tool for collective work and knowledge. This paper aims to discuss and analyze these debates and propositions using the image of an ideal type: the scientist entrepreneur, i. e., the one capable of synthesizing and unite the developments of today's capitalism, the production of science, and the communication of the benefits of the scientific knowledge. Does scientific knowledge also means western, reliable, productive and profitable knowledge? How these displacements and ideas are impacting ways of making and communicating science?

"Buen vivir" and its paradox of scientific and technology dependence. *Maria Belen Albornoz, Latin American Faculty of Social Sciences Ecuador*

After decades of poor planning in science and technology, the Ecuadorian government has started the design and implementation of public policies for stimulating scientific production through scholarships, grants, and projects to boost strategic sectors such as biotechnology, nanotechnology, petrochemical, ICTs, and renewable energy. This paper analyzes how biotechnology has become such a strategic sector within scientific policy and why Ecuador is expected to become a biotech power within the next twenty years. The Actor Network Theory will be use to describe how biotechnology has become an obligatory passage point within the new development model; how biotechnology has been used to give meaning to the political and philosophical notion of "buen vivir"; and to show how political discourses are distanced from the practices of biotechnology that are carried out in the country. This work aims to make visible the controversies that arise from the political expectation of biotechnology as a response to situated problems of the "buen vivir" and technology transfer through the South Korean model of Cities of Knowledge, similar to the one proposed for implementation in Ecuador this year. This case study intents to contribute to the understanding of the political processes and the planning of science in countries like Ecuador, where despite the political effort to develop a notion of science in dialogue with other kinds of knowledge, it seems to persist the notion of a neutral and apolitical science.

Informal Mexican Urbanity and Subaltern Knowledge: Xonaca. *Anne Kristiina Kurjenoja, Universidad de las Américas Puebla; Maria Emilia Ismael-Simental, Universidad de las Américas Puebla*

In postcolonial territories such as the peripheries of Mexican metropolis, urban designs are subject to endless processes of informal material and immaterial changes produced by complex networks of local socio-cultural performativities. From the scope of the Modern, euro-centric urban theories and design practices, these subaltern territories have long been considered impure, irrelevant for the production of architectural knowledge and subjects to be disciplined when not neglected. The efforts of canonical urban design to bring these auto-constructed informal territories into a presumably universal order have constantly failed. Contesting spatialities emerge from the cracks of formal design. Our research explores the subaltern urbanity and its production of spatial knowledge in Xonaca, Puebla, Mexico; an old "barrio" where popular culture and everyday performativities construct material and immaterial realities that cannot longer be overlooked by formal urban planning. Informed by postcolonial perspectives on cultural mobility and studies on subaltern epistemic practices, this work proposes to reconsider the

phenomenological understanding of territories not as undefined human experiences in places or private affective relations to space, but as the production of urban meaning through the cultural and communal body and its senses. One of our goals is to investigate alternative approaches to urban design that sensibly engage with local realities. Mexican cities and their peripheral settlements require architectural strategies that respond to their dynamics of social and material displacement. We propose looking into informal urban worlds like that of Xonaca as potential sources of knowledge for the creation of socially, culturally and technologically sustainable urban solutions.

Borders and Mediations in Mexico's Expanding S&T System: Emerging Issues. *Rollin Kent, Benemerita Universidad Autonoma de Puebla; Alma Carrasco Altamirano, Benemérita Universidad Autónoma de Puebla*

As the UNESCO World Science Report in 2010 shows, in most less developed countries such as Mexico, science and technology have emerged over the past five decades and are expanding today at a faster rate than in Western Europe and the US. In the Mexican case, they have developed in numerous and increasingly diverse academic and non-academic settings; disciplinary specializations have multiplied rapidly; a self-sustaining PhD system is in place for generational reproduction of scientists; and scientific productivity and collaboration have increased significantly in the last decade. These developments are easily charted using standard indicators of publications, scientific personnel and institutions. But what are the underlying institutional dynamics and emerging tensions? This paper analyzes three dimensions of this process: institutional expansion and differentiation; changes in governance (Whitley & Gläser 2007); and especially the evolution of borders (Lamont & Molnar 2002; Gieryn 1983; Guston 2001) and mediations between science and non-science, that is, between experts, politics, firms and the public. It charts the shift from the initial thrust of the founders to insulate "universal and expert" science from politics and the public in the 1960's to today's complex scenario intertwining scientists, technologists, politicians, regulatory and mediating bodies and activists. The paper seeks to make two contributions: mapping the under-researched S&T system in Mexico; and developing the social science literature on borders in the dynamics of a national case.

177. (04) Disease and health in humans and nonhumans
2:00 to 3:30 pm
Kilen: K146
Chair:
Angela Cassidy, Imperial College London
Participants:

One Health: human/animal disease and interdisciplinarity. *Angela Cassidy, Imperial College London; Abigail Woods, Imperial College London*

We present findings from our research tracing the development of "One World, One Medicine, One Health" as the latest in a long history of attempts at bringing research, clinical practice and policy on human and animal disease together. Since the language of 'One Health' emerged in 2006, it has eclipsed earlier versions such as the 'One Medicine' approach, in part due to a broadening of scope which has brought in additional actors from public health and the environmental sciences. While One Health rhetorics have clearly been highly successful in their adoption across such a broad spread of disciplines, it is less clear as yet to what extent have they affected the 'realities' of research, medical and public health practice across human, animal and now environmental health. In this paper, we will explore the points of tension unaddressed in One Health discourses, asking the following questions. What features have contributed to the

widespread adoption of the language of One Health? Which disciplines are involved, how do they interact, and what interests have led to their co-operation? Who are the main audiences and targets for One Health, and where? How have various kinds of humans and other animals been represented in One Health, and to what end? Finally, we compare the current situation with earlier 'one healths' through the 19th and 20th centuries to explore the potential for breaking down the barriers between human and nonhuman in contemporary health/disease research.

Diagnosing diseases in plants and animals. *Ann Bruce, The University of Edinburgh*

In recent years there has been an impressive proliferation of field detection techniques from lateral flow devices (such as human pregnancy test kits) through more complex but portable PCR-based devices. These devices are expected to allow rapid disease diagnosis without the need for laboratory analysis. At the same time, a combination of climate change and increasing global mobility has increased concerns about disease outbreaks in farm animals and plants. Recent examples from the UK of the impact of Foot and Mouth Disease and Bluetongue in livestock, and the challenges posed by Sudden Oak Death in plants demonstrate the seriousness of the issues. In this paper I draw on two empirical studies, one based on veterinarian and farmer attitudes to use of veterinary diagnostics and the other based on attitudes of plant health inspectors to use of rapid diagnostics in disease control. I will compare and contrast the ways in which government plant health inspectors, and veterinary surgeons respond to these developments and how they envisage diagnostic tools to contribute to their knowledge and expertise. I will emphasise the differences between the two sectors and their communities of practice, the differing contexts and the resulting differences in approach to adopting rapid diagnostic tools. The 'One Health' approach emphasises the connections among human, animal and environmental health, but the data presented here suggest very different communities and knowledge practices are involved.

Immunity and Shared Health. *Steve Hinchlife, University of Exeter*; *kim ward, University of Exeter*

There are at least two spatial imaginaries that inform current strategies of human and animal health. The first is marked by integration and exclusion. Diverse socio-technical knowledges, cultural meanings and biological systems are increasingly drawn into the human-animal fold, often under the auspices of biosecurity. A joined up system offers security from disease, and a resulting border control between the integrated and the excluded, the conformed and mal-formed, the secure and the insecure. As we will demonstrate, the tendency is to assume a new but far from innocent collective body. A second possibility also involves connection, and community, but here the bio-community is more open, less coherent and in process. In this version, inside and outside are in continuous exchange, calibrating one another. Integrity and integration give way to notions of learning and experience. This collective is, in short, a matter of intra-gration, a mixing of unlike kinds. In this paper we ground these spatial immunities with data from fieldwork in the UK, where different notions of animal and human health relations seem to coexist. Through empirical examples we demonstrate how health is practised through various immunitary logics. Drawing on Haraway and Esposito, we argue that it is through multiple rather than integrated health worlds that bio-security and health are generated.

Retrospect and mitigation: public health discourse on 2009's H1N1 pandemic. *Mark David McGregor Davis, Monash University*; *Paul Flowers, Glasgow Caledonian University*

The 2009 H1N1 (swine flu) outbreak turned out to not be the devastating respiratory infection it was first thought to be. The outbreak and its management has been much analysed and debated, including by the WHO, national and local governments and public health and related agencies. New pandemic

preparedness and control plans that take account of the events in 2009 are in place or in development. We examine this official response to the severe influenza pandemic that never was in connection with the interview discourse of UK public health practitioners regarding their own experiences of managing the outbreak. We establish how plans for responding to and controlling H1N1 were negotiated into practice, with particular reference to 'containment' used in the UK and elsewhere. We discuss the retrospective and mitigating 'we had to do what we thought was right at the time' used by interviewees to explain their experience of articulating plans for a severe pandemic influenza with one that turned out to be mild for most. Drawing on critiques of techno-scientific governance, we explore the importance of influenza's history and future for governing responses to the H1N1 outbreak and how pandemic response and control plans disrupted the normal ways in which public health exercises its authority, utilises evidence and organises health care. We conclude by suggesting that difficulties for pandemic influenza planning lie in its particular articulation of a prevention imperative, that is, securing a safe future against that which cannot be predicted.

178. (21) (Trans)formations of kinship: travelling in search of relatedness
2:00 to 3:30 pm
Kilen: K150
Chairs:
> *Stine Willum Adrian*, Aalborg University
> *Charlotte Kroløkke*, University of Southern Denmark

Participants:

Body economies: global trade in human biological material. *Ingrid Geesink, Rathenau Institute*; *Chantal Steegers, Rathenau Institute*

Technological innovation has enhanced possibilities to derive, process, modify and store human tissues and cells. Parts of the human body now circulate in an international network of labs and clinics, of producers and consumers. This is especially prominent in the reproductive field, where people and goods find their way via internet and easy Jet. Fertility specialists and intended parents are willing to travel for access to treatments and care, to gametes and legal systems, that are otherwise unavailable in their home country. In addition, living donors offer their services and products – often online, and often against payment. Thus more human biological material is becoming available in a wider international context that is increasingly becoming commercialised. Our empirical research, comprising a book and television documentary (in Dutch), covers emerging reproductive markets (gametes, surrogacy, one-stop-baby shops), established markets for organs (blood, kidneys), and recycle markets (clinical waste including foreskin and bone). These markets clash with non-commercialisation principles in national and European law, and challenge our donation system and its underlying values. We argue for more discussion on the political impact of international trade in parts of the human body and consider three trajectories. First, information, transparency and consent. Second, alternative donation systems. And finally, also consider where appropriate forms of financial incentives, remuneration, or compensation can support us in both preventing exploitation and securing access to valuable human biological material.

Queer Reproduction and the Reconfiguration of Assisted Conception in Taiwan. *Chia-Ling Wu, National Taiwan University*

This paper investigates diverse reconfiguring activities of assisted reproductive technologies (ARTs) use in Taiwan for the past 25 years. Data include archives, participant observation, and in-depth interviews. Taiwan has continued to prohibit singles and lesbians from using ARTs, from the first ethical guideline in

1986 to the legislation of the Human Reproduction Law in 2007. However, different waves of moral pioneers have re-written the script of ART use. Some single entertainment celebrities went abroad to seek ART, as reproductive exiles, created new public imagination of ART use. Nameless single women created two other routes to gain access to ART. One is to conform to the legal requirement: Lesbians got married with gays to remove the categorical barriers. The second is to "smuggle": Some find sympathetic doctors who would provide donor insemination to build unconventional family. Such clinical encounters triggered Taiwanese Society for Reproductive Medicine Society (TSRM) lobbied for the inclusion of singles in early 2000s. TSRM's efforts did not continue in part because of social controversy. Lesbian Mothers Alliance, first formed as a support group in 2005, and transformed in 2007 into an activist group, starts to provide information on self-insemination for lesbian couples, and advocates for legal reform. They have now become the most powerful network builders to rewrite the script of ART use in Taiwan. This paper reveals the spectrum of reconfiguring activities – reproductive exile, conforming with fake status, smuggling, and building activists groups -- and examines the extent they rewrite a gender script of ART.

Kinship as a palimpsest: Practices of transnational gamete donation. *Sven Bergmann, Institute for the History of Medicine, Charité Berlin | Research Projekt: "Cultures of Madness"*

Many people who choose to travel to another country are searching for gametes of a third party. Reproductive travellers mostly assume that the gamete providers are citizens of the country where the IVF clinic they choose is located. Thus the clients emanate purely from the destination country how the donor should look like. A phenotypic topography is evoked where physical characteristics are assumed to be contained in quite different ontological spheres: in specific geographic regions as well as inside tiny germ cells – and are related as some kind of "merographic connection" (Strathern). These anticipations of patients are part of practices surrounding transnational gamete donation as well as clinical recruitment strategies, donor/recipient matching, labelling of petri dishes in the lab, laws and regulation concerning anonymity and different national discourses about disclosure. This paper discusses material from ethnographic field work in IVF clinics in Spain and the Czech Republic, sperm banks in Denmark, interviews with patients and clinicians and readings of IVF internet bulletin boards. I characterise parent-making (and design) with gamete or embryo donation as forms of translation (as conceptualized by ANT and poststructuralist translation theory). By introducing the metaphor of the palimpsest (an old document which is scraped and then overwritten) I will show how bodily detachments are made in practice, how third-party IVF is denaturalised and concealed. However, the palimpsest is critical of secrecy and non-disclosure: It shows that detachments are always aligned with (material and imaginary) attachments. Research was part of my recently finished PhD project in Social Anthropology, which is also inspired by STS, Gender/Queer Studies and the History of Science.

Reproductive Imaginations: Making New Nordic Citizen Through Fertility Travel. *Charlotte Kroløkke, University of Southern Denmark*

The transnational crossings in bodies and biogenetic material (re)produce imagined national bodies and new citizens. In this presentation, I wish to illustrate how idealized national bodies are articulated in Nordic and Spanish clinical discourses and by Nordic women travelling to Spain for egg donation. I will discuss how motherhood is brought into being by nationalized and gendered discourses on ova exchange; idealized and highly feminized (fertile, gift-giving, and voluptuous) Spanish donor bodies. While the Nordic recipients minimize national

differences and draw upon imaginations of cultural resemblance including a homogenous Spanish pool of donors; clinicians in Spain frequently match what they see as Nordic fair skin and hair color with the oocytes of immigrant women from Eastern Europe.

Bending the law and crossing borders choosing Danish sperm. *Stine Willum Adrian, Aalborg University*

In recent years, Denmark has become a European destination for couples and single women wanting sperm donation. One reason is that the current regulation is liberal in the sense that it enables single women and lesbians to be treated. Since neither private sperm banks nor clinics run by midwifes have to apply to the law, it is even possible to choose between anonymous and non-anonymous donors. In this presentation, I focus on how the fertility travellers seeking sperm donation in Denmark, and the employees at Danish fertility clinics and sperm banks, negotiate the ethical implications of using sperm donation. Inspired by Karen Barad's theory agential realism, I will analyze how ethics is material-discursively negotiated in practice. The presentation is based on an ethnographic fieldwork carried out at fertility clinics in Denmark. It includes observations from the clinics, and interviews with employees and the fertility travellers using sperm donation.

179. Social location and nanotechnology risk perception
2:00 to 3:30 pm
Kilen: K275

Engineered nanomaterials have the potential to enable significant advances in science, technology, and medicine, but their development poses possible risks across health, environmental, and societal dimensions. This session brings together research on views about nanotechnology risk and danger from four distinctly different social and professional groups: the public, industry, scientists, and regulators, in order to highlight the positional and contingent nature of such views. Two papers are based on a nationally representative survey of the US public. They find that nanotechnology risk perceptions depend on whether people think the natural world is resilient; their level of trust in the accuracy of scientific testing; their concern for the environment; and their degree of skepticism about consumer product safety. A third paper, based on extensive US public deliberative workshops, shows how gender and other aspects of social location importantly shape views on new technologies, society and the future. The last two papers report on surveys of international nanotechnology industry leaders and North American nanotechnology scientists and regulators. The first reports surprisingly high uncertainty and perceived risk of nanomaterials among industry professionals; concern about public backlash; lack of conformity with safe handling advice from governments; and yet continued desire for self regulation. The second finds that risk judgments differ significantly among scientists and regulators, with regulators judging risks to be greater than counterpart experts. This collection of research points to the importance of studying nanotechnology risk perceptions within their social context -- contexts that will be increasingly important as nanotechnology moves beyond R&D and into a growing number of consumer products and applications.

Chairs:

Mary Collins, University of California, Santa Barbara
Cassandra Engeman, University of California, Santa Barbara

Participants:

Intuitive Cognition in the Perception of Air, Water and Soil as They Interact With Engineered Nanomaterials: A Study of US Public Views. *Terre Satterfield, University of British Columbia*; *Barbara Herr Harthorn, UC Santa Barbara*

This paper examines both how people make sense of the multiple possibilities of engineered nanomaterials (ENMs), and the basis through which these materials are judged as effecting environmental media. Drawing from a recent national web survey conducted in the US by IRG 7 in the UC CEIN, we

developed psychometric scales to characterize the qualities that people intuitively assign to air, water, and soil and the value-based logics and available cues they use to evaluate the toxicology of these media. Four factors emerged as characterizing judgments: (1) the perceived tangibility of media; (2) the resilience of media in the face of impact; (3) the sensory detectability of media; and (4) the ephemeral quality of media. In contrast, the 'value and cues' question set loaded into a single 'lay toxicology' factor. These factors, along with race and gender, were then used to predict the acceptability of 14 different ENM applications, each designed in consultation with UC CEIN NSE and toxicologists. A full tutorial about nanotechnology preceded questions specific to these. Material descriptions included their application domain (environmental, medical, and military); the type of material used (e.g., carbon nanotubes), and a qualitative assessment of the environmental risks involved (minimal, uncertain, moderate, significant). Acceptability judgments of these were found to be driven by the stated risk level, and not by application domain or material type. The factor resilience, which also correlates highly with lay toxicology values, predicts well the acceptability of these materials. Nonwhite males, unusually, are more inclined to regard the applications as acceptable, white males a little less so, whereas white and nonwhite females, view risks as similarly unacceptable.

People, Products, and Nanotechnology: A Risk Judgment Analysis. *Mary Collins, University of California, Santa Barbara*; *Shannon Hanna, University of California, Santa Barbara*; *Barbara Herr Harthorn, UC Santa Barbara*; *Terre Satterfield, University of British Columbia*

The prevalence of products enhanced by nanotechnology (nano-enabled) is outpacing the speed at which scientists can study related public safety dimensions. Further, existing survey data show that public awareness of nanotechnology (generally) remains extremely low. Even given low levels of knowledge, it is important to study nano-enabled products because development is likely to be shaped by public attitudes specifically related to environmental and personal risk. Given the increase in nano-enabled products and low levels of public awareness, we conducted a nationally representation survey study that assessed public attitudes toward consumer products both generally and in the context of nanotechnology. This research uses a principal components analysis framework to minimize a long list of product safety attributes into driving factors. We found that confidence in testing, environmental concern, and general consumer product skepticism predict product inviability. Further, men and those with less education were also less likely to think that these types of products were beneficial. Finally our study makes two contributions: first we speak directly to the understanding of how different types of consumers interact with a changing lineup of technologically advanced products; and second, we speak more broadly about where related risk judgements may originate given high levels of uncertainty.

Designing Deliberation: Social Location and the Politics of Difference in US Public Deliberations about New Technologies. *Barbara Herr Harthorn, UC Santa Barbara*; *Karl Bryant, SUNY New Paltz*

How do ideas about and perceived experiences of inequality, vulnerability, and justice (which may be related, but not reducible, to gender and race) play important roles in the formation of risk perceptions about new technologies and technological futures? Risk perception researchers have reported persistent gender (and, to a lesser degree, race) effects on people's judgments about risks and benefits of new technologies, including suggestions that inequality and social difference may account for different views about technological risk. How these may matter, and what their relationship is to one another, however, warrants further investigation. The majority of existing

research in these areas has relied on psychometric survey data, which allows for robust statistical analyses and, depending on sampling method, generalizable conclusions about the study population. However, these methods have also come with several limitations, including researcher-defined (instead of respondent-defined) risk categories, and limited ability to assess the diverse meanings that may be attributed to risk objects. By contrast, in this paper we present data from deliberative workshops where participants engaged in open-ended conversations, allowing for the complex social relationships that impinge on risk perceptions to be identified and discussed by participants themselves, and we incorporate intersectional feminist approaches in their analysis. In this paper we draw on narratives from a series of deliberative workshops on emerging nanotechnologies held at the Center for Nanotechnology in Society at UCSB, in order to examine more closely, using qualitative data, the relationships among social location, inequality, and risk perception. Our analysis builds on recent risk perception scholarship (including that by our own research group) suggesting that justice views and perceived vulnerability influence the formation of risk perceptions (see Satterfield et al. 2004 & Conti et al. 2011 in Risk Analysis), or that there is a "social inequality effect" concerning perception of risk (see Olofsson and Rashid 2011 in Risk Analysis). We extend this scholarship (a) by looking at more naturally occurring views expressed in a deliberative setting (as opposed to close-ended survey response categories); (b) by looking at the views expressed about inequality in the context of new (and future) technological development; (c) by providing a fine grained analysis of the relationship between views about inequality and respondents' social location; and (d) by examining how participants do or do not associate inequality to questions of and discourse about risk. Our findings explore the ways that existing inequalities serve as a somewhat fluid template for understanding inequality-related risks associated with new and future technological developments; how a range of ideas about distributional mechanisms concerning new technologies shape ideas about both inequality and risk; the relationship between beliefs about the market and the formation of inequality-risk beliefs; and the way that techno-optimism and social-pessimism combine to serve as an important nexus for the formation of inequality-risk concerns.

Voluntary Regulation in the International Nanomaterials Industry: Perceptions, Practices & Problems for Workers. *Cassandra Engeman, University of California, Santa Barbara*; *Barbara Herr Harthorn, UC Santa Barbara*; *Patricia Holden, University of California, Santa Barbara*; *Terre Satterfield, University of British Columbia*

The global nanotechnology industry is moving swiftly downstream from research and development to commercialization. With this shift, the need to mitigate the potential hazards of workplace use of engineered nanomaterials is yet more urgent, especially for the workers who regularly handle these materials. However, for much of globe, governance to date consists of voluntary guidance documents from government and international standards and trade organizations. In this paper we report on attitudinal and self-reported practice data from industry leaders in 14 countries. Company representatives reported views that implicated workers as the stewards of workplace safety. Despite current reliance on voluntary reporting approaches and respondents' majority preference for their continuation, a large minority of companies disagreed that such approaches are effective for protecting human health and the environment. They cited lack of trust in others in the industry to behave responsibly. In spite of this recognition of the problems inherent in the voluntary approach and the reported lack of information about safe handling, this view was not accompanied by industry acceptance of the need for regulatory oversight. Companies also reported high levels of uncertainty with regard to nanomaterial risks, across a wide range of

nanomaterial types, yet these views were not accompanied by risk avoidant activities such as implementation of a nano-specific environmental health and safety program, workplace monitoring for dispersed nanoparticles that could create exposure hazard for workers, or other key nano-specific safety matters. In addition, a majority of companies affirmed a belief that "employees are ultimately responsible for their own safety at work." Companies also reported waste management and product stewardship practices less frequently than other workplace safety measures, suggesting diminished corporate responsibility for risk management toward nanomaterial or nano-enabled product end-of-life. The study found little evidence for expected significant variance in practices and risk perceptions across countries. The paper interprets these and other findings to reveal a complex of beliefs and practices in the international nanomaterials industry that, in combination with lack of information about nanomaterials' toxicological properties, create a potential for avoidable exposures for workers and the environment. In this void of regulatory oversight and corporate accountability, workers seem likely to be left to manage these uncertain risks in the workplace on their own. The paper will discuss implications of these findings for labor and citizen organizations.

Nanotechnology Expert Perceptions: Benefits, Risks, Bias, and Regulation. *Christian EH Beaudrie, University of British Columbia*; *Terre Satterfield, University of British Columbia*; *Milind Kandlikar, University of British Columbia*; *Barbara Herr Harthorn, UC Santa Barbara*

Engineered nanoscale materials (ENMs) present a difficult challenge for risk assessors and regulators. Continuing uncertainty about the potential risks of ENMs means that expert opinion will play an important role in the design of policies that minimize harmful implications while supporting innovation. This research aims to shed light on the views of various groups of 'nano experts' to understand which nanomaterials or applications are viewed as more risky than others, what differences in opinions exist between groups of experts, and to investigate the implications of these findings for future nanomaterial regulation. A web-survey (n=430) was conducted with three pools of US and Canadian experts: nano scientists and engineers (NSE), nano EHS scientists and toxicologists (NEHS), and scientists and regulators in government agencies (NREG). Our research found that experts in regulatory agencies (NREG) perceived nanotechnology applications and scenarios to pose more risk than other expert groups, with occupational settings seen as most risky. Significant differences were also observed across expert groups with respect to views of stakeholder responsibility for managing risk, and regulatory agency preparedness for managing risk. Demographic variables (gender, disciplinary field), regulatory preferences (for voluntary vs command-and-control regulation, the use of precaution), and perceptions of inherent uncertainty and the novelty of nanotechology were found to be significant drivers of risk perceptions in a multivariate regression. These findings can help risk assessors and regulators to prioritize problematic nanomaterials or nano-products for further scrutiny, and to identify biasing factors that can affect expert judgment of risk.

180. (05) Designing global health technologies in the Global South - III

2:00 to 3:30 pm
Kilen: Ks43
Chairs:
> **Norman Schräpel**, Institute of Anthropology and Philosophy, MLU Halle-Wittenberg
> **Richard Rottenburg**, MPI Social Anthropology/University of Halle

Participants:

Installing Trust: Medical data infrastructures and the production of anticipatory knowledge – Ethnographic encounters from Rwanda. *Norman Schräpel, Institute of Anthropology and Philosophy, MLU Halle-Wittenberg*

Medical practice is largely depending on medical data. Many of the therapeutic interventions and decision-making processes in medicine are in need of a set of data that carefully overlooks the spread of a disease, the reaction of a body to a drug or the effects of an intervention, to name a few. The lack of this data is expected to make medical practice uncontrollable – uncertain. Rwanda's response, a context where this data was often unavailable, is an extensive investment in information and communication technologies. In recent years this lead to the creation of various new data infrastructures for the production and circulation of medical data. This paper introduces an ethnographic account of these medical infrastructures in Rwanda. In particular it focuses on one initiative by the Rwandan Ministry of Health that uses cell phones and web browsers to connect all health facilities in the country to a centralized database. The purpose of the system is to monitor a number of diseases (including Malaria, Cholera and HIV) and partly to react immediately to these. In combining approaches from Medical Anthropology and Science and Technology Studies it will be argued that an analysis of medical data infrastructures become particular interesting when talking about uncertainties and trust in medicine. To extend this argument two points will be made: 1) Studying the design of an infrastructure does not just tell a story about the actors and their involvement in the (global) health system, it will also reveal the risks and uncertainties that are identified by these actors. 2) The availability of new data can be translated into anticipatory knowledge. Certain actors systematically promote this process in order to cope with uncertainties and to install trust. Thus following these translations reveals insights on the role of uncertainties and trust in medicine.

Global Pharmaceutical Circulations and Local Contestations: Making "Modern" Herbal Medicine in Bangladesh. *Karen McNamara, Syracuse University*

Many allopathic pharmaceutical companies in Bangladesh have recently started to manufacture a new category of herbal medicines. In response, the government issued a new herbal drug manufacturing license as an addition to the existing licenses for the manufacture of Unani and Ayurvedic medicines. The renewed interest in herbal medicines in Bangladesh is related to global WTO rules, national history and interests, the success of the allopathic pharmaceutical industry, and the market potential of producing and exporting herbal medicines globally. Even though there is a strong allopathic industry in Bangladesh, the realm of formal herbal medicinal knowledge had always been left to Unani and Ayurvedic systems. In this paper I trace how knowledge about herbal medicines and healing is constructed and contested in Bangladesh. I argue that these traditional manufacturers feel threatened by the new herbal medicines, not only because they see the new herbal as infringing on their market, but also because the new herbal medicines are not a part of the fabric and history of local healing in Bangladesh. I examine how both traditional and allopathic pharmaceutical companies make knowledge claims about herbal medicine through lawsuits filed against the government. What counts as legitimate medical and scientific knowledge and how are these forms of knowledge are influenced by politics, bureaucracy, and profit-making? This paper contributes to STS studies on the global circulation of pharmaceuticals and the ontological politics of classifying medical knowledge by examining how local Bangladeshi actors engage with these global processes.

Medicinal (dis)orders. Controversies upon fake medicines in India and Kenya. *Mathieu Quet, GSPR, EHESS; Marine Al Dahdah, independent consultant*

Since the early 2000's, international institutions such as the World Health Organization and the World Trade Organization have shown increasing concerns over the presence of "counterfeit drugs" in emerging and developing countries. The notion of "counterfeiting" points out a serious public health matter for Southern countries: the proliferation of spurious, expired, unsafe drugs. However, the notion of «counterfeit» raises several critics from the civil society and some governments, as it is seen as being used by Northern countries and companies to reinforce their intellectual property strategies and to restrain the production and circulation of generic drugs. Therefore, the controversies provoked by anti-counterfeiting policies offer an occasion to enrich the understanding of the mechanisms of power at stake in the global regulation of drugs' circulation. It also gives the opportunity to analyze the complexity of South-South relationships regarding medicines issues and the tensions between diverging conceptions of commerce, law, politics and health which are embedded in pharmaceutical controversies. They enlight the entanglement of commercial strategies, market regulations and safety policies in a transnational context. The analysis mixes sociological interviews and multisited fieldwork in India and Kenya with computer assisted discourse analysis.

Understanding the Constructedness of Hansen's Disease: A Study on Medical Work regarding Hansen's Disease in Taiwan. *Yiling Hung, Sociology, UCLA*

Effective treatments developed over the last half century for Hansen's disease (HD)—a chronic, infectious disease affecting the peripheral nerves—have not only radically altered patient prognosis but also confirmed HD as a medical entity with a specific underlying mechanism. The paper examines how the prolonged existence of an HD patient group in Taiwan constitutes a continual reminder for medical professionals of the modern "creation" of HD. Diagnosed with HD when they were young and later treated by effective pharmaceutical drugs that became available in their lifetimes, HD patients in Taiwan are hospitalized or registered as outpatients for the majority of their lives. Based on ethnographic as well as archival data, the paper argues that medical professionals, at the same time when carrying out routine medical work, create a possibility for understanding the constructedness of a disease. Drawing on recent literature on the constructedness of scientific facts, the paper analyzes how medical professionals deal with the severing of illness experiences from medical facts regarding HD. The paper contributes to the literature by showing how the routine work of medical professionals simultaneously maintains the medical facts regarding HD and reopens a possibility for discussing the constructedness of a medical entity.

181. Making and using knowledge about research collaboration

2:00 to 3:30 pm
Kilen: Ks48

Research collaboration has been observed to become more commonplace over time. It has also been argued to have become more important, with the emergence of broad new research challenges driving the mobilization of diverse types of disciplinary knowledge within collaborative frameworks. Different policy logics have been attributed to normative demands for interdisciplinary research collaboration, including logics of accountability and innovation. Policy initiatives seek to coordinate public investments in science with the demands of both industrial and public sector end-users. These factors contribute to the emergence of new forms of organization of collaboration and diverse mechanisms for collaboration between different types of organisation. Professional reward structures have also adapted, providing highly differentiated rewards for diverse contributions to collaborations. Evaluation systems monitor these activities and develop assessments of their 'impact'. This session takes a comparative approach to collaboration practices and policies. The papers in this session will address diverse aspects of research collaboration in the US, Europe and Australia,

but all with an eye to the interplay of professional and institutional logics that underpin activities. What motivates researchers to collaborate? How are collaboration strategies influenced by institutional factors? And how does 'research into research collaboration' itself contribute to answering these questions and to the emergence or extension of particular logics regarding collaboration and its purposes? From the point of view of science and technology studies, the potential for the (mis)use of STS knowledge in the design of policies and support measures is also brought into focus.

Chair:

Richard Woolley, CSIC-UPV Ingenio

Participants:

Academic careers and research collaboration: the role of job mobility and scientific excellence. *Pablo D'Este, CSIC-UPV Ingenio; Carolina Cañibano, CSIC-UPV Ingenio*

Scientific research collaborations are attracting increasing interest from both academia and policy in terms of their potential to contribute to scientific progress. In particular, special attention has been placed on two research collaboration practices: cross-sectoral research collaborations and cross-disciplinary research collaborations. Despite the numerous policy initiatives to stimulate these two modes of scientific research organisation, scientists exhibit dramatic differences in their collaborative patterns to organise research, and in their attitudes to form these types of partnerships. This study takes a Scientific and Technical Human Capital (S&T human capital) approach to examine the influence of two characteristics of research careers that are likely to influence scientists' engagement in cross-sectoral and cross-disciplinary collaborations. S&T human capital is the sum of skills, knowledge and social relations needed to participate in science (Bozeman & Corley, 2004). A researcher's S&T human capital is constantly evolving throughout her professional life cycle (Bozeman, 2008). We consider here two career characteristics that are likely to affect this evolution substantially: inter-sectoral job mobility and scientific excellence measured in terms of publication productivity. We examine data from 1593 employed at CSIC - the Spanish National Research Council – who responded to a survey conducted in 2011 covering all fields of science. The resulting dataset includes 285 CSIC researches who declared professional experience in industry, 157 CSIC researchers with previous experience in other non research oriented governmental organisations, and 396 who had professional experience in either of the two former sectors. Additionally, we use respondents' publication records to distinguish individuals with high publication productivity. We examine the influence of excellence and mobility career backgrounds on the development of cross-sectoral and cross-disciplinary collaborations.

Bad Research Collaborations: Perceptions and Impacts. *Barry Bozeman, University of Georgia; Catherine Slade, Augusta State University*

During the past decade or so, researchers, especially those in the biomedical sciences (e.g. Rennie et al., 2000; Williams et al., 1998; Cohen, 2004), have begun to focus on ethical issues and the "dark side" of collaboration, including honorary authorship, ghost authorship, duplicate and redundant publications and most important, authors' refusal to accept responsibility for their articles despite their readiness to accept credit for professional purposes. Far from being restricted to biomedical fields, problems in scientific collaboration are ubiquitous in science. Some of these problems are ethical (Shrum et al., 2001), others practical (Bozeman and Corley, 2004; Lee and Bozeman, 2005). While some articles (e.g. Mullen and Ramirez, 2006) provide a conceptual analysis of coauthorship and collaboration issues, most do not provide exacting specification of alleged problems. Based on interviews with 50 sciences and engineering faculty from a diverse group of six U.S. Carnegie Extensive (Research I) universities in three U.S. states, the authors examine factors related to "bad research collaborations," as defined by

respondents but including such factors as: • Fraudulent authorship claims • Exclusion of possibly entitled authors • Exploitation of co-authors, especially students and postdoctoral researchers • Less egregious factors that nonetheless affect perceptions and quality of collaborations. The study seeks to contribute to the literature on social studies of science by extending knowledge of collaboration practice and outcomes.

Motivations for disciplinary and interdisciplinary collaboration among Australian social scientists. *Richard Woolley, CSIC-UPV Ingenio*; *Mabel Sánchez-Barrioluengo, CSIC-UPV Ingenio*; *Tim Turpin, University of Western Sydney*

Attention is increasingly directed toward better understanding the factors driving collaboration among researchers, particularly collaboration between researches from different disciplinary backgrounds. Previous research suggests that factors such as previous employment in industry, gender and academic rank may be linked to different collaboration strategies among academic researchers. These studies have predominantly focussed on researchers in the natural and physical sciences (Bozeman & Corley 2004; Lee & Bozeman 2005; Bozeman & Gaughan 2011). This study investigates the motivations of researchers to engage in disciplinary and interdisciplinary research collaboration in the social sciences. Drawing on data from a survey of 698 researchers working in Australia, we consider researchers´ different strategies for collaboration. We analyse whether different strategies are linked to higher involvement in either disciplinary or interdisciplinary collaborations. We also analyse whether different collaboration strategies are linked to an orientation toward either basic or applied research. The paper discusses the findings in relation to policy settings in the Australia research context, particularly incentives and support measures for interdisciplinarity in the social sciences. It goes on to consider the utility of the current findings for policy makers, critically highlighting the tendency for policy-driven research to assume that 'more collaboration' is a desirable.

Researchers´ motivations to collaborate: Insights from a Spanish case study. *Irene Ramos-Vielba, Fundación Ideas*; *Celia Díaz, Fundación Ideas*; *Josefa Calero, Fundación Ideas*

Increasing attention has been paid to the study of researchers´ motivations to collaborate (Lee, 2000; Bozeman and Corley, 2004; Giuliani et al. 2010; Bozeman and Gaughan, 2011). Expected benefits from collaboration also play a crucial role in the cooperation process (De Fuentes and Dutrénit, 2010). It is believed, however, that policies to encourage collaboration should build on reputational and intrinsic, rather than purely financial, motivations (Lam, 2010). There is therefore a need to investigate the incentives that push the academic sector towards cooperation (McLellan et al., 2006). We set out to analyse scientists' reasons to cooperate with the productive sector through a case study based on the Spanish research system. The sample in our survey is made up of 851 active research groups in universities and public research centers from four regional governments. The field work was performed in Fall 2011. The methodology we apply comprises three multivariate statistical techniques to identify the most significant motivations involved in the decision of collaborating. First, an exploratory factor analysis is conducted to examine the underlying factor structure. Second, we use a non-hierarchical clustering method dividing groups according to the factors resulting. Finally, we perform a logit model to examine the significance of the extracted factors in explaining the probability of cooperation. The results will provide some useful insights into researchers´ collaboration motivations and strategies by showing the influence of inducements such as income generation, contribution to scientific production or concerns about keeping scientific knowledge updated, all which become crucial for evaluating stimulus policies.

182. (17) Genetics and human difference: from the 'gene-for' approach to...?

2:00 to 3:30 pm
Kilen: Ks54

Chairs:

Daniel Navon, Columbia University
Uri Shwed, Ben Gurion University of the Negev

Participants:

Living Data: How Genetic Data Matters. *Mette Kragh Furbo, Lancaster University, Sociology Department*

The personal genomics industry has since 2007 surfaced as a rapidly growing field promoted by advances in mapping and sequencing technologies following the Human Genome Project. Direct-to-consumer (DTC) genetic testing companies now offer individuals the chance to genotype their DNA in which they test for a number of common variants (SNPs) to provide individuals with information ranging from disease risk, genetic traits and ancestry. Discourses of empowerment, self-care and individual responsibility circulate and flourish in this industry. Scholars are also talking about 'genetic responsibility' and the gene as an 'ethical substance' intertwined with an obligation to act in accordance to one's 'risky genes'. I propose a shift from thinking about genetic data as something inside the body, where hidden normative processes inflict on individuals moral obligations to live life as a project. Instead, through an ethnographic study and drawing on Annemarie Mol and Donna Haraway, I want to think about a world of multiplicity and diffraction patterns. Genetic data may not be one thing, but many, and as genetic data has travelled outside the laboratory and the clinic into other domains such as the commercial market and online communities, individuals, so to speak, 'live genetic data' differently. The increasing sociality of data thus challenges the notion of people as 'consumers' of genetic tests. Attending to the practices of genetic data and how genetic data is enacted differently is a way of exploring this as a matter of concern, rather than a matter of fact.

Encoding Legitimacy: Genetic Discourses in Eating Disorders Advocacy. *Karin Eli, University of Oxford*

With eating disorders as a case study, this paper examines how ambiguous (and at times, non-existent) genetic findings are interpreted, defined, and employed within the advocacy realm. Anorexia and bulimia, long thought to display patterns of familial heritability, have been subject to numerous linkage and association studies over the past two decades. These studies yielded no significant results; yet, within the increasingly heterogeneous field that marks eating disorders research – including, notably, cognitive psychology and neuroscience – 'genetics' have retained a central role in advocacy discourse. This paper analyzes 'genetics' as they appear in text, embedded video, and external links on the websites of two major US-based advocacy organizations. Examining how these organizations position genetic discourses vis-à-vis ideas of multifactorial aetiology, competing research agendas, and the political economy of US healthcare, this paper argues that 'genetics' are employed as a rhetorical device, to encode the legitimacy of eating disorders as 'real', biologically-based, and not subject to choice. This paper suggests that, through paradoxically combining determinism and ambiguity, eating disordered 'genetics' constitute an evocative and remarkably open interpretative field, enabling advocates to support moral, social, and political agendas with seemingly unassailable scientific explanations. Significantly for STS, this paper explores the advocacy realm as an emerging space for the production of public knowledge about psychiatric genetics. Highlighting genetic scientists' textual and audio-visual contributions to these advocacy websites, it considers the roles of advocacy agendas and collaborations between scientists and stakeholders in shaping

scientists' representations of genetic research for public consumption.

The geneticization of gendered body variation and the potential de-stigmatization of DSD/Intersex syndromes. *daniela crocetti, University of Bologna*

The last two decades have seen increased geneticization of Intersex/DSD (Disorders of Sex Development, coined in 2006, referred to as Intersex from 1917) diagnosis, and the explosion of bioethical concern about Intersex/DSD care protocol due to the lack of informed consent, the lack of full diagnosis disclosure, and irreversible early childhood genital surgery performed for "psycho-social" reasons. This presentation will look at the shift in DSD care protocol towards the Patient Centered Care model (PCC) as both genomic and patient group explanatory models enter the playing field. In particular it will look at how a genetic marker can "fix" a diagnosis and gender assignment, in turn shifting the locus of the syndrome to the genes and away from the socially taboo genitals. We will look an Italian case study in which both a pediatric molecular lab and patient groups use the genomic model of development in different ways to rhetorically normalize DSD away from the historical image of the hermaphrodite. We will also analyze how they both advocate genetic testing and use the genomic framework to dismember the one-gene-one-trait model and its eugenic potential. This presentation adds to several STS themes, the role of genetics in medical classification, the role of patient groups in negotiating care models and research, and the multiple explanatory models utilized in genomic discourse.

Beyond the gene: TMPT, drugs, conflict, and court cases. *Michael M Hopkins, SPRU - Science and Technology Policy Research University of Sussex*; *Stuart Hogarth, King's College London*

Thiopurine drugs have long been a powerful intervention against leukaemia and a range of other conditions but are potentially fatal to patients who have rare mutations in their genes coding for the enzyme that metabolises these potent drugs - Thiopurine methyltransferase (TPMT). This paper explores how knowledge of patients' TPMT status has been developed into emerging diagnostic technologies in the USA and UK. As in the more widely known case of the Breast and ovarian cancer/BRCA genes controversy (Parthasarathy 2007), we see how in these different contexts TPMT testing technology is made available through different modes. In particular, we see how genetic information is validated in contrasting public and private modes of innovation. Furthermore we see how different forms of TPMT test are being contested on the one hand by different groups of clinicians questioning the tests' utility, and on the other by commercial interests in the US supreme court. In the post-genomic era, TPMT testing shows how some familiar features of the BRCA story are to be found not just in tests that relate to genes, but more widely on other biomarkers, and how controversies once though of as being particular to genetics may be considered more mainstream. This paper draws on a prior mixed method approach and framework (Hogarth et al. 2011), using interviews, patents and publications to trace the emergence of new modes of TPMT testing.

Discussant:

Sarah Richardson, Harvard University

183. (50) Times of design
2:00 to 3:30 pm
Kilen: Floor Ground floor - Ks71
Chair:

Ana Maria Delgado, University of Bergen

Participants:

Made by us and not of our making. *Alfred Nordmann,*

Darmstadt Technical University

I will explore a tension between two ways or relating design to temporality, and will relate to this tension two discourses in contemporary TA (technology assessment). According to the first notion, the future is an object of design. Here it is assumed that we can use technology, broadly conceived, to bring about an intended future state of the world. According to the second notion, design requires a temporally open-ended design process in order to allow for iterative adjustments between intentions and technological achievements. This is premised on the idea that we cannot, in fact, design or control the future. At least in one prominent line of TA discourse the notion of shaping or designing the future with the help of TA is assumed. This concerns the so-called Collinridge Dilemma which is framed as a technical or management problem of sorts: TA needs to identify an Archimedean point on the time-line of technological development where it is neither too early nor too late to intervene. From this privileged point, it would be possible to produce benefit, prevent harm, etc. Another prominent line of TA discourse does not assume that this Archimedean point exists. By viewing technological change as a collective or real-world experiment that takes place in society at large, it calls for an ongoing process of vigilance and social learning. To organize this process thus becomes part of an extended conception of design that is temporally open-ended and includes users as designers.

Designing programmable living things in synthetic biology. *Ana Maria Delgado, University of Bergen*

In the last years we have seen a digital turn articulating the emergence of a number of technosciences: by the use of digital metaphors life and other entities have been described as information, digital methods and design tools have been used, a proliferation of data have been produced and then stored in large data bases and information has been exchange through large internet platforms. This has come together with a transfer of open source ethics to an increasing number of domains. The digital turn is bringing radical changes in the ways in which knowledge is produced as well as in the products of knowledge. Synthetic biology is one of those emerging fields. Building on ethnographic work, in this paper, I explore designs in synthetic biology. Rather than being accurate representations of living systems, designs in synthetic biology are informed by more transformative and performative aspirations: making living bridges that will evolve by themselves becoming stronger as they grow older is but one vision. Those kind of programmable things entail an attempt at displacing action towards the future by acting at a distant time. Similar developments can be seen in fields such as geoengineering and the development of converging technologies for the enhancement of the human body: biologies, atmospheres and bodies that will behave in designed and desirable ways. This can be seen as a new way of exerting power, now not appealing to truth but to programmable futures.

Synthetic Biology: From prediction to programming life. *Dorothy Jane Dankel, University of Bergen*; *Ana Maria Delgado, University of Bergen*; *Silvio Funtowicz, University of Bergen*; *Roger Strand, University of Bergen*

In this presentation we discuss in which ways synthetic biology is 'emerging'. We explore the temporalities involved in the emergence of synthetic biology, specifically focusing on design practices. Synthetic biology has been presented as an engineering approach to biology. By applying engineering principles, biological designs would be developed by using open source software to guide the assembling of parts into systems. The ultimate vision is to design biological machines that will behave in programmed ways. Within this attempt at engineering biology, we see a shift in the goals and products of biological research: from explanations to predictions, and from predictions to programmed futures. Thus biology becomes a technoscience

and moves from a context of representation and explanation to a context of application. What does an engineering approach to biology entail? How is life programmed in synthetic biology? What kind of controllability are synthetic biologists willing to achieve? How may current practices such as computer-based design and open source sharing transform the rhymes and materialities of biological research and its products? How are the 'living things' of synthetic biology emerging in policy arenas? How are they influencing the European Commission's innovation discourse? These are some of the questions that we will discuss in this presentation based on several different cross-disciplinary approaches to understanding synthetic biology at a recent workshop.

De-signing biology and engineering practices in the iGEM competition. *Katie Bulpin, University of Sheffield*

At the heart of 'parts-based' synthetic biology is the integration of engineering concepts and practices into biological work frequently articulated in terms of introducing 'rational design' to the construction of new biological entities. Indeed, synthetic biology promises to re-design biology as both discipline and material. This ambition has brought together people from multiple disciplinary backgrounds to work in 'collaboration' with each other, for example, in the student teams of the International Genetically Engineered Machine (iGEM) competition. This paper presents an ethnographic study of a multi-disciplinary team participating in this contest in 2010 and explores how notions of 'design' emerge as key points of contestation between students embedded in different epistemic cultures. In particular, I look at how 'modelling' becomes connected with and detached from the concept of design, responsive to the plural and ambiguous meanings of both these terms in practice. I argue that the students' disciplinary identification and role within the team was partially negotiated in relation to their understandings of 'design' as well as their aspirations and capacity to perform certain forms of design within the project. These negotiations point to how constructing new synthetic collaborations is also about de-signing and displacing practices, concepts, values and people from their current networks of association and re-signing them in new configurations. This in-depth study of an iGEM team will contribute to the burgeoning literature on synthetic biology within STS as well as to broader discussions of design practices in technoscientific work and processes of scientific change.

184. (58) STS perspectives on patient safety and quality improvement in health care - III

2:00 to 3:30 pm
Solbjerg Plads: SP112
Chairs:
Jessica Mesman, Maastricht University
Roland Bal, Erasmus University Rotterdam
Johan M. Sanne, Linkoping University
Participants:

Chemotherapy protocol transforms clinical practices of cancer care team in managing chemotherapy toxicity in Taiwan. *Zxyyann Jane Lu, National Yang-Ming University*

The Accreditation of Cancer Care Quality Assurance established in 2008 in Taiwan demands the clinical practice guidelines (CPG) developed to ensure the safe environment for health care providers including nurses who exposed to the hazardous chemotherapy drugs. Based on the framework of technoscientific script (Akrich, 1992), Timmermans and Berg (1997) emphasized that standardization in action not only crystallizes multiple trajectories, in turn medical protocol may be also reappropriated. This study attempts to demonstrate that chemotherapy protocol adopted from the US transformed professional roles of nurses, nursing practices, cancer care team in action in the context of Taiwan. Participant observations of cancer care units at two

medical centers were conducted and nurses and pharmacists and related personnel were interviewed, while relevant documents such as chemotherapy drug administration protocol were also collected. The results revealed that chemotherapy toxicity as a boundary object links diverse trajectories nursing career, cancer care team relation and cost-efficiency management. The perfection of nursing skills and professional images has become not only the power to mitigate the toxicity also the substitute for N95 masks and protection gowns. Valued motherhood has been reproduced by the transferring out of cancer ward of those nurses who plan for pregnancy. Negotiation of power relations among physicians, nurses and pharmacists as well as the encapsulated toxicity have been constructed through the establishment of laminar flow cabinet for the preparation of chemotherapy drugs. Furthermore, noncompliance with personal protective measures is implicitly accepted within the framework of cost-efficiency management. Personal protective measures are transformed to be rookies for nurses, to the barriers to personal contact with patients, to efficiency management. Chemotherapy protocol has been reconfigured professional career and identities of nurses; coordinated cancer care team relations, and encapsulates risks of chemotherapy drugs.

Successful translation in hospital quality improvement: enactment, risk objects and improvement scripts. *Johan M. Sanne, 6739476164*

It is often argued that betrayal to the original project idea is needed to make translation work. However, I will argue that the concepts of re-enactment, risk objects and improvement scripts better capture what is involved in making translation work. The paper analyzes how middle managers operationalize quality improvement (QI) efforts. QI efforts in hospitals are often realized as middle managers translate problems and solutions between hierarchical levels (e.g. wards, hospital management or regional or national authorities) or communities (e.g. administrative and medical). Middle managers construct QI efforts from professionally held risk objects such as healthcare acquired infections. For administrative audiences, they construct existing QI efforts as legitimate improvement scripts such as lean production. However, to successfully realize QI efforts, middle managers not only adapt to culturally legitimate risk objects and improvement scripts, they also actively re-enact others' understanding and values of what constitutes relevant QI issues and means. On the one hand, they actively shape medical practitioners' understanding of legitimate issues and means through training in industrial QI means and through performance indicators. On the other hand, they try to influence administrators which indicators and QI means are appropriate for real improvement in medical practice, as opposed to symbolic measures. Other than just being an intermediary middle managers actively shape what QI work is about. Data for this paper comes from a comparative analysis of quality work in hospitals in Sweden, Portugal, England and the Netherlands, comprising many months of observations and interviewing.

Healthcare professionals' understanding of patient safety: Do we really know what they think? *Konstantinos Arfanis, Morecambe Bay Hospitals Foundation NHS Trust; Andrew F Smith, Morecambe Bay Hospitals Foundation NHS Trust*

Aims and Objectives: The success of patient safety initiatives in the development of clinical care depends on the engagement of 'frontline' clinical staff. However, little is known about how such staff understand and act on notions of risk and safety. We aimed to explore this understanding through qualitative inductive analysis of interview data from healthcare staff in an acute hospital. Method and Results: We interviewed 43 members of staff and analysed the interviews using a grounded theory approach. 'Patient safety' was understood within each participant's own work context. We noted discrepancies in that understanding, with 'vertical' differences (variations in

experience and seniority) within one professional group and 'horizontal' differences between groups. Risk was generally seen as intrinsic to daily working life. Participants focus on managing rather than trying to avoid risk. An informal but complex conceptualisation identified 'professional' and 'situational' risk. Participants also distinguished 'acceptable' from 'unacceptable' risk and 'avoidable' from 'unavoidable' risk. These contrasts seemed to help them decide whether it is feasible, necessary and/or beneficial to intervene when a risk appears. Further, different individuals and groups were recognized to have understanding and 'ownership' of specific risks or groups of risks. Formal manifestations of safety systems, such as protocols and procedures, were recognised as useful, but concerns were expressed about the quantity and currency of protocols and about the difficulties caused by lack of resource.

Making Quality Calculable; The tautological foundation of quality in healthcare 1945-2010. *Dane Paul Pflueger, London School of Economics*

Quality, it is noted, can be almost anything anyone wishes it to be. Yet quality in healthcare has come to mean very distinct things, and to constitute very specific technologies and interventions, throughout place and time. This paper traces the process by which quality, in the American and British health sectors, has been reconstituted as calculable, amenable to measurement, and a subject of design. To do this, the notion or unit of a 'calculative assemblage' (Deleuze and Parnet 1988; Callon and Law 2005) is advanced; this notion draws our attention to the cognitive, discursive, and technological materials which are required to 'calculate' quality-that is, to produce stable answers to the question of what it is. Analysing public discourse surrounding "quality" from 1945 to 2010, this historical morphology illustrates the tedious and fragile process by which distinct notions of quality are assembled throughout time. It highlights the way in which different constitutive parts of the assemblage (the medical profession, peer review organizations, etc.) are continually displaced, reworked, and eventually remade. In this way, the paper shows making quality calculable to be an on-going process of design and displacement; the merging of strategies into calculative wholes, and the remaking of its constituent parts to propel quality toward new ends. Attention to design and displacement in this way shows the common assumption that quality moves in some progressive or unidirectional way toward its most enlightened articulation to be unfounded. Instead of teleology, this paper reveals tautology at quality's epistemological core.

185. (46) Mediated practice: insights from STS, critical theory and media theory - III

2:00 to 3:30 pm
Solbjerg Plads: SP113
Chairs:
Anne Beaulieu, University of Groningen
Annamaria Carusi, University of Copenhagen
Aud Sissel Hoel, Department of Art and Media Studies, Norwegian University of Science and Technology
Sarah de Rijcke, Centre for Science and Technology Studies, Leiden University
Participants:
Eyes That Tell Stories. *Catelijne Coopmans, National University of Singapore*

In 2011 the Singapore Eye Research Institute commissioned an art exhibition to make its existence more salient to the local public. Called 'Eyes That Tell Stories', the exhibition was organized around the central trope of the 'revealing' eye. It featured spectacular photographs of eye diseases as well as fourteen artistically rendered iris scans of well-known Singaporeans, among whom the illustrious founding father of

modern Singapore, Lee Kuan Yew. Each of the celebrity eye images was displayed on a large canvas without accompanying information; by taking a snapshot with a tablet PC, visitors were able to uncover the 'story' behind, and owner of, a particular eye. Balancing the attraction of celebrity with a message about the importance of eye research, and saturated with both literal and metaphorical references to 'seeing' and 'vision', the exhibition situated the eye in a complex web of intersecting meanings. This paper reports on the author's efforts to articulate the exhibition as a multi-faceted manifestation of our collective investment in 'seeing' as a way of knowing and understanding. These efforts inevitably confront questions about image-interpretation across STS and media studies, as well as questions about the relation between local ('Eastern'?) meanings on the one hand and abstract ('Western'?) terms on the other.

Seeing and Designing Nanoscale Objects. *Michael Lynch, Cornell University*; *Kathryn D de Ridder-Vignone, Science and Technology Studies-Cornell University*

Nanoscience/nanotechnology (nano for short) includes a broad array of fields that study and manipulate molecules and atoms at a scale of around 1-100 nanometers (a nanometer is one billionth of a meter). Visual images have a prominent role in nanotechnology research, and in the public representation of the field. Nanoscale phenomena are said to be smaller than wavelengths of light and to be subject to quantum mechanical forces. Consequently, they are said to "appear" and "behave" in ways that differ profoundly from macroscale and microscale entities. However, when portraying nanoscale objects in image galleries, press releases, and other public exhibits, practitioners often evoke the familiar appearance of macroscale things, forms, and landscapes. Critics argue that such popularized nano images obscure more than they reveal about the fields they purport to represent, but they also recognize that no image can simply depict nanoscale reality. In other words, there is no escape from imagination. This presentation explores a range of different types of nano images, and critically addresses the question of how visual imagination is displayed in the design and contextual use of such images. We argue that, paradoxically, the most ostentatiously imaginative images employ the most conventional forms of pictorial realism. The paper contributes to social and cultural studies of science by examining cases in which "art" and "design" are explicitly highlighted in efforts to provoke public awareness of and support for a self-consciously emergent and transformative technoscientific field.

Fiction, Realism and Scientific Models. *Annamaria Carusi, University of Copenhagen*

The terms 'realistic' and 'fictional' are both used of scientific models, the first to describe something which modelling aims at, the second to try to get to grips with what is conceived as their rather problematic relation to truth and belief. Questions about realism have come under scrutiny in numerous philosophical and sociological studies of modelling, whereas trying to work out the way in which models are fictions has been carried out mostly in philosophy of science. Sociological studies of realism (sometimes conflated with representationalism) in science tend to show the social constructedness of realism, and accounts of models as fictions in philosophy of science tend to find the term useful because of what models and fictions purportedly have in common, a kind of deficit of truth or belief. There is a much richer repertoire of analyses and reflections on fiction in literary and critical theory which could instead bring different perspectives onto models in science. In this paper, I describe the aims and self-reflections of 19th century realism and the analysis and critique to which these have been subjected in literary and critical theory, and bring these into dialogue with STS constructivism on one hand, and philosophical fictionalism about models on the other. Finally, I outline a different account of fictional realism, which takes the formative capacity of fictions seriously, and gets us out of the confines of a narrow

realism/anti-realism distinction.

Visualizing Pure Mathematics: Imaginative Worlds on Computer Screens. *Alma Steingart, MIT*

In 1989, the University of Minnesota founded the "Geometry Supercomputer Project." The project brought together a group of prominent mathematicians and computer scientists to work on problems in pure mathematics. Three years later, with funding from the NSF Science and Technology Research Center, the project grew into the Geometry Center, which was dedicated to the computation and visualization of geometrical structures. By tracking the history of the Geometry Center, this talk analyzes a broader change in American mathematics over the past three decades, in which mathematicians have begun using visualization methods in mathematical research and education. Mathematician Richard Palais wrote in 1999 that mathematical visualization not only "bring[s] the known mathematical landscape to life" but also enables mathematicians to "obtain fresh insights concerning complex and poorly understood mathematical objects." In advocating mathematical visualization, these mathematicians are promoting a conception of mathematical work that extends beyond theorem proving. Bringing literature in scientific visualization, as well as critical and media theory, to bear on mathematical practice, I use the notion of mathematical manifestation to denote the modes of visual engagement such mathematicians harness to investigate mathematical theories and mathematical objects. In assessing the impact of computer graphics and other visualization techniques in late twentieth century mathematical research, I let manifestation denote the way in which mathematicians harness visual practices to pose questions, explore possible solutions, build intuition, and generate embodied understandings of otherwise abstract principles.

186. (79) On the road: journeys of innovations and prospects - III
2:00 to 3:30 pm
Solbjerg Plads: SP114
Chair:

Sampsa Hyysalo, Aalto University

Participants:

My Dress and Me – reassembling the Social in an Internet of Things. *Stefanie Reinert Jenssen, Centre for Technology, Innovation and Culture*

Internet-enabled devices are omnipresent. They collect data about us, lets us check our email, or just keep in touch on Facebook or Twitter. Uniquely identifiable objects, their virtual representations and people are inextricably linked – in both space and time – in an Internet of Things (IoT). Van't Hof et al (2011) argue that this constitutes a paradigm shift: the digitalization of public places. We do not only surf on the net, with our PCs and mobile phones – we are actually living in the net. The expectations about how these technologies can be combined, applied and create new markets for innovation, are compelling. This paper is first and foremost interested in uncovering unusual places of resistance to collective expectations (Konrad 2006) about the uses of these technologies. It follows the journey of a relatively mature technology, Radio-frequency identification (RFID) in the apparel industry in Norway. Newcomers and international fashion businesses proclaim that RFID enables sustainable and transparent ways of producing and distributing clothes. The established clothing industry of Norway, however, is skeptical about and resists introducing the technology. Based on the analysis of the negotiation processes between a wide range of actors and documents the paper will discuss and thus contribute to science and technology studies with the following questions: 1) How are collective expectations met in communities which do not want to see them materialize? 2) How can we follow objects and bring in the relevant issues to a discussion of an Internet of Things which has not materialized yet?

Fuelling Expectations: UK Public Authorities debating on Biofuels. *Pietro Berti, The ESRC Centre for Genomics in Society (Egenis), Department of Sociology and Philosophy, University of Exeter*

The role of public authorities in the diffusion of technological expectations has yet to be fully explored by scholars interested in the study of the dynamics of technological expectations. Drawing on a multidisciplinary approach extending from the sociology of expectations to informational economics, this paper analyses the exchange of expectations on biofuel technologies as occurred between the UK Government and a selection of UK public authorities from the mid-1990s to the end of 2000s. My analysis focuses on the official correspondences that the public authorities exchanged and published in that period. The distorted claims about competing technologies, which public authorities are usually exposed to, create a noise that poses political threats. As technology promoters on behalf of the whole electorate, public authorities share a responsibility in selecting and acting upon expectations as much purified as possible from any distortion. At the same time, public authorities share a responsibility in maintaining their promises to the technology stakeholders who have been previously involved by their technology policies. This paper investigates how the different accountability towards policymaking among public authorities affects their statements of technological expectations.

Running out of power: the disruption of the Ethanol Car's Socio-Technical Configuration. *Rafael Bennertz, Department of Science and Technology Policy - State University of Campinas; Lea Velho, State University of Campinas, Brazil*

In sum, The Brazilian Ethanol Car became the outcome of a major technological program initially set-up in 1975, by the Federal government (military dictatorship with an strong commitment to developmentalism) intended to reduce the country`s expenditure on oil imports, its energy dependence and to drain its sugar surplus. The Ethanol Car reached approximately 91% of the automotive industry sales in 1986, what accounted as a – however temporary, debatable and debated – huge success. Nevertheless, the events in the coming years changed its socio technical configuration and it faced almost fifteen years of stagnation. For instance, there was a shortage of Ethanol which undermined the user's reliance on the availability of Ethanol and consequently on the Ethanol Car. Although Ethanol Car sales were considered insignificant during the 1990s the artifact remained in use, fuel stations were still selling ethanol, even on high prices and ethanol cars were still being driven in Brazilian cities, and in 2003 it remerged reconfigured as the Flexible Fuel Vehicle. Accounts about the development of new technologies usually address unsuccessful competing technologies (e.g. Law, Callon, 1992; Pinch, Bijker 1987) in a rhetorical manner to propose an imaginary alternative outcome. Therefore, the case of the disruption of the Ethanol Car Sociotechnical Configuration, raises questions, and offers reflections to many interesting issues related to the study of failing systems, disruption, de-alignment, etc., of a socio-technical configuration, and also the role of the maintenance constituency (Staundemaier, 1989) of the alternative technology "beneath" the official socio-technical configuration.

Open technology practices and the first airplanes. *Peter Benjamin Meyer, U.S. Bureau of Labor Statistics*

This work examines the open practices of aeronautical experimenters that led to the first airplanes, based on newly computerized international data. A 1910 Bibliography of Aeronautics lists over 13,000 publications. By then there were dozens of aeronautical clubs, hundreds of nominally aeronautical patents, and aeronautical exhibitions and conferences. Hundreds

of letters between aeronautical experimenters of that time survive. From data on this we can show that relevant glider designs were public by 1897 and copied thereafter. Before any airplane industry existed, or licensing revenues from airplane patents, the experimenters demonstrate the behaviors of standardizing, specializing, modularizing elements of the design, and evangelizing the technology. Such "open source" behaviors arose among experimenters who wanted to fly and who believed these open practices would help it become possible. Comparing to data on early airplane firms and founders shows little overlap between the tinkerer-experimenters and the new class of entrepreneurs. Generally the new manufacturers had a different background from the tinkerer-experimenters. Generalizations about open practices of experimenters and hobbyists can perhaps be relevant to other comparative STS work.

187. Automated trading: Perspectives from social studies of finance

2:00 to 3:30 pm
Solbjerg Plads: SP205

Over the past decade, there has been a sharp increase in fully automated trading, conducted by computer systems with no direct human intervention. This has sparked considerable controversy, focussing above all on "high-frequency trading" or HFT, which involves placing very large numbers of orders, cancelling most of them quickly, and placing the trading firm's computer server as close as possible to the "matching engine" of the trading venue (the computer system that matches buy and sell orders, and continuously sends out messages every time the order book changes). This is a high-technology endeavour, and amongst its features is that the speed of light is now a real constraint on trading. (For example, an initially secret project has led to the construction of a new, more direct, fibre-optic cable between Chicago and New York. It shaves 1.3 milliseconds off the transmission time, and its owners are able to charge ten times the fees of the older routes.) Automated trading is thus an intriguing topic for researchers within STS who have started working on financial markets. This session will include four papers by: 1. Donald MacKenzie (session organiser), d.mackenzie@ed.ac.uk 2. Daniel Beunza (D.Beunza@lse.ac.uk) and Yuval Millo (y.millo@lse.ac.uk) 3. Marc Lenglet (marclenglet@ebs-paris.com) 4. Juan Pablo Pardo-Guerra (pardo.guerra@ed.ac.uk)

Chair:

Donald MacKenzie, University of Edinburgh

Participants:

Five Seconds, A History: Automated Trading, Place, and Path-Dependence. *Donald MacKenzie, University of Edinburgh*

The 'high-frequency trading' (HFT) that has caused so much controversy over the past three years sits at the intersection of three 'big' determinisms: technological determinism, reified views of 'the market' in the singular, and simplistic notions of globalisation. This paper, a first sketch of a history of high-frequency trading, will challenge those determinisms by focussing on two particular places (cultural as well as geographic) that were crucial to the development of high-frequency trading: the open-outcry trading pits of the Chicago Mercantile Exchange, in which electronic trading was a matter of fierce controversy (even death threats to its leading supporter); and Island (located at 50 Broad Street in Manhattan), a 'rebellious' new share-trading venue set up in the late 1990s. One underlying argument of the paper is path-dependence: that the specifics of the history of high-frequency trading matter and that they may have lasting effects. Another is the actor-network theory argument that scales are not invariant: that the micro and the macro, content and context can switch. High-frequency trading began as a 'content' within the 'context' of exchanges such as the Chicago Mercantile Exchange and Island; HFT is now the 'context' within which exchanges have to operate. The title is, of course, a homage to Jimena Canales's fine monograph, A Tenth of a Second: A History. The paper does not claim to have the sweep of Canales's history, but has a similar focus on

the importance of specific time periods.

Ordering markets: engineers, ideas and the moral technologies of finance. *Juan Pablo Pardo-Guerra, University of Edinburgh*

This article presents a historical sociology of one of the key technologies of modern finance, the Public Limit Order Book (PLOB). Invented simultaneously in the United States and Britain during the late 1960s, the PLOB articulated a delicate and relatively unique network of economic ideologies, engineering practices and organizational arrangements. In particular, the PLOB crystallized a novel ways of 'making markets' which, in due time, set the foundation for the rise of electronic trading. Theoretically, this article combines three intellectual approaches: first, DiMaggio and Powell's theory of institutional isomorphism; second, Somers and Block's discussion of ideational embeddedness and its broader connection to the sociology of ideas; and third, insights from science and technology studies concerning the sociologies of engineering and technological change. This article is based on extensive archival research and interviews with market participants involved in the development of several important trading systems. This article contributes to economic sociology by stressing the importance of 'infrastructural work' in relation to the sociology of markets.

Politics of liquidity: How regulators and economists shaped US automated financial exchanges. *Daniel Beunza, London School of Economics; Yuval Millo, London School of Economics*

Market automation is one of the most noticeable trends in financial markets in the last three decades. How should we account for this process? Automation in financial markets is often seen as resulting from cost incentives. Whilst we recognize that the evolution of financial markets is strongly influenced by costs, we believe that the standard economic account fails to explain several important features of financial automation. Particularly, the economic account ignores the crucial role of regulators in fermenting and shaping financial innovation. Our findings indicate that a motivation seeking to do away with human intermediaries in the market, shared by economists and regulators, shaped the dynamics and trajectories of automation. In this paper, we use historical sociology to map and analyze the process through which ideas from economics and regulatory worldviews gradually converged and thereby brought about a dominant discourse about the desired structure of financial markets. We examine events in the US, as this country exhibited the first case of economists and regulators creating a discourse calling for removal of human intermediaries from financial markets. The US, however, is by no means an exceptional case, but a trailblazer, as financial exchange around the world followed the template created through the events and rules we analyse.

Between Things and Objects: Algorithms and the Enactment of Financial Materiality. *Marc LENGLET, European Business School*

Between Things and Objects: Algorithms and the Enactment of Financial Materiality Marc Lenglet This paper deals with the production of materiality in financial markets, and discusses the ontological status of trading algorithms. Our contribution serves a dual objective: first to pursue the dialogue between STS and phenomenology; second to propose a new reading of a financial 'thing', constitutive of contemporary financial markets. Since the 'dematerialization' of markets that occurred in the late 1990's, financial instruments and exchanges have been replaced by multiple inscriptions: either textual registrations of ownership in dedicated accounting books (in the case of financial instruments), or algorithmic transcriptions coded in dedicated IT devices allowing for the 'meeting' of buyers and sellers (in the case of marketplaces). This ontological shift relating to the very nature of markets and the transactions taking place thereof, raises important issues as regards the formation, expression and

representation of financial materiality: indeed, if the virtualized activities (the negotiations) and their support (the places where they happen) are not mere simulacra, how do these access to their materiality? Drawing on social studies of finance and ethnographic material gathered during a long-lasting participant-observation (2006-2009) in a pan-European brokerage house, we discuss the very nature of algorithms now playing a critical role in the making of contemporary finance. Not only have they contributed to the shift from physical marketplaces to virtual market networks, but also are they now moving towards a new destination. Being used by intermediaries and market participants to dissect, describe, and duplicate the practices that used to be produced and activated by human traders, algorithms stand at the core of financial transactions, and seem to create an area of their own, the status of which remains unclear. Thinking of algorithms as the expression of a series of co-constructed processes rather than given objects helps us in the understanding and reconstructing of financial facticity: enacting states of the market through the activation of patterns of actions, algorithms tend to reconfigure essential categories such as time (acting within milliseconds) and space (creating their own 'state' between IT servers). They therefore question our ability to get a grip on them, and to form a representation of the kind of reality they produce.

188. (56) On fire engines and big red buttons: technique in emergency situations and disasters

2:00 to 3:30 pm
Solbjerg Plads: SP207
Chairs:
Nils Ellebrecht, University of Freiburg
Markus Jenki, University of Freiburg
Participants:

Lessons from a fire: the Moerdijk case. *Frans A.J. Birrer, Leiden University*

On January 5, 2012, a huge fire started at Chem-Pack, a company that mixes and packages chemical fluids and powders, located at an industrial estate called 'Moerdijk' in the Netherlands. Using the various reports on this incident as a basis, an analysis will be made of how the fire originated, and of the regulatory practices preceding the fire. The analysis will show that this case provides many lessons concerning risk management in general. One focus of the analysis will be on the currently very fashionable idea of 'compliance management', and more in particular on the tendency towards an overemphasis on procedures and a neglect of checking actual practices. Empirical evidence has already indicated some more or less necessary conditions for effectiveness of this approach, excluding domains like healthcare and education. The Moerdijk example, however, clearly shows that even these conditions do not suffice. A framework, developed for identifying so-called 'social risks' (i.e., the risks that originate in behaviour of all actors involved), will be explained and used in the analysis. It will be shown that this framework explains crucial links in what happened at Moerdijk. The framework can also be used proactively. Some broader implications for policy culture in general, and for STS, will also be briefly discussed.

Managing critical situations by feedback system: flight AF 447 case study. *François Domergue, INSEEC RESEARCH*

Critical situations management is an essential component in air transport. Problems occur when the operator has not identified the crisis and when he has no strategy when coping with a critical situation, or when he has no episodes series suggesting a rule to solve the problem. (Rasmussen, 1983; Hoc, 2004). With a critical situation, does episodic knowledge suggest new types of measures ? If so, should airline communication redefine all the processes necessary to improve crisis management ? A critical

situation can use the feedback systems as a process of collecting and sharing information about the management of critical situations affecting individuals in a complex system (Marchand, 2011). Systems feedback is the analysis, the capitalization and the distribution of information by the organization, the group or the site, with the various actors of the system (Gauthey, 2008).‾‾‾‾‾‾‾ We have selected an Air France's crisis communication about the crash of flight AF 447 Rio-Paris. The slightest dissonance in this communication could destabilize the whole business and make it more vulnerable than ever in despite of the fact that the company does have a very good reputation and has already had to cope with tragic accidents (Mont Saint-Odile in 1992, Concorde in 2000). We propose to analyze in this paper a literature review, tools theoreticals and methodology and suggest an exploratory case study. The theoretical and practical interest of this paper lies in the sequel of traditional management of critical situations but also in the proposal of model of feedback systems.

Structurated Preparedness for Catastrophes: The Constitutive Dynamism of Plans and Improvisations. *Natalie Danielle Baker, University of California, Irvine*

A major earthquake in Southern California could cause profound, long-term disruptions to everyday life for people in the region, One only need look at the disruption caused by Hurricane Katrina in New Orleans, and the 2011 Japan earthquake/tsunami to grasp the level of potential destruction. Current preparedness practices, while designed to educate and empower residents to be prepared, do little to ensure successful responses. I present interpretive research on an at-risk organization to tease preparedness into interactive components to show how it is structuralized. Explicit practices are planning oriented actions people engage in accordance with official recommendations designed to dictate preparedness. In contrast, research has demonstrated that people adapt existing practices rather than rely on pre-disaster preparedness activities. Implicit practices are those everyday activities, resources, and technologies with the potential for improvisation in post-disaster contexts. Preparedness can be thought of as mutually constitutive of structures by which it is constrained and enabled. Thus, it is shaped and inhibited by action and in turn, actions can both enable and constrain its structure. Preparedness is also reconstituted in different forms when new courses of action are necessary to adapt to the dynamic conditions of context. Connections between plans/planning and action, particularly improvisational action, is central to this concept. A structuration model of preparedness moves away from plans dictating action into a dynamic relationship between its structure and doing. I discuss the model's implications for future design of preparedness and the ways in which it can be carried out in at-risk contexts.

Delimiting Artifacts and Expertise: Displaced Activist Technical Projects in Global South-Global North Encounters. *Christina Dunbar-Hester, Rutgers University*

This paper considers two activist projects involving the export of communication technologies from the U.S. to East Africa. It presents the case of a group of U.S.-based activists who promote FM radio as a technology especially suited to fostering community autonomy, and considers the consequences that arose when the activist organization built a radio station at a community center in Tanzania in 2005. More than three years after the station had been built and was technically operational, it remained off the air due to complications regarding licensing and in particular the Tanzanian authorities' inexperience with community media (that is, media that was neither state-controlled nor for-profit, both of which were established radio models) (see Howley 2005). The second case is an "oral wiki" using mobile phones to support an archive of informal justice decisions (e.g. land disputes) in Rwanda, developed by a U.S. designer in dialogue with Rwandan abunzi (informal adjudicators). After

building its prototype in 2009, activists stalled on building a larger archive and network due to government ambivalence towards the project. Unlike "technology transfer" projects that fail because designers do not comprehend the introduced technology in the same terms as its potential users (Akrich 1994; cf. de Laet and Mol 2000), these technologies did not languish because of user ambivalence or disregard. Indeed, in both cases, both activists and community members had hailed the technologies as uniquely suited to the local conditions in which they were to be deployed. Drawing on social studies of technology, the paper argues that these cases present an opportunity to scrutinize the boundaries of technologies (Woolgar 1991). An artifact-centered approach is insufficient to explain the inability of these activist technology projects—selected precisely for their ostensible portability and ease of use—to translate successfully in their target contexts.

189. Productively parasitic relations between STS and its fields

2:00 to 3:30 pm
Solbjerg Plads: SP208

"[G]oods do not always arrive so easily at their destination. There are always intercepters who work very hard to divert what is carried along these paths. Parasitism is the name most often given to these numerous and diverse activities, and I fear that they are the most common thing in the world" (Serres, 2007 [1982]; 11). Given this quote by Michel Serres from The Parasite, it may be unsurprising that scholars from the field of Science & Technology Studies often have distorting, translating, and parasitic relations to their fields (or rather, their hosts?). Following the 'critique of critique' which pointed out that critical positions risk producing nothing but death and ruins – for both host and parasite – recent years have seen an increasing number of STS practices that explore parasitic relations to empirical fields in more productive terms. After all, STS may think of itself as a field that is able to make some noise, but what follows that noise? "Noise gives rise to a new system, an order that is more complex than the simple chain. This parasite interrupts at first glance, consolidates when you look again" (ibid.; 14). We bring together recent activities within STS that try to reflexively turn noise into more complex orders. We move from Values in Design workshops, to crowdsourcing initiatives in the sciences, to situated intervention in clinical guideline production. The aim of the panel is to explore the empirical richness, methodological complexities, and theoretical implications of such emerging parasite-host relations within STS.

Chair:

Teun Zuiderent-Jerak, Erasmus University Rotterdam

Participants:

Crowdsourcing in scientific practice: host and parasites. *Dick Kasperowski, Gothenburg University*

Information and communication technology has profoundly changed science, making vast amounts of virtual data possible, creating information overload, described as part of a "fourth paradigm" of science, and suggesting a turn to more data-driven research. Data sets pose huge challenges but also groundbreaking scientific discoveries – if resources where available. How, then, are large virtual data sets made useful when established modes of research seems to be struggling? Guided by crowdsourcing (CS) in business, activism and journalism science turns to outsiders – the crowd – for help to classify but also think innovatively on possible future research. Calls are launched by well-established scientific institutions and a myriad of crowdsourcing initiatives are available on the Internet, some boasting 50 million classifications involving 150,000 people only during one year. The crowd has become a huge resource supplying a workforce larger than any academic department can provide. Thus, we are part of a shift in science where amateurs now contribute to scientific knowledge and practices in ways and in a scale they have never done before. This raises several important questions for STS: How are issues of enrolement, observation, trust,

learning, division of labour, and public participation played out and reconfigured in practices relying on technological infrastructures to involve outsiders in science to produce discoveries? But, subsequently, it also raises another important question, namely how STS analyses can interact with scientists and the other actors involved (as the crowd) in a productive manner, hopefully leading to "parasitism".

Bringing In the Crowd: New relationships between genomics and society. *Niclas Hagen, Department of Arts and Cultural Sciences, Lund University*

The scientific developments within genetics and genomics has caught the attention of scholars from the cultural and social sciences for more than a decade, an attention that caught up speed as the human genome were set to be sequenced during the late 1980:s and the 1990:s. However, since the completion of the human genome project in 2003, the cultural and social landscape has been altered by the breakthrough of the internet and new social media. This talk will address the impact of the internet on genetics and genomics in terms of the crowd as an interceptor that brings about an emerging reconfiguration between science and society. The talk will emphasize the importance of spatiality and the production of social space for this development. The talk will be guided by theoretical notions from STS (Shelia Jasanoff´s notion of co-production), as well as social Nigel Thrift´s and Henri Lefebvre´s theories on spatial formation and the production of social space. The empirical results that are used in the talk have been obtained through ethnographic investigations. The talk will focus on three contexts: (1) Direct-to-Consumer Genetic Testing and the dual role of the crowd as a consumers and participants in the production of science, (2) Facebook as a spatial formation for the creation of disease identities, and (3) Wiki-sites and the open science movement. These contexts raise questions on whether the crowd facilitate or divert the production of scientific knowledge into paths not foreseen.

Design for Negotiation of Disparate Logics. *Judith Gregory, University of California, Irvine*

'Design for negotiation of disparate logics' is a concept-proposal for designers to expand and reflect upon design logics and design responsibility, particularly across disparate practices and logics as they unfold over time (Gregory, 2009). More broadly, this critical design stance poses a critique of the discourse of 'the unintended consequences' of technological infrastructures, inventions and regimes. In design practice, designers are already positioned 'in between' disciplines and collaborators from diverse domains and cultures in design research projects. Designing for negotiation of disparate logics offers an alternative to translation of others' interests into one's own; doing so can support emergence of 'spaces in between' and new 'meeting grounds' for designing creatively with and across diverse cultures of disciplines, domains, cultures, institutions, and practices. The argument concerns how we may understand the dynamics of logics that manifest in unfolding effects in the world that are reasonably, if partially, knowable with forethought and for which we can therefore take reflective responsibility. In design context, the use of the term 'logic' does not refer to a mathematical logic that leads to a determinate outcome; rather, 'logic' refers to logics that unfold in indeterminate ways that are yet shaped by dynamics that we can comprehend. Because these kinds of logic cannot be subsumed under another logic, such logics may collide. For example, the author's sense of the necessity of designing for negotiation of disparate logics comes from an extended research study that revealed how a 'beautiful logic' was confronted by the logics of practice, as the design logic of an electronic health record prototype was confronted by the logics of patient care interactions, organizational regimes, and the progressive unraveling of medical knowledge and knowledge of a patient's health as the logics of illnesses unfold in particular bodies and patients' life contexts. Logics co-exist and may interfere with each other in the 'mixed events' of everyday life because they are

embedded in practices (Bourdieu, 1990; Moll, 2008). Verran's proposal that we take responsibility for working across disparate knowledge traditions, imaginaries and ontologies, opens onto the emergence of 'third spaces' and 'meeting grounds' between contrasting culturally-historically constituted social practices and ontic and epistemic commitments held by different communities (Verran, 1998, 2001; Watson-Verran and Turnbull, 1995). This perspective offers a philosophical and theoretical position from which we may get beyond the desire to 'translate' difference into the familiar or dismiss difference as exotic 'otherness.' It expresses an alternative epistemological stance for comprehending multiple possible worlds within the world rather than counterposing a 'real world' and 'a world apart.' Case examples sketch how the concept-proposal may prompt emergent design practice in working across communities and cultural sensibilities, domains and disciplines, inter- and intra-institutional and intra- and international collaborations – thereby engendering design ethos toward reciprocity amongst communities and design logics.

An Anatomical Collection of Medical Knowledge; Situated Intervention in Clinical Guideline Production. *Teun Zuiderent-Jerak, Erasmus University Rotterdam*

The rise of Evidence-Based Medicine (EBM) has been of crucial importance for the development of Clinical Practice Guidelines (CPGs). But despite initial ideas within EBM about the importance of using diverse types of knowledge for different clinical questions, methodology development for CPGs has increasingly focused on weighing and including (meta-reviews of) Randomized Clinical Trials (RCTs). There are very few methods within the present guideline development community that focus on assessing and including types of knowledge that do not fit this format. This dis-balance poses problems to the usability of guidelines and marginalizes evidence that may in fact be 'best' for a particular issue. Some randomized studies are emerging that aim to clarify which study designs provide 'best evidence' for which clinical problems. In this paper I analyze an alternative 'way of knowing' (Pickstone 2001) different styles of guideline production: the development of an anatomical collection – or perhaps rather a cabinet of curiosities – for weighing and including different types of knowledge. Based on a survey and interviews among the members of the Guidelines-International-Network (GIN), I have collected available methods for valuing and incorporating different types of knowledge in CPGs, which carry the potential for producing alternative evidence hierarchies. This research, carried out in collaboration with the GIN board, articulates marginalized EBM sensitivities about the need for plurality of knowledge production through STS work on epistemological politics. I analyze both the promises and pitfalls of intervening in clinical knowledge production practices.

Discussant:

Geoffrey Bowker, University of California-Irvine

190. (82) Ethnography of socio-material collaborations - III

2:00 to 3:30 pm
Solbjerg Plads: SP210
Chairs:
Katharina E. Kinder, Lancaster University
Petra Ilyes, Goethe University Frankfurt am Main
Participants:

How to do Ethnography of a Computer Simulation? *Martin Deschauer, Goethe University Frankfurt*

Since the early beginnings of the science and technology studies, the laboratory studies have been a central field site for ethnographers. The lab was paradigmatic for the heterogeneous actor-networks of human and non-human. Aspects of materiality

start to play an important role in the epistemic process. Alongside of this research tradition I want to take a closer look at neuroscientific computer simulations as a case in point for a network of heterogeneous members in which physical non-material entities like computer states matters as well. Simulations based on super computers proclaim to be a third column (next to theory and experiment) within scientific research. The main interest of my ethnographic approach lies in the collaborative design of those networks. A computer program like simulation software is therefore seen as a permanently process of re-arrangements in the way of Rheinbergers epistemic objects. At the same time a simulation is a technical object and provides therefore a stable framework within the laboratory setting. The idea of simulation as a imitation (just like the latin translation suggests) is slightly misleading because the network of researchers, lab-mice, neuro-tissue, bio-markers, supercomputers, hardware, software, data and many more creates new entities instead of only copying or reverse engineering. My paper deals with an ethnographic account of this ongoing processes.

Displacing Scientific Concepts and Practices: Implications for the development of things, people and disciplines. *Jose A Torralba, University of Hawaii, Curriculum Studies; Rogers P. Hall, Department of Teaching and Learning, Vanderbilt University*

Abstract. The displacement of established conventions within any scientific discipline or any craft-like practice is difficult (Fujimura & Fortun, 1996; Fujimura, 1992). The tendency towards resistance is particularly high when such practices are integral to becoming a member of the discipline, and especially, when alternatives are not well understood by members of such community. How do scientists organize themselves and their work to counter such anticipated resistance and still advance displacing designs? In this paper, We document one such displacement using ethnographic records obtained through extensive work inside a scientific laboratory, and offer a theoretical model of displacement in scientific practice. The analysis is approached from three inter-related levels (historical, socio-technical, and interactional) to characterize the nature of the displacing designing practices and its developmental implications for people, things, and discipline. Our analysis is grounded on how a group of entomologists carefully aligned technologies (Gas Chromotography/Mass Spectometry) foreign to their practices with traditional taxonomical practices in trying to demonstrate that the former was able to consistently differentiate organisms not just as well as traditional methods did, but better.

A pair of lenses on bioscience architecture: an ethnography of design intent and users' experiences. *Alison F McDougall-Weil, University of Cambridge Engineering Design Centre*

In laboratory design, a trend has emerged since the Salk Institute opened in 1962. Designing bioscience architecture now often centres on 'designing in' collaborative atmospheres and informal interaction (leading to new multi-disciplinary science). The architecture, charged with creating specific affects (also seen at an urban scale and in other workplaces), experiments with the culture of science by changing scientists' everyday interactional practices. I undertook a three-year, multi-site, multi-modal, ANT/STS-inflected, design-anthropological ethnography of several bioscience buildings to explore this. This paper explores one case: Bio-X, in the Clark Center at Stanford University (Foster + Partners/MBT). The building's trajectory is traced through the design team's practices during design. Then, we refocus on everyday practices in that building. In describing how buildings are constitutive of practices, the relation between design intentions and performed actualities is visualised in a compelling way. Recent interesting ANT/STS work on architecture focusses on the life of a building during the professional design process before a building is built. This paper

proposes that these accounts of design can be completed by mirroring this interest in process through turning a lens onto the processes happening in the building once constructed: the practices of users. The aim is to demonstrate the possibilities of a fresh application of ethnography to design; that design is relevant to those who study laboratory practices; and how architecture can be added to the repertoire of interests in laboratory studies. Funder: EPSRC Supervisor: Dr Nathan Crilly.

Epistemic Encounters: interdisciplinary collaboration in digital humanities. *Smiljana Antonijevic, Royal Netherlands Academy of Arts and Sciences; Roskilde University*

Drawing on two recently completed projects of the Royal Netherlands Academy of Arts and Sciences and Oxford Internet Institute, this paper presents insights on interdisciplinary collaboration in digital humanities (DH). Through an ethnographic study that included observations and in-depth interviews with 86 digital humanities scholars, policymakers, funders, web developers, and IT engineers from 25 institutions in Europe, the USA, and Canada, these investigations highlighted issues relevant for understanding challenges of epistemic encounters in contemporary DH. The study indicates that theoretical models of interdisciplinary collaboration envisioned and promoted by funders, policy makers, and academic governing structures do not correspond with interdisciplinarity observed in practice. The ability to articulate field-specific methods and research objects, as well as to harmonize research heuristics and hermeneutics of the humanities on the one hand and computer sciences on the other, represents an obstacle in developing DH projects, digital tools, and resources. Similarly, difficulties in producing outputs that would bring academic recognition and credit on 'both sides' discourage DH scholars from engaging in collaborative endeavors. Younger generation of 'hybrid' scholars have the same problem of academic recognition, and usually get staff instead of teaching or research positions. Difficulties in developing criteria for evaluating interdisciplinary DH projects represent a problem for both scholars and funders. Finally, challenges of creating and implementing interdisciplinary DH curricula have been identified as a problem by all of the surveyed stakeholders. This research therefore suggests that contemporary DH represents a zone of interdisciplinary tension, which should be addressed through bottom-up, practice-oriented approaches.

191. (86) Displacement and classification - III

2:00 to 3:30 pm
Solbjerg Plads: SP212

Chairs:

Daniel Bischur, University of Trier, Germany
Stefan Nicolae, University of Trier

Participants:

Gendered classifications in software development. *Diana Lengersdorf, TU Dortmund, Germany; Matthias Wieser, University of Klagenfurt, Austria*

Work of classification has been regarded as crucial in innovation processes from the onset in STS. By drawing on empirical data from an ethnographic study in an internet advertising agency, the talk will address one particular figuration of classification that is the masculine software developer. We will show how technical and sociocultural classifications interact in a web of practices and how software developing and gender classifications mutually shape each other. We will stress how displacements in classification proceed by a differentiation of different forms of software development and of masculinities. Part of this reconfiguration processes are not only cultural categorizations like gender but also artifacts and system software as well as forms of professional work like developing in Flash and developing a business logic. We will show that the new

figuration of classification is related to power relations that establish a reconfigured system of differences.

Displacement and classification work as performances of associations. *Juliane Jarke, Lancaster University Management School*

Within STS the social has been conceptualised as an association of and between materially diverse entities such as people, things, objects, practices that are being ordered in certain ways (and not others). Hence what is important is not only the network aspect of associations but the work performed in order to create, classify and associate these entities. It is a process of translation (in proximal terms) that transforms entities and relations generated in one material into other ones. Such translations are a core activity of any form of organising, and they continuously displace and re-order associations and what is being associated. The paper draws empirically on ePractice, an initiative to facilitate the sharing of 'good practices' among European eGovernment practitioners. This exchange is meant to be achieved through a number of online and off-line devices such as a Web portal, case studies or workshops. The methodological approach is process-oriented and practice-based. It includes conventional ethnographic methods such as participant observation and face-to-face interviews which were complemented with online participation. Based on the concept of communities of practice (Lave & Wenger, 1991) in ePractice 'learning transfer' is translated from being 'situated', from depending on 'legitimate peripheral participation' to circulating entities such as downloadable case studies, online membership and workshop participation. The paper discusses how displacement and classification are being performed continuously through the translation of 'big concepts' such as communities of practice into 'manageable objects' such as online community membership. Indicative references: Cooper, R., & Law, J. (1995). Organization: Distal and Proximal Views. Research in the Sociology of Organizations, 13, 237–274. Latour, B. (2004). The Social as Association. In N. Gane (Ed.), The future of social theory (pp. 77–90). London, New York: Continuum. Latour, B. (2007). Reassembling the social: An introduction to Actor-Network-Theory. Clarendon lectures in management studies. Oxford: Oxford Univ. Press. Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation (18. print.). Learning in doing. Cambridge: Cambridge Univ. Press. Mol, A. (2003). The body multiple: Ontology in medical practice. Durham, N.C.: Duke Univ. Pr.

'Personalized' Audio and the Changing Meaning of Noise. *Joseph Klett, Yale University*

Audio technology is in the midst of a move. From a paradigm where sound is modeled as channels of signal, audio is shifting to a paradigm where signal becomes a collection of sonic objects dependent on the feed-forward of individualized listening features. I claim this shift toward "personalized" audio is inspired by a change in the operative concept of noise which has outstripped formal objective categorization. Engineers reframe mediation and design to turn intersubjective disagreement into "useful noise", displacing qualifications of signal and redefining noise solely as malfunction. In this paper I present data from a laboratory-workplace ethnography of audio engineering. I demonstrate a methodology for observing culture in interaction to suggest how meaning changes through interactions between materials and the scientific imagination, and how these meaningful practices are re-inscribed onto technologies. This approach demonstrates the practical dimensions of knowledge production for studies of culture while emphasizing a more comprehensive understanding of culture in STS.

Assessing and helping Internally Displaced People: Controversies and regulation of social rights in Colombia. *Fredy A. Mora-Gámez, University of Leicester*

A local and general frame of internal displacement caused by

violence as a social problem in Colombia during the last ten years will be established; a description of the technical devices used by psychologists, psychiatrists, and social workers to assess and treat Internally Displaced People (IDP) is provided. Trough a media review and a public policies analysis, some examples of the possible controversies around the scientific arguments presented by different groups of interest regarding IDP mental health will be described. In addition to this, a discussion about PTSD and other mental health categories as necessary conditions for IDP to receive government financial and social aid is presented. Finally a possible methodological route of this proposal will be outlined to approach a sensitive social problem in which scientific discourse and technical devices could be considered as social rights regulation agents; in this sense, the tension between public (government) organisms and private instances will be outlined as an interesting arena for Science and Technology Studies and Critical Management Studies.

Maps, Information Design, and Social Change: The Case of Destroyed Palestinian Villages. *Talia Fried, Bar Ilan University*

This paper examines a database on the Palestinian villages that were destroyed in the 1948 war (also known as the "War of Independence" or "the Nakba") that was produced by a social change organization in Israel. I examine the practices that the organization used to create the database and the incumbent possibilities and problems that arose. Through the first practice, declassification, the organization reintroduced the names of destroyed Palestinian localities onto a map of the country, thus critiquing the state-led classification work that had rendered them 'residual'. The declassification process sought to undo a past erasure, but at the same time met up against various ideological, epistemic, interpersonal, and technical challenges for what would count as a "destroyed Palestinian village." These challenges are ethnographically described. The second practice, representation, is situated at the interface of the user and the screen. Here, an analysis of the map's visual rhetoric highlights the design values that serve to refract the typically binary and oppositional discourse on the Nakba into one that can contain more nuanced subjective modes; yet, the design is also limited in that it can be seen to simplify and freeze the dynamic complexity of relationships between the land and its people before 1948. This study contributes to STS through its examination of classification as a central ethical problem for information design, and at the same time as an opportunity for imagining social change.

192. (22) Climate engineering as a societal design problem?

2:00 to 3:30 pm
Solbjerg Plads: SP213
Chairs:
Nick Pidgeon, Cardiff University
Suvi Huttunen, Finnish Environment Institute
Participants:
Framing geoengineering in academic literature. *Suvi Huttunen, Finnish Environment Institute; Mikael Hildén, Finnish Environment Institute*

Within the last few years, geoengineering or climate engineering has gained increasing attention among scientists and policy makers. Scientists are at the forefront in introducing geoengineering to wider public and in shaping the images different alternatives awake. With piling number of scientific publications on geoengineering, it has become relevant to look more closely at the way climate engineering is framed by researchers. Frames are here understood as the core interpretations of an issue resulting in particular action: a frame consists of a problem definition, and includes the identification of causes, moral interpretation and promotion of appropriate

action. With the help of framing analysis, we analyse how geoengineering is seen and portrayed as a response to climate change and also how different framings of geoengineering affect the understanding of climate change. Our empirical material consists of 68 scientific articles covering both natural and human sciences. The analysis revealed three main frames for climate engineering that can be described as: 1) risk-benefit assessment, 2) governance and 3) in balance with nature. The first emphasizes instrumental approaches, the second policy and the third moral aspects. Differences in the framings of natural and social scientist can be identified, but the distinctions are not categorical and the frames overlap. The analysis also shows how the emergency response argument has been persuasive in changing the frames and in making climate engineering a relevant although contested option in the debate on climate change abatement.

Issues of scale and ignorance in geo-engineering. Controversies over experimentation in ocean fertilization. *Mieke van Hemert, Institut Francilien Recherche Innovation Societe*

In this paper, I will discuss issues of scale and ignorance in geo-engineering discourse and practices and the controversies that surround it, focusing on developments over the last decade. First, I will briefly discuss the emergence of a geo-engineering discourse over the last few years and introduce politics of scale and politics of ignorance as analytical lenses. I will then provide examples of the intertwinement of such politics in geo-engineering discourse and analyze how issues of scaling and ignorance have been articulated in research practices, research regulation and public controversies around the geo-engineering technique of ocean fertilization. Some twenty-five years ago, ocean fertilization started to be seen as a potential way of sequestrating carbon on the bottom of the ocean. Controversies, both scientific and public, over effectivity, side effects, unknowns, scales of experimentation and commercial involvement have become pronounced since the 2000s. The preliminary outcome of these debates has been the creation of a regulatory niche for scientific experimentation, but issue articulation is ongoing and influences the governance of geo-engineering beyond ocean fertilization. The Convention on Biological Diversity (CBD) has come to act as a forum for the articulation of issues in geo-engineering experimentation following the debate about the regulation of ocean fertilization practices, which was taken up by CBD institutions in 2008. Building on recent science studies contributions to conceptualizing experimentation, I conclude by arguing that discussing fundamental differences between experimental styles, while attending to issues of scale and ignorance, could enrich the geo-engineering debate.

What is new in Geoengineering? *Paula Curvelo, European Commission - Joint Research Centre*

The full meaning of climate engineering proposals can only be grasped in connection with the larger social imaginary of science and technology in which geoengineering narratives are rooted. One possible way of looking at the geoengineering issue and the 'scalar dislocations' that it introduces into modern systems of experience and understanding is to explore the close affinity intentional climate change proposals have with other technologies that have emerged in the recent past, some of them manifesting our profound desire 'to escape from imprisonment to the earth'. The idea of terraforming, that once made us dream of exploring and inhabiting other planets, seems to have been reinvented under the aegis of climate change science to focus on Earth itself the proposals for 'wholesale rearrangement of a planet's environment to support human life'. Similar to the Space Exploration enterprises of the 1970's and 1980's, Geoengineering proposals change the fundamental idea of limits that underpins the environmental movement, inspiring new possibilities to expand and exalt our current lifestyles. In this paper we propose to explore these affinities in order to further

interrogate the 'geoengineering scientific worldview' and clear the path to more open and critical reflection about the competing social interests, values and assumptions of climate engineering proposals.

Governing Climate Engineering Research: Scientists' Perspectives. *Eleftheria Vasileiadou, Institute for Environmental Studies, VU University Amsterdam; Panagiota Stathaki, Institute for Environmental Studies, VU University Amsterdam; Arthur C. Petersen, PBL Netherlands Environmental Assessment Agency, and VU University Amsterdam*

There are various climate engineering schemes presently under discussion, all sharing the following characteristic: there are many uncertainties involved with respect to the development and implementation of such schemes. As such methods are conceptually introduced, scientifically studied and actually implemented, first in small-scale experiments, issues such as responsibility and research governance are becoming more significant. Climate engineering experiments cannot be easily contained in laboratories, but entail in situ experiments that can significantly change the environment and the citizens in the locality they are implemented. This paper investigates how experimental research on climate engineering, specifically cloud albedo enhancement, can be organized in order to explore the opportunities of preventing climate change in a socially responsible manner. It reports on a series of twelve interviews with a set of prominent scientists conducting climate engineering research from different fields. The results of this exploratory study indicate that there are no significant differences of perspectives between scientists from different disciplines. Further, the scientists believe that (i) developing countries should play a role in climate engineering research; (ii) such research should be multidisciplinary, with the participation of the private sector, the government and stakeholders in governance structures; (iii) existing legal instruments are not sufficient to cover climate engineering experiments; and (iv) there is need of full disclosure and maximum transparency in such research. These results raise important issues for the role of social studies of science in suggesting forms of research governance that are acceptable and can guarantee transparency and accountability.

193. (27) Accounting (for) Nature: REDD+, carbon credits and the design of sustainable futures

2:00 to 3:30 pm
Solbjerg Plads: SP214
Chair:

Raoni Rajão, Federal University of Minas Gerais

Participants:

Framing and Reframing Subjects in the Hybrid Forums of REDD. *Mattias Hjort, University of Birmingham*

Embarking from a governmentality perspective, the REDD initiative that seeks to decrease deforestation and forest degradation can be understood as an expression of a neo-liberal rationality of government. This rationality employs two primary technologies: a technology of performance that established the carbon credit as a commodity via mechanisms of accounting, standardized rules and more, and a technology of agency that treats those subjects that live adjacent to and depend on REDD pilot project forests as rational, individualized and responsible. The former technology governs conduct via the freedom that the latter grants. This paper utilize Michel Callon's theories of the performativity of economics to understand how these subjects are being framed in the 'hot' situation of the emerging REDD market. An argument will be made that early on these subjects were framed according to the neo-liberal technology of agency in the form of homo economicus in the 'hybrid forums' of the REDD market. However, through laborious work of certain parts

of this forum a process of reframing of these subjects is taking place that seeks to frame more complex subjectivities that, in the words of Latour, 'differ not only in their culture but also in their nature, or rather, in the way they construct relations between humans and non-humans'. This paper will reiterate this theoretical approach thereby highlighting its relevance for future STS related studies on REDD, and briefly analyse the framing of subjects according to the argument above and conclude with a caution that the situation is still not 'cold'.

Rejected Projections: Negotiating REDD+ in Guatemala's Maya Biosphere Reserve. *Micha Rahder, University of California, Santa Cruz*

In Guatemala's Maya Biosphere Reserve, leaders of a proposed REDD+ project maintain a strict line between the 'technical' and 'political', explicitly separating the two in presentations, plans, and reports. The technical side — the most complex model of projected deforestation yet produced in Central America, based on international standards, statistical models, and expensive data collection — is presumed to be unproblematic and apolitical, while the political side — who will obtain rights to carbon credits, what administrative structure will govern the project — is acknowledged to be much harder. However, many participants reject this division, with "non-experts" questioning the validity of the data and projections, which do not match with other imaginations of the landscape's future. In addition, who is and is not included in the project, as well as how participation and rights to carbon credits are decided, are hotly contested. This paper presents an ethnographic account of the development of this project, especially negotiations between the Guatemalan Park Service, local community forestry concession members, and conservationists working in local and international NGOs, as they struggle to create new spatial and political alliances in the hopes of accessing resources for biodiversity conservation and local development in the carbon-focused world of international environmental funding.

Beyond deforestation as a 'simple location': discourses, artefacts and practices in the performance of illegal of deforestation in the Brazilian Amazon. *Raoni Rajão, Federal University of Minas Gerais; Theo Vurdubakis, Lancaster University*

A common background assumption found in policy documents and scientific articles concerning the creation of a carbon credit market for avoided deforestation (REDD), is the view of deforestation as something that is "out there", waiting to be detected and accounted for. In other words, they consider the structures of representation that underpin REDD as "simple location": a view that presupposes a direct and unproblematic relation between scientific representations and the world, and that is often required in order for the world to be made manage-able (Whitehead, 1925). Against this backdrop, the present paper challenges the perception of deforestation as something that is unproblematic and self-evident and sets out to investigate how such 'simple location' is practically accomplished. The paper draws upon a three-year ethnographic study of the detection and prosecution of illegal deforestation in the Brazilian Amazonia. The study itself is situated within the post-ANT empirical programme of 'material semiotics'. As is well known, a key objective of this programme is the exploration of how particular 'realities' are enacted in practices. Based on the observation of 'human actors' (e.g. farmers, forest rangers, scientists, lawyers, administrators) and their artefacts across a variety of sites the paper argues that the fact of 'illegal deforestation' is often 'done differently' by different agents in the different sites studied (soybean farms, scientific labs, forest clearings, government offices, courthouses). For those involved in the fight against deforestation therefore, the question of 'illegal deforestation' translates into a 'problem of difference' (Mol, 2002): the practical problem of effectively patching these different

'realities' together. When 'simple location' can be accomplished, then deforestation does indeed appear as a straightforward fact, a set of relations of correspondence between representation and referent (e.g. satellite image and patch of ground); deed and agent; offence and detection; crime and punishment; policy and outcome. At the same time, in practice, these relations are often subject to negotiation, contestation and dispute. The different 'realities' so generated cannot always be co-ordinated (singularised) into a 'simple location' but jostle with one-another in a cacophony of legal, ontological and epistemological claims and counter-claims. 'Location' thus emerges as a negotiated, contested outcome of complex, materially mediated, discursive moves and countermoves, clashes and trade-offs between scientists, administrators, forest rangers, lawyers and farmers. From this assertion the paper poses some questions that might be relevant for the study of REDD and other carbon credit mechanisms.

Developing Apollonian and Dionysian Trust in Environmental and Health□Oriented Consumer Schemes. *Mikael Klintman, Dep. of Sociology, Lund University*

This paper raises some fundamental issues about information and knowledge authorities as a basis for citizen-consumers to change their purchases, use, and (sub-)political involvement as implied in the notion of green, political citizen-consumers. The paper does this by questioning certain ways in which trust in knowledge authorities is typically portrayed, namely as trust in the cognitive, scientific competence, as well as in propensity of having various stakeholders participate in these cognitive, knowledge-acquiring endeavors. By briefly examining challenges involved in designing climate labeling schemes, social marketing (to reduce smoking), and group-based interventions towards reduced energy use, this paper develops the notion of two types of trust that need to be taken into account in consumer-oriented projects surrounding health and environment: The first one, which I argue is already taken into (extensive) account is what I label Apollonian trust, the trust in the validity, soundness, logic and cognitive quality of the schemes. Still, when informing the social sciences of consumption by evolutionary theory of human motivations it stands very clear that Apollonian trust is rarely sufficient in order to motivate citizen-consumers to modify their lifestyles. Influenced by these schools of thought, I therefore coin the concept of Dionysian trust, to denote people's trust (subconscious or conscious) that their modified lifestyles will meet their social motivation, the motivation that changes in routines will somehow benefit their social position. In addition discussing implications for further consumer campaigns and schemes oriented towards reduced harm to health and environment through consumption, the paper raises the wider scientific issue. This issue concerns the importance of allowing 'Darwin-free' but rich social scientific perspectives on consumption be thoroughly influenced by lessons from evolutionary theory on human nature, and vice versa, while at the same time avoiding deep contradictions and incommensurability of the perspectives.

194. Feminist Dialogues on Technology
2:00 to 3:30 pm
Solbjerg Plads: SP216
In this panel we ask how issues of feminist analysis and sites of gender enagement are framed in the disciplinary design of science and technology scholarship. Feminist networks for the dissemination of research, design, and scholarship on science and technology long pre-date the development of digital research infrastructures. These early networks were comprised of feminist scholars who were literally scattered across institutional contexts, disciplines, and geographic locations (Merchant, 1980; Rothschild, 1983; Keller, 1983; Harding and Hintikka, 1983; Bleier, 1984; Haraway, 1985; etc.). In effect, we see in disciplinary design the continued displacement of feminist analysis; in this panel we reflect on strategies to bring feminist analysis more actively into scientific institutions and disciplines.   Our

collective hypothesis is that the ongoing situation of 'scattered' interlocutors hinders the development of feminist scholarship in science and technology in several ways: 1) people are unaware of important research going on across disciplines and global contexts; 2) the history of the engagement between feminist thinkers and issues of science and technology is not archived; and 3) students who are interested in pursing questions of feminism, science, and technology have few reliable resources to draw on in finding people and places to study. For the panel, each participant will briefly present a project, position statement, or research overview to be followed by a roundtable conversation lead by the respondent that engages audience participation in discussing and evaluating the intent and desirability of a feminist research network in science and technology scholarship.

Chairs:
Beth Coleman, Harvard/Hogeschool van Amsterdam
Anne Balsamo, University of Southern California

Participants:

Future Internet Architectures. *Elizabeth Losh, University of California, San Diego*

Feminist readings of infrastructure projects often point to the importance of historical narratives, social practices, tactical responses, and material affordances and constraints. Feminist scholars recognize the fact that massively multi-user aggregations of acts of connection, boundary building, and place-making can never be totally conceptualized by a single blueprint or master plan. Furthermore, they challenge naïve understandings of "posthumanism" that fail to account for the embodied, situated, and collectivized conditions of technological existence, and they explore the significance of intersections of race and gender in the policing of technological behavior. With regard to policy making, feminist interpretive frameworks bring into question the ideological underpinnings of rhetorical claims made in the name of supposedly universal values like privacy, network neutrality, transparency, anonymity, and access.   As the National Science Foundation moves forward with four competing teams of researchers in the Future Internet Architecture Project, it is useful to consider how the four radically different paradigms of 1) subscription computing, 2) mobile computing, 3) cloud computing, and 4) narrow waist computing could also potentially reconfigure the Internet as a cultural imaginary.   Feminist dialogue within the field-building work of science studies is needed to provide a critical vocabulary for describing the future Internet, just as it is needed for the Internet of the present. It could be a false assumption that these Internet architectures of the future will promote feminist ways of being merely because these infrastructure schemes seem more localized and fluid and less hierarchical and stable.

For an Experimental Mode of Expression. *Sarah Kember, Goldsmiths University*

Feminist debates on science and technology have been at the forefront of critical and innovative approaches to epistemology, ontology and ethics. The main point put forward here is that they are also in poll position to realize established philosophical arguments regarding the need for alternative and/or experimental modes of expression that explore the entanglement of feminist theory and practice.   Barad's notion of entanglement as the lack of an independent and self-contained existence is rooted in physics and re-works Haraway's situated knowledge through a material ontology of becoming-with (animals, machines, aliens and so on). It emphasizes the ethics of agential connectivity but has as yet largely unexplored implications for the further pursuit of feminist methods and modes of expression. To what extent might these be pushed beyond Barad's sense of our 'Cartesian habits of mind' or Bergson's sense of intellectualism as the spatialisation (and falsification) of reality? I will re-trace and highlight the legacy of intuitive and insightful (connected) approaches that, in Grosz's terms 'move theory on.' While recognizing the limitations of analogical thinking per se, what

might it add to our analytic modes? What have metaphoric, parodic and figurative approaches added to feminist debates on science and technology and what are their conceptual limitations? If, like Haraway, we underline the storied nature of technoscience, what value do we place on a direct attempt to re-tell it?

'Compliant' Feminist Archives. *Jacqueline Wernimont, Scripps College*

Two major literary archives emerged out the 1980s to address a lack of access to texts by and about women writers: The Women Writers Project and The Orlando Project. Both projects use XML to encode their data according to the Text Encoding Initiative (TEI) guidelines, which is to say that their XML documents are 'TEI-compliant.' The TEI was established in 1987 to develop a hardware and software independent method for encoding humanities data in electronic form, specifically in the extensible markup language known as XML. As a set of guidelines that ensure that encoded texts can be read across platforms and time, the TEI has been extremely successful and is now the specification followed by the majority of large text-based electronic archive projects and is the topic of training sessions funded by the NEH. While it is clear that the WWO and Orlando constitute a certain kind of feminist archive, it is not yet clear if we can say that this has anything to do with the technology upon which these archives is built. Should we consider the use of XML and the TEI guidelines as harmonious with a feminist archival ethic, or are there reasons to seek out different technologies and practices in the building of feminist archives? Given that the TEI now constitutes the gold standard in sustainable digital archives, a critical study of the politics the specification and it's underlying markup technology and their implementations is overdue.

Feminist Dialogues on Technology. *Alex Juhasz, Pitzer College*

In the process of organizing an international networked undergraduate course called 'Feminist Dialogues on Technology,' Balsamo and Juhasz contribute to this panel to initial conceptualizations, data mapping, and shared resources in laying the groundwork for new steps in a feminist STS. Their contribution will include a discussion of the state of feminism and technology studies around the world. Both have recently published new work that not only addresses topics of feminism and technology but also engages new technologies of scholarship and activism. Additionally, they will discuss the challenges of building and sustaining conversations and communities around feminist scholarship. Learning from their own scholarly experiences, they offer for critique and discussion the first version of a massively distributed collaborative learning forum and archive on the topic of feminism and technology.

Discussant:

Judy Wajcman, London School of Economics & Political Science

195. (09) Care in a self-managed world - III
2:00 to 3:30 pm
Solbjerg Plads: SPs03
Chairs:

Ger Wackers, Narvik University College
Ingunn Moser, Diakonhjemmet University College
Hilde Thygesen, Diakonhjemmet University College

Participants:

Running mania: Lay expertise and reflexivity in the everyday management of health uncertainty. *Patricia Campbell, University of Calgary*

This paper investigates the ways in which laypersons negotiate various medical and health expert discourses in managing the everyday uncertainties surrounding their own health. This negotiation is theorized as a form of public participation in terms of the social production of knowledge and collaborative practices of self-care. Using ethnographic methods for observing online communities, the paper examines the injury forum of a popular Canadian running website, Running Mania, to see how its online user community shares experiential knowledge (which often includes mediated, lay versions of medical expert knowledge) regarding the diagnosis and treatment of running-related injury. The paper examines the sources of expertise that the runners find valuable in constructing their own experiences of health and sickness, the mediation of this information, and the role of social networks in its production. The data suggests that the online interaction does not replace face-to-face consultation with medical experts. However, the website's recognition of experiential expertise provides a context through which users may negotiate the body as a site of unsettled socio-technical relations. The forum allows users to participate in the coproduction of the body as a complex and chaotic entity subject to multiple and competing interpretations. Users' interactions illustrate how these multiple realities are enacted or how the space between these practices or prescribed behaviours is actively negotiated or challenged in the form of users' self-care practices and participation in knowledge production.

Community design for active seniors using electric bicycles. *Miki Saijo, Tokyo Institute of Technology*; *shishin kawamoto, Tokyo Institute of Technology*

Background and objective: Japan's population is rapidly aging, and there is a need to build a community-based welfare system in which the elderly are encouraged to be more independent and self-subsistent. This study is based on fieldwork carried out in the city of Kakegawa,Japan and focuses on how electric bicycles contribute to building an elderly-friendly community on the aspect of moving. Research themes: The following studies were made: (1) Correspondence analysis of a general survey of the elderly (N=1390); (2) Interview survey of the elderly and professional caregivers at a test-ride event of the 4-wheel (newly developed), 3-wheel, 2-wheel electric-power assisted bicycle. Results and observations: In study (1) it was found that there are regional differences in the frequency with which the elderly use the bicycle, and women in their 80s most often use the bicycle to visit friends or go shopping but are also the most fearful of falling off the bicycle. In study (2) it was found that professional caregivers believe that the 4-wheel is easier for the elderly to use, however,they have a psychological block against riding a new type of vehicle. Contribution to STS research: In this study, we learned that the technology in and of itself does not help in building elderly-friendly community. This paper intends to show that community design which helps users to make use of technology. That is an important pillar of STS research.

Managing the Innovative Flow: challenges and developments in an innovative prevention strategy within vascular surgery. *Kathrine Hoffmann Pii, CBS*

Drawing on an ethnographic study of an innovative prevention strategy within the medical specialty of vascular surgery, this paper addresses the challenge of managing innovative processes. The paper deals with a particular prevention strategy, which was developed ten years ago at a Danish vascular clinic. The strategy was acclaimed by the vascular community as pioneering in its approach as it provided a more holistic treatment to patients by including medicine and therapeutic lifestyle conversations into a traditional surgical specialty. Inspired by the objective of vascular surgery, to ensure a healthy blood flow, the paper uses concepts from the field as a heuristic to explore the innovative process as a 'pulsatile flow'. The paper shows how the strategy managers have created 'pathways' for integrating the new preventive approach in the vascular community by linking prevention to the specific professional concerns and interests among vascular surgeons and nurses and by inserting material

structures, 'stents', to stabilize this pathway. The paper displays the 'occlusions' that never-the-less have occurred and challenged the innovative flow and the 'bypasses' created to redirect and restore flow. The paper ends by discussing the main challenge of 'overflow', which the strategy is presently facing: prevention is no longer an innovative endeavor, but has flowed (perhaps even flooded) in the wider society, reducing the strategy's 'velocity'. The paper points to overflow as a major challenge in the innovative process and seeks to discuss this with other studies of innovative processes.

Understanding the Design of Telecare Technologies. *Ivo Maathuis, University of Twente*

Telecare can be defined as remote provision of healthcare services via ICT applications. One of the aims of telecare technologies is enhancing self-management strategies of patients suffering from chronic illness. Recent medical ethics literature discerns three dominant paradigms of self-management in telecare. Self-management based on "compulsory compliance," patients as "proto-professionals" and self-management based on "cooperation with healthcare personnel" (Schermer 2010). In this paper I focus on a telecare system developed in the Netherlands for patients suffering from COPD, where self-management of patients is the core concept (COPD.COM). The system includes activity monitoring via sensors and an electronic diary. In my previous research I showed that the third form of self-management is hardly inscribed into this system. This paper addresses the question how to understand the design practice of telecare devices. I.e. what kind of enabling or constraining aspects shape the design? To what extent can this explain the absence of the third form of self-management? To answer these questions semi structured interviews (n=11) with developers of the telecare system were conducted. The interviews were analyzed based on the method of Grounded Theory. This paper contributes to insights in the design of telecare systems by taking into account that design constraints work differently for different actors involved. The design resulted in a hybrid device that enables different forms of self-management. I will describe how the design process can be understood in terms of path dependency, processes of configuring designers and users, as well as bricolage.

196. (64) Challenges in studying technologies of democratization - II

2:00 to 3:30 pm
Solbjerg Plads: SPs05
Chair:
Randi Markussen, IT University of Copenhagen
Participants:

The Ethic of the Hack: An Ethnography of Humanitarian Hackers. *Douglas Benjamin Haywood, Goldsmiths, University of London*

Hackers and hacking have become important narratives in Sociology. These have frequently portrayed hackers as deviant, framing them ethnocentrically within North Atlantic societies. Recently, however, the politicisation of hacking through 'hacktivism' and those who hack for humanitarian causes force us to reconsider such typologies. The body of empirical research in this area remains relatively sparse. The aim of this paper is to present the initial findings of an ethnographic study carried out over a year which focused upon those involved in 'humanitarian hacking'. Online and offline research focused upon the events that hackers took part in, the artefacts they produced and the individuals involved. Based around a number of 'humanitarian hacker' projects and events, this paper explores the motivations of participants, contrasting against previous studies and theory, particularly the idea of a 'hacker ethic'; the extent to which these groups comprise a 'community' and its nature; and finally the

social shaping of the technological artefacts produced by these groups. Such groups present a methodological challenge for ethnographers since they are multi-sited, mobile, and take place both online and offline. This paper therefore draws upon emerging practices in the social sciences including virtual ethnography, multi-sited studies, shadowing actors and 'following' technologies as artefacts. The hackers engaged with in this project were often themselves academics, with research taking place within the ethnographers 'own tribe' and the degree of separation between fieldwork and 'everyday life' constantly blurred. This made a more participatory style of ethnography essential and challenged pre-existing notions of 'the field'.

E-voting Machines: A gift to Democracy? *Nina Boulus-Rødje, IT University of Copenhagen*

This paper will draw upon a new research project that aims at investigating the introduction of e-voting machines in Denmark, where formal discussions about these technologies began last year. This project will follow these machines "in the making" (Latour, 1987), looking at how these are advocated for by election officials, developed and designed by computer scientists, marketed by vendors, tested by municipalities and taken into use by voters. In this paper, I will map the field and the discourse surrounding e-voting technologies and raise critical questions regarding these technologies. Like electronic banking or Electronic Health Records, e-voting machines are expected to increase efficiency and accuracy, as well as reduce costs and waiting time. However in contrast to these technologies, with e-voting mistakes cannot be compensated without devastating consequences for our democracy. While these technologies are welcomed in some countries, they are also banned from several others. One of the main concerns is that e-voting machines challenge fundamental principles necessary for democratic elections. For example, these machines black-box the electoral process and remove current public control and accountability mechanisms performed by, and delegated to, humans and non-humans. These concerns intensify when we hear computer scientists warning us that these machines can be easily hacked and that it is difficult for the public to detect such tampering incidents. This might lead us to take a cautionary and critical approach to the introduction of e-voting into democratic electoral procedures.

Institutionalization dynamics of Parliamentary Technology Assessment. *Benedikt Rosskamp, University of Liège (B)*

In this paper we rely on the preliminary results of an ongoing research at the EU level to investigate the various institutional forms that Parliamentary Technology Assessment (PTA) institutions may take in the 21st century. To do so, we aim to compare different incipient initiatives of institutional creation and recent developments of established PTA bodies throughout different European countries in order to understand what is at stake in the pursuit of formal (national or regional) bridging structures between techno-scientific developments, society and policy-making. Furthermore we'll investigate how such institutes create and maintain their niche in the political and S&T landscape as a particular source of strategic intelligence. Based on interviews, participant observation as well as document analysis will study the dynamics between bottom-up and top-down creation initiatives of PTA bodies as well as user relationships, with a particular focus on opening-up and closing-down phases of technological appraisal as well as on the dynamics between "cold" and "hot" stages of the institutionalization dynamics. While a great diversity of PTA institutions continue to coexist we will try to provide a framework which enriches the micro study of translation and irreversibility strategies in order to incorporate macro elements of socio-technical landscape, science, technology and innovation (STI) regimes, political advisory and participatory cultures as well as prevalent cultural-policy biases in mandates and working patterns of PTA institutes.

Quo Vadis Parliamentary Technology Assessment? A Case for Renewing PTA Programs and Thinking. *Michiel Van Oudheusden, University of Antwerp*

Since the 1980s, parliamentary technology assessment (PTA) institutes have emerged across Europe, typically with the aim of advising parliaments about the potential social, economic, and environmental implications of sciences and technologies. While until recently, these institutes appeared to have established themselves as dependable partners for policymakers, PTA is increasingly under threat from funders, as illustrated by the Danish Government's call to disband the Danish Board of Technology and the Flemish Government's decision to restructure the Flemish Institute Society and Technology (IST). It is hence uncertain whether these institutes will continue to fulfil their present functions as independent policy advisors and think tanks, and as catalysts for public debate. In this paper, we describe the difficulties Flemish PTA, and the IST in particular, faces today. Drawing on arguments and counterarguments to close down and/or reform the IST, we lay out envisioned futures for PTA in Flanders. From a concern with making PTA more visible and potent as a policymaking instrument, we distinguish four grand challenges PTA practitioners and advocates face: (1) increasing the public visibility of PTA; (2) ensuring the uptake of PTA ideas in science and technology discourses; (3) forging closer ties between PTA, academia, and industry; (4) inciting continuous reflection among PTA advocates about PTA aims, methods, and programs. Addressing these challenges will strengthen the PTA knowledge base and effectively align PTA with existing science governance discourses, such as responsible research and innovation, participatory science communication, and public dialogue.

197. (35) Competing visions of energy systems transitions: contributions to "Smart Grid" - II

2:00 to 3:30 pm
Solbjerg Plads: SPs07
Chair:

Jennie C. Stephens, Clark University

Participants:

Displacement by default: mission creep in smart grid design. *Stephen Potter, Open-University; Matthew Cook, Open-University; Per-Anders Langendahl, Open University*

"Smart Grid" systems are increasingly considered to be a critical component of a transition to a sustainable electricity system as we move towards dispersed generation and new patterns of consumption. This suggests that Smart Grids must involve a blended socio-technical approach and vision, yet in practice, the 'socio' element receives little emphasis compared to the 'technical'. There is a crucial issue of the role and active participation of users in the design and emergence of Smart Grid configurations. This paper documents findings from a series of projects undertaken by the Design Innovation Group. These include the EON 'Think Energy' project with a testbed group of local consumers exploring domestic Smart Grid technologies and 'Project Falcon', working with institutional actors around the 11KV grid – a level seen crucial for Smart Grid management. Overall, this work suggests that a series of incremental decisions by those with a techno-centric perspective is leading toward a design vision and articulation that displaces the user. This concentration on technological upstream actors fits well into the existing model of relationships between the energy supply industry and its consumers and their established practices and approaches to energy management. But by default this excludes a vision in which end consumers have an active role. There seems to be a process underway of displacement by default. Given that sustainability studies suggest that the exclusion of consumption behaviour cannot deliver sustainability, there appears to be

serious shortcommings with this techno-centric Smart Grids design approach.

Smart grids and the materialisation of ways of life. *Greg Wallenborn, Université Libre de Bruxelles*

The battle of the Smart Grid has begun. Many different actors are investing in the electricity grids in order to integrate intermittent renewables and distributed production to the electrical grid, and to strengthen demand side management. Actors' interests are not always aligned and nobody knows how these interests will be translated in material infrastructures. Engineers dream about a complete automation of the grid that would balance production and consumption at each moment. Economists think that the increase of available information will improve the efficiency of the actors, including the end users. Beyond technological and economic fictions, I explore the conditions under which smart grids could be appropriated by users (residential and SMEs). The different strategies of electricity production and consumption are described at different scales (individual, building, district, region) and discussed in terms of ways of life. The crucial ingredient of limited material resources is incorporated into the picture. I conclude with an alternative socio-political fiction in which active users participate to the materialisation of functionalities, usages and meanings of the new grids.

Constructing the Smart Grid: Technological Options, Policy Choice and Energy Transitions. *Elizabeth J. Wilson, Humphrey School of Public Affairs, University of Minnesota; James Meadowcroft, Carleton University*

Over the past decade there has been increasing international interest in the potential of 'smart grids' to transform the way societies distribute, but also produce and consume, electricity. Modernising the network that links electricity producers and consumers through the application of advanced information and communications technologies (ICT) could bring many societal benefits. Yet it is already clear that there are different visions of a smart grid future, that technological choices are intertwined with economic, political, legal, and cultural forces, and that smart grid deployment poses serious challenges for public policy. Experience with other novel technologies suggests many potential pitfalls including early 'lock-in' of suboptimal designs, the capture of disproportionate benefits by special interests, cycles of hype and disappointment, disjointed decision making in a fragmented policy environment, and the generation of consumer backlash. This article explores the already contested terrain of smart grids, emphasising their importance as a site for struggles over transitions in contemporary energy systems and identifying challenges for technologists, policy makers and social science.

Green Guesses: Venture Capital and the Framing and Calculation of New Renewable Energy Technologies. *Gard Hopsdal Hansen, Norwegian University of Science and Technology; Markus Steen, Norwegian University of Science and Technology*

Technological development is not merely about inventing new products and methods. For inventions to become innovations, they need to attract the resources necessary to develop. Still, the role and flow of financial resources is a black-boxed subject in most research on technological development. Investing resources in renewable energy technologies is associated with very high risk due to a situation where not only technologies, but also markets, policies and value chains are in the making. Nevertheless, renewable energy and other green technologies are apparently becoming relatively popular investments for venture capitalists. In this paper we explore how venture capital managers in Norway assess and navigate investment opportunities in the renewable energy sector. We particularly focus on how they frame and calculate investment proposals and what kind of tools, skills, expectations, consultants and other resources they deploy and base their decisions on. This approach

to analyzing investment behavior thus resonates with MacKenzies (2009) precept for the social studies of finance: what one needs to examine is how beliefs about markets, physical and conceptual tools, the structure of the connections between markets, and so on, influences calculations. The paper applies both qualitative (interviews) and quantitative methods (surveys), and addresses the questions above by consulting actors in the Norwegian venture capital business, as well as entrepreneurs and company managers in the renewable energy sector.

Lock-in and Unlocking: Flexibility and Stability in Urban Energy Assemblages. *Graeme Sherriff, University of Manchester*

Lock-in has received much attention in recent energy policy discourse, for example 'carbon lock-in' (Unruh, 2000) describes systemic factors that perpetuate fossil fuel based infrastructure and practices despite evidence of their contribution to climate change emissions and the existence of cost-effective alternatives. Whilst the search for economies of scale is perhaps the most readily recognised form of lock-in, the concept is multi-faceted and characterised by sociotechnical complexity. Scale is important: the dominance of the national energy companies is often perceived as 'unsustainable' lock-in, but the development of local heat networks, viewed more positively, may form local lock-in to certain fuels. Alternative discourses around 'lock-in' highlight the different frames of lock-in: moving from 'entrenched' energy inefficient behaviours to 'embedding' sustainable practices, for example. Unravelling the 'seamless web' of lock-in is a strategic policy objective and a key challenge for social science's response to climate change. This paper discusses Greater Manchester's recent referendum on a package of public transport improvements through the lens of lock-in. The electorate voted against the package of transport measures, which would have included a congestion charge. It draws lessons from the two years of debating and campaigning that preceded the referendum. The paper will argue that rather than simply 'unlocking' lock-in, we need a more contextual understanding of the dimensions of this phenomenon and of how the elements of a sustainable, low-carbon city can be fostered in urban assemblages that display both flexibility and stability. If our cities are 'sites of continuous organisation and disorganisation' (Bogard, 2000) then perhaps they are also sites of continuous lock-in and unlocking. In doing so the paper connects policy discussions on sustainable energy and sustainable cities with STS ideas of urban assemblages.

198. (89) Conditions for work and knowledge production in the social sciences

2:00 to 3:30 pm
Solbjerg Plads: SPs08
Chair:
Veronika Woehrer, University of Freiburg
Participants:

Of course, that's how it is. Enculturation of Young Researchers in the Current Academic Environment. *Diana Schmidt-Pfister, Center of Excellence "Cultural Foundations of Integration", University of Konstanz, Germany*

Over the past few decades, the conditions for and character of university-based research have changed drastically in most Western countries. Growing competition, growing pressures to publish, a growing need for mobility and increasing auditing are often referred to as the key challenges for the next generation of scientists. However, to what extent are these facets of the knowledge-producing routines actually seen as 'new' challenges by early-stage researchers? Having grown into this changing context since their pre-graduate years, young academics might take these features of the current research environment for

granted whereas their senior colleagues perceive them in stark contrast to a different past. Moreover, to what extent are these and other features considered as challenges also in the social sciences and humanities? This paper addresses these questions by drawing on narrative interviews that have been conducted with about 50 researchers in different countries (Germany, UK, USA), disciplines and status groups. These interviews focus on changing value commitments and practices with regard to the changing conditions of university-based research and thus provide a valuable basis for assessing the respective role of enculturation among junior researchers. Importantly, on this empirical basis, the paper may move beyond possibly biased self-reflection by comparing (a) the situation in different disciplines or fields in the social sciences, humanities as well as natural sciences and (b) attitudes and practices among early stage and more senior researchers.

Aims and values in the humanities research. *Endla Lõhkivi, University of Tartu*; *Jaana Eigi, University of Tartu*; *Katrin Velbaum, University of Tartu*

Encouraged by our previous study of the workplace cultures at the Estonian academic physics institutions (EC 6th FP project UPGEM 2005-2008), we carried out a study of the humanities culture in 2010-12, partially inspired by Stephan Fuchs's account of scientific styles. We made qualitative interviews with researchers from several fields in the humanities in 2010, and thereafter focused on history as a discipline. In the interviews, a salient conflict between the researchers' internal cognitive aims and those imposed on them by the official research evaluation criteria and practices appeared. For instance, published high quality extensive monographs are assessed as equal to multi-author journal articles. In the paper, we shall focus on the aims and values as perceived so by the Estonian historians, contrasting those with the aims and values of the physicists studied in 2005-08. The bureaucratic standards conform quite well to the physicists' values and aims, whereas researchers in the humanities experience a threat and loss of identity. In order to cope with the official science policy, different strategies have been developed. For analysis, we applied the method of culture contrast which enables more flexibly than other methods to take into account various alignments, the whole heterogeneity of a research community under investigation, and the historical changes.

Keep on movin'! Research mobility meaning(s) for Italian early stage researchers. *sara minucci, University of Turin*

Research mobility is a core notion of the European Research Area discourse: it recalls the right of the freedom of movement and the role of knowledge for EU competitiveness. Furthermore, it is at the basis of the policy recommendations for the harmonization of the European academic system and, at the same time, it is emerging as a criterion for evaluating researchers' careers. But what does mobility mean from the perspective of an early stage researcher? How is it related to the changing in research funding? The paper aims at exploring these questions, addressing the impact of the "mobility mantra" on the practices related to social sciences' funding and researching. The empirical material originates from data collected through the research project OMERA Social Sciences (Observatory of Mobility in Social Sciences in the European Research Area), aiming at exploring the impact of the E.R.A. policies on social sciences. The project is developed through a web-site (http://www.omerasocialscience.org) gathering research funding opportunities in social sciences research from more than 90 grant-makers like foundations, institutes of advanced studies etc. that is open for consultation to registered researchers from all over the world. Starting from this data set, the paper will present a pilot case study about Italian researchers in the context of the changes of the national academic system. The case will be supported by both quantitative and qualitative analysis, since the information collected through the Omera web-site will be

expanded using in-depth interviews to a sample of the registered researchers.

'A certain amount of prestidigitation is needed.' Early Stage Sociologists in Austria. *Veronika Woehrer, University of Freiburg*

Based on analyses of participant observations, in depth interviews and focus group interviews with sociologists at two Viennese universities, I want to present analyses of how early stage researchers deal with insecurities and ambivalences in regard to their personal careers in academia. The ambition to continue doing research has to be balanced with the constraints of the current university system: As there are basically no tenure track positions at Austrian universities, they try to find ways to combine their aim to live a stable private life in Vienna with the fact that employment at university cannot be prolonged after six years. The early stage researchers experienced reluctance on behalf of the permanent staff of the departments to introduce junior researchers into the departmental life. They criticized that they never learnt how to write journal articles or project proposals and claimed more assistance from the side of their professors and supervisors. The need for mentoring, guidance and exchange of experiences was repeatedly expressed. In the meantime several of them moved out of academia and into administration, others are facing the end of their six-year time span. Working at small extra-mural social science research associations, of which exist approx. 140 in Austria, is an option for some of them. This paper can contribute to the discussions on the effects of university reforms and mode 2 research to individual researchers' work and careers currently going on in STS (e.g. Hammersley 2003; Lithman 2004; Felt 2009).

199. (77) Urban assemblages and cosmopolitics: contributions for an ongoing debate - V

2:00 to 3:30 pm
Solbjerg Plads: SPs10
Chairs:

Anders Blok, Copenhagen University
Ignacio Farias, Social Science Research Center Berlin

Participants:

Reassembling Water-Cycles in the Lower Lea River Basin East London. *Tse-Hui Teh, University College London*

London is currently a water stressed city served by a large technical drinking-water and wastewater system. It is predicted to become more short of drinking-water if weather patterns alter due to climate change and the population continues to increase. In 2010 UK's first large scale desalination plant was opened in London to secure water for its future. This solution is a high energy and high polluting source of drinking-water which runs counter to the prevailing need to lower carbon and pollution emissions in order to preserve the ecologies we need to survive as a species. It also runs counter to the insights from STS which show that adding more security to large technical systems reinforces the need for their use and increases water consumption over time. This research combines the insights of ANT and STS co-evolution with design to explore how water-cycles and urban space in London can be reassembled to create urban ecologies that continue to be advantageous to human society in the future. ANT allows a symmetrical understanding of both humans and nonhumans in creating the assemblage of the urban water-cycle. STS co-evolution enables the identification of areas of transformation, and pathways for change. Design is used to investigate what forms these reassemblages might be. The methods of this research stretch actor-network theory from its ethnographic, historic beginnings into the realm of propositions for the future offering new water-cycle assemblages for people who face many, yet uncertain, types of water stress in the future.

Performative planning at the urban scale. *Birgitte Hoffmann,*

DTU MAN; *Mai-Britt Quitzau, Technical University of Denmark*

Sustainable urban transformations are needed that radically challenges and changes the urban structures of our society towards more sustainable development. This paper argues that in order to realize sustainable urban transformations in practice new forms of strategic planning are needed at the urban scale, since current planning practices tend to reproduce existing structures in society, rather than transforming these and develop new green urban assemblages. The aim of this paper is to illustrate how performative forms of strategic planning are able to challenge and transform existing urban structures as a means to implement sustainable development in practice. These performative forms of strategic planning are inspired by Actor Network Theory, which challenges the way associations are traced by not a priori assuming any fixity to social aggregations. By applying this theoretical perspective, the paper shows that current planning practices tends to act as intermediaries that simply reproduce existing urban structures, whereas performative forms of strategic planning show potential for planning to act as a mediator that challenges and transforms. These points are illustrated through a case study of strategic planning in Denmark, where sustainable urban transformation was addressed through a more performative approach. In the discussion, the potentials of this more performative approach to strategic planning to promote sustainable urban transformations is highlighted, although it is also argued that it represents a difficult and risky business for the planners. In conclusion, the paper points towards ways to promote more performative forms in strategic planning in order to implement sustainable transformations of urban structures.

Plassein and urban political matters. *Jonas Bylund, Department of Human Geography, Stockholm University*

Assemblage allows us to consider multiple object-spaces. Put even stronger, it challenges a 'Euro-American common sense realism' and Euclidean-space default in thinking about e.g. urban settings. In this paper, plassein is proposed as a (prototype) tracer device and/or amplifier to follow the fate of place 'after ANT'. Plassein refers to – or is a way of talking about – mobilized, shared, and fluid object-spaces in (urban) knowledge practices which have some claim to democratic achievements or ethos in their activities. It helps the analyst to take into account often ignored techniques for shaping place. Hence, in contrast to more procedure-oriented and container space approaches to urban planning practices, the paper argues how object-oriented inquiries might be better suited for a praxiography of urban assemblage. The paper thus contributes to the enrichment of urban and planning studies by STS approaches, and vice-versa. The empirical material is drawn from a recent research project on the functional redevelopment of harbour areas in Swedish cities with particular attention on sustainable development in the urban planning practices.

Users of urban open space and low carbon transitions. *Sonia Liff, Appleby Research*

As part of sociotechnical changes aimed at a transition to a low carbon society many city or regional authorities are developing spatial plans and land use policies which cover open spaces as well as the location and design of buildings. Traditionally such policies are experienced by those using urban space as management by experts rather than through involvement or engagement. A range of factors are making some city authorities rethink this approach. These include the need for building a consensus in favour of long term policies which might otherwise be undermined by changes in political leadership, scepticism around climate change, and competing priorities during a period of austerity. A range of community led initiatives which have demonstrated the ways in which a sense of place can engage citizens in envisioning and enacting low carbon futures would lend support to such an approach. However the diversity, and

often transience, of urban populations make this far from straightforward, as does the gulf between the way open space is used and a wider understanding of climate change. This paper will draw on the experiences of northern European cities participating in an EU programme to combine community engagement with spatial planning policies and specifically multi-functional green space. It will reflect on attempts to enrol and engage the users of such spaces in wider commitment to low carbon practices and on the relevance of STS conceptions of the user, more normally focused on a specific technology, to broader sociotechnical systems.

200. (73) Critical studies of interdisciplinarity - III

2:00 to 3:30 pm
Solbjerg Plads: SPs12
Chair:
Scott Frickel, Washington State Univeristy
Participants:

Interdisciplinarity in times of citizen science: Game over?
Barbara Prainsack, Brunel University

Interdisciplinarity has become a valuable currency for a wide range of researchers and institutions. Recently, criticism of tokenistic practices of intersdisciplinarity has been mounting, while those who take the programme of interdisciplinarity seriously are said to be penalised by research assessments favouring outputs with clear and unambiguous identities. Moreover, critics argue that the benefits of interdisciplinarity have so far been assumed rather than empirically shown. We clearly need more studies exploring how interdisciplinary works, and whether its results are in any way more 'robust' than those produced in mono-disciplinary settings. However, with online tools now enabling anyone with an Internet connection to contribute to scientific knowledge production, and papers in top-tier academic journals listing players of computer games as authors, the very notion of interdisciplinarity as such is challenged. Although citizen science is unlikely to replace traditional ways of scientific knowledge production entirely, it opens the scientific endeavour to people whose expertise does not fit within the boundaries of any particular discipline. If, as some argue, science teaching will become increasingly gamified, and data collection, analysis, and interpretation will frequently be crowd-sourced to people with no specific disciplinary training and identity, how does this affect scientific practices and institutions? Based on the analysis of existing and emerging citizen science projects around the world, this paper develops a typology of citizen science initiatives, and discusses their relevance in the context of ongoing debates on interdisciplinarity and expertise in STS.

Designing 'Integration Machines' – Performing Epistemic (Dis-)Unity. *Judith Igelsboeck, Universität Wien*

Collaboration between heterogeneous scientific and more recently also non-scientific actors is considered ever more important to manage complex and pressing problems such as climate change. While several authors in STS have highlighted the 'dis-unity' of science when it comes to the machineries of knowledge production - new knowledge regimes call for 'unity', or at least temporal 'unification', in order to get a better handle on concrete societal problems. Drawing upon such ideas of collective knowledge production, an Austrian research program in the area of sustainability research explicitly requires active co-work of different scientific disciplines and also strongly encourages the involvement of extra-scientific actors into knowledge production processes. The vast majority of projects within this funding scheme hype computer modeling/simulation as 'integration machine' - not only held capable to incorporate different kinds of knowledge and expertise, but seemingly meeting the demands of several scientific and extra-scientific communities involved. Yet there has not been paid much attention to knowledge-orders and -hierarchies inscribed into such 'integrations machines', or to the ways how different machineries of knowledge production established within different 'epistemic communities' become (dis-)embedded. To address this gap I will empirically investigate how the use of computer simulation/modeling as 'integration machine' is negotiated and legitimized in different discursive arenas, such as project proposals, publications, interviews, or press articles. In doing so, I will gain insights into the ways how 'unity' and 'dis-unity' is performed between different (epistemic) communities, and how boundaries - and with them knowledge- and powerrelations - are (re-)negotiated within moments where 'hybrid knowledge regimes' meet.

Anthropological reflections on the 'user' in the urban wilderness. *Johanna Maria Ylipulli, University of Oulu*

I am doing my PhD within a large research program UBI (UrBan Interactions, 2007–) realized in Oulu, Finland. The aim of the program is to furnish the city center with new ubiquitous computing infrastructure facilitating new ways of human-human and human-machine communication. The program is coordinated by the city of Oulu and MediaTeam Oulu, a research group from the Department of Computer Science and Engineering, University of Oulu. The goal of my research is to study both the design process and the usage of the new ubiquitous communication technology from sociocultural perspective. What is the role of anthropologist in such a project - are users just a modern "tribe" in urban wilderness whose culture I am trying to understand? Am I just mediating their technological needs to the computer scientists? The UBI Program is based on the research agenda of urban computing, ubicomp, which rhetoric supports this view: research is often done "in the wild", in real environments. However, I am arguing that the role of the anthropologist in this kind of research project especially in relation to the user is not simple and users cannot be understood as just 'users'. The data that I produce is much more complicated arousing many political and philosophical questions. By drawing examples from my ongoing empirical study I am going to contemplate what kind of knowledge anthropology can produce of the 'users'/of the whole design process and its implicit and explicit user representations.

Open Space Workshops for Changing Science and Society: Reflection on Participation and Collaboration in STS. *Peter John Taylor, UMass Boston*

This paper reports on a series of interaction-intensive, interdisciplinary workshops to foster collaboration among those who teach, study, and engage with the public about scientific developments and social change. The term "open spaces" is used to refer to the arena bordered on one side by critical interpretation of the directions taken by scientific and technological research and application and on the other side by organizing social movements so as to influence those directions. The workshops have been appreciated by participants not so much for bridging the two sides as for acknowledging the value of discussion, reflection, and clarifying one's identity and affinities with both sides kept in view. This paper argues that reflection on experiences of participation and collaboration in STS might inform our analyses of fields that emphasize collaboration and group processes. Indeed, the authors' own involvement in the workshops extends our own STS work on actor networks and 'heterogeneous engineering', that is, the mobilization of a variety of resources by diverse agents spanning different realms of social action.

201. Studies of expertise and experience: SEE and the third wave (Part II)

2:00 to 3:30 pm
Solbjerg Plads: SPs14
The original Third Wave of Science Studies paper appeared in print in

2002 and continues to rank as one of the most cited and downloaded articles to be published in Social Studies of Science. This double session illustrates how that call for Studies of Expertise and Experience (SEE) has developed over the intervening decade. The aim of the session is twofold. First, it brings together work that draws on the Third Wave approach, particularly the distinctions between different kinds of expertise, in order to illustrate the range of topics to which these technical distinctions can be fruitfully applied. Secondly, the papers presented demonstrate how the programme that was first sketched in 2002 has developed in new and unexpected ways, to include topics as diverse as research methods and political philosophy. The double session is split into two panels. The first panel examines the implications of the Third Wave and the emphasis it places on tacit knowledge, with papers discussion research methods, scientific collaboration and workplace training. The second session is more policy-orientated, with papers focussing on political philosophy, climate change and policy-making under conditions of controversy.

Chair:

Robert Evans, Cardiff University

Participants:

Domain-Specific Discrimination and Technological Decision-Making in the Public Domain. *Martin Weinel, School of Social Sciences, Cardiff University*

Based on an analysis of empirical material related to a policy-relevant technical controversy in South Africa about the safety of anti-retroviral drugs a new type of expertise is explicitly recognised. 'Domain-specific discrimination' (DSD) refers to the ability of those immersed in a specialised domain to make technical judgements on the basis of their intimate social knowledge of such a domain. DSD has been implicitly recognised by sociologists of scientific knowledge since the 1970s, but its explicit recognition not only adds an 'element' to the 'Periodic Table of Expertises', but might also have implications for thinking about the extent of lay participation in technical decision-making.

Reframing Science for Policy Reform. *Robert Lorenzo Jomisko, Norwegian University of Science and Technology*

There is a long tradition of studying how science is used in Norwegian policy making processes, yet the concentration of former literature has not focused on empirical questions regarding the application of knowledge in policy creation. The objective of this paper is to empirically examine how different actors in sustainable energy and climate change policy making collect and use information to develop policy measures and reforms. More specifically focus is set upon on how Official Norwegian Reports are developed and implemented. These reports are formulated by committees and work groups appointed by Norwegian ministries, when the government is in need of new knowledge to aid in policy development. This paper applies a mixed methods approach. The qualitative data collection consisted of a series of in-depth interviews with members of several governmental appointed committees working on issues related to sustainable energy and climate change. This was complimented by a document study and a survey of four high level Norwegian ministries to further reveal compelling data. Although the policy-making processes may appear democratic in content when taken at face value, our empirical data implies high level ministries' selective use of scientifically grounded fact based knowledge. The data suggests fact-finding mission results may be largely ignored if they do not align with current political strategy.

Habermas and the Third Wave: Experts and Citizens in a Deliberative Democracy. *Robert Evans, Cardiff University*

In a recent paper, Darrin Durant identifies two styles of democratic thinking within STS: a Rawlsian political liberalism and Habermasian politics of identity. He also associates the Rawlsian version with the Third Wave approach and suggest that the critics of the Third Wave adopt an approach similar to what

political theorists would call the the politics of identity. In this paper, I do not attempt to work out if the critics of the Third Wave are or are not Habermasian. Nor do I dispute that there are some significant overlaps with deliberative politics as it is imagined within the Third Wave and Rawls' theory of political liberalism. Instead, this paper considers how the Third Wave relates to Habermas's work on deliberative democracy and, in particular, the role of communicative action in raising the issues that then become matters of concern within the formal political sphere. The paper argues that the distinction between the technical and political phase, which is central to the Third Wave's understanding of democracy, is consistent with the distinction Habermas draws between the lifeworld and the formal political system. It also suggests that, to the extent that scientific values are a central part of any contemporary society, recognising the value of technical expertise within policy-making is consistent with broader conceptions of deliberative democracy. In this sense, the differences between Habermas and Rawls are less significant than the assumptions they share and it is not necessary for the Third Wave to choose between one or the other.

Discussant:

Harry Collins, Cardiff University

202. (67) Technologies of the self - III

2:00 to 3:30 pm
Solbjerg Plads: SPs16

Chair:

Antonio Carvalho, University of Exeter

Participants:

Notions of interactivity in new media theory, STS and contemporary art. *Anja Johansen, NTNU*

Interactivity has figured as one of the key strategies and buzzwords within the (science) museum sector lately. It has promised to design more dialogue-based and engaging exhibitions, which in turn would create more active citizens. According to Andrew Barry (2001), interactivity has come to be the dominant model of how "objects can be used to produce subjects": The passive spectator was supposed to be turned into an active experimenter, handling diverse gadgets and responding to tasks presented in the museum. "Interactivity" is used for a wide array of strategies in everything from education and entertainment to art and politics, and does not seem limited to the use of certain technologies. However, within the museum sector it often tends to reflect a particular model of human interaction drawn from computer science. This form of interaction is designed for a single user, solving certain tasks with feedback. The danger is that this form of interactivity becomes confused with an active (political) subject, or even social interaction, thus limiting the understanding and exploration of different forms of interaction, engagement and participation within the museum. The paper will start with presenting the intertwining histories of "interactivity" in new media theory, STS and contemporary art. Further, I will discuss notions of interactivity and activated spectatorship in relation to contemporary art and science exhibitions related to neuroscience. My aim is to open up the understanding of how subjects become (in) formed and perform in different contexts.

Smartphone Intimacies: Shifting Boundaries of Human-Machine Subjectivities. *Ellie Harmon, University of California, Irvine*

In considering the proliferation of smartphones and other personal ICTs, the academic and popular press frequently narrate stories of problematic technologies and problematic users. They employ a language of 'addiction' and 'control;' raise concerns about 'presence', 'absence,' 'attention,' 'work-life balance' and 'always on' 'connectivity;' and call for 'disconnection' and 'detox.' However, in ongoing fieldwork with California

professionals and families, another language stands out — one of personal bodies, and technological intimacy. This other language figures smartphones and users less as distinct subjects and objects, and more as human-machine subjectivities-in-flux. Chad Robinson tells me about "clearing emails" while sitting on the toilet with his iPhone every morning at four am (simultaneously clearing his body of other waste). On my first afternoon with another family, Mark and Bobbi Smith each take pains to show me the iPhone chargers by their bed. It seems important to emphasize to me, the researcher, the integration of ICTs within these most intimate and personal of spaces — bathrooms and bedrooms — within already private homes. Mark later evokes a bodily dis-integration, commenting, "I'm going to strip off all my technology and go play with my kids." People express 'passion' for their smartphones; devices that seem natural, ordinary, familiar, intimate; yet simultaneously out of place, artificial, intrusive, threatening to one's 'pure' or 'natural' experience of life, others, and self. In this talk, I consider my fieldwork engagements in terms of the marking, making, transgression, and contestation of the shifting boundaries of human-machine subjectivities.

The Everyday Figuration of Parents and Children during the Transition to Parenthood. *Cornelia Schadler, Department of Sociology, University of Vienna*

Parent and child are dominant forms of subjectification in contemporary societies. The practices during transition to parenthood produce those subjectifications and a transition from women or men to mother or father. New materialist redefinitions of the human and human relations (I focus on the work of Rosi Braidotti, Karen Barad, Donna Haraway and Stefan Hirschauer) have consequences for how human parents and children are defined and (re)produced. From this perspective the dominant view of reproduction in the social sciences -- the performance of a bodily and material birth and an immaterial formation of the mind and the personality during socialization processes – no longer holds. I focus on everyday practices during the transition to parenthood to explicate how different kinds of parents and children are figured. Those children and parents are not made by sexual practices or by birth, but by apparatuses of categorization that accompany embryos, fetuses, newborns and numerous other participants. During the categorization processes bodily characteristics of the preborn and the parents are enacted with different kinds of children and parents, their future practices and lived realities, relationships and hierarchies between them and their present and future tasks and duties. The foundation for my arguments is an (200 page) ethnography about subjects in transformation at the transition to parenthood which I produced on the basis of 26 interviews, observations in hospitals and pregnancy related spaces, documents from and for parents and protocols of massage boards.

Women becoming computer scientists. *Vivian Anette Lagesen, Norwegian University of Science and Technology*

This paper explore processes of subjectification mediated by technological devices by analysing the experiences of women who learn or study or work with ICT and how this process transform them as gendered individuals, thus being a co-construction of gender and technology. The analysis is based on in-depth interviews with women who study computer science, and men and women who work as computer scientists in three different countries. Theoretically, it draws on ideas of becoming derived from Deleuze and Braidotti (1994, 2002), individualization (Beck and Beck-Gernsheim (2001) and invoke actor-network theory by being concerned with the complex and heterogeneous material and non-material associations that these women construct in their becoming process. In a becoming process such associations are not free. They have to be negotiated and they are subjected to different norms. Also, some associations are possible and others are not, some associations are easier, while others are strained and uncomfortable. This

resonates well with Haraway's cyborg point that humans and materiality is welded together in complex, contradictory and possible painful ways. In studying these associations I also invoked another analytical tool, which is the Bakhtinian concept of voices. According to Bakhtin, or language is always overpopulated with other people's voices. We struggle to produce our own meanings out of a myriad of voices that are available to us, and that we have to negotiate when we speak. The analysis shows how we may better understand the complex relation between gender and technology.

203. Entanglements of science and justice (part 1)

9:00 to 10:30 am
Kilen: K143

Practicing scientists and engineers as well as scholars of science and technology increasingly cite justice as an organizing theme of their work. Yet, it is often unclear what justice means, what it stands in for and what it might replace. What issues does justice hail and bring forth? How does it relate to ethics, especially institutionalized bioethics? How does orienting around justice differ from orienting around democracy? This panel considers the meanings of 'science and justice' and why it might be arising now in a diversity of research areas. It explores the opportunities and risks of this formation, and what new interventions may be possible when the joint of science and society is articulated toward justice. The contributions in this panel address specifically the formations of justice that are emergent with new genomic and biological technosciences, including medical genomics, multispecies conservation genomics, and translational epigenetics. The panel invites the audience to think with us about how STS scholars might productively work in this space where justice is an emergent problem. How are existing forms of STS scholarship enabled or forestalled by these trends? What skills do we have as STS scholars to respond to justice questions and how can we build out scholarship that is capable of doing in situ work at sites of science and justice? What forms might 'science and justice' take, and what might be gained or lost in fostering them? This is a companion session with Entanglements of Science and Justice II.

Chair:

Jenny Reardon, University of California, Santa Cruz

Participants:

On Genomics and Justice. *Jenny Reardon, University of California, Santa Cruz*

In 2009, the American Civil Liberties Union and the Public Patent Foundation filed a lawsuit against the genetic testing behemoth Myriad Genetics, charging Myriad with unjust control of the BRCA1 and BRCA2 breast cancer genetic variants. What Myriad Genetics did with a few genetic variants, some in the new civic space of the science blogosphere argued the U.S. government did with all genomic information: it locked it up, keeping it from the persons to whom it rightfully belonged. In these and other cases critics charged dominant institutions—big pharma, big gene testing companies, the Federal Drug Administration, the National Institutes of Health, and large medical schools—with unjustly taking power. Ethics, particularly institutionalized bioethics, failed to prevent this. What was needed was a revolution, one that would go back to the first principles of democratic governance. Genomics by and for the people must overthrow big government genomics. Justice, not ethics, should frame the discussion. In this paper I ask after the opportunities, but also the dangers, that these developments present for developing public discourses on the entanglement of scientific ideas and practices with contemporary concerns about justice. By way of example, I explore the openings and exclusions created by the recent conjugation of science and justice in the field of personal genomics. I conclude with reflections on what other forms 'science and justice' might take, what might be gained or lost in fostering them, and what role science studies scholars might play in shaping these discussions.

Nature/Nurture Refigured: Gendered Narratives of Parenthood in Environmental Epigenetics. *Martha Kenney, History of Consciousness, UC Santa Cruz; Ruth Mueller, Univ. of Vienna & Austrian Institute for International Affairs (oiip)*

Epigenetics is a rapidly growing branch of molecular biology that studies the interaction between genes and environment. This paper focuses specifically on epigenetic research that investigates how parental behavior affects gene expression in offspring. In the influential article "Epigenetic Programming by Maternal Behavior," Weaver et al. reported that the amount that a mother rat licks and grooms her pups affects the expression of a gene that regulates stress response. The study found that well-tended pups grew into calm adults, while poorly-tended pups became anxious adults. Since the publication of this article in 2004, there has been an increase in scientific studies that investigate how affection, nourishment and abuse in early life lead to epigenetic changes that may remain stable throughout an individual's life. In this epigenetic literature, "nature" and "nurture" become interrelated in new ways. In this paper we explore how this new nature/nurture configuration contributes to and changes the intertwined scientific and moral discourse about 'good parenting'. We will pay special attention to the gendered assumptions about 'mothers' and 'fathers' that are built into the experimental design of these studies. We will further explore how concepts of 'good' and 'bad' parenting behavior are created in the traffic between animal experiments and human categories, and how these translations refigures parenting as a natural and social phenomenon. By paying close attention to the narratives coming out of environmental epigenetics, we gain traction on important social justice questions that emerge at this particular moment in the ongoing co-production of science and society.

The Anthropological Algorithm: The Biopolitics of Conservation Genomics. *Jacob Metcalf, University of California, Santa Cruz*

This paper examines conservation genomics as an emergent case in which the distinction between human and non-human is being reassessed in a manner tests claims about whether justice would be best extended to nonhumans through technoscience means. Until recently, nearly all nonhuman genomes were assembled with the human as a reference that all comparisons must pass through—even though the mouse and rat, for instance, are fairly closely related, all comparisons between mouse and rat included the human genome as a referential third party. This is a result of both funding politics and now obsolete informatic limits. However, the vast increase in sequences of nonhuman genomes are making it necessary to produce reference-free comparative systems that do not rely on the human to understand relationships between animals. In particular, Genome10K is an international project aiming to sequence 10,000 vertebrate species for use in conservation genomics. Without the human as a universal reference point, multispecies genomics would seem to break down the anthropocentric nature of bioinformatics and affirm the independence and diversity of nonhuman life. And yet genomics is oriented toward an entrenched conservation biopolitics of ever more sovereign power and technocratic control of nonhuman life—the global extinction event may be the exemplar of a state of exception in which politics could be suspended by sovereign power. This case study provides a test for debates around Giogrio Agamben's description of the 'anthropological machine'—the iterative cutting between humanity and animality—as a distinction between who is and is not properly a member of political and ethical life. In his critique of technoscience, Agamben argues that as humans delve deeper into the mysteries of biology we risk furthering the biopolitical and technocratic ordering of human life and breaking with the conditions that make ethics and politics possible. Commenters have argued that human, animal, and ecological justice(s) would be best served by recognizing the diversity of non-human life and refusing to mark the well-being of human and non-human life alike as outside of politics. Closely examining the merger of conservation and genomics enables the tracking of what formations of justice are possible within posthuman biopolitics.

Discussant:

Kimberly TallBear, University of California, Berkeley

204. Models and simulations: Shaping science and society - I

9:00 to 10:30 am
Kilen: K146

As a rapidly developing practice of knowledge production and knowledge deployment, the importance of mathematical modelling and simulation is growing relative to their distribution and entanglement in society. Serving as epistemic artifacts in situated practices, simulation models play an important role in arranging and re-arranging theories, data, as well as ways of knowing and ways of doing in and between different communities. Mathematical modelling is typically understood to relate history, data, and ways of knowing with theories, questions about the future, and the unknown by producing new knowledge artifacts that extend our reality as well as our notions of `realities´, and thus co-produce new courses of actions and enacting the future. It is therefore crucial to investigate how mathematical modelling and simulation contributes to the re-arrangement of materials and ideas in contemporary research, policy, design, and social order, to produce necessary reflections by which to discuss the current and future development of these increasingly technical and otherwise closed practices incorporating simulation and modelling.

Chair:

Joakim Juhl, The Technical University of Denmark (DTU). Department of Management Engineering

Participants:

The visual practice of modelling: Translating theorems toward practical implementation. *Joakim Juhl, The Technical University of Denmark (DTU). Department of Management Engineering*

Simulation models are integral to most current technical sciences. These are typically justified for their assumed impact-potential on society through realization of technological artefacts. But how is modelling helping in realizing natural scientific knowledge into society? I aim to address this general question through a multi-sited ethnographical field study that I have conducted on the collaboration between industrial partners and natural scientific research institutes in Denmark. I pay close attention to how theoretical physicists construct representational mathematical models for energy effective regulation of industrial heating processes. Considering visual representations like hand sketched drawings and computer simulated plots, I address the craftsmanship of modelling and its intermediate steps through the following questions: What kind of visual materializations are developed and used throughout the process of constructing a representative mathematical model? How do the visual artefacts help to translate prior knowledge and input data into new knowledge about a specific physical system? How can the translation of knowledge performed by modelling be understood as useful for the intended regulation implementation in the physical machinery that the model is made to represent? The findings will show how visual artefacts are central to the practical translations of existing natural scientific theorems into mathematical representations of a particular and complex system that are useful for a specific regulation purpose. I also propose an understanding of mathematical modelling as a knowledge practice that performs this translation through a "bricolage mechanism" that operates opposite to the epistemic direction of the established understanding of purification based knowledge processes.

Images of the Higgs Search: Producing Evidence in Large-Scale Collaborations. *Martina Merz, University of Lucerne*

Since the Large Hadron Collider has taken up operation at CERN, the European Laboratory for Particle Physics, in the year 2010 the discovery of the Higgs particle seems imminent. First candidate events have been presented but conclusive evidence has not (yet) been attained. Data analysis devoted to the Higgs search relies on statistical reasoning. It faces the challenge that statistical fluctuations need to be distinguished from the sought-for signal. In addition, data associated with the presumed Higgs decay channels have to be separated from the dominating background. Data analysis makes use of computational procedures and simulation but also extensively draws on visual representations (or images, to use the more general term). Adopting a scientific practice perspective, this paper will maintain that such images are constitutive of the prime analysis results due to their specific pictorial logic and epistemic make-up. Considering two main image types, discovery image and synthesis image, three questions will be addressed: (1) Which procedures and pictorial logics are at play when condensing the data of such large-scale projects into individual images? (2) How is evidence produced, represented, and communicated through these visual representations? (3) How, and to what effect, are different sources of data and data sets combined and juxtaposed in the images, and more specifically, what role do simulation and modeling play in this context? This study contributes to current scholarship on simulation in STS and philosophy of science by placing image and simulation into relationship and investigating their interconnection.

Translating Global Climate Models for Local Policy-Making. *Liam Heaphy, University of Manchester*

Climate model simulations are deemed essential tools for quantifying the possible impacts of climatic changes, yet they are necessarily uncertain, based upon both complex and uncertain science and the future activities of humankind embedded in scenarios. As a result, projections of climate variables, laid out upon socio-economic narratives, are provided to assist in the task of adapting our societies to the likely impacts of a changing climate and rising sea levels. Climate data is becoming increasingly "mainstreamed" into long-term planning in the UK and other countries through national and local legislation and information programmes (Carter 2011). Simulated climate data are provided as probabilistic datasets for integration into decision-making, and various research programmes are underway to provide knowledge for a changing climate at various scales of interest, including metropolitan regions. A key component of this work is the provision of tools that non-scientists can interact with, thus embodying the complex modelling process in a simplified pragmatic manner. This paper seeks to respond to the question of what transformations and translations do climate models go through in order to have agency at the scale of decision-making in the urban environment? It analyses how models and tools function as epistemic artefacts (Knuuttila and Voutilainen 2003; Knuuttila and Boon 2011), while also looking at how modelling knowledge is the outcome of mediation between different communities with varying concerns. The challenge of providing tools while also integrating multiple worldviews is considered in the light of findings based upon fieldwork on modelling practices in the UK.

205. (47) Screen realities, synthetic situations, and scopic media - I

9:00 to 10:30 am
Kilen: K150

Chairs:

Niklas Woermann, SDU Odense, Uni of Constance
Vanessa Dirksen, University of Constance
Stefan Beljean, University of Konstanz

Participants:

Second Life as Synthetic Situation: Reorienting Goffman's Interaction Order. *Ulrike Schultze, Southern Methodist University*; *JoAnn M. Brooks, Syracuse University*

Given the rampant use of social media technologies today, the implications of these partially scoping synthetic situations (Knorr Cetina 2009) for the constitution of social life and the

construction of social selves need to be understood. However, since many of the stabilizing conditions taken for granted in co-present situations are attenuated in technology-mediated interactions, the microprinciples underlying Goffman's interaction order need to be reoriented for telecopresent situations involving social media. In this paper, we seek to shed light on how Goffman's interaction order can be usefully reoriented to conceptualize interactions mediated by social technologies. Relying on interview data collected in the virtual world Second Life (SL), we rely on an interpretive method to examine how the microprocesses and microstructures of social interactions in synthetic situations compare to the concepts outlined by Goffman. SL seems highly appropriate for such an inquiry, as this environment simulates face-to-face interactions, albeit through a virtual body or avatar. Our findings highlight that many of Goffman's concepts hold in this synthetic situation. Furthermore, we show how users compensated for shifts in system requirements, e.g., lack of feedback in avatar-mediated interactions, by stretching ritual requirements to bring the interaction order back into balance. We thus provide insights into the technological affordances that need to be considered in reorienting the interaction order for social media. We also note that the concepts of role embracement and role distance are likely to gain in prominence in research on social media in general and on virtual worlds in particular.

Go Live! User-Livestreams on the Internet. *Heiko Kirschner, University of Dortmund Germany*

The Dreamhack Festival in Jonköping Sweden titles itself as „Worlds largest digital Festival". The expension of physical Events into digital Livestreams can therefore be described as an enhanced form of „being live" (Auslander 2006). A Livestream describes an audiovisual broadcast of an incident that takes place in the very moment, on the internet. To get viable data of Livestreams, Screen-Capturing as a method becomes necessary. In the following i'll be focusing my research on the topic of User-Livestreams as a specific type of Livestream. Therefore the question comes up, what quality of „Liveness" (Auslander 2006) can be stated for User-Livestreams. The idea of simultaneous production and reception of an incident while being physically copresent is described as being live and immediate. User-Livestreams share the fact of simultaneous production and reception. They offer feedback channels for viewers to even become part of the streamed content. Thus User-Livestreams create new types of presentations, coproduced by the streamer and it's viewers, who can become coproducers of the streamed content. Streamers therefore use specific enactment strategies to get the attention of their audience. „Orchestrating" (Schnettler 2007, 142) audio and visual Singals along with the actual „Performance" (Schnettler, Knoblauch 2007, 20) on the Stream, is the challenge in maintaining this „mediaconvergent" (Hasebrink & Domeyer 2010) setting. The Goffmanian „Ensemble" (Goffman 2003, 73ff.) can be used to describe how Viewers and Streamer coproduce content in a User-Livestream while being in deterritorial Copresence on a dynamic stage.

Grindr: Empirical Observations on Some Contemporary Mediations of the Pick-Up-Line. *Martin Stempfhuber, Johannes Gutenberg-Universität Mainz; Michael Liegl, Johannes Gutenberg University Mainz*

Contemporary sociological research on intimate relations is specifically interested in the changes in forms and styles of intimate communications brought about by the power of New Media – especially in the scenes of the pick-up or chat-up (line), as the recent studies on 'sex@amour' (Kaufmann) or online dating services (Illouz) exemplify. More often than not New Media are conceptualized as 'parasites' that threaten to undermine the bodily logic (Illouz) specific to face-to-face interaction, which is thought to be essential for an authentic intimate encounter. In this paper we want to challenge this verdict by taking a closer look at the actual use of the geosocial networking application Grindr that combines the possibilities of social network sites and the technical capabilities of geo-location via smartphones. We use empirical observations of communicative practices of Grindr users who are present in the same physical space (for example a bar) and nevertheless use the detour through the internet to initiate (possibly) intimate encounters, thereby creating a hybrid face-to-screen-to-face-to-face situation of layered spaces and thus a specific form of synthetic situation (Knorr-Cetina). Grindr blurs the distinction between mediated and non-mediated interaction; it offers a rich tableau exemplifying a continuum of mediations that entails the simultaneity of virtual and 'real' spaces, of bodily presence and absence, of distance and intimate closeness. Thus, there arise a set of challenging questions for the sociological model of 'natural' interaction as the core of intimate relations, as these interactions figure here themselves as a kind of parasite (Serres) of mediated communication.

Experiences of knowledge and uncertainty in locally-based online re-use networks. *Christine Hine, University of Surrey*

This paper focuses on locally-based online forums which allow people to give away their unwanted objects to others who have a use for them, in the interests of reducing waste. Initially email- and web-based, these re-use networks have also latterly migrated to social media such as Facebook and developed apps to facilitate mobile usage. These e-use networks constitute screen-mediated social situations in their own right, and yet to achieve their goal the relationships which they initiate must move from online to offline as people make arrangements to exchange objects. Participants have to decide who is to receive objects they give, and negotiate demands of convenience and personal safety. The shift from online to offline occasions judgments about the identity and motives of the other party which often turn out to be misguided and can provide surprising new ways of understanding the place one lives in. This paper focuses both on the new forms of knowledge about localities and populations that participation in the list occasions and on the uncertainties attendant on moving relationships from online to offline and making predictions about the behaviour and motivations of other participants from limited empirical evidence. The discussion is based on accounts from participants of these knowledges and uncertainties, augmented by autoethnography and including reflection on these sources of evidence as, in themselves, sites for emergence of knowledge and uncertainty. The paper contributes to STS interests in the contextual nature of knowledge production and the emergence of screen-mediated situations as embedded in everyday life.

Monitor screening of energy markets: the enactment of economic transactions in Finnish electricity control centers. *Antti Silvast, University of Helsinki*

In the recent years, a number of social scientists have studied the role that market devices, like computer monitors, play in the construction of markets. In this presentation, I develop an inquiry into computer monitors, and the electricity markets in Finland. Electricity infrastructures in Finland were once centrally planned regional monopolies, where competition was either restricted, or highly informal. After the last decades, however, it is now widely believed that societal infrastructures should be managed economically. To study this tendency, the presentation asks the following research question: how are markets enacted in face-to-screen interactions of managing Finnish electricity supply? The data of the presentation is ethnographic and includes interviews, and participatory observations from two real-time electricity control centers in a Finnish town. The centers are responsible for trading on the common Nordic energy market, and for maintaining the local electricity grid through coordinating outsourced maintenance teams respectively. The result of the study is a description of the specific working routines, `disciplining' market devices, and interactions on a computer screen that the energy markets, and the maintenance markets make emerge. I will also consider how this economic agency

challenges and is shaped by the local habits, working culture, and skills of the control center workers. Finally, the presentation relates the findings to the theories of synthetic situations, and scopic systems by Karin Knorr Cetina. Here, I shall focus in the temporal facets of energy markets and discuss the recurring market events that connect global market flows with local working practice.

206. "Ethnicity" and "Race" in Science and Technology

9:00 to 10:30 am
Kilen: Ks43

Social, political, and cultural values affect scientific research and technological innovation, which, in turn affect society, politics and culture. Or as Janet Shim states (2002),"The content of scientific theory is constructed, in a co-constitutive fashion, along with the social relations and structures in society. Causal links are seen as multi-directional: sociocultural contexts influence scientific knowledge production, and techno-scientific projects construct social reality. That is, practices around the inclusion of race, SES and sex in epidemiological research are both the products of and contributors to the larger social order" (p.144). When a concept such as ethnicity or race is included in health science and professional practice, what is selected to be included or excluded, how these selected elements are included or excluded, and why, matters. This, because these practices are constitutive to shaping knowledge and society, and ultimately a larger social order, as the affect of science is fundamentally social and political. The proposed session will discuss the co-constitutive nature of ethnicity and race in science. The papers presented in this session explore the manner in which science and society affect each other with regard to the inclusion of ethnicity and race in research and practice, and look at how these simultaneously co-evolve. These explorations provide insights for Science and Technology Studies as they provides specifically salient and current illustrations of the co-constitutive interaction between scientific and professional practice and society.

Chair:

Dvora Yanow, Faculty of Social and Behavioral Sciences/Department of Sociology and Anthropology/University of Amsterdam AND Faculty of Social Sciences/Communication Science Department/Wageningen University

Participants:

Lungs, Vitality, and Work: A History of Race and the Spirometer. *Lundy Braun, Brown University. Department of Pathology and Laboratory Medicine and Africana Studies, Science and Technology Studies Program*

Since the announcement of the draft of the human genome in 2000, race has emerged as a central organizing principle of genomics research. While the relevance of genomics to the understanding of racial disparities in disease is currently the topic of heated debate, little attention has been paid to the epistemological dimensions of technological devices in naturalizing the concept of race. As complex diagnostic and monitoring instruments become ever more central to daily life and the medical marketplace, it is critical to probe the socio-scientific processes by which scientific instruments have worked -- often invisibly -- to naturalize racial and ethnic categories and to consider how this history shapes present understandings and practices. The spirometer, an instrument that measures the capacity of the lungs, is used routinely to diagnose respiratory disease in specialist and primary care settings. An important feature of the device is that numerical values produced with the device are routinely "corrected" for race and sometimes ethnicity. The "correction" factors for race and/or ethnicity are embedded seamlessly in the software and hardware of the spirometer. What were the historical processes, this paper asks, by which the spirometer gained credibility as the arbiter of truth about lungs and bodies and fitness for labor? In this paper I

explore the transnational co-production of social ideas and scientific expertise about the "vital capacity" of the lungs, tracking the racialization of spirometric measurement from the mid-nineteenth century to the present into and out of social worlds as diverse as war, the insurance industry, mining, physical anthropology, physical education, and biomedicine.

Excavating Ethnic Options: Genetics and Identity at the Lower Manhattan African Burial Ground. *Alondra Nelson, Columbia University*

In 1991 archeologists uncovered several graves on a plot in lower Manhattan. These burials were discovered in the course of the completion of a land survey conducted by a commercial archeology company on behalf of the United States General Services Administration. The unearthed burials confirmed that the planned construction site was also the location of the "Negros Buriel Ground," a former municipal cemetery for the city's enslaved African population. The rediscovery of this colonial-era burial ground, with its promise of rare insight in to the life and death of bondspeople, was an occurrence of great historical import. The political debate and scientific research that arose around the issue of the disposition of this landmark New York City cemetery—now a property of the National Parks Service and renamed the African Burial Ground National Monument—was foundational to the formation of the African Ancestry company and the subsequent proliferation of genetic analysis in black politics. This presentation considers a major element of this foundation—the re-framing of the significance of the burial remains by community activists. Cognizant of the history of scientific racism, the activists' reframing was a retreat from standard forensic designation of individuals and by "skin color" and stigmatizing "biological racing." Apposite analysis of the burials, they activists believed, could return lost African "ethnicity" to both their ancestors and themselves. This talk shows how science has been used to draw distinctions between "ethnicity" and "race."

Diversity: The Multiple Versions of "Ethnicity" in Biomedical and Public Health Research in the Netherlands. *Alana Proctor, Maastricht University*; *Anja Krumeich, Maastricht University*; *Agnes Meershoek, Maastricht University*

In this paper, we explore the current categorization, conceptualization and use of ethnicity in Dutch health research. To examine the use of ethnicity in contemporary health research in the Netherlands, a systematic content analysis of peer-reviewed publications from 2009-2010 was conducted. All articles were read and analysed in their entirety and two rounds of analyses we conducted. Firstly, to examine whether and how the official Dutch country of origin categorizing system is applied in practice, and secondly to determine how ethnicity and the relationship between ethnicity and health is conceptualized in these publications Our analysis shows that all publications make use of the official country of origin categorizing system for ethnicity; however, this is done in three distinct manners, namely according to country of birth, race and westernism. Subsequently we found that ethnicity is also conceptualized and used in research in three distinctly different manners. Firstly, an Empty version of ethnicity is used, for the purpose of demographic description. Secondly, a Complex version of ethnicity is used, within which different themes and determinants are employed to capture ethnicity. And lastly, ethnicity is conceptualized and used in accordance with the idea of Race.

Scientific Knowledge Of Race As Produced By And For Textbooks. *Ann Morning, New York University*

This paper examines the notions of racial difference that are conveyed by high-school biology textbooks in the United States. Specifically, it poses the question, "Do biology textbooks transmit an essentialist, constructivist, or other type of concept of race?" Based on content analysis of a sample of over 90 texts published from 1952 to 2002, this study finds that as in the past,

today's biology books largely depict race in essentialist fashion, as a fixed property of human bodies. Moreover, it argues that such depictions are not simply a legacy of past pedagogical approaches, but rather that the essentialist model has been transformed over time. In textbooks, race went from being a phenotypical taxonomy to a serological one and finally a genetic schema over the course of the late 20th century. In other words, race has been reinvented in the texts, not simply preserved. Mapping the changes in biology textbooks' portrayals of race to the historical moments in which they were published offers a window onto the co-constitution of race and science. As numerous examples—both visual and textual—will illustrate, the books clearly reflect the beliefs and mores of their times, but at the same time, they are explicitly vehicles for the dissemination of scientific knowledge to the lay public.

207. (07) The politics of techno-embodiment in the age of pharma commerce - I

9:00 to 10:30 am
Kilen: Ks48

Chairs:

Anna Bredström, Institute for Research on Migration, Ethnicity and Society, Linköping University, Sweden
Marianne Winther Jørgensen, Culture, Society and Media production; Dept for Studies of Social Change and Culture

Participants:

Articulations of Reproduction in the Design and Use of Ovulation Predictors. *Joann Wilkinson, Lancaster University*

Ovulation predictors are often small devices which come in bits; they may be microscopes, watches, or monitors and can be assembled and disassembled as users become more skilled with their pieces of metal and plastic. Ovulation predictors also feed off bits: bits of data, body bits, fluids and substances, all leading the user towards an assemblage of parenthood, personhood and family. However, in some cases, increasingly so as one in seven couples trying to conceive experience difficulty, the assemblage materializes with some bits missing. So what happens to the bits and the assemblage? In this paper I will firstly examine how ovulation predictors articulate experiences of reproduction in the form of 'bits' and assemblages. Secondly, I will explore how users also engage with reproductive technology when it fails, and how reproductive bodies materialize in this process. The methodology for this research comes in two parts. I am tracking discussions of ovulation predictors on online parenting forums which take place between users or potential users. Secondly, I am interviewing women and couples who are trying to conceive and are currently using or considering using such devices. This paper contributes to STS in a number of ways. Reproductive technologies are becoming increasingly visible, however much attention has been directed towards sophisticated and costly interventions such as IVF and less on technologies which can be used outside the medical setting; technologies which have often 'gone under the radar'. My research foregrounds such technologies and explores their impact on bodies and reproduction.

Obesity science, hormones, and gender. *Fei-Wen Cheng, Sociology Department, Tunghai Univeristy, Taiwan*

Critical obesity studies, sociology and feminism have suggested that obesity is a socially constructed phenomenon rather than a biological disease. Before the 90s, feminist studies of issue of fat put emphasis on the subject of anorexia, popular culture and gender body politics; after the 90s, the critical obesity researchers deconstructed the myth of obesity as an epidemic disease and analyzed the political economy factors that construct the disease. This paper intends to integrate STS, feminism and fat studies in order to examine mainstream 'obesity science', politics of

gendered body and (bio)medicalization in Taiwan. I shall adopt Oudshoorn's research (1994) on hormone science and explore gender representation of obesity science and analyze medical textbooks. I ask: what kind of gender meanings embedded in the pathologized body of fat within medical discourses. It is argued that hormone science dominates the discourse of obesity, diagnosis and its treatments within the process of (bio)medicalization. According to medical textbooks, obesity causes hormone disorder, therefore increases androgen in fat women's body, and makes them 'tomboy-like'; on the other hand it causes fat men to increase estrogen, which makes them impotence and threatens their masculinity. Although there are many uncertainties in scientific researches, medical discourses of obesity science keeps emphasizing on reproductive organs about risks of losing men's sexual capacity and women's reproductive function in terms of motherhood. Since society blames fat women and men for their infertility, the medical intervention and individual responsibility of losing weight become the only solution in the era of (bio)medicalization.

Implanting childhood: the hormonal treatment of early onset puberty. *Celia Roberts, Lancaster University*

Medicating children to stop early puberty – that is, using hormonal implants to hold off sexual development starting at 6 or 7 – evokes double-sided concern. That children are developing sexually at such young ages is disturbing, but is hormonal medication the answer? How might we understand what is going on in children's bodies? And how might clinicians and parents best respond to contemporary changes in the timing of sexual development? Can childhood be hormonally implanted? As pharmaceuticals, hormones and hormonally active chemicals have a long and controversial history: articulating with sex/gender, sexuality and reproduction, they carry significant cultural freight. This paper analyses contemporary clinical practices of using hormones to prevent puberty. Situating these practices in a historical trajectory that includes the use of estrogens in menopause, growth hormones in children and gonadotropins in reproductive medicine, I explore the ways in which these interventions are framed, implemented and debated in clinical and more public settings. Engaging with the work of feminist theorists of the body and materiality and with recent sociological and STS studies of pharmaceuticalisation, I ask how we might approach the child-with-implant. How might we challenge and/or live better with cultural concerns around childhood, sex/gender and sexuality and the physiological processes imbricated in these?

Dynamic Being: A Digital/Analog Analysis of the Technosocial Anthropocology of Juvenile ADHD Care Decisions. *Sabrina Weiss, Rensselaer Polytechnic Institute*

In current STS analysis about care and treatment, we frequently highlight how "high-tech" medicalization can discipline bodies and minds in problematic ways. From this, care/treatment decisions like medicating children diagnosed with ADHD or substituting cochlear implants for sign language mix the welcomed introduction of helpful technologies with a damaging enforcement of social power. It becomes tempting to conclude that these high-tech practices intrinsically undermine social justice and well-being rather than contribute to a larger trend of displacement of power and choice in the technosocial anthropocology, defined as the human-mattered environment. Looking at decisions leading to exclusive/inclusive care/treatment with prescription medications and/or martial arts training like Aikido, binary assumptions about high-/low-tech are blurred. Additionally, emphasizing the active movement of ideas, practices, and people across ideospatial topographies enriches the discussion of situatedness by adding a clear vector component to Being in the style of theorists like Karen Barad, who show that the onto-epistemological nature of embodiment is a dynamic process, not a static state. Thus, ethical decisions of care are not merely responses to radically exterior/ized others,

but about embracing dynamic relationalities in which we are entangled. This paper describes a framework in which we can replace the "high-/low-tech" duality with a more useful "analog/digital" (Ron Eglash) dimension to weigh interconnectedness and recursive patterns of networked control, both within and beyond bodies (dis)placed across regime boundaries of discipline, expertise, family relationships and identity formation.

208. (24) Design and transitions to sustainability

9:00 to 10:30 am
Kilen: Ks54

Chair:

Kirsten Ulsrud, Department of Sociology and Human Geography, University of Oslo

Participants:

Design of village scale solar power supply in Kenya as a creative learning process. *Kirsten Ulsrud, Department of Sociology and Human Geography, University of Oslo*

The paper analyzes a socio-technical innovation process of developing and implementing a pioneering, off-grid solar power supply system for the village scale in Kenya. This process of designing an innovative way of using solar power in a local community has been both planned and open ended, and builds on research and experiences in other places and the rich background knowledge of the responsible social scientists and energy and development experts. A large number of details of the complex, socio-technical design have been comprehensively discussed through long-term interaction between the social scientists and practitioners within the expert team and with the local population in the involved village. The initial idea of designing a solar mini-grid system for Kenya inspired by examples in India gradually changed through the adaptive, creative process of mutual learning, negotiation and co-creation of knowledge. This was a work intensive process of exploring ideas and options, trying to arrive at a suitable, affordable, inclusive and viable model for a village scale solar power supply system. The empirical data on this process have been produced through active participation in the whole process. This action research effort demonstrates the importance of working out socio-technical change designs through such processes of translation, cooperation, experimentation and integration in local, national and international contexts. Based on the analysis of this creative learning process, the paper presents a number of suggestions on how such processes of designing and embedding sustainable energy technologies in new contexts can be organized and facilitated by social scientists.

The influence of effluent within emergent creative research practice. *Paul Lloyd Sargent, University at Buffalo*

This paper examines two recent projects to emerge from creative research practice addressing the impact of combined sewer overflows (CSOs) on New York City waterways. Both projects identify and respond to human factors that produce CSO events in a combined sewer system (CSS), where production of wastewater during periods of heavy rainfall exceeds catchment and intake capacities of wastewater treatment plants resulting in the release of untreated grey- and blackwater sewage into urban waterways (Prochaska and Zouboulis 2005). The approach to addressing this issue taken by The Center for Urban Pedagogy's Sewer in a Suitcase is emphatically "low tech"—a simplified model of a city block with working "residential plumbing," scaled CSS, and CSO outflow designed to accompany hands-on educational workshops with resident stakeholders. Pouring colored water into intakes of each component of the CSS reveals how storm water and residential wastewater combine to overburden the system. In contrast, Leif Percifield's DontFlushMe large-scale sensor network, currently being installed in critical New York City CSOs, implements SMS technology to notify participating neighborhood residents of increased levels of rain and wastewater within an identified CSOshed. When wastewater levels rise, triggered sensors broadcast text messages warning "Code Brown! Do not flush!" during periods of increased precipitation. In cities like New York, where a single CSO in the Gowanus Canal watershed of Brooklyn discharges yearly 260,000 m3 of combined sewage into the New York Harbor (Montaltoa 2007), these two examples illustrate possible solutions to emerge from imaginative, creative research practice.

Evolutionary Urbanism: Designing Ecology. *Adam Jacob Levin, University at Buffalo*

This paper analyzes urban environments within the context of evolutionary ecology. In doing so, it challenges dualities commonly used within the design professions, which oppose cities (as cultural/technological artifacts) to "natural" ecology. It thus seeks to resituate urbanism within the purview of ecological analysis, as a means of articulating design standards based on synergy, symbiosis and mutual adaptability. The rigid separation of urbanism and ecology is a relatively recent invention. As late as the early 1930s, the biologist Patrick Geddes viewed cities as aspects of ecological (and cultural) evolution, while the evolutionary biologist and zoologist Julian Huxley (1942) defined ecology in affective terms that are equally applicable to large-scale urban aggregates. However, the works of early biologists, ecologists and urbanists, like Huxley and Geddes has been overshadowed in contemporary accounts of "urban ecology," by perspectives that frame urbanism as an antithesis to "nature." Where cites are invoked in ecological terms, it is inevitably negatively, as a problem to be solved. Yet, this position ignores the vital ecosystems that subsist within urban environments. It also ignores the adaptability of organisms to urbanism, and the potential adaptation of urbanism to organisms. By returning to earlier interpretations of ecology that incorporated urbanism within the fold of its "natural" context, it becomes possible to rethink current discourses on the relationships between cities, suburbs and natural resources; it also becomes possible to critique contemporary design practices that unconsciously, view human behavior as a privileged form of production, separate and different from "natural" productive practices.

Tunnelling Barriers. *Gunnar Andersson, Oestfold University College*; *Bjørn Gitle Hauge, Oestfold University College*

This paper explores the making of Science Center Inspiria. Inspiria represents a €27 millions investment in Norway's most modern and biggest science center. Inspiria also represents an alliance between academia, private and public sectors. The "problem" is that this takes place in a region known for low scores on education and living conditions indexes, and maybe the least likely candidate to host such a venture. The big question is how did Inspiria nonetheless become a reality? The paper explores how the science center transforms from a local, voluntary based project in the cellars of the faculty of engineering, to a regional signature building and a knowledge project for the whole region. The analysis is based on approximately 100 newspaper articles over a period of 10 years. We follow the idea science center through three threads of translations in the newspaper articles. These stories define the actors and relations that make up the science center. The findings describe Inspiria science center as a product of a temporary, precarious and material alliance including academia, private and public sectors. The discussions link the findings to the initial question on how Inspiria became a reality despite the barriers. The discussions replace the rationality of the abstract, frozen and detached Triple-Helix alliance with that of the temporary, precarious and material alliance. An alliance that in one time and one place surmounts the insurmountable barriers, making Inspiria the regional analogy to a quantum-tunnelling phenomenon.

209. (105) Governance of nanotechnologies: risks and benefits for development - I

9:00 to 10:30 am
Kilen: Floor Ground floor - Ks71

Participants:

Nanotechnology and Development in Latin America: Rationales and Challenges. *Noela Invernizzi, Federal University of Parana*; *Edgar Zayago Lau, Autonomous University of Zacatecas*; *Guillermo Foladori, Universidad Autónoma de Zacatecas*

Following recommendations of international organizations and the interests of their own research communities, several Latin American countries have included nanotechnology as a strategic area in their Science, Technology and Innovation Plans. With little nuances, enhancing national competitiveness is the main purpose of the programs directed to spur nanotechnology, and the cooperation between universities and companies the main instrument adopted. Nanotechnology promotion is thus linked to a development perspective that places innovation, and particularly high technologies, as a mean to increase the countries' participation in global markets. Based on nine countries case studies on nanotechnology policies and practices, we identified some challenges for the region in order to place nanotechnology into an equality-driven path of development. First, nanotechnology development is very unequal within the region, which may evolve into a south-south gap. Second, the solely focus on competitiveness (and foreign markets) may divert research efforts from addressing topics that can directly and positively affect the quality of life in this socially unequal region. Third, the latter may be reinforced by the importance of international research cooperation in the Latin American nanotechnology enterprise. While cooperation with advanced research centers assures access to equipment and knowledge, it also influences the agenda towards foreign priorities. Finally, nanotechnology policies in the region have poorly addressed its social implications and risks –which adopt specific features in developing countries – and the presence of social movements pressing on such issues is still frail. This paper intends to contribute to the STS discussion on technology, social inequality and development.

Nanocosmetics in Brazil. *Denise Maria Nunes, Universidade Federal de Santa Catarina*; *Julia Silvia Guivant, Universidade Federal de Santa Catarina*

Currently, Brazil is the third biggest consumer's market in the world, it is only behind the United States and Japan. This position is a consequence of many factors such as the developments in the area, the use of high-technologies and the growing presence of women in the labor market. The utilization of high technology just mentioned includes the use of nanotechnology in the production of some products. This study aims to present the processes of governance that surround the production, commercialization and consumption of nanostruturated cosmetics. It is possible to observe the absence of sociological researches in this area of study, despite its claimed multidisciplinarity. The main aim of this research is to investigate the relationships between the industry, sellers and consumers, to understand how cosmetics that contain nanotechnologies are presented and perceived in regard to its possible risks and benefits. Under the theoretical base of the Reflexive Modernization and authors like Erving Goffman and David Le Breton, this research aims to contribute in the development of sociological perspectives in researches about the use of nanotechnologies in the cosmetic area, without the pretension of draining out the theme – considering the relevance of these researches and the lack of social scientists in the research networks of this area.

Expectations of nanotechnology in India, South Africa and Kenya. *Koen Beumer, Maastricht University*

The sociology of expectations highlights the key role of expectations in the emergence of new technologies. Thus far this body of literature exclusively relies on case studies situated in 'Western countries'. This paper hypothesizes that the particular challenges and opportunities faced by 'non-Western countries', as well as differences in for instance technological cultures, styles of governance and availability of resources, gives rise to interesting differences and similarities in the construction and circulation of expectations. This paper therefore investigates the expectation dynamics of new technologies in non-Western countries. This is important not only because new technologies are increasingly seen as crucial ingredients in solving problems of development. It may also improve our understanding of the role of expectations in the development of new technologies in general. After all, the development of new technologies is no longer the exclusive playground of Western countries due to the emergence of countries like India and China. Finally, expectations in non-Western countries may also shed new light on the particularities of expectation dynamics in Western countries. The rise of nanotechnology expectations India, South Africa, and Kenya will be discussed. Expectations of nanotechnology, both positive and negative, have been put forward in each of these three countries. Over fifty semi-structured in-depth interviews were held with key actors in the three countries. Interviews were held at over thirty different institutes during five months of fieldwork. Furthermore, an extensive corpus of publically available documents, systematically gathered for each country, has been analyzed.

Assessing Equity and Equality in South Africa's Nanotechnology Initiative. *Rodrigo Cortes, Georgia Institute of Technology*; *Susan Cozzens, Georgia Institute of Technology*; *Matthew Harsh, Arizona State University*; *Ogundiran Soumonni, Georgia Institute of Technology*; *Jameson Wetmore, Arizona State University*; *Thomas S Woodson, Georgia Institute of Technology*

South Africa is an emerging power on the international political, economic and science arenas. South Africa is one of the scientific hubs of Africa and the research portfolio of the country affects the whole African continent. In 2002, South Africa began its nanotechnology initiative, but how does the initiative address inequality and poverty in the country? How does the design of the nanotechnology initiative impact the displacement and distribution of wealth, education, risks and opportunities? In the summer of 2011, a team from the Center of Nanotechnology and Society at ASU and Georgia Tech interviewed a variety of nanotechnology stakeholders (a total of 55 interviews) that were engaged in research, policymaking, business, and community development in water, energy and agri-food nanotechnology. We examined how the nanotechnology initiative is pro-poor, egalitarian, and equalizing and we argue that the initiative helps decrease some types of inequality, like education inequality between ethnic groups and gender, but that it has very little affect on other types of inequality, like the rich and poor gap. The study shows how the designs and motivations of the nanotechnology community affect equality throughout the country. Individual scientists, university priorities and government dictates played a role in addressing equity in nanotechnology, and yet many of the disparities that were targeted by the actors remained steadfastly unchanged. This study helps to fill a gap in the STS literature on emerging technology's relationship with inequality.

210. (30) Eco-efficiency agendas: what role for techno-fixes?

9:00 to 10:30 am
Radisson Hotel: Radisson A

Chairs:

Les Levidow, Open University
Luigi Pellizzoni, University of Trieste, Italy

Participants:

Material politics of nutrient cycles -- viable recycling systems of manure on trial. *Minna Kaljonen, Finnish Environment Institute, Environmental Policy Centre*

The way in which manure is used in agricultural production is important to the resource-efficiency of the sector, but also to the overall sustainability of our consumption and production systems. The ongoing changes in meat consumption, intensification of animal husbandry and differentiation of livestock and plant production compel to find new resolutions to manure use. Many current policy programmes approach the issue from the point of view eco-efficiency. Nutrient cycles should be closed and manure recycled more efficiently. Knowledge on nutrient contents and costs of processing will help in the optimisation. However, if manure recycling is to succeed, it needs to be coordinated as part of a larger systemic whole. This becomes evident as I analyse the various scripts (Akrich 2000) of viable recycling systems provided by a group of Finnish farmers, service and technology entrepreneurs, administrators and researchers. When considering various recycling systems, these actors did not only consider how farmers must, for example, re-organise their uses of manure; simultaneously, they also made judgements on the quality of the trajectories and their relation to various ways of practically organising socio-economic processes of agriculture (Thevenot 2002) – and its spatialities. In this paper I put the various scripts in contrast with one another and, by so doing, raise discussion on how they may contribute to the sustainability of agricultural production systems and future of rural development. Re-ordering manure recycling practices, if anything, is a question of material politics (Law and Mol 2008).

Exploring the logic of eco-efficient service design. *Matthew Cook, Open-University*; *Stephen Potter, Open-University*; *Per-Anders Langendahl, Open University*

Eco-design is a key mechanism through which improvements in eco-efficiency are sought. While traditionally eco-design focuses on the redesign of products (objects), eco-efficient service design is now the subject of a growing literature. Inspired by modern trends in service provision, such as to provide energy services to households as opposed to energy conversion products (e.g. gas boilers), eco-efficient service design involves examining the functionality of products and proposing alternate eco-efficient service orientated means to satisfy demands for such functionality. This contribution explores the logic of these service design practices undertaken in pursuit of eco-efficiency and the multiple displacements associated with them. It pays particular attention to how eco-efficient service design reinforces dominant institutions such as the relationship between firms and households who 'want functionality'; assigns responsibility for resource management to firms as opposed to households who are deemed to be less rational; allocates a central role to professional design with little attention paid to the role of other actors such as households in subsequent redesign. The contribution suggests that while multiple displacements may be associated with eco-design practices, rather than withdraw from the sustainability project, a more fluid approach may be usefully adopted. This would not involve universally seeking eco-efficiency but recognising that sustainability does not fall evenly across space and that therefore, communities face and articulate different sustainability challenges, which design may help them develop specific responses to.

Eco-efficiency and the concept of "marginal land" in energy crop production. *Orla Shortall, Centre for Applied Bioethics and Institute for Science and Society, University of Nottingham*

This paper will explore how the concept of "marginal land" for energy crop production is framed and promoted in the UK. Energy crops can be either food crops used in the energy system or non-food crops grown specifically for energy production. Marginal land is generally taken to mean land where agricultural production is unprofitable or sub-optimal. The use of marginal land for energy crops can be seen as an example of the "do more with less" philosophy of eco-efficiency. It aims to help improve the UK's energy security and reduce greenhouse gas emissions whilst overcoming the "food versus fuel" and environmental controversies faced by the production of biofuels. However, definitions of this concept differ considerably, as do opinions about whether or not there is sufficient "marginal" land available in the UK for significant energy crop production (Booth et al. 2009). There have also been questions raised about the feasibility of profitable energy crop production on marginal land without the substantial use of inputs such as fertiliser (Levidow and Paul 2008). This paper will consider these different definitions and explore how they frame the aforementioned controversies related to energy crops, and envisage solutions in a UK context.

Eco-efficient biofuels: techno-optimistic expectations for sustainability. *Les Levidow, Open University*

Future expectations for eco-efficient biofuels have become central to European Union policy, especially as a means to justify ambitious targets despite controversy over environmental sustainability. Such techno-optimistic expectations draw on earlier EU policy frameworks, whereby eco-efficient innovation will reconcile environmental and economic sustainability. The biofuels case and wider policy framework are mutually reinforcing, in ways that can be illuminated by the sociology of expectations. In the 'promise-requirement cycle', promises of future innovation generate burdens to demonstrate their fulfilment, while also mobilising resources to do so. In the EU biofuels case, techno-optimistic promises have been shifted from early biofuels to future novel ones. When the European Commission proposed that an ambitious 10% target for the year 2020 would made mandatory, especially as a means to reduce GHG emissions, questions were raised about claims that biofuels are nearly carbon-neutral. The Renewable Energy Directive 2009 incorporated demands that the 10% target would be conditional upon second-generation biofuels becoming available in time. Conversely, the Commission defended the targets as essential stimulus for industry to develop such novel biofuels. This circular reasoning implicitly shifted responsibility to future policy and innovation for achieving the official aims of the Directive. Meanwhile doubts have been raised about fulfilment of the techno-optimistic promises. Eco-efficient production processes are meant to facilitate the use of non-food biomass and 'marginal land', thus avoiding the 'food versus fuel' conflict; but more efficient conversion could intensify market competition for available biomass. Moreover, uncertainty remains about whether second-generation biofuels will become viable in time for the 2020 targets, even while innovators maintain optimistic expectations to mobilise resources.

The use of techno-fixes in the international cooperation for the environment: the case of the Global Environmental Facility (GEF). *Nicole Aguilar Gayard, University of Campinas*; *Maria Conceição da Costa, University if de Campinas*

The rise of global environmental issues has spurred the creation of several international institutions for environmental aid. Nevertheless these institutions based their aid programs on the standards set by international development ones, such as IMF or the World Bank. This is specially the case of the Global Environmental Facility, created in 1991 to provide funding for developing countries in projects aiming to reduce damages to the global environment. The pattern of funding of this institution is defined by North-South transfers and, when looking at the list of projects financed by the GEF, it is possible to see a great focus on technological-fixes solutions. Based on an analysis of the operation and projects of the Fund, it is argued that: i) the main

institutions created to deal with global environmental issues are inserted, since its conception, in a pre-established pattern of international aid for the development; ii) thus, the environmental solutions presented by them are also largely influenced and submissive to a broader development debate, in which the need of maintaining the international economic system is crucial; iii) the technological-fixes solutions resolve the deadlock to protect the environment while maintaining an existing system of international – but cleaner – development. Nevertheless, technological solutions can be inefficient or dependent of too lengthy processes. It is concluded that environmental cooperation proposals are still defined in terms of North-South dialogue and technology transfer and diffusion, instead of proposals for a joint development of technologies between the countries or non-technological alternatives.

211. Medicine and health information

9:00 to 10:30 am
Radisson Hotel: Radisson B

Participants:

A realist analysis of the demise of the UK programme to construct a national EPR. *Iain Crinson, St Georges, University of London*

Over the last decade, many health care systems within Europe and North America have initiated the process of replacing paper-based records with electronic patient record (EPR) systems that can utilise the advantages of digitalisation to integrate patient care information and improve communication between clinicians and health care providers. In 2002, the British government committed itself to the development (budget £13bn) of a ten year National Programme for Information Technology (NPfIT) within the NHS; at the time of its commencement this was the largest civilian IT programme in the world. The Department of Health was clear that it was the EPR that would constitute the core of this programme and offer the most significant potential for improvements in organisational efficiency and patient care management. Yet, in September 2010, following an eight year period of development the programme was effectively abandoned by the UK government. In addressing the question of why this major socio-technological undertaking failed to deliver on its original 'vision', this paper seeks to apply a methodological framework (the transformational model of technical activity) informed by critical realism. This approach examines the 'moments' of technical activity, isolation and reconnection, that while common to both the design and use phases (of the development of the EPR programme), are seen to have different characteristics in each phase. It is the analysis of these different characteristics within an organisational context that enable an assessment of the socio-technical factors that contributed to the failure of the programme. In conducting this analysis, the paper draws upon the published reports (including first person evidence) of U.K parliamentary oversight and regulatory bodies.

Infrastructure and Action: Making Do in the Shifting Material Ecology of a Hospital. *Kathleen Pine, University of California, Irvine*

Infrastructure exists in relation with people and activities (Star & Ruhelder, 1996) and becomes visible upon breakdown (Star & Bowker, 2002). I expand current work on infrastructuring in the field of STS to examine how infrastructure is related to action and the artistry of getting things done. Through in-depth ethnographic study of a hospital labor & delivery unit, I examine how the shift to a digital work infrastructure, an Electronic Medical Record (EMR), impacted clinicians ability to problem solve when breakdowns or unexpected situations arose as part of the normal course of work. EMR is expected to result in increased efficiency and quality of care by enabling and promoting standardized workflows and protocols for clinical practice. However, in medical work, disruption and exception to

expected patterns of action are almost so common as to be considered routine. Drawing on de Certeau (1984), "making do" in times of disruption in the hospital involves a high degree of flexibility, ingenuity, and bricolage of infrastructures, artifacts, and routines. This is a cultural and political activity, as hierarchies are often subverted and norms and regulations subtly re-formed or sidestepped in the name of getting things done. The shift to EMR interfered with this activity of making-do. I discuss three main factors for this: decreased familiarity with the materials of a digital infrastructure, seeming impenetrability of digital infrastructures and increased distance between EMR users and means of altering and changing the infrastructure, and the political and cultural assumptions about medical work embedded in EMR.

Personalized medicine, Impersonal practice. *Sheri Alpert, Indiana University Center for Bioethics*

The potential irony of a new age of personalized medicine may well be the complete impersonalization of the clinical experience. As doctors learn to interpret biomarkers and genome sequence data, they may increasingly relate to the atoms and data bits of patients, while losing the human contact that has been at the core of the medical and healing relationship between health care provider and patient. Moreover, as doctors also rely more on evidence-based medicine, there may be an additional tendency to view patients as data points along a bell curve of standardized outcomes. The introduction of all variety of technologies into the clinical relationship (e.g., electronic health records, decision support systems, nanomedicine, etc.), over the more than a century, has been largely responsible for increased longevity and better health than our ancestors experienced. However, it has also contributed fundamentally to changing how medical care is rendered and how patient and provider relate to each other, by placing a premium on data collection and quantification over communication. This paper will examine how the care provider/patient relationship might continue to change in the age of "personalized" medicine, and examine ways to reinforce the more human elements of that relationship. Using Stanley Reiser's work on the topic as the foundation, I will analyze a sampling of clinically-oriented literature to assess how technology contributes to framing the provider/patient relationship, and how the clinical experience continues to evolve, thereby addressing an often overlooked consequence of the increasing reliance on technology in the clinical encounter.

Learning about bodies: intersections of pedagogy, emotion and professional identities. *Dawn Goodwin, Lancaster University*; *Laura Machin, Lancaster University*; *Adam Taylor, Lancaster University*

Medical education in the UK has undergone significant curricular revision over the last 15-20 years with the adoption of problem based learning, enhancing the social, psychological and communicative aspects of clinical education, and most significantly for this paper, debating the place, style and quantity of anatomy teaching in the curriculum. Consequently, these changes have prompted claims that medical education is undergoing a form of 'rehumanising'. Exemplifying the issues at stake are debates about how anatomy should be taught. Developments in learning technologies, the increasing importance of visual images in diagnosis, changing societal attitudes towards ownership of bodies, and the diminishing availability of cadavers for dissection have prompted a multifaceted approach to anatomy teaching in which dissection is no longer seen as an essential route to understanding clinical anatomy. In this paper we explore this claim of the 'rehumanising' of medical education. Debates around anatomy teaching engage with concepts of 'objectivity' and 'emotional detachment' to articulate the role of anatomy teaching in cultivating a developing professional identity. We question what is meant by these terms and how curricular design may channel the expression of emotion. We analyse focus group data from a

pilot study that aimed to explore medical students' experiences of learning anatomy in a medical school that did not employ dissection. We ask how students experienced attending post-mortems, how the absence of dissection affects their preparation for the corporeal aspects of medical practice, and the role pedagogical approaches play in shaping and expressing collective professional values.

212. (62) Monitoring, identifying, displacing: on everyday surveillance & security practices - I

9:00 to 10:30 am
Solbjerg Plads: SP112

Chair:

Jutta Weber, Institute of Media Studies

Participants:

'Hi-Tech and Desirable': On Risk Management and Military Technology in Everyday Life. *Jutta Weber, Institute of Media Studies*

Recently, we observe a rapid transfer of security technologies such as body scanners, drones, smart CCTV, etc. from the military realm into everyday life. And though there is a lively debate on the growing militarization of public space, political culture and everyday life, there is surprisingly little discussion on the massive military-civilian transfer of emerging security technologies in western democracies. Approaches in STS showed how technologies transport values, world views and norms. In my contribution I want to analyse whether and what kind of norms, values and frames of thought are transported into everyday life with the military-civil transfer of security technologies such as drones, body scanners or smart CCTV. For example, Caren Kaplan has shown how GPS did not only link demography, geography, remote sensing, geopolitics and identity politics but became an icon of 'personal empowerment and self-knowledge linked to speed and precision' (Kaplan 2006). Military consumerism is accompanied by an epistemological reframing of security as (precautionary) management of risk and preventive securitization of security fighting permanent and systemic contingencies such as pandemics, global warming, or terrorism. This logic operates on risk profiling, statistics and probabilities, models and speculations. I want to show how this new preventive and techno-centred security policy corresponds to the increasing networking of surveillance measures, the reconfiguration of surveillance as assemblage (Haggerty/Ericson 2000) and the intermingling of surveillance and consumerism.

Mediating security and disabilities: the case of body scanners. *Michael Nagenborg, University Tübingen*; *Anja Königseder, University of Tübingen*

Mediating security and disabilities: the case of body scanners Michael Nagenborg, Anja Königseder International Centre for Ethics in the Sciences and Humanities (IZEW) University of Tübingen, Germany michael.nagenborg@izew.uni-tuebingen.de anja.koenigseder@izew.uni-tuebingen.de Abstract Our proposal to the conference is based on research carried out within the interdisciplinary research project KRETA . The project is funded by the German Federal Ministry of Education and Research (BMBF). Questions about new security measures are often brought up in terms of the trade-off between security and freedom, or security and privacy. However, KRETA focuses on the relation between security and justice. Adopting Peter Anderberg's argument about technologies as mediators of disability (2005) and building on Geoffrey Bowker and Leigh Star's work on infrastructures (Bowker & Star 2006), we consider body scanners as mediators of disability, marking 'uncommon bodies' as suspicious and unveiling hidden disabilities to the beholder (i.e. security screener). Since certain groups of people are thus no longer capable of 'passing as normal' (Goffmann 1963), the interaction between security

personnel and passengers at the airport as a trail blazer area for the deployment of body scanners is a significant part of the screening process. Therefore, the field research work package works at providing a better understanding of the interaction between security personnel and travelers. Furthermore, a series of expert interviews contributes to examining the evolution of airport security along the implementation of a new technology. In the proposed lecture, we would like to present first findings of the empirical research. Specifically, we will focus on the way in which body scanning technology challenges the legal distinction between the sphere of privacy and the sphere of intimacy, being a central element in regulating security procedures in German law. References Anderberg, Peter. 2005. Making both ends meet. Disability Studies Quarterly, no. 3, http://www.dsq-sds.org/article/view/585/762 (accessed March 22, 2010). Bowker, Geoffrey, and Susan Leigh Star. 2006. Infrastructure. In: Handbook of new media and communication, ed. L. Lievrouw and S. Livingstone, 151-62. London: SAGE. Goffmann, Erving. 1963. Stigma - Notes on the Management of Spoiled Identity. New York: Simon & Schuster.

Premediated regimes of surveillance. Practices of preemptive crime reduction in Minority Report and law enforcement. *Timo Kaerlein, University of Paderborn, Research Training Group Automatisms*

Large-scale initiatives in preemptive crime reduction – like INDECT in the EU and several regional undertakings in the USA – utilize socio-technical arrangements including predictive analysis and relationship mining to forestall criminal acts before they are actually committed. To this end, seemingly random behavioral patterns (e.g. physical movements, online access, consumption decisions) are analyzed and transformed into probabilities and operational parameters like risk profiles. Eerily and accurately close to these developments, the science fiction movie Minority Report (USA 2002) envisions a near future of seamless observation architectures, in which post-privacy is a reality and comprehensive surveillance apparatuses are deeply interwoven with everyday activities. The paper follows Richard Grusin's (2010) observation that post-9/11 media are often concerned with a practice of anticipation that he termed premediation. The concept points to the everyday experience of potential futures that are always already mediated. In this way, even repressive practices and technological arrangements come to be experienced as oddly familiar, fears and possible resistances being shifted from the area of politics to the symbolic. The paper aims to confront Grusin's theoretical claims with recent developments and their public reception. One hypothesis is that science fiction and other forms of premediation operate with strategies of displacement that modulate collective affect. In this way, they come to be seen less as creative spaces of possibility but rather as test environments preparing for techno- and sociological change. The field of STS may profit from more explicitly taking into account the interrelations between fictionalized techno-visions and actual developments.

From visual information sorting to decision making: understanding image processing algorithms. *Christoph Musik, University of Vienna*

Coping with information is not limited to written content in the internet (e.g. search engines), but does also refer to the ever increasing amount of visual data that is constantly produced in/about the physical world. Optical information deriving from movements of bodies and non-human entities (e.g. cars, planes) needs to be understood by image processing and computer vision algorithms in order to surveil, control, care about, track, and manage these objects. Many speak about „smart CCTV" or „intelligent video surveillance", but we are still far from completely abandoning human capacity and power of judgement for processing visual data, as the cases of facial recognition (Introna & Wood 2004) or event detection (Musik 2011) show.

In Austria, pioneering applications equipped with image processing algorithms are already in practice, e.g. an automated toll sticker monitoring system which is supposed to recognize automatically, if cars on motorways have an obligatory valid toll sticker on the windscreen. A closer look at the system shows that decisions still need human inspection for becoming final. Simultaneously, even more sophisticated algorithms are in the making, e.g. algorithms for fall detection systems in ambient assisted living environments. In extreme cases these devices could decide about life and death. In the paper I will present findings from ethnographic field research in computer vision laboratories and their environments in order to scrutinize the black box of algorithms. I address the fragile nature of algorithms in practice and show that they are highly dependent on situation, time, and place.

213. Being neither here nor there: Presences and absences in fieldwork, data and theory

9:00 to 10:30 am
Solbjerg Plads: SP113

Absence, deficiency, incompleteness, 107; of sympathy, 164 So begins the index to John Dewey's "Reconstruction in Philosophy" (1920), a work in which he argues for more practicable methodologies, asking us to hunt for both literal and metaphorical trouble. This also aptly opens the two concerns which this panel addresses in relation to empirical work and theory: presence and absence. Our works are haunted by questions about being there or elsewhere, questions that are at once practical and conceptual and that betray a nuanced and rich register between presence and absence, between design and displacement. Being absent from "the field", as Dewey's "indexical poem" (Lyn Hejinian) suggests, goes against ethnographic conventions and is seen to produce insufficient accounts. Similarly, much of STS's critical purchase has rested on making visible certain absences while readily avowing the actualised as the only mode of materiality. Yet, our work often suggests more differentiated presences and absences: a 16S rRNA gene barcode of a bacterium that never quite was; a characterisation of human proteins on a scale from "maybe" to "hopefully"; landscapes raised to support new technologies, others made absent in the name of contestation; How do we design our objects and fields around solids and voids? What kinds of work are required to achieve (co-)presence? What are the risks we must take to do so? If, as Whitehead suggests, "life lurks" in the interstices, how to empirically and theoretically access them?

Participants:

The politics of presence: making political contexts for bin contents. *Natalie Gill, Lancaster University*

In an attempt to decrease the UK's heavy reliance on landfill, practices of waste collection have been profoundly redesigned. A key site of change has been the home. Here, policy focuses on intervening in individual household's waste management, effectively turning the home into a waste sorting facility. This brings households, quite literally, in touch with their waste where previously no contact was necessary, transforming waste from problem to presence. Such increased visibility and physical rapport is seen to make householders more conscious of what they throw away and more responsible for their waste. Hence, rendering waste visible appears as a tool for change in our relationship to the waste our bodies and lifestyles produce. But the heightened visibility of waste also brings into relief the normative reality and version of responsibility that are being enacted and materialised in waste sorting practices. My empirical work has followed these changes in collection practices as they were being implemented with a Local Authority in the North West of England. In this paper I draw on my fieldwork to describe the practice of "bin auditing". I demonstrate how the waste practices of households make some bin contents count as evidence for good waste practices while making other contents invisible to the process. By attending to bin contents that are absent to the auditing process during a home visit with a Local Authority worker, I make visible what is absent (or displaced) in the current design of waste collection practices.

Hopeful presences and uncultured encounters: GenBank record EU805409.1. *Tahani Nadim, Goldsmiths*

GenBank is the world's largest database of nucleotide sequence data. It contains 150 million DNA sequences in the form of publicly available database records. Aside from the sequence itself, these records document a range of contextual information such as source organism and sequence features such as genes. GenBank records form the basis for a range of crucial bioinformatic tools which compare and match sequences. This facilitates identification, genome assembly and generally assists bioinformational knowledge-making. Sequences recorded in GenBank derive from bacteria, eukaryotes, viruses but also metagenomes, that is, sequences directly derived from environmental samples such as gut or soil samples. In contrast to single organism genomics where it is evident from which species the DNA/RNA originated, environmental samples contain many different species, making species identification extremely difficult. Nevertheless, environmental sampling projects such as J. Craig Venter's Global Ocean Sampling project, which has sequenced water samples from all oceans, continue to register new species via metagenomic analysis. GenBank record EU805409.1 documents such an instance, an as yet to be fully identified uncultured bacterium collected 250 miles from Panama City. On the basis of this doubtful record, my paper will probe the kinds of presences and absences enacted by database records, environmental sampling, bioinformational knowledge-making, and Craig Venter. Using observations from fieldwork carried out in GenBank, this paper seeks to challenge the monolithic notion of database logic and suggests new ways to critically engage with these technologies.

Dealing with Presences and Absences in Landless Workers' Agro-ecological Communities in Espírito Santo, Brazil. *Michalis Kontopodis, Universiteit van Amsterdam*

The Landless Rural Workers' Movement (Movimento dos Trabalhadores Rurais Sem Terra) is considered to be one of the more radical social movements in the Brazilian countryside. For 28 years Landless Rural Workers have occupied lands owned by colonial landlords and established small-scale agroecological communities there. This model is opposed to large-scale profit- and export- oriented agribusiness which has been the main cause for local population's poverty. In principle, small-scale family-based agriculture is sustainable but it requires the use of certain technologies, such as freezers, electric pumps or cables. The Landless Workers need to procure these technologies from elsewhere. Because the costs involved are higher than the yields from agricultural products, the Landless Workers still depend on external funding. My ethnography in Landless Workers' settlements in Espírito Santo, however, has shown that external funding and externally produced technologies are made "absent" in most everyday life practices as well as in most of the Landless Workers' discourses. This suggests that agroecological practices, though dependent on extraneous, perhaps contrarian, instructions, can relate a much more nuanced pattern of dependencies and local sustainability. My presentation discusses this pattern through the example of "eating fruits", a practice that differentially enacts presences and absences. At the same time, I reflect on a follow-up intervention in the Landless Workers' settlements to explore how we, as researchers, can create presences by going back and giving feedback to the field – especially through making use of digital visual materials and filmic techniques.

In/visible Landscapes: Tactics of presence and absence in a wind energy controversy. *Uli Beisel, University Halle-Wittenberg*

The offshore citizen wind park Butendiek in the German North Sea bay is conceived as a truly local enterprise: from the region

for the region. But soon the initiators discovered that there is more than one region and indeed more than one landscape involved in the making and unmaking of the wind park. For the citizen-investors the wind park is a means to economically benefit from the offerings of the sea and its winds; the sea is an extension of arable land. For other locals the aesthetic of the North Sea as pristine wilderness is endangered through the project; and it is this aesthetic that makes the region productive for them, as a tourist destination. The Maritime Authorities on the other hand are concerned with regulating the North Sea as an industrial landscape where oil platforms and cargo ships coexist with offshore parks. For Friends of the Earth the park threatens the local bird population, a concern explicitly not shared by Greenpeace for whom the North Sea represents a unique laboratory for renewable energy production. This paper traces the different landscapes mobilised in the controversy over the Butendiek offshore wind park, and shows how these manifest themselves as flickering star patterns of presence and absence (Law & Mol, 2001). I focus on the tactics of visibility and invisibility employed by the different actors and argue that the actual visibility of the wind park matters less in the controversy than evoked atmospheres, imagined communities and projected bird deaths.

Discussant:

Amade M'charek, Universiteit van Amsterdam

214. (11) Smart Homes: designing care, work, care technologies, and living at home - I

9:00 to 10:30 am
Solbjerg Plads: SP114

Smart homes are currently designed and implemented in homes of older and disabled people as a means to meet socioeconomic challenges that follow from the so-called 'tide-wave of elderly'. In meeting these challenges such technologies are designed and put on a particular meaning-bearing path concerned with reconfiguring existing designs of and between care, work, home and public. That is, in brief, in the smart home specific public care services are distributed to technology that are put to work twenty four a day in private residencies (Genty 2009). What we see as challenges, here, are how difficult it becomes to separate care and technology in the smart home for elderly, and how much care (work) it takes to uphold and make such care technology work (Finken & Mörtberg 2011; Finken forthcoming). STS scholars have fruitfully been engaged with issues on practices, design and displacements within the care sector (e.g. Roberts & Mort 2009; Mort et al. 2009; Moser 2011). In following such lines we invite papers that problematize issues of care designs and everyday practices of living and working with care technologies. We ask the following questions: What/who is involved in designing and upholding care technologies? Who/what are in- and excluded in such design practices? How do displacements come about? What implications do they have on everyday living and care practices?

Chairs:

Sisse Finken, University of Oslo
Christina Mörtberg, Linneaus University, Sweden

Participants:

Enacting Aging Bodies in Design of Welfare Technology. *Marie Ertner, IT University of Copenhagen*

In recent years there has been an increased focus on developing Welfare Technologies that motivate elderly people to keep their bodies fit to avoid negative physical conditions related to aging. The design of WT can thus be seen as a stage where elderly and body is being enacted and given meaning in specific ways. On this stage, aging is commonly enacted as a bodily process, a (life)situation or an experience, and the body appears as a coherent whole which is either young or old, fit or fragile, self-sufficient or care-dependent. This paper takes a different approach by investigating elderly peoples practices of doing aging, which is deeply entangled with practices of doing body

(Mol & Law 2004). Enacting aging in this way opens up to see the work invested in accomplishing a whole body, which involves handling tensions such as avoiding signs of aging or accepting the body as it appears; between the body capable of feeling and expressing sexuality or the socially acceptable, antisexual body; Between the overweight body and the sturdy fitness body hiding underneath. The paper concludes that foregrounding practice leads to an understanding of aging as situated within multiple and sometimes contradictory bodies and socio-material contexts. This suggests that the common enactment of elderly users in design processes may be too simplistic. Analyzing aging in this way contributes to STS studies of aging and embodiment and produces a critical response to WT design and practices of configuring elderly users articulated from an STS perspective.

Design of assistive, welfare technologies for healthy eating and active aging. *Anne Moen, Univeristy of Oslo, Norway; Ingrid Svagård, Sintef, dept of Instrumentation, Oslo, Norway*

Active aging is a priority that follows technology-enabled migration of activities to the home dwelling. Adequate nutrition or healthy eating is a core premise for independent living. We are interested in design of tools and services for novel, meaningful participation to ensure social, physical and mental well-being. Eliciting and aligning with current, sophisticated and purposeful strategies already employed for design and deployment can meet future health care demands and maintain self-care, dignity and independent living. We have explored potentialities of assistive, welfare technologies to suggest tools and re-thought services that support healthy eating and active aging. In workshops with future users we introduced a) tools for participation and support, b) environmental sensors, c) bio-medical sensors, and d) robot assistants. Feedback from community living elders pointed to tools to support creation of communities, maintenance or expansion of knowledge and social networks as the most interesting. In addition, resources to share experiences were preferred over sensors reporting environmental activities or vital signs. Robot assistants were seen as just too futuristic. Our experiences so far point to that users perception of usefulness is related to perceived transparency and supported through their understanding on how the tools can be a beneficial, assistive part of daily living. For the track "Smart Homes – designing care, work, care technologies, and living at home" we will discuss design challenges for assistive, welfare technologies constituted in interplays of user's perceptions of tools and better-understood challenges to healthy eating and active aging, as requirements to design new tools and services.

Beyond the smart home. Designing multimodal environments to support mastery. *Tone Bratteteig, University of Oslo; Ina Wagner, University of Oslo*

A smart home should include technologies to not only compensate for lack of or decreasing human functioning but pro-actively improving its inhabitants' abilities for participating in society. We want technologies that encourage and assist people with slightly declining cognitive abilities in being a part of society, i.e. enable them to walk out of their smart homes to cafés, shops, libraries or the gym. A smart home should therefore be a home that does not make elderly persons helpless if they leave it, but a home that encourages their own development and mastery in ways that enable them maintain a certain level of functioning also outside of their home, possibly 'in cooperation with' a piece of technology. The concept of mastery is related to the notion of flow, developed by Csikszentmihaly (1990), as well as the notion of human agency and learning, developed in activity theory (Engeström & Middleton 1996). It has been found that a sense of mastery is difficult to achieve and maintain under conditions of cognitive decline and that this is connected to anxiety and depression (Penninx et al. 1995). Cognitive decline

(of elderly people) implies reduced abilities for understanding and performing abstractions, which is a basis for all abstract general systems, like maps, schedules, labels/signs, categorizations – and IT systems. We discuss the design challenge of representing abstract complex systems with representational means and communicative modes that facilitate abstraction and generalization, utilizing the digital potential of representing information in visual, audio, haptic, physical and processual ways.

Technology Acceptance of Home Care Service Providers.
Susanne Giesecke, Austrian Institute of Technology
Demographic change poses considerable challenges to most EU countries as the percentage of the elderly is rising disproportionally. A decreasing share of young people will have to shoulder the financial burden and the task to care for the physically and mentally impaired elderly in/of the future. Only a combination of technological and social innovations paired with new public policies will be able to cope with these challenges and guarantee the individual independence and dignity of the elderly while keeping the costs of care manageable. For technical innovation, the "Ambient Assisted Living" (AAL) program at the EU level and in various member states has generated some interesting solutions, allowing the elderly to continue their own life style in their individual environment with home care tailored to their needs. Most of these solutions are still waiting to be implemented, though. New models of care and new services, including technical support services, will be needed as well. What is missing, however, is a critical assessment of the future role of home care service providers or caregivers. We can see already that this role is changing. Home care service personnel, e.g. nurses, will become the major contact points, the nexus, between the elderly and the technology suppliers. The question arises how service providers, who, in the way they traditionally perceive their work, are not readily prepared to adopt new technologies, accept technical innovations at the work place and how they will integrate them into the workflow of elderly care at home.. The study presented here is one of the first to deal with this question. We have looked at historical discussions of technology acceptance in society in general. We have also looked at studies of technology acceptance at the workplace, especially in services. Field studies and interviews with experts and caregivers in Germany complement our research. Finally we have formulated hypotheses and designed an analytical framework to investigate the acceptance of AAL technologies among home caregivers.

215. (06) Evidence-based activism: patients' organizations and the governance of health - I
9:00 to 10:30 am
Solbjerg Plads: SP201
ENGAGING IN BIOMEDICINE. PATIENTS' ORGANIZATIONS' ARTICULATION WITH, OPPOSITION TO, AND TRANSFORMATION OF BIOMEDICAL RESEARCH AND ACTIVITIES
Chairs:
Vololona Rabeharisoa, CSI Mines-ParisTech
Tiago Moreira, Durham University
Madeleine Akrich, CSI Mines ParisTech
Participants:
Patients at the Zero Point: Uncertainty and Promises in Japanese Stem Cell Research. *wakana suzuki, Kyoto university*
In Japan, recent advances in stem cell research have attracted patient's attention, due to the promise of future clinical applications. Many papers and publications on stem cell research refer to the potential treatment possibilities of multiple diseases and disorders. According to Mackenzie's 'uncertainty trough', end users, such as patients might be expected to exhibit 'low uncertainty' with regards to the promises of such treatment

possibilities. In other words, it might be supposed that patient groups would expect stem-cell-based treatment to come true soon. But the reality is much more complex. Based on qualitative data collected about various patient group (e.g., spinal cord injury, type 1 diabetes mellitus and retinitis pigmentosa) discusses how different patient groups understand the possibility of stem-cell-based treatment in various ways. Their uncertainty, expectation and involvement (or exclusion) for stem cell differ very much depending on their condition of disease and disorders, as well as on the social worlds they inhabit. As part of her engagement with Actor Network Theory, Susan Leigh Star introduced the concept of 'the zero point'; a location, which is inside and outside of a network at the same time. In this paper I suggest that various patient groups are at the zero point of the networks of stem cell research. This allows for an understanding of the various kinds of uncertainty patients and patient groups exhibit towards future treatment possibilities.

The dynamics of causes and conditions. Rareness of diseases in French and Portuguese patient organizations' engagement in research. *Vololona Rabeharisoa, CSI Mines-ParisTech*; *Michel Callon, CSI Mines-ParisTech*; *Angela Marques Filipe, London School of Economics*; *Joao Arriscado Nunes, CES University of Coimbra*; *Florence Paterson, CSI Mines-ParisTech*; *Vergnaud Frédéric, CSI Mines-ParisTech*
Many stakeholders in the field of rare diseases point to the role played by the notion of rareness in the emergence and development of what we suggest to call the "hybrid collective model" (HCM) of collaboration between patients and experts. HCM features two main characteristics: (i) the constitution of communities gathering families and researchers as actors in 'war on diseases'; and (ii) organized cooperation between experts and patient organizations in the production of knowledge on diseases. In this presentation, we examine the relationship between the notion of rareness and the HCM. Drawing on research of French and Portuguese patient organizations, we first discuss such relation that is neither systematic nor univocal. In both countries, certain "non-rare diseases" patient organizations adopt the HCM. However and in contrast to their French counterparts, certain Portuguese "rare diseases" patient organizations take both the HCM and non-rareness criteria into the definition of their mode of engagement. We show that those disparities result from a reflexive work patient organizations undertake on the notion of rareness, notably on its relevance for capturing the specificities of rare diseases with regard to "non-rare" conditions. Our contention is that this reflexive work is core to a process of singularization-generalization of conditions that patient organizations entail when delineating their causes. In conclusion, we offer preliminary thoughts on the dynamics of causes and conditions of patient organizations towards research.

Re-presenting patient groups Today: from the US Orphan Drug Act to Rare Disease R&D Today. *Pei Koay, Center for Genetic Research Ethics & Law (CGREAL), Case Western Reserve University (CWRU)*
When various groups define what counts as "a patient group," they are talking about different things. Representations here are statements about life and death for individuals but also populations. Today, in our current landscape where genomic medicine, translational science, and pharmacogenomics are beginning to cover our landscape, there is also increased prevalence of patient group involvement and efforts to increase involvement. With this comes more actors who seek to represent patient group and their roles. Representations about patient groups also come with unspoken elaborations of what counts as a responsible citizen, how knowledge is made and who can participate, and how society should be organized. What remains to be seen is whether the alternative visions of medicine/health (biomedicine) can effectively counter our attachments to high tech, individually based biomedical forms of intervention — to

create new dreams of biocitizenship and health —without reinforcing stark social divides. This presentation will present some empirical work on the history of orphan drugs/diseases (including oral histories with some of the actors who brought about the US Orphan Drug Act) and current work on patient groups and their influence on research in our contemporary biomedical landscape to discuss the concepts of 'biocitizenship' and 'biopolitics' and its challenges especially in the context of the US bioethics landscape.

Reframing Criticism in Mental Health. Patients' Movements in Switzerland (1970-2012). *Virginie Stucki, Department of social and political sciences, University of Lausanne (Switzerland) (PhD Student) & Universit of Applied Sciences (HES-SO), Lausanne (Switzerland) (Professor)*

The recent research interest in the role of users' organizations in health and medicine has produced important studies on the negotiation of biomedical knowledge. By contrast, patients' organizations in psychiatry have not attracted as much attention. Knowledge in mental health is not restricted to biomedical concepts but relies on a multiplicity of different discourses. Furthermore, questions of mental health concern the very legitimacy of a person to speak for oneself more fundamentally than other diseases. Therefore, a study on knowledge governance in psychiatry that focuses on patients' organizations promises important new insights into the role of users in shaping medical research and treatment. Within the last forty years users' organizations in Switzerland have been part of a process of defining and redefining knowledge in mental health. Recently, they are involved in a paradigm shift that is supposed to turn psychiatry from a clinical domain into an evidence based practice (EBP). Interestingly enough, it is not possible to comprehend this process by simply opposing patients' organizations to medical professionals. This paper will argue that it is necessary to change the perspective from a critical sociology that would focus on users' resistance against psychiatry to a sociology of criticism which studies the full range of users' epistemic practices including the interaction with professionals. Only if the different modes of alliance, exchange, relations of power and demarcation between and within users and professionals are taken into account the construction of medical knowledge in psychiatry can be properly grasped.

216. Art and science studies: depicting design in nature and in artifacts

9:00 to 10:30 am
Solbjerg Plads: SP202

Different types of visual representations depict design (or teleology, or form) in natural objects and design in artifacts and spaces like DIY laboratories, studios, ships, etc. This panel will discuss the way the concept of the natural is constructed in text and image by considering what we mean by design in the context of depicting, studying, and understanding the natural world. Panelists will consider how the means of production (draftsman's practices, watercolor, photography, genetic intervention) confer power to images and attendant forms of knowledge. Attention will be paid to the legitimating practices (the use of traditional methods, materials, and the presentation of self) employed by actors who work across the fields of art and science to situate themselves and the knowledge they produce in the networks of art and science. The panel discussant will offer an analysis of the images, in terms of the philosophy of design, focusing on the distinction between design in nature and design in artifacts.

Participants:

Designing Nature: Contrasting Stories of Manipulation and Design from the Bioarts. *Hannah Star Rogers, Cornell University*

The bioarts raise new questions about the ethics of intervening in biology by focusing attention on and asking direct questions about the processes manipulation and design, rather than their

outcomes. This paper contrasts two episodes in bioarts interventions, the story of Edward Steichen's 1936 delphinium exhibit (a genetic intervention using a medication as a poison) and a case from synthetic biological design from the Synthetics Aesthetics project, to reveal different frames of reference for intervention in nature. Steichen dosed delphiniums with colchicine to produce doubled chromosome flowers which were shown at the MoMA. While Steichen's delphiniums are imagined as a genetic manipulation, bioartists working with synthetic aesthetics describe their work as designing nature from the ground up. Steichen's story is now used by bioartists as the earliest example of an artist intervening in genetics. Science-engaged arts are not merely parasitic on the sciences, but are created simultaneously with them and have the potential to critique science by drawing attention to assumption in the scientific framework.

Imag(e)ining Land and Sea: Visual artifacts of the HMS Challenger Expedition. *Emma Zuroski, Cornell University*

By the time the HMS Challenger left Sheerness, UK in 1872 for a 4-year circumnavigation of the globe, the expedition was already touted as the most complete and systematic exploration of the deep sea ever pursued. The scientific findings of the expedition are often viewed as the foundation to modern Oceanography, and the Challenger has a well-established place in the history of exploration and Victorian science. One vital component of the work conducted during the expedition was the creation of various visual representations of land and sea created by J.J. Wild, the official artist on board the ship. In addition to being responsible for the vast majority of sketches of new found fauna specimens, Wild also painted dozens of watercolor landscapes, sketched images of the tools and instruments used for research, and took hundreds of photographs with the first camera officially included on a British maritime expedition. Interestingly however, Wild also contributed to the scientific observations and experiments conducted, and authored several short scientific papers resulting from this work. The visual artifacts produced by Wild have now been naturalized as part of our popular image of the deep sea, but at the time of the expedition his representations were the first imagining of what existed both beneath the ocean and across the sea. In focusing in on Wild's unique role within this scientific endeavor, we can not only better understand the role of visual depictions within the framework of natural knowledge, but we can also begin to examine how the various modes of representation allowed Wild to traverse the liminal space between art and science in 19th century natural history.

Listening to Images, Looking at Sound: Sonic Skills in Field Ornithology. *Joeri Bruyninckx, Maastricht University*

While much has been written in STS on the role of visual and textual arrangements in scientific research, the material turn has also brought its non-visual, corporeal and sensual dimensions increasingly under scrutiny (Burri, Schubert & Strübing 2011; Myers 2007; Roosth 2009). This paper adds to such recent work in STS, by showing how instruments, bodily and sensory practices entangle in the production of scientific knowledge and the interpretation of visual material. It reports on the ways in which field ornithologists and behavioral biologists have come to organize, negotiate and legitimize instances of 'ear-work' (Mody 2005) in their observations, recording and analysis of bird vocalization in studies of ecology and animal behavior. Drawing on a historical ethnography of field notes, diaries, correspondence, interviews and published documents around the Cornell Laboratory of Ornithology and Cambridge Madingley Field Station between 1930 and 1970, I show that to make sense of bird sound, these scientists actively and strategically switched between auditory and visual modes of understanding. While scientists modeled new aural tools such as parabolic microphones and sound microscopy on visual observation, their production and analysis of visual inscriptions produced by sound cameras

and spectrographs in turn required aural imagination and sonic skills. I argue that attending to the ways in which the visual and auditory, mechanical and embodied, and inscriptive and affective interact in the production of knowledge, contributes to studies of processes of scientific imaging and visualization and may enrich our understanding of their epistemic prominence.

Cinematic actor assemblages. *Kjetil Rodje, Simon Fraser University*

Building upon a study of the performative aspects of images of blood in 1960s American cinema, this paper will present an argument that blood, and similar visual phenomena, can be approached as cinematic actor assemblages, that perform and express affective intensities as well as entering and connecting with discursive formations. The term 'blood assemblage' will here designate a multitude of operating factors which together make the appearance of blood convincing to the viewer. This assemblage is actor, both in the sense that it performs a role, and in the sense that it makes things happen. No essential characteristic of blood can be detected anywhere in this assemblage; rather its effects are distributed and enacted across a potentially unlimited number of relations. If 'blood' as such can be located anywhere, it is in these relations, not in any given location. Drawing upon the philosophy of Gilles Deleuze, Actor-Network Theory, and recent developments in affect theory, the paper sets out to provide a vocabulary and methodological framework for the study of affective potentials in (audio)visual images and the operations of images in their encounters with situated audiences. The study furthermore makes a contribution to the study of audiovisual technologies and the interrelationship between design and questions of affect.

Discussant:
Dehlia Hannah, Columbia University, Philosophy Department

217. (52) Configuring Users and Design and Implementation practices - I
9:00 to 10:30 am
Solbjerg Plads: SP205
Chair:
Wouter Boon, Rathenau Institute
Participants:

Instauration and restoration of usership: The ongoing assemblage of telecare users. *Tomás Sánchez-Criado, Universitat Oberta de Catalunya*

Even though design and use practices have been widely treated as a research topic in STS, little attention has been paid to the processes of implementation as moments of 'user configuration.' Drawing from ethnographic work on home telecare services for older people in Spain, in this paper I would like to bring User Studies closer to the Sociology of Repair and Maintenance. In order to do so I will show different instances of my fieldwork where telecare users could not be said to either pre-exist scripted in the devices' design or only perform as active domesticators or appropriators of them. Instead, they might be better described as 'brought into existence' and constantly 'held together' along with the ongoing tensions of service implementation and work by different telecare technicians and other people involved in the provision of such services. Departing from these empirical examples my contention here would be to propose instauration and restoration practices as an interesting new focus for User Studies. Mainly because I believe they might help in making visible the frictions, tensions and the struggles, as well as the effort put to bring into existence and hold together particular user positions in given socio-technical assemblages. And, in doing so, I consider that they could be of great help to open up an interesting political discussion of the practicalities of different technological arrangements (such as, for instance, the sort of care arrangement that home telecare puts in place).

Channeling ICT users' implicit knowledge into "innovativeness" in Living Laboratory practices. *Sabrina Sauer, University of Twente*

Although certain R&D practices focus on the role of users in -specifically user-centered- design, it is still worthwhile to closely examine the actual user role in these design processes. STS theories can help articulate and explicate tensions in user-centered design practices, particularly by focusing on the performative aspect of user-involvement. The focus of the paper lies on user-centered design in Living Laboratory-practices. Living Laboratories aim to involve users and the uncontrollable dynamics of daily life in ICT design. Apart from the fact that Living Lab-practices are still and may remain very heterogeneous in terms of methodology, "user centrality" is also not so straightforward. Case study material will show that although users are granted "agency" in design processes, they are still tightly configured. Practicing user- centered design this way, sits uncomfortably alongside the Living Lab idea that tapping into the knowledge and creativity of users will lead to "unexpected" new ICT innovations. What kinds of knowledge are users encouraged to share? Are practices, i.e. the ways in which users perform with technological artefacts seen as knowledge and subsequently used to change ICTs? Zooming in on these questions not only allows for an investigation of how the articulation of users' implicit knowledge can contribute to STS literature on the "innovativeness" of users , but is also relevant for Living Lab practitioners; how can these labs engage users to employ their knowledge to benefit R&D instead of "merely" configuring users in a certain role to validate their own practices?

'Pre-User' – Following the Fabrication of a Relational Concept. *Ditte Nissen Storgaard, Oticon and University of Southern Denmark*; *Janet Kelly, Novo Nordisk and University of Southern Denmark*

When envisioning future technologies, design and innovation processes often focus on the relation between technologies and users in an everyday practice. Our industrially embedded PhD project, on the other hand, was initiated based on the idea that understanding the practices of people before they become users of a technology could also contribute to design and innovation processes. The project involves a collaboration between the two disciplines of anthropology and design, working in partnership with two medical device companies. In this paper we will demonstrate how throughout our ongoing process of exploration, analysis and re-envisioning of practice, the concept of 'pre-users' has been fabricated both as a means of selectively attending to our empirical field of study and as a tool for design. We have focused our attention on zooming in on existing everyday practices in settings where a specific medical condition surfaces as relevant in peoples' lives, e.g. the methodic ways patients "do" being patients in the clinical encounter; while attempting to envision new configurations of people and technologies in these setting. By tracing the connections to the concept throughout the project, we will show how the idea of pre-use has shaped and interacted with our process, and how understandings of existing practices and visions of alternative futures elaborate each other.

Negotiating autonomy and responsibility for autonomous military robots. *Merel Noorman, University of Virginia*

Central to the ethical concerns raised by the prospect of increasingly autonomous military robots are issues of responsibility. If human beings are no longer able to directly control these robots, can they still be held responsible for the results of the machines' behavior? This paper analyzes two different conceptions of machine autonomy in the discourse on future military robotic systems in order to bring into focus what it is at stake when it comes to the autonomous nature of robots. The first part of the paper provides a background for the analysis and discusses recent developments in unmanned aerial vehicles and how and under what conditions tasks are delegated to automated

systems. This discussion shows that what automated systems are designed and allowed to do is dependent on existing responsibility practices. At the same time, the delegation of tasks to automated systems is accompanied by a redistribution and renegotiation of responsibilities throughout the broader sociotechnical system. The second part of the paper then analyzes two different interpretations of machine autonomy in relation to the delegation of tasks. The first interpretation describes machine autonomy in terms of further automating particular well-defined complex processes, whereas the second emphasizes the ability of machines to adapt to their environment and to translate a given goal into tasks to be performed without human intervention. These two conceptions imply that different approaches to the delegation of tasks have to be negotiated with existing practices of and perspectives on responsibility.

218. 3.11 and the structures of risk: Experts, politics, and social vulnerability

9:00 to 10:30 am
Solbjerg Plads: SP207
On March 11, 2011, a powerful earthquake and tsunami struck Japan, causing severe damage and a nuclear power plant accident. Although the situation has changed with time, a state of emergency persists. Assessing the responsibility of experts sits at the center of inquiry aimed at understanding why the disasters--particularly the nuclear meltdown and radiation release--were so destructive. Structures of risk-taking nurtured by technical experts, regulatory officials, and elected officials are prime targets of research for STS scholars, particularly in light of the vulnerabilities exposed by the 3.11 disasters. Yuko Fujigaki will focus on the responsibility of experts by examining the actions and discourses of experts and academic societies. In particular, she will focus on their responsibility in view of the fact that their predictions, expectations, and assumptions were wrong. Scott Gabriel Knowles will focus on the major formal investigations into the Fukushima disasters. He will examine the politics of expert investigation and the possibility that the Fukushima inquiries may reach beyond the limits of conventional patterns of blame and reconciliation often seen in technical disaster investigations. Miwao Matsumoto discusses the Fukushima accident as a "structural disaster." "Structural disaster" indicates the failure of the science, technology, and society interface, and he offers an account of the disaster from sociological perspectives. Ryuma Shineha focuses on social vulnerability following 3.11. He will focus on the negative correlation between the severity of damage and the economic situation of towns. His points will make clear a variety of social gaps regarding 3.11 related to the damage, the economy, and information.

Chair:
Gabrielle Hecht, University of Michigan

Participants:
Experts' Responsibility on 3.11. *Yuko Fujigaki, University of Tokyo*

In the 2011 joint plenary of HSS (History of Science Society), SHOT(Society for the History of Technology) and 4S on "Fukushima," the audience was amused when Hugh Gusterson showed a picture of a Japanese government press conference, and said that the "Japanese Government continues to announce dis-organized knowledge." It leads to a question: what is "organized knowledge" in the context of 3.11? The Science Council of Japan insisted on "unique" or "unified" knowledge, however, organized knowledge is not the same as unique/unified knowledge. This paper will analyze the meaning of organized knowledge and will consider the relationship between organized knowledge and social responsibility of scientists. The paper also examines the differences of meaning among "prediction," "expectation," and "assumption." The report of the Japan Nuclear Energy Safety Organization "predicted" the loss of the electric power supply to the cooling system of nuclear power plants by simulation on October 2010, six months before the 3.11 disaster. However, this situation was not "expected" in the decision-

making system and this prediction was not used in the countermeasure plan for disasters in nuclear power plants. It is also pointed that the height and power of the 3.11 Tsunami was beyond the experts' "assumption," so more than 50 people died in spite of their evacuation based on their "disaster drill." The paper will analyze the responsibility of experts in the case that their "prediction," "expectation," and "assumption" were wrong.

Investigating 3.11: Fukushima and the Politics of Expert Inquiry. *Scott Gabriel Knowles, Drexel University*

STS scholars have analytical tools that reveal disaster investigations and the technical experts who direct them as more than neutral arbiters of "the facts" of a disaster. Disaster investigators are instead players in a drama that will ultimately determine an acceptable narrative of a disaster. Facts are good, but facts (when did the reactor melt down, what was in the safety manual?) will never overwhelm the more irrational, contingent, and highly contextual demands of a society to have what its most powerful actors deem appropriate. As Sheila Jasanoff argues: "What we know about the world is intimately linked to our sense of what we can do about it, as well as to the felt legitimacy of specific actors, instruments and courses of action." (Jasanoff, 2004) With this caution, we might reflect that disaster investigations are themselves conditioned by the very forces that created the risk and enabled the disaster in the first place. This paper examines and compares the major investigations of the Fukushima disasters. A technical investigation directed by engineer Yotaro Hatamura was the first, and was commissioned by the Japanese government. All interviews were voluntary, "without compelling legal force," and according to Hatamura, "determining responsibility wasn't one of our goals." Two other expert panels will be considered: the Fukushima Nuclear Accident Independent Investigation Commission (NAIIC) and the Rebuild Japan Initiative Foundation (RJIF). The NAIIC and RJIF investigations, while focused in part on matters of technical explanation, are not composed of technical experts with strong commitments to the socio-technical status quo of "big nuclear" Japan. With commitments to broader governmental and regulatory reform, these two investigations may break out of the more common mode of disaster investigations in which the investigation calms the public for a return to high-risk business as usual.

The "Structural Disaster" behind Success or Failure. *Miwao Matsumoto, University of Tokyo*

This paper argues that the Fukushima accident cannot be fully understood simply as the result of an unexpected coupling of the huge natural disasters and human errors, or as the malfunction of the roles played by scientists, engineers, TEPCO officials, NISA officials, politicians, science journalists, science communicators, and others. All of these factors are certainly responsible for the accident, but one of the most important aspects seems to be missing. That is the aspect that could be called "Structural Disaster." "Structural Disaster" indicates the failure of the science-technology-society interface rather than that of science or of technology or of society. The concept was developed by the author in 2002 to give a sociological account of the repeated occurrence of the failure of a similar type. In particular, it was developed to clarify a situation where novel and undesirable events happen but there is no single agent to accuse and no place to allocate responsibility for the events and to prescribe remedies. This paper attempts to show that the Fukushima accident can be described and analysed as "Structural Disaster" in a manner that is freed from an opportunistic narrative with hindsight. The success or failure of science, of technology, and of society cannot be overlapped mechanically. Based on this insight, the sociological implications of a structural contradiction between heterogeneous agents in the Fukushima accident, among other things, will be suggested for further comparative studies on various disasters in the science-technology-society interface.

Vulnerability and Inequality: A Case Study of the 3.11 Disaster.

Ryuma Shineha, Graduate University for Advanced Studies

The earthquake and tsunami on 11 March 2011 caused terrible damage to the Tohoku region in Japan. The number of deaths was more than 16,000, and the damage and repercussions still continue. When we consider this matter, it is obvious that we should not avoid the aspect of "social vulnerability." Risk of hazard pertains to more than the hazard itself. Risk of hazard consists not only of the impact of hazard but social vulnerability as well (lack of access to information, infrastructure, power, and economic disadvantage). In fact, on 3.11, there was an inequality of damage according to economic status and quality of infrastructures among local sites. This presentation focuses on the vulnerability of the 3.11 disaster. Through the analysis of macro data on damage and social statistics, we found the structural problems behind 3.11. We found a clear negative correlation between damage and economic status at the level of the local town. What this means is that areas with economic disadvantages and an aging population are vulnerable to damage in this context, and this is related to the disparity of the Japanese society. In addition, there is another gap concerning information. The vulnerable on 3.11 were also information-vulnerable. The majority of the information society occupied areas of the non-damaged city, and the people in these areas were focused on the nuclear power plant accident in Fukushima. As a result, the center of interests in the society quickly moved from "damage of tsunami" to "nuclear power plant accident." Thus in our opinion, we have to re-focus on the 3.11 damage and its background problems. What kinds of matters have been missed, and what kinds of social problems exist? We have to consider the social structural problems behind 3.11. And STS as a metascience should not only treat the NPP accident itself, but also consider the viewpoint of its social effects on discussions and policies concerning disasters.

Discussant:

Gabrielle Hecht, University of Michigan

219. (14) Beyond finality: design and displacement of death in biomedical practices - I

9:00 to 10:30 am
Solbjerg Plads: SP208
Chairs:

Klaus Hoeyer, University of Copenhagen
Linda F. Hogle, University of Wisconsin--Madison

Participants:

Finality Undone: an introduction to the panel. *Linda F. Hogle, University of Wisconsin--Madison; Klaus Hoeyer, University of Copenhagen*

Through which practices do conceptions of death as a point of absolute finality emerge? Who participates in them, how do they acquire authority, for whom and with which consequences? Answering such questions inevitably invites studies of how any settled end can become subject to renewed negotiation. This presentation introduces a panel organized in order to focus on those people who seek to move beyond finality and thereby design new points of finality while displacing others. If death is popularly imagined as the inevitable end, we explore biomedical fields in which death becomes re-designed, extended, negotiated, pressed, transfigured and questioned. We explore what it does to conceptions of the good life and the proper death, and we explore the political, economical, cultural and organizational contexts for the questioning of death as finality. We attend to the material practices through which the finality of death is probed; the material artifacts to which people attach their aspirations; and the ways in which technologies act as agents for change in our encounters with what might otherwise have seemed as existential premises. How does hope, aspiration and moral reasoning interact with material artifacts and biomedical technologies in re-

writing death temporally, hermeneutically and perhaps even ontologically?

The Politics of Intimacy: Rethinking the End-of-Life Controversy. *Anna Durnová, University of Vienna*

"End of life" is a controversial political phenomenon worldwide. Current discussions on the care of the terminally ill and on self-chosen death challenge what was once considered to be natural. In this paper, I suggest a new analytic path to understand the end-of-life controversy: the analysis of acknowledgment of emotions that enter the debate on both the individual and the collective levels. Two empirical case studies – one in France and the other one in the Czech Republic – uncover a conflict between self-governing practices shaped by acknowledgment of individual's emotions and the public power. The paper summarizes this phenomenon by using the metaphor "politics of intimacy." This phrase recalls Foucault's empowerment of the self that shows that power and meaning are negotiated by means of practices that the individual adopts, rejects, or revises. "Politics of intimacy" attributes a key role to acknowledgment of emotions in the negotiation of the meaning of "end-of-life". The proposed analysis combines STS literature with discourse linguistics and follows how the individual acquires and acknowledges meanings in a specific time and place and how these meanings assume privileged positions in collective interpretations of what proper or good "end-of-life" is. Through the lenses of the acknowledgment of emotions the paper reconstructs by that the dynamics of current controversies on end-of-life.

Informatic Selves and Information-Theoretic Death. *Abou Ali Farman Farmaian, Department of Anthropology Bard College*

What becomes of death when life is conceived to be constituted by information, when the informatic convergence of NBIC stands as a leading paradigm for understanding and intervening into life itself? I explore this question through an ethnography of US-based Immortalist groups seeking to radically extend lives by scientific means, employing the techniques of A.I., neural nets, and cryonics. The key premise in these efforts is that the precise pattern of atoms in the brain both constitutes and represents the self. Thus, in what they call the 'information-theoretic definition of death', as long as that pattern, understood as 'information', is recoverable then a person cannot be called irreversibly dead, since some future technology might be able to reconstitute it. Function and biology, then, no longer provide sufficient criteria for the evaluation of death, so death becomes largely an information recovery and engineering problem quite aside from the vexing problems of animation or consciousness. The notion of an Informatic Self changes what is assumed about the person, what may be done to the body. Cryonicists dispose of the body and preserve the brain as a 'suspended' person, claiming certain rights for it. Computational immortalists preserve information about their selves in databases, or mind-files (sometimes 'spacecast' via satellite). The concept of information is ontologically unstable and it is precisely this property which in use allows it to perform a function of moving beyond the limits of dualities like animate-inanimate, matter-immaterial which have been key in the ontologies of life and death determination.

Can death be re-designed? A theoretical experimentation with the concepts of agency and finality in stem cell science on Alzheimer's disease. *Lotta Hautamäki, University of Helsinki*

The processes of beginnings and ends of life are blurred in the hopes invested in stem cells' regenerative potential to delay brain degeneration and death in on old-age onset neurodegenerative diseases like Alzheimer's disease. In this paper, I will conduct a theoretical experimentation with the concepts of agency and finality, by taking the future-oriented expectations of stem cell research and innovation on Alzheimer's disease as a case example. Stem cells are expected to prolong and enhance the life

of a human being whose personhood is marked by the inevitable degeneration of memory, cognitive functions and emotions – and finally death. Via this empirical example, I will discuss the notions of agency and finality by pondering how is the specific material artifact, a stem cell derived from human embryo or through genetic reprogramming of somatic cells, agential? How is this material artifact expected to be mediating in the process degeneration and death of human agency? Is the concept of death, as something ontologically and temporally final, re-designed in the attempts to delay the processes of brain cell death, the death of the organism and the death of the personhood? This theoretical paper draws from preliminary work in my post-doc research, which is part of a project convened by doctor Mianna Meskus. The project "Pluripotent science: Use of stem cells in the creation, assistance and prolonging of lives" is studying the expectations of new stem cell based medical interventions into infertility, children's diabetes and Alzheimer's disease.

220. Problematizing collaboration: Assessing experience, expectations, and outcomes

9:00 to 10:30 am
Solbjerg Plads: SP210

This panel considers scientific collaboration from a variety of STS perspectives and methods. It includes papers that consider: how interlocutors in a laboratory study define collaboration and what responsibilities collaborators have to each other, the emotional and affective aspects of collaboration, issues of trust in collaboration between students and advisors, and the connections (and tensions) between interdisciplinarity and collaboration. While collaboration is a longstanding object of interest in scholarship on science/technology, there are some little explored dimensions (such as those examined by papers in this panel) that suggest the need for returning to some basic questions. What do scientists mean when they talk about collaboration? How do emotions, power differences, gender, and disciplinary divides get "managed" in collaboration? Can qualitative and quantitative research on collaboration speak to similar "problems" in collaboration or not? The panel is intended to contribute to conversations that should be of broad interest and applicability for STS scholars.

Participants:

Hot Spots and Hot Moments in Scientific Collaboration. *Edward Hackett, Arizona State University*; *John Nathaniel Parker, National Center for Ecological Analysis and Synthesis*

Knowledge-Intensive Work: A Trust Based Model. *Simcha Jong, University College London*; *Sebastiano Massaro, University College London*

Interrogating Collaboration: How Chemical Scientists define Collaboration and Responsibilities to Collaborators. *Jennifer Croissant, University of Arizona*; *Laurel Smith-Doerr, Boston University*

Knowledge production is an increasingly collaborative endeavor. Research on co-authorship, for instance, shows that the number of coauthored papers is rising in every disciplinary field (Wuchty, Jones and Uzzi 2007). And while classic laboratory studies inform us about epistemic cultures (Knorr Cetina 1999) and the creation of facts (Latour and Woolgar 1979), not enough is known about how "collaboration" is perceived and managed by scientists. This paper explores the dynamics of collaborative knowledge production by focusing on researchers in the Chemical Sciences in two settings: an academic Chemistry lab, and a research group employing chemical analysis in a biotechnology company. The data come from semi-structured interviews and observations at lab meetings. In this project, the investigators do not define collaboration a priori, but instead allow interlocutors to describe their experiences with collaboration and develop their own working definitions. In the

interviews, collaboration appears as a fairly static category, both as a problem (how to overcome the difficulties in collaboration, or barriers to collaboration) and as an approach (some scientists are more collaborative than others). In the ethnographic observation, collaboration is more dynamic. The chemical scientists perform collaboration in meetings in ways that seem to fall along a spectrum of "more" and "less" intense collaboration, as evidenced by differences in language, tone, and non-verbal behavior. Collaboration is sometimes contracting and sometimes expanding (such as in who is included in collaboration). Gendered organization and ethical issues, broadly construed, are found to play a role in this contraction and expansion of collaboration in the two settings.

The Different Facets of Diversity: The Case of 'Interdisciplinarities' and Their Contrasting Effects on Scientific Impact. *Ismael Rafols, University of Sussex*; *Alfredo Yegros-Yegros, Universitat Politecnica de Valencia*; *Pablo D'Este, CSIC-UPV Ingenio*

Research projects benefit from integrating various type of knowledge (interdisciplinarity). Such integration requires coordination, which impose a burden on the project. A number of scholars have proposed that there is a trade-off between the "gains" and the "costs" associated with knowledge diversity. However, diversity is a not a linear property; it has three aspects: the number, the balance and the disparity of the categories considered. How does each of these aspects of being diverse ('interdisciplinarities') effect the scientific impact research? In this study we investigate the effect of disciplinary diversity of references in publications in the number of citations. The results suggest that publications with highest scientific impact, have a specific type of diversity: they draw mainly on various bodies of knowledge in their cognitive proximity, but only in small amounts from distal fields. Two interpretations are proposed for the findings, one in terms of the costs associated with coordination of disparate knowledge, a second in terms of bias by readers against cognitively diverse publications. Implications for collaborations are discussed.

Discussant:

Kelly Moore, National Science Foundation

221. Beyond dual-use (part 1): Reconsidering the civilian-military connection

9:00 to 10:30 am
Solbjerg Plads: SP212

This two part session invites STS scholars to explore the concept 'dual-use' and (re)consider its utility in the articulation of relationships between science, technology and society. Part One addresses dual-use 'designs' at the interface between civilian and military innovation systems. The concept dual-use was established in the Cold-War context in relation to concerns about international technology markets and the security environment. Its adoption emphasized the relationship between military capacities and civilian technologies and provided the conceptual and practical means to manage this boundary, by enabling or constraining the transfer of sensitive technologies from one sector to another. In the past, STS analyses have provided insight into the dynamic influence of dual-use designs on various aspects of the 'military industrial complex' including technological trajectories, arms control policies and geopolitical boundaries. This session calls for a resurrection of STS contributions to the analysis of 'classic' dual-use issues. For instance, participants may be interested in the long-term implications of particular design practices or in the intricacies of civilian-military integration, technology transfer or conversion. They may look back to the design of dual-use technologies, products or processes with new information or insight or look forward at the potential outcomes of dual-use systems. The objective is to challenge assumptions about the dual-use designs in relation to the formation and operation of civilian-military innovation and on aspects of society, politics and the economy. (Re)considering the civilian-military connection thus goes beyond assessing the dichotomies of technologies but explores the dynamics of

constructing new networks, categories and identities.

Chair:

Keelie L.E. Murdock, Rathenau Institute

Participants:

Changing Civil-Military Relationships in the Naval Shipbuilding Industry. *Haico Te Kulve, University of Twente*; *Wim Smit, University of Twente*

Due to the changing international security environment since the ending of the Cold War, defence-oriented industries have undergone a number of transformations, such as a reshuffling of roles of civil-oriented and defense-oriented actors in the development and production of new defense systems. By contrast to for instance military aerospace, little attention has been paid to changes in naval industry. Historically, the naval industry has had distinctive features that set it apart from other defense-oriented industries, like high initial procurement costs and relatively small numbers of platforms commissioned. Another factor is that military aerospace and defence electronics industries overlap substantially with the trans-national civil industry in these sectors, whereas naval shipbuilding has been mainly nationally oriented. This paper focuses on which changes in the naval shipbuilding industry have occurred (if at all), in particular what has been the role of relationships between civil-oriented and defense-oriented actors in such change processes. For our analysis we use the systems of innovation perspective as a heuristic. We show that the naval sector has been predominantly driven by actors and institutions operating at the national level which has resulted in a closely knit network of the navy, government and naval yards. We argue that the close network is opening up to what can be called a 'dual capacity network' with a relatively larger role for civilian actors and innovation processes, operating at an international scale. The mechanism behind this is that defense-oriented actors and activities 'retreat' and transfer roles and responsibilities to civilian-oriented actors.

Constructing the Military User of Dual-use Technology. *Judith Reppy, Cornell University*

Science studies has had much to tell us about the interplay between the design of new technologies and its users, but there has been relatively little work on the military user of dual-use technologies. Historically, the policy interest was in military technologies that were transferred or spun off to the civilian sector; more recently dual-use technologies have been seen as a way for the military to take advantage of civilian innovations, particularly in information technology, which have flourished under market conditions very different from those in the defense sector. These technologies were typically procured as components—e.g., microchips or computer modules—which were then incorporated into standard military hardware. The most recent technology transfers, however, go further, in that consumer technologies, such as smart phones and social media, have been appropriated for military use. This new development raises questions about how to imagine the military user, now no longer located in the Pentagon bureaucracy, but actually the soldier on the battlefield. What freedom does the individual soldier have to influence the development of the technology? What will be in the impact of social media on traditional lines of command and control? What surveillance methods will be used to insure that the devices are safeguarded from capture or hackers? My paper will discuss these questions in the context of the history of earlier communication technology, such as telephones, and the resistance of military organizations to cultural change.

Anthrax, SALT and Suspect Biological Weapons Research: Geopolitics and STS. *Brian Balmer, University College London*

How well does Science & Technology Studies tackle geo-

political issues? My paper addresses this question through a historical case study of a potential breach of the 1972 Biological Weapons Convention, based on recently declassified documents from the UK and US archives. In 1979 an outbreak of anthrax occurred in the Russian city of Sverdlovsk, killing numerous people; the city was also the site of a military facility suspected by the west of undertaking biological weapons research. As news of the outbreak reached the west in 1980, first the US, then the the UK – at the behest of the US – approached the USSR to seek clarification about what had happened. The diplomatic path followed by the two nations involved a tricky balancing act, requiring attention to the souring of East-West Relations in the wake of the Soviet invasion of Afghanistan, the integrity of the Biological Weapons Convention, and the remote but nonetheless real possibility of ratifying the SALT II nuclear negotiations in the USA. At the same time, diplomatic tactics depended on epistemic issues: how to tell if the disease outbreak was natural or not, how to decide what evidence was needed? In short, how to know for sure what had happened? Through an exploration of the issues at stake in this case study, this paper is intended to provoke a discussion about whether STS has sufficient theoretical tools to bring new insights to the final decline of East-West détente and, more generally, to geo-politics.

Revolutionary Technology and International Security. *Jürgen Altmann, Experimentelle Physik III, Technische Universität Dortmund*

Fundamental technological change has influenced the relationship between societies/states throughout history. 65 years ago nuclear weapons created the imperative to avoid great-power war, 50 years ago arms control began. After the Cold War more agreements were concluded, with increasing use of on-site inspections. But international efforts to augment the Biological Weapons Convention with a compliance protocol faltered, mainly because verification would be too intrusive for relevant states, fearing for commercial or military secrecy. Now nanotechnology and converging technologies are appearing with the promise of revolutionising how we produce, live, maybe even who we are. Possibilities for hostile use/misuse will be many, by armed forces and by small groups or individuals. 20-cm missiles could down aircraft, new biochemical agents could be synthesised in somebody's basement, microrobots could kill important persons or by swarms render strategic weapons unusable. Such dangers can be contained within societies because the state sets rules and has the monopoly of legitimate violence to enforce compliance. Not so on the international level – here voluntary prohibitions by international treaty are needed which in turn would require extremely intrusive verification, essentially anytime anywhere. If states could not agree on this, drastic destabilisation and an open-ended arms race has to be feared. An alternative method of providing international security would be fundamental change in the international system, endowing democratised UN with a monopoly of legitimate violence similar to the status within states. Threats from technological developments in the next decades may help to convert such ideas from "futuristic" to necessary for the survival of civilisation.

Discussant:

Samuel Evans, Havard University

222. (106) The shaping of international regulation and local practices

9:00 to 10:30 am
Solbjerg Plads: SP213

Chair:

Michael Soegaard Joergensen, Department of Management Engineering, Technical University of Denmark

Participants:

International Standardisation and Local Participatory Dynamics

: The INTERNORM Project. *Christophe Hauert, University of Lausanne*; *Marc Audétat, University of Lausanne*; *Danielle Bütschi Häberlin, University of Lausanne*; *Jean-Christophe Graz, University of Lausanne*; *Alain Kaufmann, University of Lausanne*

This paper presents a pilot project (INTERNORM) funded by the University of Lausanne (2010 – 2013) to support the involvement of civil society organisations (CSO) in international standard setting bodies such as the ISO. It analyses how a distinct participatory mechanism can influence the institutional environment of technical diplomacy in which standards are shaped. The project is an attempt to respond to the democratic deficit attested in the field of international standardisation, formally open to civil society participation, but still largely dominated by expert knowledge and market players. Many international standards have direct implications on society as a whole, but CSOs (consumers and environmental associations, trade unions) are largely under-represented in negotiation arenas. The paper draws upon international relations literature on new institutional forms in global governance and studies of participation in science and technology. It argues that there are significant limitations to the rise of civil society participation in such global governance mechanisms. The INTERNORM project has been designed as a platform of knowledge exchange between CSO and academic experts, with earmarked funding and official membership to a national standardisation body. But INTERNORM cannot substitute for a long-established lack of resources in time, money and expertise of CSOs. Despite high entry costs into technical diplomacy, participation thus appears as less a matter of upstream engagement, or of procedure only, than of dedicated means to shift the geometry of actors and the framing of socio-technical change.

Analyzing Imposed Management Systems Pragmatically or by contrasting 'Program and Practice'? *Morten Bonde Ubbesen, Aarhus University, Denmark*

Requiring organizations to implement standardized management models such as ISO 9001, is a common way of governing at a distance. Research shows, that in organisations faced with such requirements, a decoupling between system and practice often occur, rendering the system ineffective as it does not contribute to substantive performance. In other scenarios the systems' management rationalities colonize organisations in ways that impede professional norms and common sense. Demonstrating gaps between the programmatic intentions behind such systems (fx quality improvement) and the practices in which they are installed, is a dominant approach when analyzing the practical consequences of imposed management systems. I argue that such a 'program-versus-practice' framing, ignores potentially interesting aspects of what these systems do as performative entities. This argument is based on examples from my field studies in Denmark's National Environmental Research Institute (NERI). NERI is responsible for calculating and reporting to the UN, the amounts of CO2 emitted from Danish sources. Following the Kyoto protocol, NERI is required to implement an ISO 9000 based Quality Management System (QMS) to guide this work. On the one hand, the system can be understood as a decoupled and ineffective system. On the other hand, the system can be understood pragmatically as a performative entity that stabilizes relations between NERI and the UN Climate Panel, by making it easier for people on both sides to do what is expected of them. As such, it becomes less clear whether the QMS is productive or not.

Governing global health: the World Health Organization and the global tobacco treaty. *Katherine E. Kenny, University of California, San Diego*

The field of global health has drawn much interest from philanthropic donors, international organizations and academic programs over the last few decades. Two features that are often

mentioned as characteristic of this new field are its reliance on public-private partnerships in combating health threats that transcend national boundaries and its focus on emerging and re-emerging infectious diseases such as SARS, tuberculosis and malaria. Yet one often-cited global health success, the World Health Organization's Framework Convention on Tobacco Control (WHO FCTC), appears at first glace to conform to neither of these trends. The FCTC, the world's first legally binding global health treaty, addresses non-communicable diseases (those caused by tobacco use) and operates through the seemingly antiquated avenue of the nation state. Yet the FCTC simultaneously engages a range of diverse actors including philanthropic, multilateral and civil society organization. In this paper I use the institutionalization of the FCTC as a case study in contemporary global governance of health. I ask: to what extent does the FCTC continue in the tradition of post-war international public health and to what extent does it embrace practices associated with early 21st century global health? Drawing on official documents of the central organizations, the public health literature and interviews with key actors, this paper contributes to STS studies of the epistemic assumptions, political imperatives and ethical impulses that ground the emerging field of global health as well as studies of the coproduction of knowledge and governance on a global scale.

Curbing Stubborn Objects: The challenge of probiotic innovation to regulation. *Nina Margareta Honkela (ex Janasik), University of Helsinki*; *Mari Niva, National Consumer Reseach Centre, Helsinki, Finland*; *Sari Yli-Kauhaluoma, Aalto University*

In the last two decades, research on the implications of probiotic ('for life') bacterial strains for human and animal health has grown extensively. This research claims that many such strains have beneficial effects in relation to a multitude of immune-system related ailments. Yet, since the introduction of the new EU regulation on health claims in 2006, not a single probiotics-related health claim has gained acceptance from the European Commission. In April 2011, outraged probiotics researchers wrote a statement to European health authorities pointing to the absurdity of the situation. How, then, is it possible that the over 5700 scientific papers published since 2002 are not viewed as providing solid enough evidence for probiotic health claims? This paper studies probiotic health claims as a 'knowledge object' and analyzes the tensions and clashes between two epistemic communities – the marketing community and the regulatory community – centered around a common knowledge object in flux. Our study thus participates in the growing stream of research both in STS and organizational literature on knowledge objects and our aim is to make a contribution to the ongoing discussion on how objects change from 'epistemic' to 'technical objects' – or indeed refuse to do so. Based mainly on interviews and document analysis, our study identifies and discusses the reasons for the persistent stubbornness of probiotic innovation to regulatory processes of standardization and control. We especially point to the partially incompatible views on what counts as 'health effect' espoused by the two communities.

223. Methodologies and theories of scale

9:00 to 10:30 am
Solbjerg Plads: SP214

Our historical moment faces economic systems, power structures, and ecological problems at both microscopic and planetary scales. As such, STS literature is rife with discussions of "the politics of scale," "scalar strategies," "scalar fixes," "scalar jumping," "scaling down," "scalography," "scalar devices," "scalar practices" and "the ethics of scale." In these discussions, the crux of the problem is often methodological. Scientists, designers and STS scholars require methods that deal with timescales of thousands of years or fractions of seconds, and sites the size of nanoparticles or planets. Moreover, we need theories of how things relate within and across these scales. As we work through these

issues, we question whether scale is an ontological thing with its own qualities and materialities or whether scale is an epistemological, analytical framework and tool. Different disciplines and methodologies deal with these questions in various ways. Thus, STS scholars deal with scale twice in their work. First, we must trace what scale is and how it is addressed by actors within our case studies—in the case of this session these include endocrine disruptors, telescopes, ghosts, government assessment metrics, and global e-waste circulation. Then, we must think of how our own methods and theories of relations between parts and wholes, instances and phenomena, space and time address problems of scale. This panel includes scholars who whose STS work deals with scalar methods and theories in geographical, anthropological, economic, scientific, environmental and everyday terms.

Chair:

Max Liboiron, New York University

Participants:

Emerging Phenomenon and Scalar Fallacies. *Max Liboiron, New York University*

Scale is not about being big or small. At different scales, different relationships matter. In the last two decades, there have been heated contests over the meanings and methodologies of scale, not the least because our historical moment faces economic systems, power structures, and ecological problems at global and planetary scopes. In these contexts, the use of the term "scale" is often unreflective and scholars inadvertently create "scalar fallacies," particularly in the realm of environmental advocacy, management and design, where the scale of the problem and the scale of the solution are mismatched. This paper considers the case of plastic pollution to investigate the stakes of methods of scale as plastic waste exceeds conventional scales of pollution measurement. In the Pacific Ocean gyre, plastic outweighs plankton by more than six to one. Indigenous peoples and polar bears living the Arctic can carry such high concentrations of industrial chemicals in their bodies, including plasticizers, that they can be classified as toxic waste when they die. Plastic chemicals are on Mars, where they have leached from exploratory equipment. Every body, ocean, and landscape that scientists have looked into has contained plastic or plastic leachates. These materials will outlast the human species. How does one study such a phenomenon? And, more importantly, how do these studies impart knowledge of scale so that actions that activists, advocates, and policy makers wish to bring against plastic pollution "fit" the scale of the problem?

A Topological Approach to Social Innovation Measures. *Ann-Christina Petersen Lange, Goldsmiths, University of London*

This paper brings sociological expertise to the understanding of valuation of social innovation. I investigate the tools and methods of measurement (rankings, indexes, listings etc.) used in the assessment of governmental initiatives and explore the implications of these initiatives for the making of social order and the measure of value. These tools aim to translate social, public, environmental and civic values into calculable and comparable entities, which in turn affect an integration of such issues previously excluded from government policy. That is an infrastructure that enables influence and authority to be felt across proximity and distance. Topology is a key concept for this study emphasising the problem of scale claiming that the evaluating tools might not be considered external in time and space, but participate in the networks they aim to measure (Lury and Wakeford 2012). Different from previous research within the social sciences the aim is not to improve the tools of measure by increasing its 'predictive fit' (Stark 2011). Instead, this study gives pivotal role to the tools and methods of valuation as not merely metrics but also resources, insofar as it does not adopt external measures of size by which to measure the movement, growth or diffusion of innovation. A topological approach allows me to explore, not only the measure of scale, but also to analyse the tools and methods of valuation as devices of scaling.

Scalar Work and Scalar Regimes: The Patterned Production of Scale as a Property of Objects and a Quality of the Mundane. *Charles Camic, Northwestern University; Christopher Steele, Northwestern University*

How is it that we live in worlds structured and ordered by scale? And not only worlds that appear susceptible to particular scales – that seem to afford the possibility of scaling – but also worlds in which scale, per se, appears as an intrinsic and unavoidable quality of mundane reality? In this paper we pursue an ethnomethodological perspective on these questions in order to develop a sensitizing theoretical framework – drawing on preliminary empirical materials from an investigation of scale and scaling in the social sciences. In particular, we propose three concepts that we believe may contribute to research into the epistopic of scale (cf. Lynch, 1993). First, scalar devices: the textual, material, and conceptual tools that 'reveal' the position of objects along certain scales; that render those positions easily observable-reportable; and that sometimes perform an inversion, by which the scalar properties established through scaling come to appear as their own cause and justification (cf. Latour & Woolgar, 1986). Second, scalar work: the forms of mundane reasoning (Pollner, 1987), and skilful praxis, by means of which scaling is achieved and scale in general produced and maintained as a mundane quality of the world. And lastly, scalar regimes: observable-reportable patterns of scalar work that characterise certain domains of activity, delimit the forms of scalar device, scalar work, and scaling that may be performed, and produce particular forms of scale-as-a-mundane-quality. We explore some implications of these concepts for the study of ontological politics (Mol, 1998) and the generation and circulation of knowledge.

Scale, Size, Complexity and Electronic Waste. *John Lepawsky, Memorial University of Newfoundland.; Charles Mather, Memorial University*

How do we fit our detailed and carefully collected research findings into the 'bigger context'. It is not so easy to do this when following electronic waste (e-waste). These are objects that have been ejected from the formal economy. They are not captured in standard commodity chain frameworks. The statistics on the trade of electronic waste are not readily available on global statistics sites. The challenge of fitting e-waste into bigger contexts is partly what makes waste such an important thing to think through. Waste in the form of e-waste troubles the normal way of doing social science, where normal is the fitting of our specific research findings into broader processes. Recent research in STS is helping us to write and think about the trouble we are having in understanding electronic waste through standard social science approaches. This thinking questions the axiomatic relationship between scale, size, and complexity where the small is presupposed to be simple and local, and the macro is large and complex. It points to the possibility of new ways of understanding complexity. In this paper we experiment with some of these alternatives for writing the world(s) we research, alternatives we felt compelled to consider in the middle of our research on electronic waste. We argue that following the action of electronic waste, and perhaps other forms of waste as well, compels us to stop and reconsider fundamental approaches to scale, size, and complexity in the social sciences.

The very large and the very small: perspectives from animism and astrophysics. *Istvan Praet, Roehampton University (London)*

This paper compares animistic and scientific ways of conceiving phenomena that unfold at different scales. First I examine how Chachi Indians of NW Ecuador envisage different magnitudes of misfortune: everyday anxieties and more exceptional catastrophes. Victims of fearful encounters with ghosts are treated with minimal effort (uttering a short spell suffices) but occasional earthquakes or floods are followed by much more

elaborate rituals. Yet, the degree of elaboration is never understood in terms of varying complexity. Ordinary instances of fear are – so to speak – miniature catastrophes while 'big' catastrophes are merely enlarged versions of 'small' fears. This implicit refusal to distinguish between the simple and the complex is a key feature of animism; no scale is more fundamental than any other in this context. However, the belief that it is possible to make such a distinction pervades contemporary science. For example, there is a broad but curiously unquestioned consensus that the quantum world is more fundamental (and hence ultimately simpler) than everything that takes place on, say, the human scale or the galactic scale. By means of an ethnographic study of astrophysicists at the European Southern Observatory in Munich, I examine that deep-rooted assumption. More specifically, I focus on their usage of the Very Large Telescope, an advanced, ground-based optical instrument located in the Atacama Desert (Chile). A central question is: in how far is their way of dealing with immensely large astronomical phenomena imperceptible with the naked eye different from animistic techniques of dealing with the invisible?

224. Spaces of anthropoietic knowledge: Where the human is known

9:00 to 10:30 am
Solbjerg Plads: SP216

With concepts such as "inscription/de-scription (Akrish) and "ontological commitment" (Verran) STS has over the past decades succeeded in moving away from understanding science and technology as products and instruments of individual human (mental) endeavours. Process- and practice-oriented approaches to science and technology have been developed that provide a more complex understanding of these phenomena, as distributed and as circulating across socio-material assemblages. On this basis it is timely to start re-introducing the human in STS. That is, without compromising the insights of science and technology as distributed and processual. The session seeks to discuss ways of thinking about the human in STS. It does so by attending to spaces where knowledge about the human is generated. It discusses a broad range of spaces such as science, regulation, court and media-technologies such as books, picutres, classification reports and measurement apparatus. How is the human conceptualised and practiced in these spaces? How can we as STS scholars conceptualize the human on the basis of the anthropological knowledge we investigate in practices of science and technology? Concepts of the human will be discussed through the analysis of genuine empirical material.

Chairs:

Estrid Sørensen, Ruhr-University Bochum
Christina Brandt, Ruhr-University Bochum

Participants:

Concepts of 'Transhumanism': Perspectives from the history of sciences. *Christina Brandt, Ruhr-University Bochum*

This paper will focus on historical transformations of knowledge about the "human" that developed at the intersection of life sciences, philosophical reflections and literary writings. The development of gene technologies as well as theoretical movements in 20th century life sciences have challenged our notions of 'what it means to be human' in radical ways and in a variety of modes. In this paper, I will explore the history of an amalgamation of views that propagate a technological driven, fundamental 'transforming' or 'transcending' of mankind and that are discussed as "transhumanism" today. The first part of the paper will analyze the work of the biologist Julian Huxley, who coined the term "transhumanism" in the late 1950s. The concept of transhumanism (as it was introduced by Huxley) will historically be analyzed in the context of evolutionary theories, practices of emerging genetics, and utopian literature that developed in the first decades of the 20th century. The second part of the paper will trace the shifts in the 1960s and 1970s when cybernetics and molecular gene technologies gave such ideas a new impetus.

Body images in times of social upheavel: Iconography and Governance. *Miriam Eilers, Ruhr-University Bochum*

The body is an obvious condition of the human life span. At the same time it is an entity which needs to be redefined in every epoch, depending upon the particular society in which man is placed. In my paper, I explore how body images are circulated via popular scientific books. My research focuses on the question, how can the iconography and design of popular scientific publications be understood as a practice that displaces one body image with another? I analyse the way in which pictures convey both knowledge about the body and what is wanted by their recipients. Thus popular scientific publications become a space of anthropoetic knowledge, evidencing the aims of governance through pictures and their relationship to the viewer and the society in which they are placed. This case-study starts in 1922. Jewish German author Fritz Kahn (1888-1968) aimed at a health education derived from a classic humanist image of humanity. He published his bestselling series „The life of man" in the 1920s and illustrations from these books (such as „Man as industrial palace") were widespread throughout Germany. Kahn was forced to emigrate in 1933. His books were burned by the Nazi regime but his illustrations didnot disappear: They were adopted in the NS health-education programme and as such they became part of a system that had a completely different aim which was directed towards changing attitudes and behaviour in a programme of eugenics.

ECG: „reading the most intimate secrets of the human heart". *Uwe Wippich, Ruhr-University Bochum*

In literature as well as in religion and even everyday culture the human heart can be addressed as the very part of the body containing a special space of production, processing and storage of what makes the human human. But apart from the variant metaphorical and symbolic cultural use of the term heart, the human heart is a myogenic muscular organ which bears its own electrical conduction system. With the ECG an ensemble of media-devices was developed to "read the most intimate secrets of the human heart", as Wilhelm Einthoven wrote to his friend Alexander Samojloff. But what secrets are these and what does the ECG reveal? The lead of an electric current representing the frequency and the rhythm of the heart led to a non-invasive technique of diagnosis of cardiac problems. But for clinical purpose the instrument first had to "escape the laboratory" (Bart Grob). It then gained a monitoring function under surgery, nowadays also providing telemedical monitoring of the heart via mobile phones. A telemedical usage that was already part of Einthovens ECG-media-ensemble. While first mathematically constructed the ECG-curve became iconic and is used in dramatic moments in popular media. The talk follows some of the practices of design and displacement connected to the ECG and outlines their role in framing anthropoietic knowledge, above all when it comes to questions of life and death – and to the "most intimate" secrets of the heart.

Knowing Children in and through Computer Game Regulation Practices. *Jan Schank, Ruhr-University Bochum*

In Germany, regulation of media contents is closely tied to social assumptions about abilities of persons interacting with media products. This is particularly obvious in those practices of regulation taking their starting point from concepts of "Youth Protection". Here, children appear as the "raw material" of society and protecting their "education and development" (which is how the relevant law states its objective) is central to the direction in which society will develop in the future. In political and public debates over the past decades, computer games have emerged as a particular source of "detrimental effects" to children's "education and development". In this context, German governments in particular have been engaged in regulating children's access to games in order to prevent children to be harmed by the games they play. Against this background, the

contribution will inquire into the specific ways of knowing children involved in the practice of classifying computer games: how are (potentially) harmful game-child relations constituted and managed in practice? How are children and childhood conceptualized in and through this practice? I will approach this question by way of in-depth analyses of written rating decisions from the German classification agency USK, aiming to discover this organization's practical methods and resources for generating "harmful" game-child relations as a phenomenon that can then be recognized and acted upon by others (most centrally producers/publishers in decisions about whether or not to appeal the decision, but also professional analysts).

The hybridity of anthropoietic knowledge in court. *Estrid Sørensen, Ruhr-University Bochum*

As a result of an Entertainment Merchants Association challenge of a California law represented by Senator Brown to restrict the sale or rental of violent video games to minors the US Supreme Court concluded in November 2011 that the law violated the First Amendment and it permanently enjoined its enforcement. Experts of media effects with long track records of high-profile publications on the harmful effects of violent video games were called as witnesses in the court. Generally, their expertise was rendered insufficient and irrelevant by the judges. The paper compares the logics followed by the court in coming to this conclusion compared to the logics followed by aggression researchers. Central to these differences are the different anthropoietic concepts of the individual/actor with whom the court and the aggression researchers operate. In coming to a decision the Supreme Court needed to decide on 1) whether the notion of "violent video game" is factual and on 2) the implication of the materiality of the representation form, i.e. if it matters if violence is conveyed through writing, film or video games etc. It is analysed how the court produced knowledge of the human as a co-configuration of legal knowledge, scientific expertise, the status of materiality and criteria of factual knowledge.

225. The multi-layer thinking to advance universal design in the 21st century

9:00 to 10:30 am
Solbjerg Plads: SPs01

Demographic changes and new legislation represent new demands for more inclusive, universally designed products, services and environments. Likewise multicultural societies and new lifestyles require better and different customer insights. By considering new target groups such as older persons, people with different ethnic and cultural backgrounds and people with impaired functional ability, products, services and environments can be made more relevant and more effective for all. Universal Design is being presented as a solution towards creating environmental, products and services accessible to everyone. Yet there is insufficient evidence based design to demonstrate the effectiveness of the designs and to understand how people actually use these manmade urban spaces. Yet up to now Universal Design has been based on definitions and principles. We are now at the stage of implementation which puts these definitions and principles under fresh scrutiny of what they mean and how can they be applied. At the same time there is a need to clarify the philosophical bases for the acceptability of Universal Design which includes social, administrative, economic change, material as well as cultural. There is a danger that "Design" may be perceived as a top-down framing and shaping of devices and environments, conveying a tinge of technocracy and paternalism that does not fit in the picture we have of the new sets of common values. It is crucial to consider how will UD fit into the emergent values of the 21st century?

Chair:

Mark Dyer, Trinity College Dublin

Participants:

Philosophical bases for the acceptability of Universal Design.

Michel Puech, Sorbonne University, Paris, France

The philosopher's role in this debate can be to clarify the philosophical bases for the acceptability of UD and possible smart moves to improve it. The acceptability issues concern social, administrative and economic change, which are material as well as cultural. My point is that, in the end, all of them are also ethical. In that context a tension can be perceived between the Universal and the Design of Universal Design. "Universal" access and inclusive devices are up with the trend of "Technology 2.0 ": with more participative and really empowering the user. However, "Design" may refer to the top-down framing and shaping of devices and environments, conveying a tinge of technocracy and paternalism that does not fit in the picture we have of the new sets of common values. It is crucial to consider how will UD fit into the emergent values of the 21st century? The discussion can help enlarge the list of natural matching features and then complete the list of acceptability challenges for UD. This may be an antidote rather than in the abstract as people still see UD very close to disability only and in particular physical access? As stated by an architect at a recent debate "Yes to access, but not everyone is in a wheelchair. Why should every door be so large in a new building?"

Building for All: Evidence Based Research. *Mark Dyer, Trinity College Dublin*; *Thomas Grey, Trinity College Dublin*; *Eoghan O'Shea, Trinity College Dublin*

Even though it is recognised that cities, neighbourhoods and buildings should be designed for people, there is a scarcity of evidence based research to demonstrate the effectiveness of the designs and to understand how people actually use these manmade urban spaces. The disconnection between design and occupancy becomes even more acute when the users may have a particular physical or cognitive limitation due to temporary or permanent illness or disability as well as the general effects of ageing. To address the gaps in knowledge and understanding about the effectiveness of urban design, a series of field based research studies have been undertaken to explore two particular aspects of the built environment. The first project is a field investigation into the concept of Shared Space, Shared Surfaces and Homes Zones where different users and modes of transport share the same physical space. The diverse range of user groups included children, wheelchair users, partially sighted or blind, elderly, cyclists and motorists. The research projects produced two significant results. The first outcome was the consultation process itself which achieved an unusually high level of stakeholder engagement and co-ownership. The second outcome was the result of ethnographic studies in Dublin City which revealed the effectiveness or otherwise of different street design and navigational features which will be trialled in future pilot studies into urban regeneration schemes. The second research project has a broader perspective and aims to develop a rating system for the universal design of buildings. Although the aim may appear deceptively simple, the project demands a rigorous methodology to capture users' response to different physical or cognitive thresholds in buildings that may impact on accessibility. The project has the potential on the one hand to allow user groups to be more selective about the buildings or public spaces they choose to use. The project also has the potential to develop generic knowledge about the effective design of building types that moves beyond merely aiding improved access to buildings but allows the user to enjoy the full architectural experience.

Implementing Universal Design as part of International/National Policy. *Gerald Craddock, CEUD NDA*

Quoting Mahatma Gandhi "A policy is a temporary creed liable to be changed, but while it holds good it has got to be pursued with apostolic zeal. " To deliver on this zeal requires a multi

layered/deep approach that is supported by diverse stakeholders in order for a new paradigm to be embraced and implemented at a national level before it becomes stale and outmoded. Policy is about creating a clearer understanding of what we know. This is the "knowledge brokerage" layer which synthesises the philosophy and research into meaningful, precise and easy to apply legislation and regulation and at the same time supporting the delivery of strategies such as codes of practice, guidelines and standards. Up to now Universal Design has been based on definitions and principles. We are now at the stage of implementation which puts these definitions and principles under fresh scrutiny of what they mean and how can they be applied. The two concepts of time will be critical in the success of this phase. The first is timing and being strategic in inputting at the right time new design thinking into legislation, procedures, protocols or policies. The second is realising the length of time that it can take to deliver the required systems change. This happens as a result of quality materials and practices that can be demonstrated to show a positive impact on the lives of all citizens.

The Relisation on the promise of a Universal Designed Country.
Onny Eikhaug, Norwegian Design Council

Demographic changes and new legislation represent new demands for more inclusive, universally designed products, services and environments. Likewise will multicultural societies and new lifestyles require better and different customer insights. By considering new target groups such as older persons, people with different ethnic and cultural backgrounds and people with impaired functional ability, products, services and environments can be made more relevant and more effective for all. By involving these target groups in the design and development process in terms of lead users, designers will be inspired and challenged, resulting in new perspectives and unexpected ideas that can lead to innovative, more user friendly concepts. Such a people-centred approach in the design and development process is a low cost, low tech, and profitable way to innovate. This is also true for public institutions serving a wide diversity of clients and citizens. This people-centred, universal design strategy can lead to more innovative solutions better for everyone, give competitive advantages for business in crowded markets and also meet the needs of previously untapped market segments. Trade and industry can therefore be a driver for change and improve life for more people, by applying a people-centred universal design strategy. Universal Design is therefore a strategy that benefits society, business and the individual. It can ensure participation and equal access (transport, work, information, leisure). UD improves the quality of life for more people, which also has commercial value and a socio economic impact. Cost benefit analysis in Norway has documented that this is profitable as well as better, more efficient for more people.

226. (70) Science and the impact of organizational practices - I
9:00 to 10:30 am
Solbjerg Plads: SPs03
Chair:
Finn Hansson, Copenhagen Business School, Dept. of MPP
Participants:

Merit, Expertise and Measurement. *Paul Wouters, Centre for Science and Technology Studies, Leiden University*

The history of science and technology indicators can be understood as a recurring process of design, displacement, and redesign. The Science Citation Index was designed mainly as a bibliographic tool (Wouters, 1999). A process of gradual displacement resulted first in a set of new analytical tools for quantitative science studies and subsequently in performance indicators. These are now routinely used in research assessments.

In this process, the citation indexes have been redesigned repeatedly. I will analyze the next redesign in STI indicators by presenting the new research programme of the Centre for Science and Technology Studies (CWTS). The programme introduces new approaches to scientometric research. First, we move from a longstanding tradition of data-centric methods towards a systematic theory-based framework. We explore the potential of alternative forms of metrics ("alt-metrics"). Second, we increasingly base indicator development on the systematic analysis of scholarly practices rather than on general statistical arguments. We analyze the impact of research assessment exercises, and the performance criteria applied, on the primary process of knowledge production. Third, we explore the possibilities and problems in assessing the societal impact of research ("social quality"). Increasingly, this dimension is becoming the second pillar of research evaluation next to scientific impact. Wouters, P. (1999). The Creation of the Science Citation Index. BOWDEN, M.; HALIN, T.; WILLIAM, R. Proceedings of the 1998 Conference on the History and Heritage of Science Information Systems. Information Today Inc, 127-136.

When Scholarship is Measured. University Researcher's Perception of Performance Indicators. *Poul Erik Mouritzen, University of Southern Denmark*; *Niels Opstrup, University of Southern Denmark*

By Poul Erik Mouritzen & Niels Opstrup Department of Political Science University of Southern Denmark Following an international trend Denmark in 2010 implemented a performance-based research funding system with the official aim to enhance research productivity and quality. An important factor for the success of such systems is how they are perceived by university researchers. Under certain circumstances extrinsic incentive systems may actually reduce motivation and work effort rendering the incentive system with little, no or even negative effects. A crowding-out effect may occur if the system is perceived as an instrument impairing self-determination. As shown by Lotte Bøgh Andersen and Thomas Pallesen (2008) economic incentives may indeed have a negative effect on the number of publications in scientific journals if introduced in a culture where it is interpreted as a control measure. Based on survey responses from 1650 Danish university researchers (response rate = 60 %) collected in the first months of 2011 this paper will examine perceptions of the National Bibliometric Research Indicator which is used in the formula for allocating funds to Danish universities. It is expected that perceptions vary with sex, age, position, self-perceived future career, main area, homogeneity of discipline and knowledge of the indicator. The paper to our knowledge represents the first attempt to assess the perceptions of the group targeted by performance indicators at the time when the indicator is introduced.

The impact of indicators - how evaluation shapes knowledge production. *Sarah de Rijcke, Leiden University*

At present we know little about how quantitative performance indicators shape knowledge production. This is surprising given the increased impact of these indicators on research evaluation. Interestingly, the medical sciences seem particularly responsive to indicators. In the Netherlands, the earliest Dutch science policy document on assessing the sciences focused on the medical sciences. The document was the first to overthrow peer review as the sole source for research assessment (Wouters 1999). Since then, the use of indicators is increasingly favored over peer review by policy makers. Another sign of this tendency is that the medical sciences are appraised yearly via professional bibliometric research assessment – an unusual rate compared to other fields. Furthermore, only the medical sciences are obliged to state the average impact factors for their field on grant applications. The great scientific and societal relevance of the field underlines the importance of analyzing costs and benefits of working with quantitative metrics. How do bibliometric and

other performance indicators affect knowledge production itself? Biomedicine partly overlaps with health care, providing the opportunity to better understand the generic roles of performance indicators in professional work (care work compared to research work). Both can be studied in the same institutional framework. In the paper I will share preliminary results of ethnographic fieldwork at one of the Dutch university medical hospitals. Rather than treating these indicators as a priori of knowledge making, I ask what scientometric indicators are constitutive of in terms of ways of knowing, performance measurement, and standards for evaluation processes.

Can we design a tool box for quality assessments in the SSH?
Thed van Leeuwen, CWTS - Leiden University; *Paul Wouters, Centre for Science and Technology Studies, Leiden University*; *Sarah de Rijcke, Centre for Science and Technology Studies, Leiden University*

Discipline wise and local evaluation practices are put upon scholars and scientists of different backgrounds. In research assessments in the natural, life and medical sciences (NLMS), bibliometric tools are often used in combination with peer review. Current assessment procedures are often modeled on the NLMS, which might be disadvantageous for the social sciences and humanities due to its divergent communication practices. Who decides which communication types 'count' in research assessment procedures? What are the effects of changes in what is considered as proper scientific output on the SSH? This paper discusses recent attempts in the Netherlands to shape assessments that can serve the agenda of SSH researchers in a more varied way (and not only the agenda of deans and funders for example). It does so by discussing the recent reports from the Academy Councils on quality assessment in the SSH and a recent study performed by CWTS on a university wide impact assessment, including the social sciences, history and philosophy. These examples highlight some of the difficulties faced when attempting to make the SSH accountable (as traditional bibliometric techniques do not work here), but also offer new possibilities by including information from the internal research information system. A variety of scientific communication types (books, chapters, journal publications, conference papers, theses, magazines), but also prizes, memberships of editorials boards and review panels became available. Although a good step forward, collaboration with scholars in the SSH is needed to further delineate the lines according to which they want to be evaluated.

227. "Voices from within and outside the South: Defying STS epistemologies, boundaries and theories

9:00 to 10:30 am
Solbjerg Plads: SPs05
This session addresses the emerging sub-field of development STS, while featuring cross disciplinary research on three major developing world problematics - sustainable agriculture, Foreign Aid, and new ICTs. As a collection, these papers form the basis for a proposed special issue of Science, Technology and Human Values.

Chair:
Raoni Rajão, Federal University of Minas Gerais

Participants:
Sustaining the enterprise: Enacting sustainability standards for Tanzanian tea. *Allison Loconto, Institut National de la Recherche Agronomique/Institut Francilien Recherche Innovation Societe, Université Paris-Est Marne-la-Vallée*
Standards that codify sustainability, such as Ethical Trade, Fairtrade, Organic and Rainforest Alliance, have become a common means for value chain actors in the Global North to make statements about the values that their products and the practices of producers in the Global South. This case study of Tanzanian tea value chains engages the dialogue with the current literature on performativity and the recent debate in science and technology studies over the relevance of this approach in developing country contexts. I argue that in order to understand how the value of codified sustainability is being practiced in countries that were not party to its codification, we must take seriously how sustainability is enacted in the various local contexts that constitute its actor-network. Social, environmental and economic development are considered core indicators of certified sustainability and practices in Tanzanian tea value chains illustrate that sustaining the enterprise, sustaining the tea quality and sustaining adaptability constitute multiple 'sustainabilities' in practice. This case study illustrates the value of performativity analysis in understanding practices in multiple and diverse locales.

Conceptualizing "Voices from within and outside the South."
Raoni Rajão, Federal University of Minas Gerais; *Ricardo B. Duque, St. Cloud State Univeristy*; *Rahul De, Indian Institute of Management, Bangalore*

The global South, that is the region outside of Western Europe and North America, has been historically neglected by social scientists studying science and technology (STS) issues. Since the 1990s however, a growing body of work has critically evaluated the contradictory role of Northern styles of science and technology for development, including the cultural assumptions embedded within them. Social theories have also expanded to consider the ways that local practices shape knowledge and technologies in these unique settings. These kinds of studies have, for instance, addressed the debates concerning the divide between laymen and scientists to the relation between Northern and Indigenous epistemologies, showed the power relations embedded in the use of science in postcolonial settings and questioned the allegedly deterministic relation between technoscience and development. Despite the substantial contributions of this growing body of literature, most accounts concerning the relationship between science, technology and society are still focused in a limited portion of the world. A decade after the first special issue dedicated to STS in the global South, and followed by more recent review articles on knowledge and development and post colonial studies of technoscience, the works included in this special issue represent voices and experiences from the South that at times merge and at others defy traditional STS epistemologies, boundaries and theories. Echoing the conclusions of a 2010 Harvard University meeting on the next 20 years of STS, this present collection underlines the importance of considering closely narratives from outside traditional geographical confines of technoscience studies.

From Coast to Deep-sea: the development of fishing technology and rise of islanders 'identity in Xiao Liu Qiu. *Chunghsin Li, Graduate Institute of History, National Changhua University of Education*

The development and local practice of technology often complicate the power relationship between the colonizer and the colonized due to the social, economic and cultural changes brought by the implementation of technologies. This paper explores this complex interface between modern technology and regional identity by a case study about fishing technology in Xiao Liu Qiu, a small island with an ambiguous sociopolitical status among China, Taiwan and Japan during the Japanese colonization. Under Japanese "southward policy", fishing in Xiao Liu Qiu was transformed from a regional "earn-a-living" activity to a modern socio-political-technological enterprise. Through the construction of lighthouses and refuge ports, the motorization of fishing boats, new technologies for cold storage and land survey, the Japanese government implemented its social and economical blueprint through these infrastructure building. Nevertheless,.this

"successful colonization"at the same time also facilitated the cohesion of the local community and the growth of a strong sense of belonging among the islanders. The increasing population engaged in fishery, the interests of pursuing modern fishing equipments, and the cultivation of the folk religion Wang-Yeh (name of the leading god worshiped by fish men) to worship the fishing tradition, indicate that fishing technology in Xiao Liu Qiu not only served as an effective tool of colonization, but also were practiced innovatively as a "form of life" by the islanders to connect their past to the present, to ease the tension between the colonizer and the colonized, and ultimately contributed to the formation of islanders' local identity.

Discussant:

Rahul De, Indian Institute of Management, Bangalore

228. (15) Designing and imaging life - I
9:00 to 10:30 am
Solbjerg Plads: SPs07
Chairs:

Manuela Perrotta, Norwegian University of Science and Technology
Kristin Spilker, Department of Interdisciplinary Studies of Culture, NTNU

Participants:

Cell imaging/imagining the cell. *Merete Lie, NTNU*

Medical imaging technologies have developed in scale to depicting fragments of human tissue not visible to the eye. Cells, the interior of a cell and even the inside of its nucleus are depicted via medical visualization technologies including electron microscopes with built-in cameras. The preparation and visualization techniques imply integration with digital phototechnics (such as Photoshop as a work tool) and with styles and aesthetics of contemporary computer graphics – at the same time as the images must pursue the styles and standards of scientific illustrations. Increasingly, cell images are used in medical practice to reveal 'your own cells' to the patient, for instance with assisted fertilization and cancer therapy. Human cells are depicted as concrete bodies, thus paving the way for a cultural transformation of the understanding of cells from an abstract notion of the composition of human tissue towards the perception of cells as autonomous entities. The images literally give cells a body and facilitate the study of a single cell and through this cultural transformation they reappear as autonomous and manageable bodies. The paper will discuss the cultural processes of detaching cells from human bodies and the implications of their appearance as individual and autonomous entities.

Body-enacted: Pleasure and Anxiety in Prenatal Screening and Testing in Taiwan. *Li-Wen Shih, Sociology Department, Lancaster University, Lancaster,UK*

This paper discusses Taiwanese pregnant women's experience of prenatal screening and testing (PST), and how that experience affects their relation to the foetus, medical professionals, PST technologies and their families. When conducting fieldwork in Taiwan in 2009, I observed that many pregnant women felt excited in seeing the image of the foetus on the ultrasound monitor. However they also worried a lot about the issues of health and sex of the foetus. It seems that this relates to the construct of women's responsibility and decision making subjects. Their pleasures and anxieties provoked me to investigate their PST experiences, and also how PST is practiced in Taiwan. Drawing on ethnographic study, which included participating in 83 women's PST, 33 interviews and 30 drawings from interviewees, this paper explores how pregnant women interact with, and situate themselves in relations to, PST. It suggests that Taiwanese women's engagement with and experience of PST are never passive but full of complexities.

Employing Donna Haraway and actor-network theory's material-semiotic approaches, it shifts our views of understanding women's agency in relation to biomedicine. Alongside academic discussions about women's relation to reproductive technologies, this paper wishes to provide an account on how PST shapes and reshapes women's relations to PST technologies, the foetus, their families and medical professionals through technoscientific practices. In the end, it contributes and extends to Western feminist technoscience studies by bringing Taiwanese women's experiences to international feminist discussions.

Holding life together: Home-made and professional designs of egg cells and sperm cells. *Kristin Spilker, Department of Interdisciplinary Studies of Culture, NTNU*

This paper will discuss empirical material from a recent fieldwork in a Norwegian fertility clinic (NorFer). The fertility clinic is a site where gender and bodily differences are crucial components of the core business, and as such a good place to look for exploring how people of different professions ascribe meaning to bodily tissue that are specific to the male and female body. Men and women who came to the NorFer clinic were well-informed about the interior of the human body, and quite often had theories about the reasons for their own fertility problems. Still, the medical examinations in the clinic brought about new and extensive information about their reproductive cells as well as about other complex connections in the course of human fertilization. Egg and sperm cells were visualized, and measured according to both quantity and quality in trained and routinized ways. This analysis will focus on how the couples and the staff of the clinic ascribed meaning to the numbers and qualities of the egg and sperm cells, and how the attributes of the cells referred to functional and esthetic values. Moreover, some couples carried these meanings out of the clinic and integrated them with a wider understanding of everyday practices and sense self-identity.

Embryos-in-the-making: the creation of life in reproductive laboratories. *Manuela Perrotta, Norwegian University of Science and Technology*

Assisted reproductive technologies (ARTs) developed quickly and broadly in the last decades, producing a number of new options that challenged the definition of kinship and parenthood, as well bodies and gender relations, and even culture and life itself. ARTs have been sharply criticized and often ethically and morally condemned for the manipulation of human life in the labs as well as for the international marketing of human bodily tissues. Notwithstanding the criticisms, however, the spread of fertility clinics and the increase of the number of patients who undergo reproductive treatments had grown exponentially all over the world and ARTs are nowadays globally accepted as a concrete alternative for overcoming unintended childlessness. The aim of this contribution is to deconstruct the myth of the production of life in reproductive laboratories. As many other kinds of cells, in fact, embryos have a limited "life" in culture. They cannot reach the foetal stage outside the womb. Moreover, the same term embryo does not belong to the biological nomenclature that would use terms as zygote, blastocyst or morula. On the base of ethnographic data collected in three reproductive centres in Italy, the contribution will focus on: how the medical conceptualization of embryo is highly dominated by moral and ethical categories; how the ontological status of embryo is built in reproductive centres as well as in other loci; and how the myth of life creation in the lab is partly supported in these centres for organizational reasons.

229. (23) + (31) Configuring Climates - I
9:00 to 10:30 am
Solbjerg Plads: SPs08
Chairs:

Aleksandra Lis, Central European University in Budapest

Ingmar Lippert, Augsburg University
Lea Schick, IT University
Arno Simons, Technische Universität Berlin

Participants:

Under the Dome of Things: Media Art's Engagement with Bruno Latour (Peter Sloterdijk as best man). *marc tuters, University of Amsterdam*

In a recent keynote address to the assembled "Design History Society" in Cornwall --home to "The Eden Project's" spectacular geodesic domes- Bruno Latour (2008) discussed the connections between his project and that of Peter Sloterdijk, the German philosopher and rector of the ZKM (Centre For Media Art) in Karlsruhe. Sloterdijk considers politics as a matter of arranging and assembling artificial "spheres" of safety and immunity, leading him controversially to speak of "cultivating human beings". In this address, Latour defended his colleague against an attack by public sphere theorist Jurgen Habermas, to whom Latour retorted: "when humanists accuse people of 'treating humans like objects', they are thoroughly unaware that they are treating objects unfairly." For Latour, Sloterdijk's Sphere Trilogy (the first volume of which has just been published in English) counters the claims of humanists and phenomenologists alike by revealing the "different envelopes into which humans are thrown". For Latour, both Sloterdijk's sphere's and his own notion of actor-networks provide concepts that bridge the "great divide" between nature and human, science and society, etc. To this end, both thinkers look increasingly towards media art to communicate science to the public. I look at their engagement with new media through Latour's curation at the ZKM in Karlsruhe in 2005 (where Sloterdijk is Chair of Media Theory), in specific those works which illustrate Latour's concept of "the parliament of things", considering how new media art practices see themselves (or at least can be seen) as giving voice to non-human agencies.

Claiming Better Communication. A European public debate on Climate Change. *Giuseppe Pellegrini, University of Padova*

Addressing Climate Change is one of the most important challenges of our times. To develop communication actions with a participative approach in order to better engage citizens in the debate of climate change, fifteen European relevant organisations, scientific centres and science museums were engaged by the European project ACCENT (Action on climate change through engagement, networks and tools) in 2010. To reach this goal, the main instrument introduced has been the "Local Citizens Debate" (LCD), a local meeting involving various actors: scientists from local research institutes, stakeholders, decision makers at the local level, civil society organizations and citizens. In this way citizens have had the possibility of dealing with the local dimension of climate change (at regional and local level) in relation with the global dimension. Throughout Europe, 25 LCDs (Local Citizens' Debates) took place, gathering panels of experts and the public in a three steps discussion. During LCDs, citizens discussed issues among themselves and to exchange views together with a panel of experts including scientists, stakeholders, journalists, local governors. The discussion concluded with a presentation of recommendations for mass media, scientific community, local, national and EU institutions. Feeling of "risk society" and disorientation because of the quick environment transformation raised during the meetings. This presentation will focus on some relevant issues taking into account the different needs of communication on climate change raised form the meetings with particular reference to local and global forces which affect individual and community values.

"Future citizens" discussing issues of today. How do children handle climate change issues in relation to their own lives? *Malin Ideland, Malmö University*; *Claes Malmberg, Malmö*

University

In public discourses on climate change and the future, children are often included as a metaphor for "future citizens", the ones that will take the consequences for consumption and lifestyles of today. At the same time the discourse define them as excluded from the category "citizens of today", since they lack experience, knowledge and responsibility. The question is, how do children themselves use their experiences and knowledge to handle the climate change issue and how do they express responsibility for their lifestyles and actions? In this study, 9-10 year olds in Sweden discuss issues about carbon dioxide reduction. We analyses how they use different discursive repertoires to legitimise or question their 'normal' everyday lifestyles. Conversations from 25 groups of children were audio-recorded, transcribed and coded. Six repertoires were identified: Everyday life; Self Interest; Environment; Science and Technology; Society; Justice. The everyday life repertoire was for example used when they related to the image of 'normal' lifestyle. Science and technological solutions were often suggested as 'magic bullets' to maintain or improve these. Arguments related to environment were commonly superior to other. Findings show that the children were able to negotiate real-world science of the kind used by engaged citizens, and able to discursively handle this complex issue. When the repertoires became in conflict, the children had to 'renegotiate' their own identities, and showed responsibility to change their lives. They positioned themselves as active contributors to society, using scientific ideas, among others, to understand the problems that affected their normal everyday lives.

Sustainable Development as "Troubling" Knowledge in Teacher Education. *Hanna Sjögren, Linköping University*

In this paper, I argue that teacher education marks an interesting case for studies seeking to understand how knowledge about sustainable futures is produced and circulated, thus which imaginaries of the future that are established at the exclusion of others. I further argue that today's inter-connectedness and intra-actions (Barad 2003) with humans and the environment offer a radical challenge to the educational system, both in terms of organizational structures and learning contents. At focus here is the negotiation about how knowledge can be understood in always already times of trans-corporeal relations (Alaimo 2010) and entanglements of e.g. nature-culture, local-global and individual-collective. These negotiations are seen in the co-productive context of knowledge-making concerned with problems that are transgressing conventional disciplinary boundaries in teacher education. I argue that these transgressions offer a challenge what counts as knowledge, a challenge perhaps most vital to those assigned with the commitment to educate future generations – the becoming teachers. Here, questions are raised about the re-conceptualization of responsibility and accountability connected to knowledge and knowledge-production. By using focused group interviews with teacher educators as the method of inquiry, I study how knowledge about sustainable development is negotiated and performed in the context of Swedish teacher education. The interviews reveal the "trouble" that sustainable development creates in teacher education both in terms of establishing what a good teacher is and what can count as valid and desirable knowledge when educating future teachers.

230. New information and communication technologies and old organizational challenges
9:00 to 10:30 am
Solbjerg Plads: SPs10

New information and communication technologies have transformed several longstanding social institutions, from electoral campaigns and political parties to interest groups and new media. Yet, we lack interdisciplinary perspectives and methods for understanding these

changes. While political science and sociology have developed a strong understanding of the various political and organizational processes involved, they have generally ignored technology and treated innovation as an exogenous variable. These fields often pay little attention to the communication infrastructures and technological tools integral to various forms of social action. This panel brings the literature on communication and technology to bear on the changing social and technical contexts of political and journalistic work. These papers take novel methodological paths toward understanding the uptake of new technologies in 'old' organizational settings. All analyze the dynamics between novel tools and forms of expertise and established goals and routines. Together, they reveal how changing constellations of people, tools, organizations, and infrastructure together produce political life. Kreiss analyzes 'computational management' in electoral politics, showing how institutions and organizational practices shaped the uptake of new media tools on the 2008 Obama campaign. Nielsen analyzes the informational infrastructures that shape voter contacts in contemporary American campaigns. Anderson analyzes how ideas of 'public journalism' are embedded in sociotechnical contexts that both enable and constrain relationships between journalists and their publics. Karpf shows how technologies are central to how organizations instantiate membership and political representation and afford "passive democratic feedback" by quantifying members' behavior and attitudes.

Participants:

Developing Technologies of Control: Producing Political Participation in Online Electoral Campaigning. *Daniel Kreiss, University of North Carolina at Chapel Hill*

This paper analyzes the new media managerial practices used by the 2008 Barack Obama campaign for president. Campaigns have long sought to generate online citizen participation in fundraising, messaging, and fieldwork. To help secure these fiscal and human resources, the Obama campaign developed a set of management techniques and data and analytic practices designed to increase the allocative efficiency of resources and probabilistically produce desired actions among supporters. Through in-depth interviews with more than twenty staffers, this paper analyzes the campaign's development of what I call a 'computational management' style, or the delegation of managerial, allocative, messaging, and design decisions to analysis of user actions made visible in the form of data as they interacted with the campaign's media. The paper shows how computational management works through an in-depth analysis of the website optimization practices of the campaign. While these practices and tools did not on their own produce the extraordinary mobilization around the campaign, they helped translate it into staple electoral resources: money, messages, and votes.

From Public Journalism to the Public's Journalism? Innovation and Tradition in the "Next Mayor" Project. *Christopher W. Anderson, City University of New York*

In the early 1990s, a reform movement operating at the margins of the news industry launched a series of initiatives design to reform journalism from within. Calling itself the "public journalism movement," advocates argued that professional journalism had become disconnected from the public it was supposed to serve and had reduced political coverage to a series of shallow reports primarily for political insiders. The paper examines the technological, organizational, and cultural connections between the public journalism and the digital journalism of the 21st century. The research draws upon ethnographic fieldwork and social network analysis, and is part of a larger project analyzing changes in news from 1997 until 2011. Specifically, the research looks at one Philadelphia project-- the "Next Mayor project"-- and analyzes how new technological affordances, personnel work histories, and culturally-grounded notions about what journalism "should be"-- guided the path of the project.

The Technological Basis of Organizational Membership:

Passive Democratic Feedback on Third-Wave Membership Organizations. *David Karpf, University of Pennsylvania*

Membership-based organizations play a critical role in modern societies. They form the bedrock of social movement mobilization, serve as "laboratories of democracy," and support bridging social ties among diverse citizens. Much scholarship in communication and political science has focused on the membership-based organizations. Rarely examined, however, are the underlying technologies that mediate these membership relations. We have moved through three distinct phases of membership organizations – from physical participation to armchair activism, to clicktivism. ICTs have played an underappreciated role in this transition. Membership can be analyzed through three perspectives: organizational, individual, and technological intermediary. This paper combines data from the Membership Communications Project (Karpf 2011) with in-depth interviews to explore how changes in technological intermediaries have influenced modifications from the other two perspectives. It argues that, though individual membership has become a weaker social tie, new ICTs have afforded novel and beneficial forms of "passive democratic feedback."

Conceptualizing interactive technologies as environmental infrastructures. *Heather Wiltse, Indiana University; Erik Stolterman, Indiana University*

Interactive technologies have come to be wrapped up in all areas of life. In addition to serving specific functions, they shape possibilities for action and interaction, and reveal our environment. We do not just use them as tools—we live in and through them. Understanding how this takes place requires ways of conceptualizing technologies not as single, independent artifacts, but rather as components always brought together in holistic ways that are more than the sum of their parts. In this theoretical paper we take up this challenge, drawing on architectural perspectives and a set of case studies in order to conceptualize interactive technologies as constituting environmental infrastructures. Interactive technologies are part of the backdrop of what we see and experience, and what shapes and enables our activities and behaviors—our environment. Together they form a pervasive and relatively stable material base, or infrastructure. We are especially concerned with a specific type of environmental infrastructure that we call architectures of interaction: configurations of interactive technologies that enable people to be mutually aware of each other's presence and activities, and to potentially interact with each other. We conclude by considering the potential analytic benefits of taking such an architectural perspective. These include a conceptualization of the relation between characteristics of digital material and the digital infrastructures they can constitute; a shift in focus and scale, from static, individual technologies to links, assemblages, and interactive spaces; and a way to look at the structure of digitally-mediated perception, activity, and experience.

Discussant:

Daniel Kreiss, University of North Carolina at Chapel Hill

231. (63) Biotechnologies and immigration - I

9:00 to 10:30 am
Solbjerg Plads: SPs12

Chair:

Torsten Heinemann, Goethe University Frankfurt

Participants:

Biological citizenship revisited: The use of DNA analysis by immigration authorities in Europe. *Ilpo Helén, University of Helsinki; Thomas lemke, Goethe University, Frankfurt am Main*

Our presentation broadens the current discussion on 'biological

citizenship', focused on patients' associations and disease advocacy organizations and on the emergence of new possibilities of participation. Our starting point is the fact that modern national citizenship is embedded in 'biology', since nativity, i.e. birthright, constitutes basis of the membership of the nation state and provides criteria for inclusion or exclusion of the person from the political community. Today, ´post national' modes of citizenship related to immigration and articulated in the international treaties on refugees' and immigrants' rights subvert citizenship anchored in the nation state. Through our study of the use of DNA analysis for family reunification, based on documentary analysis, interviews with representatives of NGOs and immigration authorities, lawyers, geneticists and applicants for family reunification in Finland, Austria and Germany, we explore the complicated connections of biological traits to both national and 'post national' modes of citizenship. We show that biological criteria still play an important role in decision-making on citizenship rights and inclusion and exclusion in the nation state. However, in the case on family reunification through DNA-testing, biological criteria may back up 'post national' citizenship and the personal rights of the asylum seeker or immigrant, since the biological tie to his or her family (and not to the nation and the natives) provides the basis the right to enter the country and stay there. At the same time, the use of parental testing by immigration authorities endorses a biological concept of family which may narrow down citizenship rights.

Border Control and the Shaping of a Non-Public. An Actor-Network Perspective on Europe's Technological Frontiers. *Huub Dijstelbloem, University of Amsterdam*

Surveillance of migrants and aliens through the use of biotechnologies is gradually changing the way 'border control' is conceptualized and executed. Firstly, border control no longer takes place at the actual frontiers of Europe, but consists of a proliferation of procedures and practices that are increasingly incorporated in the bureaucratic system. Secondly, border control is not only carried out by governments, but is executed within the context of governance in which state bodies cooperate with private companies and medical organizations. Thirdly, border control increasingly targets the human body. Fingerprints and iris scans are rapidly becoming common ID cards but also bones and DNA serve as storable information in migration policies to determine age or family relationships. As a consequence, Europe's technological borders raise new questions concerning migrants' and travellers' privacy, bodily integrity, mobility, quality of data, information storage and exchange, and opportunities for correction (Dijstelbloem et al. 2011. By applying Actor-Network Theory to the study of borders and border control, this paper aims to make some important ontological changes visible that are currently at stake. The use of these technologies leads to the formation of new groups and new categorizations of people, collecting, grouping and redefining them as unwelcome aliens of different sorts. As a result, not only do concepts such as privacy, identity and bodily integrity need to be re-assessed; technological borders are likely to turn Europe into an Actor-Network State transforming the representation and categorization of citizens and migrants through technological processes into included and excluded publics.

Biopolitics and Ethics at the Greece-Turkey Border. *Ozgun E Topak, Queen's University*

In the last couple of years, the Greece-Turkey border has been heavily criticized by the EU Commission and the member states for being the most porous external EU border, allowing an average of 245 people to cross the border irregularly per day. The deployment of the Frontex in November 2010 was followed by the development of the new digital surveillance mechanisms and the construction of fence in the Evros region. While the Greece and the EU authorities pushed for ever stricter border controls, human rights groups noted the human rights violations, difficulties in accessing to the asylum system and poor health conditions at the detention centers. In this paper, I will first argue that the "body" of the migrant has been central in these developments, which has been screened, recorded, fingerprinted, assessed, sorted or left abandoned to the sickness. Second, I will point out that this concern with the body has largely been driven by the rationalities of biopolitical sorting (Foucault) of the people that are outside of the law (Agamben). In the final part, drawing on the activities of the Médecins Sans Frontières (MSF), the possibilities of the development of an ethics of care and welcoming that could contest the hegemonic biopolitical paradigm will be discussed.

DNA and Immigration: A comparative analysis of DNA testing for family reunification in Austria, Finland, and Germany. *Torsten Heinemann, Goethe University Frankfurt*; *Ursula J. Naue, University of Vienna*; *Anna-Maria Tapaninen, University of Helsinki*

Since the 1990s, many countries around the world have begun to use DNA analysis to establish biological relatedness in family reunification cases. Family reunification refers to the right of family members living abroad to join relatives who hold long-term residence permits in a given country. To be reunited, family members have to prove their family status by official documents (birth and marriage certificates, passports etc.). However, applicants often do not possess the required documents; in many cases, their applications are rejected by the immigration authorities as they question the documents' authenticity. In this context, many countries resort to DNA analysis to resolve cases in which they consider the information presented on family relations to be incomplete or unsatisfactory. Today, thirteen European nations have incorporated the use of DNA testing into decision-making on immigration. In our talk, we will present the preliminary results of an international research project on the use of DNA testing for family reunification in Austria, Finland, and Germany. We outline general trends of DNA analysis for family reunification and analyse the societal and political implications of parental testing. We argue, that the three countries represent different immigration regimes. The argument is based on an extensive document analysis as well as numerous interviews with representatives, international governmental organisations, international and national NGOs and immigration authorities, lawyers specialising on immigration law, geneticists and those applying for family reunification.

232. Affective ecologies I

9:00 to 10:30 am
Solbjerg Plads: SPs13

As both discipline and ontology, ecology is a contested field. The ecological sciences are currently being remade as disciplinary fields and modes of inquiry are stitched together to generate new modes of attention, new scientific objects, and new politics. Ecological concepts are proliferating wildly not only in the sciences, but also in social theories. And as the interdependent relations that engender lived ecologies are increasingly threatened and deemed at risk, they become catalytic nodes fomenting new social movements. This panel intervenes in current debates in STS to examine what work ecological concepts are doing in our analyses. We draw on theories of affect emerging in social theory, geography, and anthropology to explore how attention to "affective ecologies" might interrupt the impoverished capitalist, functionalist, and militaristic logics that are pervasive in ecological thinking in the sciences and beyond. By bringing attention to affective intensities we ask: how might we articulate ecologies differently? How can we hone our attentions to otherwise "imperceptible politics" and "forms of life"? The papers draw attention to the affective entanglements among humans (including activists, artists, scientists, farmers, consumers, and city dwellers), and the nonhumans (including chemicals, plants, insects, soils, worms, microbes, dogs, and cows) that ingather affections in sites as diverse as jungles, farms, laboratories, parks, oceans, and cityscapes. In the process we articulate a wide range of the affinities, repulsions, enmeshments and ruptures that intensify interdependent relations among more-than-human

practitioners.

Participants:

Smell and the City: Mapping the Olfactory Ecologies of Urban Space. *Kelly Ladd, York University*

The smells of a city are only ever remarkable when a particular odour stands out from the ambient nothing that marks our everyday olfactory lives. This lack of smell is not simply an innocent absence but the product of dense bio- or olfacto-political entanglements of public health initiatives and deodorization. Maintaining a constant baseline of "no smell" requires an unending amount of work. This project seeks to uncover the oft-hidden olfactory life of urban space. This is particularly timely as contemporary chemical cartography or smell mapping initiatives are being positioned as vital tools on the war on terror. However, instead of "smell" as the site of control, it is the molecular composition of smell that these kinds of initiatives are monitoring. Here olfactory vigilance becomes molecular vigilance, mirroring Deleuze and Guattari's shift from a macro- to a micropolitics of control. Specifically, I examine DARPA's recent chemical cartography project, an attempt to create "ground-truth" models of the chemical ecologies of urban spaces as a means of demarcating the chemical signatures of "illicit" or bad smells from the ambient absence/presence of a "normal" chemical smellscape. In doing so, I chart the invisible olfacto-politics and affective entanglements between smell, space and bodies because, like the 18th century fears of swelling miasmas and 19th century horrors of foul body of the proletariat, DARPA's initiative reinscribes the relations between odour, animality and pathology that have always been part of the olfactory textures of the city.

Canine Cartography: On the Biopolitics of Poodles. *Peter Hobbs, York University*

Dogs are fags. There is no getting around it or avoiding them. They are constantly having public sex and in ways that brings home the difference between sex and reproduction, and sex and gender. Despite efforts to dress them up as model canine citizens, they will often betray themselves as deviants. Even the spayed or neutered police dog runs the risk of being outed as a sexual outlaw. Doggie style won't be denied. Dogs are in your face, sniffing each other's butts, and perhaps humping your leg. In the combined biting spirit of Michel Foucault and Donna Haraway, this paper maps a biopolitics of canine sexuality. More specifically, I focus on the practice of dogs marking territory with their urine as a form of gay cruising rather than an exertion of control. According to this line of thought dogs use their urine to collectively give shape to a canine public sphere. Dogs are thus presented as agents and subjects of meaning, as a unique assortment of divergent beings who, acting as emissaries or ambassadors, provide us with glimpses of a furry ontology, which is, like all ontologies or worldviews, ever-partial, ever-emergent. This furry ontology, in turn, complicates our notions of both discipline and innateness so that we are forced to acknowledge that, like humans, dogs are neither solely social construction nor biological phenomenon, neither solely docile bodies nor feral spirits. What I am proposing is a speculative mapping of canine sexuality that does not secure scientific or social truths but is more interested in detailing a lively and uncertain terrain.

Exploring the Local Ecologies of Farmstead Cheesemaking. *Heather Paxson, MIT*

Food making is an embodied, sensuous act that contributes to the constitution of places, physical landscapes and locales in and through which people stake affective claims of belonging. This paper examines the making of farmstead cheese — a food crafted by hand and fermentation on a dairy farm — to investigate a North American food politics that seeks to revitalize rural areas through the economic and affective relations of food making, relations that refer us to places such as farms, and to localized,

multispecies ecologies of production. To make cheese is to cultivate a microbial ecosystem. Increasing curiosity among producers and consumers about the identity and role of ambient cheese microbes — ones that are conveyed to the cheese vat in the milk or settle on the surface of cheeses as they ripen — has been fueled by speculation that artisan cheese can embody terroir, the "taste of place," and thus convey the value of particular methods and locations (if not also histories) of production. On this view, the symbiotic life of a cheese offers a microcosm of the social, economic, and physical health of rural communities. If we are what we eat, then attention to "local ecologies" — extending Margaret Lock's notion of "local biologies" — can and should raise questions about environmental justice, agricultural practices, and food safety regulation.

Shifting grounds: recomposing soil ecologies. *Maria Puig de la Bellacasa, University of Leicester; Dimitris Papadopoulos, University of Leicester*

This paper looks at the role of science, social movements and everyday practices in transformations of human-earth relations and more specifically in soil ecologies. We enter the underworld by following an epic protagonist of contemporary soil life: earthworms. One would tend to think that worms are "unloved others" however from Darwin to the contemporary applied science of soil management, scientists have been celebrating them as distinguished creatures of the soil community. More recently, vermiculture has become a crucial practice for lay gardeners and urban composters. The doings of earthworms and other fellows of the soil community such as microbes figure prominently in sustaining the life of the soil far beyond laboratories and scientific publications, in popular science books, blogs and various trainings in organic garderning, permaculture and composting techniques. As we follow these and other invisible inhabitants of the underworld we reconstruct different visions of organization that permeate contemporary sciences of soil ecology. By exploring how different denizens of soil live together we seek to articulate alternative visions of ecology that are less focused on systems, populations and self-organising processes and more on building affective communities that contribute to combating toxicity and to creating common livable worlds of interdependent existences.

Discussant:

Etienne Benson, Max Planck Institute for the History of Science

233. (20) Rearranging research relations: the making of new forms of collaboration between STS and science and engineering - I

9:00 to 10:30 am
Solbjerg Plads: SPs14

Chairs:

Susan Molyneux-Hodgson, University of Sheffield
Paul Anthony Martin, University of Sheffield

Participants:

Between a rock and a hard place: the future of social science engagement with the life sciences. *Paul Anthony Martin, University of Sheffield*

The social sciences are increasingly being drawn into new forms of collaboration and entanglement with a range of science and engineering disciplines, with a growing emphasis on promoting impact, responsible innovation and knowledge transfer. This offers new opportunities for mutlidisciplinary collaboration, but raises fundamental questions about the role, independence and future of STS and other social sciences. As a means of exploring the contradictions and challenges this poses, this paper considers the changing relationship between the social and life sciences in the UK over the last 20 years. Three distinct phases can be

identified: 1) 1980 to mid-1990s: the emergence of the 'ELSI' agenda following the start of the Human Genome Project; 2) Mid-1990s to mid-2000s: the development of the knowledge economy and the growth of the biotechnology regime; 3). Mid-2000s to the present: economic crisis and restructuring. In each of these phases key changes in the broad economic and policy context, the development of new technologies, governance regimes, and the role of the social sciences will be described. Drawing on ideas about the co-production of new knowledge and sociotechnical networks, and the search for legitimacy in the knowledge economy it will be argued that we are seeing the creation of a new political economy of collaboration in which the value of STS is increasingly justified in instrumental terms. In conclusion, some tentative ideas will be offered about the possibility of a post-ELSI mode of collaboration that maintains both a critical stance and the integrity of our discipline.

From an ethics of restriction to an ethics of construction The role of ELSA researchers. *Rune Nydal, Department of Philosophy. Norwegian university of science and technology*

We have experienced a shift in ELSA policies from what we call an ethics of restriction to an ethics of construction. The aim of this article is to analyze how and why this shift has taken place in a Norwegian context. This work is an outcome of an evaluative synthesis study of experiences on ELSA research financed by the Research Council of Norway. ELSA research programs situates socio-humanist research as "part of" large scale R&D initiatives of emerging technologies believed to enable radical socio-economic transformation of our societies. ELSA programs then have come to be an important learning arena for exploring how STS research may engage in the modulation or design of coproduction processes. In order to find ways of responding to these challenges we need to understand how they came about. Socio-humanist researchers are challenged to take on a role as a constructive co-constructor within the ELSA context for three reasons. 1) Better understanding and wider recognition of the nature of the transitions within scientific enterprises that sometimes is referred to as shift from Mode 1 to Mode 2 2) ELSA research communities are also challenged by the output of their own research, following the learning outcome of two decades of ELSA research programs. 3) Given this historical situation ELSA research is attempted integrated in large priority areas at a very early stage which enforce a constructive agenda for ELSA researchers.

Collaboration as a research method? Navigating social scientific involvement in synthetic biology. *Jane Calvert, University of Edinburgh*

It is now common for social scientists to become involved in emerging technologies in their early stages. This is an exciting development that opens up new opportunities for interdisciplinary collaboration, but it also puts social scientists in novel situations that give rise to methodological quandaries. In this chapter, I explore these tensions and dynamics, giving three examples of the various ways in which I have become involved in synthetic biology. I discuss my methodological struggles, and the fact that the new collaborative arrangements and peer-type relationships that I am engaged in do not easily lend themselves to straightforward distinctions between social scientific researcher and scientific informant. I explore resonances with notions of complicity and paraethnography that are currently being discussed in the anthropological literature, particularly the idea that we should think of collaboration itself as a research method. I end by arguing that methodological reflection can be valuable in helping us navigate these new kinds of interdisciplinary interactions between scientists, engineers and social scientists.

Promiscuity and Purity: Some thoughts on collaborative relationships. *Andrew Balmer, University of Manchester*

This presentation will draw on ethnographic work from the past

two years and theoretical concepts developing in STS, deconstruction and performativity. It draws specifically on relationships developed between STS scholars and scientists/engineers in the heterogeneity of 'synthetic biology' in order to reflect on practices and principles of collaboration. In the talk I will outline some trends in the field of STS and synthetic biology as regards 'working with' each other, and some of the complicated entanglements that have come from such engagements. I put forward some of my current thinking regarding 'hospitality' and 'promiscuity' as regards theoretical approaches to mixing disciplines. In doing so, I hope to move away from the language of interdisciplinarity as epistemological synthesis or instrumentalist, object-oriented, problem solving, in order to direct our attention towards the subjects of collaborative work.

234. Situated technological literacy in organisations

9:00 to 10:30 am

Solbjerg Plads: SPs16

Engagement with technology in our work life is a well-known phenomenon in organizational and work life studies. Since Taylors Scientific Management, the impact and possibilities implied with specific technologies has been at the core of interest for studies of processes change and learning in organizations and work life. Earlier and contemporary studies of the meaning of technology and technological skills in industrial workplaces show how any technology demands specific competences and professional approaches. The term 'technological literacy' as it is worked with in the Technucation project addresses this element of technology: "The learnt ability to gain and combine technical know-how together with other forms of social and cultural understanding to identify and qualify opportunities for the use, application and deployment of new and disruptive technologies within a professional context". This way of framing our knowledge production on the use and meaning of technology in modern organizations re-vitalize and re-articulates issues relevant to technology, organizational change and work life: How do the engagements with technology affect our understanding of what it means to be a professional? How does technology use create and change human needs and expectations? How does it affect the professionals' ability to reflect and be innovative? How does sensitivity matter in technological engagements? In this session we wish to address these questions further and draw attention to the engagements with technology as an ongoing everyday practice that very often is collective.

Chair:

Cathrine Hasse, Aarhus University

Participants:

Caring for Plastic – accounting for simulation-based training in nursing education. *Ann Katrine Bønnelykke Soffer, Aarhus University, School of Education*

Within the last ten years, the use of simulation-based training has gained ground in Danish nursing education, and it is increasingly changing professional learning. The aim of this study is to analyze the mediations of the dummies used in simulation-based training, as well as the effect of this type of training on the professional practice of nursing, by asking the questions: How are professional objects, contexts and practices translated and mediated within a simulation lab? I will answer this question by looking at the manners in which connections between the simulation lab and the everyday professional practice at the hospitals are both created and cut, thereby simultaneously generating ties to a professional practice, taking place "out there" beyond the laboratory, as well as constituting the simulation lab as a space in its own right. I shall discuss how these acts of creating and cutting of connections could be said to both localize and transcend the simulation space. These connections take on many shapes, but for the purpose of this presentation, I will narrow the main focus down to connections that are affective in nature. Narrowing the attention of this presentation to that of affective connections is not only due to practical constraints, but

done more so out of an interest in paying attention to an element within an unlikely setting – namely being affect located in a laboratory within interactions between humans and non-humans.

Modes of Ethics in Professionalism - A Study of Moral Literacy in Technological Care Work. *Katia Dupret Søndergaard, University of Aarhus; jo Krøjer, Roskilde University Center*

Our empirical studies of professionals' work show us, how professionals are putting themselves in the place of the other – the clients, pupils, patients, in order to act ethical/make moral choices about the use of technologies etc. By involving Levinas' thinking on ethics as well as Latours principle of generalized symmetry along with the teleological ethics this implies, we suggest a new way of understanding professionalism.Our aim is to point out thatProfessionals engage in moral judgments when using (new) technologies. When doing so, they achieve that radical responsibility towards the other, which Levinas accounts for as being at the very core of ethics. At the same time professionals try to asset the possible consequences of the involvement of specific technologies and adjust their actions in order to secure ethical responsibility (el behavior). Thus, ethics is necessary in order to obtain and sustain one's professionalism. This presents organizations with the challenge – or even the moral prerogative - to design work processes and technology work in ways, that includes a sense of 'The Other', and make ethical choices an indispensable part of professional competence on technology.

Learning Relational Technological Literacy. *Cathrine Hasse, Aarhus University*

Teachers and nurses learn about technologies and their effects in their professional workplace cultures. They do not learn to handle and innovate technologies in their educations. The result is that the professional actors lack agential knowledge of how technologies not only affect work and its organisation but also the very thinking technologies of the professionals. Many view problems with technologies in their professional lives in passive and compliant ways and they do not seek to engage others in their solving contradictions and challenges with multi-stable technological artefacts. I shall discuss how the professional nurses and teachers are in need of learning technological literacy in their educations, which will enable them to develop an agential knowledge of the relational agency needed to handle multistable artefacts (Ihde 2002, Rosenberger 2011). The presentation build on data from the 'Technucation'-project (www.technucation.dk), and I use a combined postphenomenological, cultural-historical and ANT-inspired approach to develop Anne Edwards concept of 'relational agency' (Edwards 2005) so it also take agential artefacts into account.

Teachers perspectives on technology in their teaching practice. *Ann-Therese Arstorp, Aarhus University*

Today, teaching in primary schools is not just about learning to read and count using exercise books and pencils. New technologies like interactive whiteboards and intricate new hardware as well as software swarm the classrooms. As part of the research project Technucation, 17 teachers in Danish public primary schools participated in qualitative research interviews about their use of technology and their thoughts on what they gained or lost by teaching with it. We initially thought, we would be able to detect that individual teachers had different approaches to using technology, and that we from this material would produce a discrete typology of teacher-types and maybe even a taxonomy, but it turned out to be far from the case. In a reading through the transcripts and coding them for differing perspectives on technology, differences did emerge as expected, but there were unexpected overlaps between them. It seemed that teachers had different perspectives on technology but that it was much too complex and context dependable to be separated in to different types of teachers. In trying to honor the teachers' actual statements and differences but also in giving them a voice

(Davies, 1999; Hastrup, 1995), we decided to describe them as having different, context dependable perspectives on the use of technology. We have divided them into four main approaches: 1) The intuitive, 2) The hesitant, 3) The efficient and 4) The appendix. These teacher's perspectives will be used as a model for further research in the teaching and nursing professions in the Technucation research project and contributes to the existing research by challenging the typologies that usually constitute the field of research into technological literacy (eg. Beynon, 1992; Garmire & Pearson, 2006).

Approaching dimensions of technology in practice: Forming an ecological view from the views of teachers and nurses. *Jamie Wallace, University of Aarhus*

This paper presents a view of a practice oriented technological literacy inspired from an ecological perspective. The metaphor of ecology is used to explore practitioner / technology concerns and the way their exchanges are shaped and changed over time under the influence of multiple factors. By considering the views of both nurses and teachers taken from the 'Technucation'-project (www.technucation.dk), this approach is adopted to model practitioners attitudes towards their arrangements of technology in order to propose criteria suitable for developing technological literacy within vocational education and workplace learning.

Discussants:
Peter-Paul Verbeek, University of Twente
Don Ihde, Stony Brook University

235. Entanglements of science and justice (part 2)
11:00 to 12:30 pm
Kilen: K143

Panel Abstract: This panel began as an NSF-sponsored workshop held in 2011 in order to bring together scholars from a wide range of disciplinary and epistemological perspectives in order to share, and ultimately construct, frameworks for how both to theorize and operationalize "justice" in our research. This is a companion session with Entanglements of Science and Justice: I. Here we will present exemplars-- a few of those attempts of how to consider and attend to the meanings, uses, and social consequences of ethical questions and justice ideals in technoscientific projects. Are "justice" and "ethics" merely objects of analysis in STS research? Or should and how can we incorporate considerations of (in)justice into our research? We will present on key substantive issues in STS that specifically engage justice questions. These will include concerns about cultural recognition and competing moral claims by different stakeholders about issues including the causes of environmental degradation and the availability of reproductive health care services. We will also look at embedded justice concerns in the use of new technologies including prenatal genetic diagnosis for sex selection and the use of medical algorithms for decision-making. Together, we want to offer examples of conceptualizations, engagements, and questions raised in and by justice as a framework in STS. Panelists: Damayanti Banerjee (University of Tennessee, Knoxville) dbanerj2@utk.edu Vanessa Hildebrand (Case Western Reserve University) vaneesa.hildebrand@cwru.edu Michelle McGowan (Case Western Reserve University) michelle.mcgowan@cwru.edu Kelly Joyce (William and Mary College) kajoyc@wm.edu Discussants: Jennifer Fishman (McGill University) jennifer.fishman@mcgill.ca Laura Mamo (San Francisco State University) lmamo@sfsu.edu

Chairs:
Jennifer Fishman, McGill University
Jennifer Fishman, McGill University

Participants:

Morality, Justice, and Biomedical Obstetrics: Views from a Rural Indonesian Clinic. *Vanessa Hildebrand, Case Western Reserve University*

This paper looks at notions of justice and universal human rights as a driving factor in global aid programming goals for greater

access to biomedical reproductive health care for women in high MMR and IMR regions. Based on ethnographic data from rural Indonesia, this paper explores the entanglements of morality and the use of biomedical obstetric care in the work of clinic midwives and their interaction with the targeted patients. While global and national reproductive health programs anchor their goals on the moral reasoning that all women have the right to biomedical obstetrical care, this discourse falls flat among women in rural Indonesia. Rather women analyze reproductive health outcomes and weigh use of various sources of obstetrical care using local reasoning based on ideas of fate, health and wellness, and magic. This paper argues that because ideas about justice and universal human rights are used as a foundational force for implementing biomedical programs, a sense of moral rightness becomes attached to the work of the midwives and the acceptance of biomedical obstetrics. Thus when women do not use the biomedical services and technology to the extent assumed by program officials, they are deemed as lacking a "will to improve" and are seen as morally deficient. Implications of different discourses about justice and morality as associated with biomedical obstetrical care will be discussed. ¬

Justice in the context of family balancing. *Michelle McGowan, Case Western Reserve University*

The justice implications of non-medical sex selection and family balancing have garnered much attention in the bioethics and feminist literatures. However, prospective users' viewpoints have been largely absent from discourse over the socially acceptable bounds of the use of in vitro fertilization and preimplantation genetic diagnosis (IVF-PGD) for non-medical sex selection. This presentation reports on a qualitative study of prospective users of IVF-PGD for non-medical sex selection, and provides a unique set of empirically-grounded perspectives on the moral values that underpin prospective users' conceptualizations of justice in the context of a family balancing program in the United States. The results indicate that couples seeking IVF-PGD for sex selection understand justice in individualist and familial terms rather than in terms of social justice for the women and girls of the world or for children who are the product of sex selection. This presentation will explore the implications of the finding that couples who participated in this study voiced a less commonly articulated perspective in the bioethics and feminist studies literatures, specifically that an individual's desire for gender balance in their family is ethically complex and may not be inherently sexist, immoral or socially consequential, particularly given the social context in which they live.

The Ethics of Algorithms. *Kelly A. Joyce, College of William and Mary*

Algorithms have captured the social imagination, showing up in a variety of popular press articles in the United States as well as in academic, medical, and scientific scholarship. Such stories highlight anxieties about the agency of algorithms as these are seen to take over significant decision-making processes in society or alternatively emphasize the certainty and positive outcomes produced by the use of algorithms. This paper explores the ethics and values embedded in medical algorithms. It focuses in particular on the Texas Medication Algorithm Project [TMAP], which began in the mid 1990s. The Texas Department of Mental Health and Mental Retardation, pharmaceutical companies, and the University of Texas Southwestern were key stakeholders in TMAP. The project developed a medical algorithm for the pharmacological treatment of individuals with bipolar disorders, schizophrenia, or major depressive disorder. The paper demonstrates how ethics and values are integral to the design and content of TMAP and contributes to an STS understanding of the social shaping of algorithms.

The New Sexual Politics of Cancer: From Oncoviruses to Sexual Health. *Laura Mamo, San Francisco State University*; *Steven Epstein, Northwestern University*

Recent work on "social knowledge" (Camic, Gross, and Lamont, 2011) juxtaposes it with natural science rather than examining the spaces of intersection of natural and social knowledge. In this project, we consider how transformations in understandings of disease risk can drive an investment in and uptake of social knowledge in the field of public health. This intermingling of natural and social knowledge characterizes what we describe as a "sexualization of cancer." In recent decades, at least six so-called oncoviruses have been causally linked to a variety of cancers, accounting for an estimated 12 percent of all cancer cases worldwide. Many of these, including the well-known case of HPV, can be transmitted sexually. Knowledge of sexual transmission at once directs scientific attention "inward" to the molecular level of the viral causal agent and "outward" to the worlds of sexual practices, cultures, and identities that may be causally linked to the risk of transmission. In this paper, we examine public health and epidemiology as hybrid knowledge domains that straddle this endogenous/exogenous divide in etiological accounts, and consider how public health appropriates social knowledge in making claims about sexual practices, categories, identities, risk groups, networks, and populations. By juxtaposing the different cases, we demonstrate that the production of risks, subjects, and bodies depends not only on the specificities of the STI-cancer connections but also on how sexuality is materialized through social and natural knowledge practices. Sexuality thus emerges as a potent site for the intertwining of social and natural knowledge.

Discussant:

Laura Mamo, San Francisco State University

236. Models and simulations: Shaping science and society - II

11:00 to 12:30 pm
Kilen: K146

As a rapidly developing practice of knowledge production and knowledge deployment, the importance of mathematical modelling and simulation is growing relative to their distribution and entanglement in society. Serving as epistemic artifacts in situated practices, simulation models play an important role in arranging and re-arranging theories, data, as well as ways of knowing and ways of doing in and between different communities. Mathematical modelling is typically understood to relate history, data, and ways of knowing with theories, questions about the future, and the unknown by producing new knowledge artifacts that extend our reality as well as our notions of `realities´, and thus co-produce new courses of actions and enacting the future. It is therefore crucial to investigate how mathematical modelling and simulation contributes to the re-arrangement of materials and ideas in contemporary research, policy, design, and social order, to produce necessary reflections by which to discuss the current and future development of these increasingly technical and otherwise closed practices incorporating simulation and modelling.

Chair:

Joakim Juhl, The Technical University of Denmark (DTU). Department of Management Engineering

Participants:

Problem identification through mathematical models. *Stig Andur Pedersen, Roskilde University*

The development of modern technology has made it possible to deal with extraordinary complex systems. Systems can be complex in different ways. Some systems are highly non-linear which means that equations describing them cannot be solved analytically. Numerical simulations are needed in order to understand them. Some systems require extreme amounts of data. They are complex in the sense that comprehensive computer power is required in order to represent data and make data theoretical accessible. Advanced computer simulations are necessary in order to identify and coped with problems related to complex systems of both kinds. By way of some historical

examples it will be shown how the development of computer models has led to new styles of science and new ways of interdisciplinary cooperation. Some researchers even talk about a fundamental revolution: "We are in the midst of a computational revolution that will change science and society as dramatically as the agricultural and industrial revolutions did. The discipline of computational science is significantly affecting the way we do hard and soft science."(Norman J. Zabusky: Physics Today, October 1987, p. 25). Some epistemological issues raised by this development will be considered.

Validation of Simulation Models. *Muniza Rehman, Section for Philosophy and Science Studies, Roskilde University*

In philosophy of science the interest for computational models and simulations has increased heavily during the past decades. Different positions regarding the validity of models have emerged but the views have not succeeded in capturing the diversity of validation methods. The wide variety of models with regards to their purpose, character, field of application and time dimension inherently calls for a similar diversity in validation approaches. A classification of models in terms of the mentioned elements is presented and used to shed light on possible types of validation leading to a categorization of validation methods. Through different examples it is shown that the methods of validation depend on a number of things as the context of the model, the mathematical nature, the data available and the representational power of the model. In philosophy of science many discussions of validation of models has been some what narrow-minded reducing the notion of validation to establishment of truth. This article puts forward the diversity in applications of simulation models that demands a corresponding diversity in the notion of validation.

Weather Vane Science: Simulation in the Era of Academic Capitalism. *Steve G. Hoffman, University at Buffalo, SUNY*

Over the last three decades, scientific knowledge production at research universities has steadily entered an era of academic capitalism (Berman 2011; Hoffman 2011; Slaughter and Rhoades 2004). As the two-pronged push for knowledge capitalization and accountability accelerates across Europe and the U.S., if unevenly across university models (Etzkowitz, Webster, Gebhardt, and Terra 2000; Nickolai, Hoffman, and Trautner 2012), scientists have steadily re-tooled their epistemic cultures to better respond to increasingly transient resource dependencies (Kleinman 2010; Vallas and Kleinman 2008). In this paper, I demonstrate how simulation techniques and technologies can facilitate the agile knowledge production required by this arrangement. Simulations are well fitted to the vagaries of an uncertain instituaional environment because they are by nature cheaper and lower risk simplifications of their indexed reality. As such, they are highly transportable and flexible, exhibit high degrees of ontologically agnosticism, and serve the goal of reliability rather than truth (Winsberg 2006; 2010). I elaborate this argument within an ethnographic case of the unpredictable developmental path of an Artificial Intelligence project that begins as a system for simulating improvisational theater and ends up an animated blog classification system. No member of the AI lab could predict which direction the developing simulation technology would take. Together, and over three years, they groped their way toward new knowledge by adopting a set of practices I refer to as "weather vane science." The lab routinely tested the weather of the lab's external organizational environment and adjusted their simulated science to its whims.

Whose Weather Is It Anyway? Calculating Risk at the National Weather Service. *Phaedra Daipha, Rutgers University*

This paper builds on fieldwork at a forecasting office of the National Weather Service (NWS) as well as on interviews with commercial fishermen in order to examine the production and consumption of meteorological risk communication. I analyze how NWS forecasters go about determining the weather

information requirements of their multiple audiences by distinguishing among interactions with "partners," "customers," and "the public." While the first two types of interaction dynamics are characterized by dialogic exchange, interactions with the public are unsurprisingly hierarchical and monologic, typical of what has come to be known as the "deficit model" of the public understanding of science. Yet, such conceptualizations not only perpetuate but actually exacerbate the conventional generalized mistrust of meteorological warnings and forecasts by offering increasingly detailed, and therefore increasingly fallible, quasi-deterministic predictions. Weather forecast users, however, from the most proactive and sophisticated to the most passive and incidental, are inevitably bound to adapt the forecast message to their daily plans and routines, not vice versa. Per my research, fishermen do not only exhibit a highly sophisticated dynamic meteorological decision-making approach, but, more importantly, their calculations of meteorological risk depart significantly from those of the NWS since they are ultimately about determining "fishable," i.e., profitable, weather. What fishermen—and, I would argue all forecast users— require, therefore, is more, and more raw, information: in other words, a more sound basis for second-guessing forecasts, as they do now and will continue to do, in any case. Empowering them to draw a more meteorologically-informed bottom-line, furthermore, will of have a positive effect to the reliance on weather forecasts as well as responses to emergency weather advisories and warnings.

237. (47) Screen realities, synthetic situations, and scopic media - II

11:00 to 12:30 pm
Kilen: K150
Chairs:

Niklas Woermann, SDU Odense, Uni of Constance
Vanessa Dirksen, University of Constance
Stefan Beljean, University of Konstanz

Participants:

Life on screens: monitoring hearts in home and clinic. *Karen Dam Nielsen, Centre for Medical Science and Technology Studies, University of Copenhagen*

This paper examines the role of screens in practices of diagnosing and treating heart rhythm disorders as these practices become increasingly tied to telemedical setups. A central feature of remote as well as in-clinic monitoring of portable and implantable devices to detect and treat cardiac arrhythmias is the display of electrocardiographies (ECGs) on screens. Much clinical work is about interpreting these screen images – images that basically depict the state of 'being alive' and in a sense become images of the patient herself. This way, even when being physically absent, the patient becomes present in the clinic. But the telemedical solution may bring about other 'screen realities'. When adding patient-involving IT to the telemedical setup the patient is given a new 'screen manifestation' in the clinic, in the same way as the clinic manifests itself in the home on a computer screen. And the interaction between home and clinic, the clinical encounter, becomes a screen-mediated social situation. Based on ongoing fieldwork and inspired by concepts from symbolic interactionism and postphenomenology, the paper investigates the entanglement of these multiple screen realities in heart monitoring practices. It discusses how screens act as displaced manifestations of the body and life at stake, how they become linked to other sources of information, e.g patient narratives, and how they enhance the clinical encounter to what could be understood as a synthetic situation (Knorr Cetina, 2009), ultimately asking what this means to the actions and experiences of patients and clinicians.

Learning to interact in screen-mediated social situations. *Erna Håland, NTNU-IVR; Line Melby, Norwegian University of*

Science and Technology

In this paper we address local situations of communication which become expanded or enhanced by the addition of screens. We investigate the use of electronic message system, video conferences and net based discussion forum in Norwegian municipal health care, where users are relatively new to the media. The empirical data comes from interviews and observations conducted within two different research projects. In one project we studied health personnel's use of an electronic message system for inter-organisational communication. The introduction of the system meant a shift of means for communication across organisational borders. Telephone, fax or face-to-face meetings would be replaced by electronic messages. In the other project, an evaluation of a competence development initiative for health personnel, we studied health personnel's use of net-based discussion forums and video conferences for educational purposes. These technologies were introduced as alternatives to physical meetings at courses, partially to reduce the travel needs of the participants. In this paper we explore how health personnel act and interact through screens, in so-called 'synthetic situations' (Knorr Cetina 2009). We look at how health personnel experience this type of communication and cooperation, and how they, through local interpretations and adaptations, are learning to interact in screen-mediated social situations. Contribution to STS: By examining specific forms of screen-mediated social situations from a micro perspective, we want to contribute to the understanding of technology mediation, and to the understanding of how health care is changed and reconfigured by technology.

Immersion and Emergence in Synthetic Situations. *Vanessa Dirksen, University of Constance*

Scopic media is a term used to denote a variety of real-time screen technologies that render distant and invisible phenomena situationally present. Of particular importance to understanding the kinds of social situations created by scopic media is the notion of immersion. With the aim of understanding immersion sociologically, the empirical work of the study revolves around the production and use of so-called telepresence systems for distributed collective practices. Telepresence is a form of face-to-face situation simulated by videoconferencing technologies. As opposed to the bulk of the research done highlighting the cognitive dimensions of immersion or presence, this study posits immersion first and foremost as an attribute of group communication, and thus as a collective construct. The leading question for the design side of the investigation is: How is the required immersion in a collective experience technologically created or simulated? Immersion as design matter refers to the creation of the sense of a shared context by means of seamless room design, virtual eye contact, depth of view, as well as the manipulation of sound. A better understanding of immersion as an interactionally established phenomenon, subsequently, requires the extent to which these ingredients are perceived as 'real' or engaging by the people that are partaking in telepresence communication. The study of immersion (and emergence) in telepresence communication requires a combination of ethnography and what in this study is referred to as 'self-test methodology', involving elaborate recordings of the fieldworker's usage experiences of the systems under investigation.

Infra-setting: ethnomethodology for Information Infrastructure studies. *Gian Marco Campagnolo, University of Edinburgh; Giolo Fele, University of Trento; Neil Pollock, University of Edinburgh; Robin Williams, University of Edinburgh*

The concept of infra-setting is illustrated by fieldwork on corporate large-scale information systems as Information Infrastructure. The aim of this concept is to provide new directions to address the 'localist turn' in social studies of technology. The localist turn has been defined as the tendency of

information systems scholars for single-sited short-term information systems implementation studies (Pollock, Williams & D'Adderio, 2007). The infra-setting concept emerged as a radical reflection upon received ethnomethodological notions (Garfinkel, 1967; Pollner, 2011; Garfinkel, 2002) and their diffusion in the information systems field (Suchman, 1987; Suchman, 2002; Suchman, 2007; Suchman & Trigg, 1991; Heath & Luff, 2000). To make the concept of infra-setting recognizable we have described three components of the technological project in the corporate world, that, if seen from the received localist perspective, would appear implausible: (i) the provision of the core components of the corporate information system as generic software packages; (ii) the process of taking procurement decisions based on formal assessments about software packages vendors future performance and (iii) the move of technological support for these purchase to global on-line settings. The aim of our analysis is to describe people engagement in the ERP corporate project as infrastructure work: the armamentarium of discursive and digital practices vendors, analysts and support specialists attend to make settings observably connected to each other. Our understanding of infrastructure work will be then summarised in the notion of infra-setting. The infra-setting is a view on the singular settings of social action as concretely connected to other past, simultaneous and future settings of action through applications, data and network resources. Our analysis demonstrates that rather than in a better understanding of movement (Cooper, 1998; Shapin, 1998; Harris, 1998), what is needed to respond to current STS concerns of time-space distantiation is a more sophisticated theoretical appreciation of the ways "settings" of social action are increasingly de-differentiated and de-distantiated, concretely connected and integrated as they are by an underpinning information infrastructure. Finally we present the implications deriving from the assumption of infra-setting as a relevant paradigm for understanding social action.

Videocommunication and the performing ordinary and institutional situations as multimedia events. *Christian Licoppe, Telecom Paristech*

This paper argues that the last ten years have seen a kind of 'mobility turn' in video communication. It is increasingly done with cameras the orientation of which may be controlled and changed, and on mobile terminals (smartphones, laptops, etc.). A consequence of this is that users are able to depart more easily from the kind of 'talking heads' interaction format which has dominated earlier video communication and show various details of their environment as they become relevant to their ongoing interactions. However there remains a pervasive orientation towards "putting the face of the current speaker on screen" in all these forms of video communication (Licoppe and Morel, in press). So showing someone or something during video communication is an interactional accomplishment with sequential implications. Based on several corpus of video recordings of naturally occurring video interactions we have been able to gather (on 3G and 4G mobile phones, Skype interactions on laptops, and recording of remote participation in French judicial hearings through videoconference) we will show how this is practically done and discuss the sequential organization of such "showing sequences". Sequential concerns account for significant properties of video communication: a) the kind of "intensification of attention" participants often evoke when describing their experience of video communication ; b) th need for specific competences for participants in order to be able to perform ordinary and institutional video-based situations as multimedia events.

238. Steve Fuller's "Humanity 2.0"
11:00 to 12:30 pm
Kilen: Ks43
Steve Fuller's Humanity 2.0 is concerned with the impact of biosciences

and nanosciences on 'humanity', understood both as a matter of public concern and an object of study for social sciences in the 21st century. As we enhance our human bodies and re-engineer the human genome, what are the political implications for our post-human world? The debate surrounding these questions both deepens and goes beyond other debates in which Fuller has been involved in recent years, including Darwinian evolution vs. intelligent design, the governance of science, and the role of the university as the locus of 'humanistic' education. In this author meets critics session, four critics will discuss these topics before responses by Steve Fuller.

Chair:

Francis Remedios, Editorial Board Member Social Epistemology

Participants:

Post-humans, enhancement and the species identity problem. *Sarah Chan, The University of Manchester*

The prospect of becoming post-human – of evolving or transforming ourselves, through the application of technology or through other socially-directed or natural processes, into something beyond human ("Humanity 2.0?") – is an ethically contentious one. Some fear or caution against it; others welcome, even encourage it. But what might it actually mean to become, through the process of what might be called human enhancement, 'post-human'? Why should we care about this – and how would we know when we had got there? In this paper I examine some of the ethical arguments relating to post-human 'evolution' and the issues that might arise in pursuit of such a course. I argue that worries about the preservation or destruction of the human species per se are misdirected; instead what we should be most concerned with is the ways in which technologies mediated and how this shapes the choices about these technologies that are available to individuals and to society.

A Manifest Apathy: Reflections on the Prospect of Humanity 2.0. *Thomas Basbøll, Copenhagen Business School*

Fran Lebowitz recently answered Heidegger's famous "question concerning technology" with a rather direct "No". "I have none of these machines," she says, "which allow people to not be wherever they are. Since I don't have them I'm forced to be where I am all the time, which is why I'm noticing what people are doing." This rejection of new media devices in favour of "being there" is of course already quaintly old-fashioned. (Lebowitz is also nostalgic about the ratio of tourists to muggers in New York City and unmoved by the "offense" that smokers cause non-smokers. "Being offended," she notes, "is the natural consequence of leaving one's home.") Nonetheless, I want to mobilize this view of so-called progress against the idea that "'converging technologies' promise to transform the very constitution of the human species by allowing us to live longer, more productive lives", as Fuller argues in Humanity 2.0. Siding with Lebowitz, I want to suggest that although we do seem destined to live longer lives, they will not necessarily be more interesting. We may be left "marooned," as Norman Mailer put it, "in the nervous boredom of a world [we] didn't try hard enough to change."

The Biological Challenge to the Social Sciences and the Response of Intelligent Design. *Gregory Sandstrom, Lithuania University of Educational Sciences*

This presentation approaches Steve Fuller's Humanity 2.0 in light of the so-called 'biological challenge' to the sovereignty of social sciences. It focuses in particular on the social epistemology of intelligent design (ID), in which Fuller participates as a front-line contributor. By highlighting the theme of ID and its relation to social sciences, the presentation identifies a gap in the ID movement literature regarding its goals of potentially revolutionising science. While ID focuses predominantly on natural and applied sciences like biology, engineering and programming, Fuller promotes social science as

'the party of humanity' and shows what distinguishes it and us from (mere) biology. The discussion explores the possibility that social sciences are more appropriate to analyse 'intelligent design' than physical sciences. Fuller's suggestion that we must 'credit reductionism' applies also to the ID movement, which narrows its focus to natural scientific legitimacy, away from humanity and social thought. Beyond the arguments from/to design of classical theology, Fuller's work emphasises contemporary views of 'design' in science and technology, which leads to provocative notions regarding human nature and transhumanism. This presentation opens the discussion of 'design' to both natural and social sciences, asking where 'design' belongs and where it does not.

Where Is the 'There' in the Posthuman 'Being There'? *David M. Berry, Swansea University*

The most fascinating yet perplexing ontological problem posed by the collection of projects that travel under the heading of 'Humanity 2.0' involves trying to figure out where the 'human' ends and something else begins. This applies to whether we are talking about the massive genetic overlap between humans and other animals (and even plants) or, more importantly for my own work, the distributed and mediated character of our technological life-world. This tendency has been accelerated by our increasing facility in communicating information. In the process, positional conceptions of sender, receiver, owner, producer and consumer have been radically de-centred, not only philosophically but also in legal and political terms. Following up on some leads from my Philosophy of Software, a Heidegger-inspired fundamental ontology of this aspect of the posthuman condition will be attempted.

Discussant:

Steve Fuller, University of Warwick

239. (07) The politics of techno-embodiment in the age of pharma commerce - II

11:00 to 12:30 pm
Kilen: Ks48

Chairs:

Anna Bredström, Institute for Research on Migration, Ethnicity and Society, Linköping University, Sweden
Marianne Winther Jørgensen, Culture, Society and Media production; Dept for Studies of Social Change and Culture

Participants:

New materialism and political potential: A critique of Karen Barad's agential realism. *Marianne Winther Jørgensen, Culture, Society and Media production; Dept for Studies of Social Change and Culture*

The political potential of theory and research is central within feminist debate. Today, a new generation of feminists urges us to develop new theoretical frameworks that better encompass nature and materiality – both in order to produce more accurate descriptions of the world around us, and in order to increase the potential political impact of feminist research. We thus witness a flow of research that aims to transcend the divide between nature and culture. Karen Barad is one prominent thinker within this new materialist current. She invites us into a theoretical-philosophical universe, where ontology, epistemology and ethics are critically reviewed and reworked, resulting in a grand framework called "agential realism". The impressive scope and ambition of Barad's work notwithstanding, I argue that her framework is wanting in terms of political potential – almost to the extent that political action becomes unfeasible. In my paper, I outline this critique in three aspects. The political whom: even if integrating poststructuralist thought, the poststructuralist thinking around "us"/"them" largely loses its theoretical-political productivity in Barad's work. The political how: within Barad's

framework, capacity for action cannot be localised, and it thus becomes unclear where and how political action can be brought about. The political what: "exclusion" is a main target of Barad's critique, at the same time as she sees exclusions as unavoidable and infinite. Still, nothing in her theory helps us to rank exclusions or judge priorities for political intervention. In sum, I believe that Karen Barad's work provides a valuable contribution towards rethinking the relationship between nature and culture in non-dichotomous ways. However, if we aim to invest our work with political potential, I suggest that we need to stretch Barad's theoretical horizon and to seriously target the three gaps described above.

Learning Nico-Rette from Nico-Wrong: Pharmaceutical Designs on Nicotine and the Displacement of the Cigarette-Smoker. *Mark Elam, University of Gothenburg*

During the mid-twentieth century the cigarette-smoker constituted a sublime model of techno-embodiment. Becoming a cigarette smoker resembled an obligatory rite of passage for anybody wanting to become somebody. As the health consequences of smoking became apparent, so cigarette-smoking was subject to growing pathologization. Talk of smoking as a 'dependency disorder' began to circulate by the late 1960s. While major new drug problems are typically connected with processes of 'pharmaceutical leakage', cigarette-smoking became nicotine addiction after 1967 through a process of 'pharmaceutical incursion'. No therapeutic drug spilled out into an illicit drug economy when smoking became a drug problem. Rather a new therapeutic tool – nicotine chewing-gum – successfully dented sales of cigarettes helping to re-envision the latter as first and foremost tools of nicotine self-administration. Nicorette® chewing gum was founded upon a Swedish entrepreneurial vision of an ensuing struggle between the forces of nico-rette (rätt) and nico-wrong leading to the creative destruction of the cigarette. The global success of humble Nicorette® chewing gum triggered an explosion of nicotine psychopharmacology research leading up to definitive confirmation by the U.S. Surgeon General of smoking as a problem of nicotine addiction in 1988. In the paper the incursion of nico-rette on nico-wrong will be traced from nicotine chewing gum's initial mimicry of oral tobacco to the nicotine inhaler's imitation of cigarette smoke and the introduction of the nicotine patch – a broad variety of new models of techno-embodiment designed to displace the cigarette smoker and enable the nicotine dependent to routinely overcome their injurious desires.

Ethnicity and Antidepressants: Racialising the "Neurochemical Self". *Anna Bredström, Institute for Research on Migration, Ethnicity and Society, Linköping University, Sweden*

The aim of this paper is to investigate how race and ethnicity are constructed in discourses on the new generation antidepressants, the so-called SSRIs. Drawing upon interviews with general practitioners working in primary health care in Sweden as well as a critical reading of how racial and ethnic differences are constructed in the Diagnostic and Statistical Manual of Mental Disorders (DSM-iv), the paper aims to discuss Nicolas Rose's concept of the Neurochemical Self from a critical race perspective. The Neurochemical Self, Rose argues, is representative of the new style of thought in biological psychiatry where the mind, moods and emotions primarily are understood as reflective of neurochemical processes in our brains, (making depression and other psychological disorders treatable with SSRIs and other psycho drugs). In this paper, I query what happens to social and cultural differences in a time when we are supposed to understand mental health issues as primarily somatic? Do - and if so how - race and ethnicity get re-inscribed in contemporary discourses on neuroscience? And in what ways does this affect diagnosing procedures and treatment?

Productivity quotas in the regulatory evaluation of drugs for safety. *Jennifer Cuffe, .*

While the productivity quota can be considered an "innocuous bureaucratic principle," to borrow the words of Arjun Appadurai out of context, the introduction of productivity quotas in the workplace may have a profound impact on the reasoning of scientific workers in both obvious and subtle ways. As I began my anthropological, ethnographic study of the reasoning in a Canadian government directorate responsible for the science-based regulatory evaluation of certain types of drugs, management introduced productivity quotas into the workplace. This presentation considers the design and impact of these productivity quotas from the perspective of the regulatory evaluators themselves. The consideration is based on more than a year of participant-observation in the directorate as well as formal interviews with forty of the scientific staff, and observation of other scientific staff reasoning in their cubicles. While many regulatory evaluators quibbled with the exact rate and conditions of the implementation of the productivity quotas, few challenged the introduction of productivity quotas in any fundamental way. Nevertheless, my presentation also describes how the productivity quotas oriented the evaluators' affects and mundane work activities, thereby subtly reframing how they approached the evaluation of the safety and efficacy of the drugs in question. Following the work of others in the social study of number and statistics in science, I reaffirm that while the precise number in the quota (e.g., 5 reports weekly rather than 7.5 reports weekly) could be altered without significant effect, the introduction of the productivity quotas themselves reconfigured evaluation in the directorate.

240. (100) Displacing the laboratory and STS with it: new modes of engagement - What is a lab? - I

11:00 to 12:30 pm
Kilen: Ks54

Participants:

Producing Credits and Profits: Biotechnology in China's Scientific Transformation. *Wen-Ching Sung, University of Toronto*

One of the legacies of the international Human Genome Project (HGP) initiated in 1990 is large-scale genome sequencing centers. Their scales and automatic sequencers make them more like "factories" than ordinary laboratories. I will explore how such a displacement affects scientists' moral economies of production by examining the Beijing Genomics Institute (BGI). The issues of moral economies are critical when genome centers like BGI involve both international collaboration and academic outsourcing. BGI became the largest genome sequencing center in the world in 2011. In addition to participating in high profiled projects like the HGP and 1000 Genome Projects, BGI provides sequencing services to foreign and Chinese scientists, similar to industrial outsourcing. For some projects, they reduce or even waive service fees in order to ask for collaboration and journal publication. Thus, outsourcing can be turned into collaboration, while an international collaboration might be actually outsourcing, too. These fine lines between academic collaboration and outsourcing raise questions about credits, nature of work, and scientists' professional identities. These scientists' moral economies of production can also serve as a window to examine China's scientific transformation and the connections among the government, industry, and academia. Like many spin-offs of the Chinese scientific institutes, BGI has an ambiguous nature: one foot in academia and other foot in industry. They are required to produce both credits (journal articles) and profits to survive. The struggles of BGI's scientists in this regard reflect Chinese scientists' sense of uncertainty in innovative institutions mushroomed during China's scientific reforms.

Neoliberalism, Innovation, and the Interpretive Potential of Laboratory Studies. *Mary Ebeling, Drexel University; Amy*

E. Slaton, Drexel University

When faced with slower-than-expected recoveries, policy makers in industrialized economies have historically turned to a rhetoric of "innovation" to secure and maintain those nations' political and economic dominance. Given the extraordinarily broad societal benefits currently ascribed to U.S. governmental support and promotion of corporate R&D, we ask in this paper how laboratory studies help us interrogate the ideological sources and societal consequences of that trend. We take as our case the stress in academic and commercial laboratories on knowledge that will rapidly lead to commercialized applications; a stress said to promise wide economic benefits but which in fact has perpetuated economic disadvantages for American technical workers. We are particularly concerned with recent claims for a national expansion in "middle-skilled" labor in high-tech workplaces. This ostensible area of growth is said by proponents to empower economically large numbers of American workers no longer employed in faded traditional industries. Neoliberal doctrine paints this as an inclusive trend, providing opportunities for all those workers willing to direct their education and labor towards emerging high-tech sectors. But bench-level study of technical manufacturing operations reveals that few such mid-level jobs exist in the U.S. We consider how ethnographic and analytical approaches of laboratory studies may illuminate this fraught social situation (drawing questions about labor and class relations into social studies of science), and disciplinary impediments to this stress on social justice.

The Evolving Role of Laboratories in the Taiwanese Biopharmaceutical Innovation System. *Shih-hsin Chen, University of Nottingham*

The existing literature maintains that laboratories play a central role in the knowledge production network (Godin et al. 2000; Cook 2005) at the frontier of technology. This paper empirically examines what the changing roles of laboratories in the knowledge production network, using the case of the Taiwanese biopharmaceutical innovation system. The study applies social network analysis with the combination of quantitative and qualitative data analysis. The results show that the leading domestic laboratories have evolved to become technological gatekeepers who actively influence the acquisition, creation and diffusion of knowledge in the domestic network. This evolution contrasts with the typical nature of knowledge production in catching up economies where key technologies are usually transferred from abroad. In fact, in the Taiwanese context, the role of the laboratories and the institutional factors mutually shape one another. From the analysis of the interview data, it was proved that leading scientists have influenced the institutional factors through their advisory positions in the technology policy process while the institutional environment has been transformed from prohibiting the involvement of academia within the commercial entities into encouraging academia-industry collaboration. These results suggest that in the catching up economies, just as at the frontiers, laboratories could gradually develop until they come to play a central role in the knowledge production process in the biopharmaceutical innovation system.

Technology Assessment as ‚Laboratory' – On the role of TA in the process of shaping emerging technologies. *Torsten Fleischer, Institute for Technology Assessment, Karlsruhe Institute of Technology*

A central part of the current practice of technology assessment (TA) can be understood as research with the aim to provide knowledge for orientation and action of decision makers. Especially in the case of some emerging technologies like nanotechnologies and synthetic biology, TA institutions and its researchers started projects dealing with the ethical, legal and societal aspects (ELSA) or implications (ELSI) of the respective technologies early in its development stages. The results of these investigations directly contributed to various forms of public

deliberations and were referred to in numerous publications of scientific commissions advising policymakers. TA researchers also participated as individual experts in the design and analysis of deliberative exercises or in the work of advisory bodies. In doing so, TA contributed to the shaping of the sociotechnical framework of emerging technologies and presumably also to the shaping of the technologies themselves. In other words, in these cases TA institutions become 'laboratories'. The aim of this paper is to take a closer look at the practice of research and science-policy interaction in the case of technology assessment of emerging technologies. By contributing knowledge to policymaking in various arenas, TA researchers add another role to their portfolio – they are no longer only observers, they become actors. Moreover, with their expertise in interdisciplinary reflexive work, they also investigate their own 'laboratories' and its role as actors in S&T policy as participant observers. Some experiences with these reflexive loops will be presented in the context of German and European nanotechnology S&T policy.

Give Me a Laboratory and I Will Raise the World...Out of Poverty? *Margarita Rayzberg, Northwestern*

Randomized controlled trials (RCTs) for impact evaluation of international economic development initiatives have achieved significant success as evidenced by their prevalence in the popular "intellectual attention space" (Collins, 1998), increased levels of funding by key development institutions, and the narrowing of curricula at top economics and public policy departments. To date, the Abdul Latif Jameel Poverty Action Lab (J-PAL) alone has conducted 318 randomized evaluations in 52 countries. Given that the original social experiments using this method took place in the United States, I examine how applied development economists transformed the practice of RCTs in the process of translating and displacing the method from one geographic and policy arena (large experiments in the US) to another (local experiments in low-income countries). I show that "transforming a village into a laboratory" requires several traceable design modifications: translating experimental outcomes from abstract to legible units, replacing economic theory with program-specific "theories of change", relying on local, non-governmental organizations (NGOs) in the sampling process, and scaling-down the evaluations allowing researchers to influence program design. I further argue that these transformations allowed development economists to achieve epistemic success by emphasizing the strength of causal inference of RCTs, by downplaying theoretical assumptions formerly discredited by the development community, and by making possible scientific replication – a key tenet of credible knowledge production in economic science. The paper concludes with practical and theoretical implications of the proliferation of laboratories across the "developing" world for both the field of international economic development and STS-informed studies of the social sciences.

241. (105) Governance of nanotechnologies: risks and benefits for development - II

11:00 to 12:30 pm
Kilen: Floor Ground floor - Ks71

Participants:

China's High-Tech Push: Can Nanotechnology Contribute to More Equitable Development? *Richard Appelbaum, University of California, Santa Barbara; Rachel Parker, University of California, Santa Barbara*

China's rapid economic growth has been based on export-oriented industrialization through the use of low-wage labor. While this has lifted hundreds of millions of Chinese out of poverty, it has also resulted in growing inequality, environmental degradation, and hazardous working conditions in manufacturing. China now seeks to become an "innovative society," "leapfrogging development" by investing vast sums in

developing an innovative and globally competitive research and development capability. Nanotechnology, as one of four "science megaprojects," is one of the key areas selected for investment. China has indeed made significant advances in such areas as bionano, water filtration, and disease diagnosis ("lab-on-a-chip") and treatment (targeted drug delivery). Moreover, China's "indigenous innovation" policies, as reflected in its Medium and Long-Term Plan for High-Tech Development (MLP), emphasize the creation of a "harmonious society" – one that relies on nanotechnology and other emerging technologies to create a more equitable development path in such areas as energy, food security, health, and sustainable environmental practices. Yet at the same time, nanotechnology lab and workplace conditions in China raise concerns about health hazards to those engaged in nanotechnology R&D and commercialization. In this paper I draw on field research, bibliometrics, and the analysis of publications and patents to assess China's likely success in realizing the benefits of nanotechnology to secure a more equitable developmental path – one in which the benefits of nanotechnology outweigh the risks. The paper draws on five years of research on Chinese nanotechnology conducted by UCSB's Center for Nanotechnology in Society.

How government and labs in universities are designed and engaged in developing Nano-technologies? *Feng Li, Tsinghua University*

Nano-technology, as an emerging technology is growing and comes in waves. With intensive field research in Phoenix and Beijing, this paper investigates the interaction pattern between government and one important actor in local innovation system – Nano-technology labs in local universities: Arizona State University and Tsinghua University. It further explores whether knowledge diffusion can be designed and occurs along with the interactions. The empirical findings separately show that government actively interacts with Nano-technology labs in Arizona State University in Phoenix and Tsinghua University in Beijing through four different models: joint-lab model, sponsored research model, internship and training programs, and integration model. In-depth analysis of these models based on the interviews and two case studies demonstrates that the integration model is the most efficient method of knowledge diffusion for transferring both codified knowledge and tacit knowledge, which can contribute to local innovation capacity in the long run. Finally, the paper will depict the key factors in designing and combining government and labs in universities for developing Nano-technologies.

Unlikely Allies and Competing Authorities in Chemical Regulation. *Alissa Cordner, Brown University*; *Phil Brown, Brown University*; *Margaret Mulcahy, Brown University*

How do players advocating for or against greater regulation of chemicals use science as a tool for social movement organizing and industry advocacy? How do stakeholders use science alongside other forms of authority to argue for or against stricter regulation of chemicals? This paper examines how various players interact in regulatory and legislative arenas through a case study of a state-level regulation of flame retardant chemicals, situated in the larger context of anti-toxic legislation and environmental health controversies. We draw on extensive multi-site and multi-method qualitative research, including interviews with more than 70 stakeholders involved in flame-retardant activism and regulation; analysis of testimony at state legislative hearings; and ethnographic fieldnotes from meetings and conferences that bring together 'unlikely allies' including environmental activists, burn victims, fire fighters, public health activists, and furniture manufacturers. Our findings demonstrate that players identifying as scientists or activists often operate in overlapping arenas, make similar claims to scientific knowledge, and challenge the separation of values, science, and policy. Additionally, we identify alternate, non-science forms of

expertise claimed by stakeholders, including cultural, economic, democratic process, and identity-based authority. This analysis contributes to STS research on scientific authority and scientization; lay and expert claims; non-State targets of social movement activity; and the relationship between policy-making and science. Our research suggests more attention should be paid to the nuanced ways in which science, particularly scientific uncertainty, is employed by non-scientific players, and is utilized alongside of other forms of expertise.

242. Categorical cartographies: Property, place and displacement in global health research

11:00 to 12:30 pm
Radisson Hotel: Radisson A

The organization, funding and implementation of global health research is undergoing transformative change. Patent pools, open-source components in public-private partnerships for neglected diseases and the opening up of corporate pharmaceutical laboratories are changing the landscape of property relations across global health's distributed networks. While so-called 'North-South' research consortia continue to operate in a modernist landscape of public versus private, STS scholars have long problematised such a neat division. Indeed, it has been suggested that we consider public and private not so much as mutually exclusive places, but rather as 'complex domaining effects' (Hayden 2010). This approach directs us to the way in which the processes of delineating publics and privates generate categories of social difference and, from a more agential point of view, the way in which publics maintain their own existence as such. This panel will explore the temporality and spatiality of property relations in global health research. Drawing on empirical work, from pharmaceutical companies to university laboratories and clinical trial sites, papers will interrogate how objects are appropriated and re-appropriated, and how the temporal and spatial organization of such activities enacts particular political, scientific, and socio-cultural relationships. Related to this, we pose questions about the ontological politics of property in global health; if we see property as performative, as enacting rather than enacted, what analytic avenues and epistemological effects might we encounter? To what extent does property intervene in design, governance, placing and displacing across geographic boundaries?

Chair:

Javier Lezaun, Institute for Science, Innovation and Society, University of Oxford

Participants:

Brazilian Probes, African Pills: History and Resistance in Global Health. *Ari Samsky, Princeton University*

This paper draws together contemporary ethnographic research on international drug donation programs and archival research on a Rockefeller Health Board tropical health campaign in 1930s Brazil. Drawing on ethnographic work at all levels of the Mectizan and Zithromax donations I chart how the organizers of these programs imagine property, the act of donation, and the publics constituted by the recipients of free drugs. Through interviews with Tanzanians who receive and distribute these drugs I reveal conflicts and local re-configurations or translations of the arrival of valuable goods from abroad. I place this in an historical context with the Rockefeller Health Board's yellow fever autopsy program in Brazil. Rockefeller records reveal a complex ecology surrounding the "viscerotome," a Rockefeller patented autopsy probe used to reveal "silent" cases of yellow fever. Rockefeller agents' journals reveal a scientific, social, and political system that placed compulsory autopsy at the center of an emerging Brazilian state; Rockefeller staff also recorded many incidents of local resistance, sometimes violent. I attend especially to concepts of ownership and property, mapping which goods are retained and which are given (as in Godelier and Weiner). I ask how these circuits authorize and fashion social difference and allow their interventions to imagine and act on publics as if they suffer solely from technical problems, and to inscribe compliance or resistance in a biomedical register, rather

than a political one. Following Hacking and Fassin, I track how their focus on technology forecloses discussion of the biopolitics of inequality that these interventions elaborate.

Patented Drugs and their 'Others': Interrogating the Political and Social Meanings of Counterfeit Medicines in sub-Saharan Africa. *Emilie Cloatre, Kent Law School, University of Kent*

In this paper, I will explore how counterfeit medicines are both shaped by global networks of intellectual property, and generative of particular effects of intellectual property rights. Using empirical data from sub-Saharan Africa, I will unpack the different meanings and understandings of what constitutes counterfeit drugs and question the effects of intellectual property in shaping the role of counterfeit drugs as social actors. I will then discuss how counterfeit medicines, in turn, come to reinforce and stabilise intellectual property rights, feeding back into transnational networks of power and property. The shifts between patented drugs, generics and counterfeits, in practice and in discourses, will be explored in order to illustrate some of the flows that occur when seeking to select particular medication. Overall, the paper will invite a reconceptualisation of the type of actors that we understand counterfeit drugs to be, of their role in intellectual property networks, and of their multiple and complex effects on public health and policy strategies.

Telescoping Time to Discovery: Spatial and Temporal Domaining in Global Drug Development Partnerships. *Catherine Montgomery, Institute for Science, Innovation & Society, University of Oxford*

Time and place are fundamental rationales for the shifting organisational terrain of research into drugs for 'neglected' diseases. The lapse of time for new drugs appearing on the market has been a spur to create product development partnerships (PDPs) to respond to market failure. These hybrid, so-called virtual entities focus on shortening the amount of time it takes to test promising drugs and get them to those in need. For example, where previously drugs were tested one by one, now new regimens are being tested that combine drugs from multiple partners. Such synchronic forms of research are based on modifiability and new intellectual property arrangements, and potentially telescope time to 'discovery'. They also telescope the distant and distributed – yet material – places of drug development and consumption from an apparently placeless location. In this paper, I explore the mechanisms through which virtual drug developers knit together wealthy and poor, commercial and not-for-profit, 'Northern' and 'Southern' into productive sociopharmaceutical partnerships. Through the notion of categorical cartographies, I challenge unidirectional and teleological accounts of drug development and transfer, focusing instead on the domaining effects that drug development partnerships enact. The paper contributes to STS theorisations of property and publics, as well as enacting its own agenda of putting 'Southern' spaces onto the STS map.

Intellectual Property Rights in Clinical Trials and Modes of Collaboration in South Asia. *Salla Sariola, Durham University*

Clinical trials in developing countries have a reputation of being extractive and using vulnerable populations as guinea pigs. This paper investigates the types of collaborations that are formed in South Asia around randomised controlled trials in Global Health and shows the complexities in research and development in this area. These collaborations range from multi-sited pharmaceutical company funded trials where the protocols have been pre-defined with minimum inputs from the trial sites; to academic, investigator-led drug trials funded by international public health trusts on locally relevant health concerns; experimental community health interventions that are usually locally driven but have international connections; and public-private-partnership that are hybrid forms of these. This paper collates

evidence from two projects International Science and Bioethics Collaborations (2007-2010) and Biomedical and Health Experimentation in South Asia (2010-2012) and several years of participant observation on trial sites in hospitals, villages, public health organisations, and research centres, and over 200 interviews in the region with corporate stakeholders, academics, operational staff and clinical researchers. It dissects the typologies of collaborations with regard to intellectual property, and analyses the kinds of ownership that the different parties have to illustrate the flow of knowledge in these collaborations (extractive, capacity building, developing country ownership, mutual benefits, equal partnerships, etc).

Discussant:

Rob Hagendijk, Universiteit van Amsterdam

243. (03) Dis/placing medical technologies in theory and practice

11:00 to 12:30 pm
Radisson Hotel: Radisson B

This panel tinkers with the conference themes of 'design' and 'displacement' in order to stimulate our ways of thinking and writing about medical technologies. We problematize typical globalization narratives that posit medical technologies as "designed in the North" and "displaced to the South." To do so, we begin by approaching medical technologies as heterogenous sociocultural assemblages that involve humans and machines, capital and discourses, sounds and images, tissues and fluids, as well as local ethics and moralities. Based on this approach, how might we, as researchers, conceptualize the 'design' of these assemblages as "creative enactments" (inspired by Mol 2002): ongoing social processes of use, rather than a single, original, intentional orchestration? Whereas 'displacement' suggests departure, forced or not, from a normal position, what are the effects of refusing a normative slant and instead thinking about the complexities that inhere in the 'emplacement' of all technologies? In addressing these questions, we look to these enactments and emplacements as potentially generative of new theoretical frameworks. This panel comprises empirically driven and theoretically engaged papers on medical technologies and their enactments in diverse sites and among diverse social actors, in both the global North and South. The papers in this panel imagine how particular ethnographic, cultural, and/or historical analyses point to novel conceptions of medicine and technology. By tinkering with notions of design and displacement, we aim to better understand both what medical technologies are in particular times and places, as well as the time and place of our theories.

Chairs:

Jenna Grant, University of Iowa
Lara Braff, University of Chicago
Nayantara Sheoran, George Mason University

Participants:

Designing risk(y) subjects: Survey research as an instrument of biomedicalization. *Aaron T Norton, University of California, Davis*

Public health authorities are employing surveys to ask men throughout the world if they would be willing to be circumcised to reduce their HIV-risk. Most of these surveys have been conducted since 2005, in the wake of randomized controlled trials demonstrating that circumcision confers a 60% reduction in the risk of HIV-transmission from women to men. This paper addresses the global role of public health surveys in the emergence of circumcision status as an HIV-risk category. Whereas most critiques of survey research focus on issues of reliability and validity, I make a different intervention. I consider the implications of survey questions that discursively apply risk statistics derived from group-level comparisons to the bodies of individual respondents. Drawing on discourse analysis of survey questionnaires and interviews with expert and lay actors, I suggest that one consequence of this statistical translation from group to individual risk is the carving out of a new subject

position based on circumcision status, one that risks obscuring the multifaceted nature of HIV transmission. By positioning some bodies as inherently more risky than others, these surveys construct certain choices as more desirable than others in the fight against AIDS and therefore constitute a powerful tool in reorganizing the risk of entire populations, one body at a time. I contribute to theoretical discussions of biomedicalization by arguing the surveys constitute a technology that transforms how we think about the body, threats to it and attempts to optimize the body in response.

Movements and emplacements of drinking: the ingestion of alcohol among an Amazonian people. *Camila Becattini P. de Caux, Museu Nacional/UFRJ - Brasil*

Alcohol drinking is one of the greatest matters among an Amerindian group of the Amazonian rainforest. Based on fieldwork, this paper will start by describing the mobility of some of this indigenous when they are severely inebriate: when they drink, they walk. This is an uncontrolled and unpredictable displacement, mostly transgressive, and at times with explicit cosmological outcomes. However this is also a problematic movement, and it is the cause of many concerns nowadays, both for these amerindians and to professionals who work with them. Thereby, there are many policies directed at reducing alcoholic abuse among these people, though most of them is not organized by the indigenous themselves. Thus, in the second part, I will describe the Brazilian literature dedicated to designing governmental programs to decrease indigenous drinking and its effects. Here, specific persons disappear: they are replaced for their "culture" (and Anthropology is taken as a mediation technology). In addition, personal motivations, specific incidence of ingestion and the results of a drinking also vanish away: the label "alcoholism" appears as a descriptor (and the hole care is now focused on "the alcoholics"). Nevertheless the chief effect of those programs is to, alongside with the reduction of drinking, inhibit the many displacements achieved by the drunken. Hence, the questions we will be pursuing on this paper are: would it be possible for these policies to embrace mobility? And how is this displacement coordinated, in practice, with the necessary emplacement done by these politics?

Visual practices and routinization of ultrasound in Phnom Penh. *Jenna Grant, University of Iowa*

Most ultrasound machines enable the user to choose 'platform' - black and white or different color tints – a feature which is not linked to diagnostic capability. My presentation focuses on this narrow aspect of ultrasound visuality in Phnom Penh, Cambodia. Based upon ethnographic research in public hospitals, private clinics, and outside of clinical sites, I discuss how visual practices of producing, exchanging, and consuming ultrasound images in color and its construed opposite, black and white, are shaped by interconnected aesthetic and economic concerns. These practices create economic distinctions between patients, indicate a doctor's level of success and expertise, reveal (or not) qualities of the fetus, and mediate truth and pleasure. They are not deviations from an intended or original design, but rather designs in themselves, enactments of technology which reflect physician and patient understandings of ultrasound as a biomedical commodity, a necessarily hybrid object. My focus on ultrasound as a visualizing technology is a means to connect STS studies of biomedical imaging with a focus on knowledge production (Burri and Dumit 2008) and anthropological studies of techno-visual practices, particularly photography, in Asia (e.g. Pinney 2003; Strassler 2010) which explore how seeing and imagining vary across cultures, and how subjectivities are linked to visual practices. Ultrasound's status as a visualizing machine compels attention to visuality in practice, not only to biomedical knowledge production, in order to understand how it is being routinized in Phnom Penh. These enactments are driving broader transformations within the extremely stressed public and thriving private health systems.

Medical Technology, Technological Artifact: A Global Hospital in Maine. *Susan E Bell, Bowdoin College*

This paper conceives of hospitals as technological artifacts – medical technologies – and explores how and why these heterogeneous sociocultural assemblages are shaped by transnational flows of people, ideas, and objects. It draws examples from an ethnographic study of a hospital in the global North to problematize typical globalization narratives of the dispersion of hospitals from the North to the South. In their physicality hospitals – and differentiated spaces within them (Mol, The body multiple, 2002) – install routines in bodies by insisting on particular paths that bodies move along daily. These embodied routines become natural and invisible (Gieryn, 'What buildings do', 2002). And yet hospitals, like all medical technologies are continually redefined, reevaluated, and reconstructed by users. To study these ongoing social processes this project follows staff and adult immigrant and refugee patients and their interpreters through two outpatient clinics in a hospital in Portland, Maine (USA), and looks and listens to what happens along the way. It focuses on what stories are being told, who is listening, and what the tellers and listeners convey about transnational communities, medical technologies, and the circulation and transformation of biomedical knowledge. It builds on STS scholarship about technological artifacts and medical technologies. It contributes to STS scholarship by creatively exploring how hospitals enable diverse social actors to perform biomedical science and cultural sensitivity. It does this by taking into account the material infrastructure, symbolic meanings, and human practices in two outpatient clinics at one hospital in Maine.

Discussant:

Ayo Wahlberg, University of Copenhagen

244. (62) Monitoring, identifying, displacing: on everyday surveillance & security practices - II

11:00 to 12:30 pm
Solbjerg Plads: SP112
Chair:

Michael Nagenborg, University Tübingen
Participants:

Vernacular Video Analysis: The digitalization of the professional vision. *Rene Tuma, TU Berlin*

Sociology of knowledge has very early on taken up the discussion on visual knowledge, the debates in STS and the visual turn have revived those questions. Focusing on the question how specific forms of visual knowledge are produced and enacted I am discussing in which specific practices and methods the very situation of video analysis consists. (Vernacular) Video Analysis refers to the systematic (often discoursive) screening and scrutiny of (mostly) recorded audio-visual data for the sake of understanding and explaining action/behavior/movement of human actors that takes place everyday in specific contexts. The paper is going to present results from an ethnographic study of vernacular video analytic practices. Experts in a wide range of fields ranging from education to marketing, from sports training to policing do record human inter(action) routinely. But what happens to all that recorded data? Which data is analyzed to what end, with which method and building on which assumptions and professional knowledge? I am following actors from two fields (eye-tracking in marketing and sports coaches) during their routine activities and do elaborate on how those professionals do deal with visual data. Where and what do they monitor and track, what are relevancies and categories they apply, which assumptions about interaction underlies their work and which methods do they apply to generate knowledge and legitimate their outcomes. The study is based in a theoretical context of communicative

constructivism.

Norms in information systems for sustainability. *Baki Cakici, Stockholm University*

Stockholm Royal Seaport is a future urban district under development in Sweden. Its designers aim to create a residential area with zero fossil fuel emissions by the year 2030. I examine the mechanisms of norm construction that appear in the information and communication systems that are proposed for inclusion within the district. I focus primarily on examples proposed by system designers in a project titled "Smart ICT" which aims to identify technological applications to meet the sustainability goals of the district. I use the concept of attachment to analyse the surveillant aspects of the proposed information systems. Specifically, I investigate how norms are established via surveillance, and how they aid the translation of the recorded instances between different contexts. I argue that the systems record and transfer the traces of the lives of the inhabitants from everyday practices into other information systems which are used to judge if the traces are compatible with the encoded statistical norms of sustainable living. In cases of deviation from the established norms, the traces are translated once more to produce values through which the subjects under surveillance can be convinced to behave differently. Within the proposed systems, surveillance translates the deviations, and the translations exert new pressures on existing power relations. In my continuing involvement with the project until the end of 2013, I will work together with system designers, and aim to critically analyse the proposed systems from an STS perspective, guided by theories of surveillance.

Banking on (the) Line: Security & Authentication Practices in the Minimization of Internet Crime. *Lena Ewertsson, Halmstad University and Gothenburg Research Institute, University of Gothenburg*

During recent decades, satellite systems and digital technology, the Internet included, gradually have begun to meet and become recombined with existing practices of banking. Homebanking, internet-banking, e-codes, cashpoints, debit cards, card readers in the home and other places, are perhaps some of the most visible expressions of such recombinations. By allowing new forms of organization and interaction, the marriage between banking, satellite and digital techniques has involved radical changes for banking activities as well as for the individual and society at large. At the same time, it involves a number of dimensions and problems increasingly discussed in terms of crime, threats, uncertainties and risks deriving from particular innovative practices of recombination called, for instance, skimming, hacking and Trojan attacks. In this paper, I explore an issue which hitherto has been little investigated: what do banks do in practice when they deal with problems, threats and uncertainties related to such 'unwanted' innovative activities? Here I concentrate on Nordea AB, a Stockholm-based financial services group operating in Northern Europe, which is described as 'the world leader of internet banking in terms of usage, having more than 5.9 million online customers doing more than 260 million payments/ year" (Wikipedia). By making more visible the work on security & authentication carried out by Nordea, I hope to illuminate, nuance and problematize more general imaginations of how technologies associated with the Internet can be used in attempts to enact, expand, destabilize or sabotage particular interactions and relations.

Seeing like a citizen: Challenging surveillance in the biometric state. *Aletta Norval, Department of Government, University of Essex; Elpida Prasopoulou, Department of Government, University of Essex*

In this paper, we explore the way technologies for identification, especially biometrics, are gradually reshaping the content of the 'normal' biopolitical relationship between citizens and the state. Currently, there is a gradual migration of identification techniques reserved for criminals (e.g. fingerprinting) or non-citizens to the entire population which substantially transforms the role of state from tracing and correcting deviant behaviour to monitoring the entire population To capture this we introduce two different perspectives; 'seeing like a state' and 'seeing like a citizen', allowing us to analyse techniques of governance on the one hand, and practices of disruption and contestation by citizens on the other. More specifically, our analysis juxtaposes government discourses on security and identification with discourses and practices of citizenship ranging from those that seek to problematize some aspects of the extant 'rules of the game' (e.g. mainstream privacy activism) to those that contest the rules of the games themselves (e.g. hacker activities). This approach fertilizes existing STS accounts on technologies of government and their implications on current notions of citizenship with an agonistic perspective. Civic citizenship practices, being an action- instead of law-oriented approach, shift the focus away from technological artifacts and the imbrication of government strategies into their design dominating STS literature. Instead, it allows an alternative perspective informed by the discourses and practices developed by citizens in their efforts to challenge existing subjectivities and reinvent their relationship with the state.

245. (98) Mapping the dynamics of the social sciences and humanities

11:00 to 12:30 pm
Solbjerg Plads: SP113
Chair:
David Budtz Pedersen, Center for Semiotics, Aarhus University
Participants:

Mapping SSH - mixed methods and mixed feelings. *Katja Mayer, Department of Social Studies of Science, University of Vienna*

Social Sciences and Humanities (SSH) are often described as especially difficult to map and to survey, since the fields and disciplines have diverse and divergent publication strategies and quality criteria, and some are specifically bound to a local context and local languages. This makes it challenging to get an overview of the output and ongoing research of SSH in international research areas. Traditional statistical scientometric methods, such as (co-) citation analysis of journal articles, do not give enough insights needed to understand what is going on in the SSH domain. With new semantic technologies, natural language processing and visualization techniques however, a rather different light can be shed on the contents of SSH research. In our study, we are currently investigating abstracts of successful research proposals of a large EU funding body in the fields of SSH. We would like to get insights into current streams of research in order to be able to highlight main issues and topics, as well as methodologies used in scientific practice. During our exploratory study we triangulate several open source text mining, content analysis and visualization methods combining quantitative and qualitative approaches. In our presentation we will outline our empirical study design and discuss selected theoretical and practical implications of this triangulation, as well as limitations of analysis. Particularly we will look into the ontological politics of method, when creating classification and annotation schemes, as well as visual maps, such as network visualizations.

Professional Networks in the International Political Economy. *Lasse Folke Henriksen, Copenhagen Business School; Leonard Seabrooke, Copenhagen Business School*

Who writes the rules for the governance of the world economy? This paper looks beyond the usual suspects of states, NGOs and firms to attempt to map how ideas and skills travel between professional ecologies to solve long-term socioeconomic

problems. The paper identifies professional networks in variety of science-heavy, and social science related, issue-areas and identifies how variation in network structure may shape processes of idea formation, skills transfer and policy solutions and implementation. The paper also outlines the framework for visualizing professional ecologies and how they compete and cooperate through a variety of novel concepts and technologies. The issue-areas discussed in relation to professional networks include: the creation of a viable bio-fuels industry; addressing low fertility rates in the OECD; risk weighting and regulatory segmentation in financial reform debates; and the creation of 'human capital controls' to prevent the poaching of skilled migrants. The paper directly contributes to the STS literature in locating how professional practices and, their work content, are linked to science and technology while embedded in socio-cultural frameworks in national and transnational contexts.

EASST conferences (1983-2010): mapping the evolution of STS in Europe. *Fred Steward, Policy Studies Institute, Westminster U*; *Athena Piterou, University of Greenwich*

The papers presented in EASST conferences (1983-2010) provide the data for reviewing the evolution of STS in Europe. Scientific conferences and the role of academic associations have been rather neglected in STS. Although the boundaries of STS are unclear, it is assumed that EASST conferences provide a fair representation of STS scholars in Europe. STS is an interdisciplinary field of study which demonstrates significant variation in philosophical positions, methods and empirical domains of application. It is a comparatively small field and its connections to different disciplines probably inhibit the development of a distinct identity. Despite its radical origins there are claims that STS has lost its provocative power (Woolgar, 2009). A challenge for STS is how to benefit from growth and interdisciplinarity while retaining (regaining?) its radical character. EASST conference data are used to map the social and cognitive evolution of the field applying Social Network Analysis. Conference co-attendance and joint paper submissions between individuals, departments/research units and institutions account for the social dimension of the EASST network. Key participants can be identified over time. The cognitive dimension is examined by applying co-word analysis methodology to the titles of the papers. By placing terms in context co-word maps demonstrate the emergence, growth and decline in interest both in theoretical approaches and in empirical domains where STS has been applied, hence they enable the interpretation of evolving research interests. Preliminary findings indicate a turn towards the study of lifesciences and medical technologies.

Inscribed and circumscribed by citations – Indicators, impact and quality in the humanities and social sciences. *Gustaf Nelhans, University of Gothenburg*

This paper will focus on the science policy debates regarding bibliometric impact measures in the Swedish national allocation system for funding at higher education level in between two systems of impact measure. In the various bibliometric models the recognition of high qualitative research is either based on process of "being cited" as translated into the problem for researchers to make themselves cite-able in the system of citation based metrics and in publishing in the most "prestigious channels" in impact based systems. Since 2008 a bibliometric model based of performance based indicators (i.e. citation based bibliometric indicators) has been in place at the national level, but after much debate a new public inquiry, with the instruction to evaluate how panel based evaluations of quality of research could complement the bibliometric indicators has been performed. The investigator, however, rejected this idea and instead, a system of indicators based on publication channel impact was suggested to replace the present citation based allocation system in in the fiscal year 2014. What are the consequences of the constant reorganization of funding practices

and how do they influence the publishing behaviour of the practicing researchers within academia? A case based on performance by Swedish humanities scholars who appear to have made a 40 per cent increase in publication rates in the Web of Science databases is discussed. The lack of transparency between various levels of aggregation in quality assessment (e.g. department, faculty, national level) will also be discussed.

246. (11) Smart Homes: designing care, work, care technologies, and living at home - II + Disability studies and STS

11:00 to 12:30 pm
Solbjerg Plads: SP114
Chairs:
> **Sisse Finken**, University of Oslo
> **Christina Mörtberg**, Linneaus University, Sweden
> **Vasilis Galis**, Linköping University
> **Ursula J. Naue**, University of Vienna

Participants:

Ability or Disability - Design for whom? *Hanne Lindegaard, DTU Management Engineering, Technical University of Denmark*; *Søsser Brodersen, Department of Development and Planning, Aalborg University*

The dilemma addressed in this article is how private homes and their residents change when they both become hybrids of workspace and private space. When institutional designed assistive technologies enter the home, the everyday practice of disabled persons and their relatives change. It both change in the interplay with the institutionalized artifacts but also with the multiple actors involved in domiciliary care. Based on ethnography research of two implementations of assistive technologies in Denmark, the article raises this dilemma and discusses how these dilemmas provide the opportunity to re-think how assistive technologies are shaped in the interplay with everyday life in private homes. Through an emphasis on embodiment, script and domestication the authors illustrate how relations are built or not built between the disabled and the non-human artifacts. The Danish welfare system offer assistive technology for disabled but the artifacts are mostly designed to assist the caregivers and not to help the disabled to get less disabled.

Smart homes: in- and exclusions in design. *Sisse Finken, University of Oslo*; *Christina Mörtberg, Linneaus University, Sweden*

In this paper our focus is on smart homes as an emerging phenomenon in care and services offered to senior citizens. The background of this phenomenon is the so-called tide-wave of elderly. Along with socio-economic challenges, politicians express a desire to keep alive the welfare state that offers senior citizen services to maintain their well-being and autonomy. New technologies are therefore considered as a means to meet these challenges. Senior citizens are, like other citizens, a heterogeneous group with different wishes, activities, demands, and expectations rather than a uniform group with similar needs. The boundaries between those included in the smart homes and those not, and the very way these are drawn have ontological implications for the subject and object that emerges out of ongoing activities. We ask what kinds of homes that comes into existence due to the integration of elderly, care staff, alarm providers, alarms, sensor and so on. In addition to these entities other more intangible entities such as policies, technological push, and governance regimes are included. We locate our discussion of smart homes as infrastructures to a relational ontology in which humans and nonhumans are understood not as pre-given but come into existence in intra-actions in ongoing material-discursive practices e.g. smart homes offered to senior

citizens. Hence what come into existence is dependent on the entities included, entities that are not innocent but "they are necessary for making meaning" and "have real material-consequences" (Barad 1996:187). Three vignettes are used in the exploration of the thinking house.

Politics of Hearing' – The appliance of new, assistive technologies in context of Deafness on the example of the Cochlear Implant. *Stefanie Wrba, University of Vienna, Department of Political Science*

This presentation, which is based upon my master thesis, deals with the debate of Cochlear Implants (CI) that by means of an improvement in the field of technology research gained on relevance in recent years. The Cochlear Implant, which is implanted through surgery in the back temporal lobe of the "deaf" ear, is understood as an "assistant technology" that should make hearing possible for deaf people. To most parents such an implantation of the CI is recommended, if a child is born deaf. Due to the implant, the child would be able to develop "normal" speech abilities, the parents would be able to communicate in a "normal" way with their child, and the child will therefore have a "normal" life. In my thesis, I have embedded the debate of Cochlear Implants in the field of Science-and-Technology-Studies. The case study of the Cochlear Implants is an example of how science, technology and society are interwoven, and shows also what effects this technology has on deaf people and on their self-understanding as a linguistic and cultural community. Against the background of a biopolitical discussion of Cochlear implants, the presentation deals also with the concept of "normalcy" concerning deaf people and people with disabilities in the context of Michel Foucaults conception of power. Further, in my thesis, websites of international enterprises which deal with Cochlear Implants haven been analysed regarding their understanding of "normalcy", "language" and "quality of life". In most cases, an exclusively medical-individual view on deafness is the case. Further, concerning advertisements of Cochlear Implants for children as a target group, a negative image of deaf people is being transported. The proposed paper will present these results.

Disability hybrid forums in the Senate Departments of Berlin. *Katrin Grueber, IMEW*; *Vasilis Galis, Linköping University*

Several STS strands have empirically and theoretically dealt with the question 'which actors are excluded from techno-scientific policy-making and why'. Disability policy-making also constitutes a site of controversy, regarding who is legitimate to participate, to decide and to develop knowledge and policy concerning disability issues. Historically, organizations for disabled people have been weak in representing the interests of their members. Instead, social service managers and experts have had the interpretative prerogative to define the interests of disabled people. This paper aims to highlight the contribution of disability groups who are capable of negotiating with experts. We will present findings from an empirical study on the role and impact of working groups of the Senate Departments of Berlin. Since 2001, every Senate Department has its own working group comprised of staff from the respective Senate Department, the Commissioner on Matters relating to Disabled Persons, and members of the advisory boards for disabled people. They act as a forum to exchange information and to lead a dialogue between different actors inside and outside the administration and can be described as a proactive tool to implement disability mainstreaming by analyzing the need for action in different fields. We will explore if and in what terms these groups constitute what Callon (2003) calls hybrid forums, that is, open spaces where heterogeneous groups discuss (technical)) choices. One of the leading questions will be: what is their impact in relation to regular communication channels?

Discussant:
Laura Mauldin, City University of New York

247. (06) Evidence-based activism: patients' organizations and the governance of health - II

11:00 to 12:30 pm
Solbjerg Plads: SP201
REVISITING MEDICALIZATION/DEMEDICALIZATION. PATIENTS' ORGANIZATIONS' FRAMING OF UNSETTLED CONDITIONS AND MEDICAL PRACTICES

Chairs:
Vololona Rabeharisoa, CSI Mines-ParisTech
Tiago Moreira, Durham University
Madeleine Akrich, CSI Mines ParisTech

Participants:
„Well, it's not healthy." Negotiating embodied knowledge and medico-moral definitions of obesity. *Theresa Oehler, University of Vienna*

Health policy and societal assumptions about obesity in Austria share common views of fat bodies: Weight control is reduced to a formula of eating less and exercising more, implemented through the appropriate amount of willpower (Oehler 2011). Much simpler than many biomedical accounts, these models of obesity form the dominant medico-moral framing of body weight. The paper deals with two activist/advocacy groups in Austria that address body weight: a self-help group for people undergoing weight loss-surgery, and an all-female fat-positive activist group. While the first relies heavily on and complements medical expertise in their adoption of weight loss-surgery, the second group defies medical definitions of bodies and wants to politicize the issue of weight. Although with different stakes, both groups engage intensively in distributing their views to a wider public. I ask: How do they formulate their versions of fat bodies? How do they relate to mainstream medico-moral definitions of body weight? How do they buy into and at the same time distance themselves from these accounts? What (embodied) knowledge do they draw upon? I look at micro-processes of formulating knowledge about fat bodies arising from their own experience, possibly resulting in a "politics of singularities" (Moreira 2011). The paper builds on materials from my PhD research and the project "Perceptions and Imaginations of Obesity as a Socio-Scientific Problem in the Austrian Context" (PI Ulrike Felt), including interviews, a focus group discussion, and published material from both groups, analyzed with a categorization analysis approach (Lepper 2000).

ADHD in France and Ireland: Parents' groups' scientific and political framing of an unsettled condition. *Claire Edwards, University College Cork, Ireland*; *Etaoine Howlett, University College Cork*; *Madeleine Akrich, CSI Mines ParisTech*; *Vololona Rabeharisoa, CSI Mines-ParisTech*; *Orla O'Donovan, University College Cork*

Attention Deficit Hyperactivity Disorder (ADHD) is an unsettled condition whose history is characterized by controversy amongst medical professionals. Its emergence has frequently been interpreted as an example of the growing medicalisation of society and the individualization of social issues. This paper examines how groups representing children with ADHD in France and Ireland engage within this contested medical domain, and challenges the frequently-made association between the process of medicalisation and de-politicization. We argue that, through the weighing up of different bodies of knowledge, parents' groups redefine issues of significance requiring action at both an individual and a collective level. Organizations have developed different politics of knowledge around ADHD, which become visible in their epistemic efforts. In Ireland, organizations have aligned themselves with the biomedical approach to ADHD. Their concern is pragmatic: to explore 'alternative' treatment modalities to medication. In France, the key parents' group opposes any paradigm that focuses

exclusively on one aspect of the disorder (social, psychological, neurological); it challenges the dominance of psychodynamic understandings of the condition, and struggles to 'open up' the scientific domain of ADHD. We demonstrate how these different ways of conceiving ADHD lead organizations to develop specific political actions. Thus, whilst Irish groups seek to marshal "undone science" (Hess, 2009) on ADHD to promote a multimodal therapeutic approach, the French organization strives to articulate its multidimensional definition of ADHD in the context of French disability legislation. In this way, groups seek to intervene in the 'web(s) of expertise' which shape ADHD in each country.

From silence to epistemic empowerment: the creation of a collaborative device around stuttering. *Daniel Neves Costa, Centre for Social Studies*

STS have long shown the virtues of moving from Public Understanding of Science to Public Engagement with Science. Experiences of collaborative participatory research and community-based participatory research reveal some of the complexities related to both science/society relations and science/democracy relations. These are characterized by the engagement of academic actors and civil society organizations in the resolution of problems of common interest or to the development of innovative projects with social impact through the promotion of egalitarian and nonhierarchical epistemic relationships between them. This paper aims to put forward some reflections resulting from the collaboration between the Centre for Social Studies and the Portuguese Stuttering Association. Stuttering emerges as a complex entity, not stabilized, whose causes have not been fully identified and whose treatments still lack consensus on its effectiveness. In the Portuguese context this discussion comes at an incipient stage and completely dependent on the Anglo-Saxon tradition. This collaboration seeks to promote dialogues between stutterers, speech therapists, psychologists, experts in neuroscience, linguistics, among others, in order to foster a reflection on stuttering, its causes, possible coping strategies and different legal and clinical frameworks. The purpose of this paper is to reflect on the potentiality of this collaborative device to promote the epistemological empowerment of people who stutter, allowing their emergence as "experts in experience" and owners of relevant knowledge about stuttering, giving them the legitimacy to participate in the collaboration, not as objects of research, but as active subjects of knowledge production.

Rearranging aetiologies and caring practices: Transgender in the making. *Esther Ortega, Universidad de Santiago de Compostela; Carmen Romero-Bachiller, Universidad Complutense de Madrid*

In this paper we aim to discuss and pursuit different trans activist groups in relation to trans health issues in order to map the different actors and practices emerging in the current controversies around "trans" definition –as it is being debate for the new edition of the DSM-V and CIE-11 forthcoming in 2013. In particular, we concentrate in two group placed in apparently opposed positions, stressing how both of them are anchored in research production of scientific knowledge by different means, and concentrating in its relations, collaborations and discussions with biomedical professionals. First of all we will consider, the Spanish/International Network for Trans Depathologization a group which is actively working on the removal of 'Gender Dysphoria' / 'Gender Identity Disorders' categories from the international diagnosis manuals. Denying the current consideration of transsexuality as a mental or physical disease, they do not reject medical attention on trans health issues, but claim such caring practices should be based on a new relation between health professionals and trans people which is displayed in their proposal of a new protocol for best practices in trans health care. In second place, we will analyze the Harry Benjamin

Syndrome International Organization. This organization, whereas strongly rejecting to the classification of transsexuality as a "mental disease" as well, reject removing transsexuality from the main international catalogues of disease, but to rearrange it, to identify it as a physical condition. Concretely, they aim for the inclusion of HBS (Harry Benjamin Syndrome, as them call their condition) as an intersex condition, within its new aetiology of Disorder of Sex Development.

Childbirth activism as evidence-based activism. *Madeleine Akrich, CSI Mines ParisTech; Maire Leane, University College Cork; Celia Roberts, Lancaster University; Joao Arriscado Nunes, CES University of Coimbra*

The existing literature on childbirth organizations focuses on four key issues: (1) their critical positioning vis a vis medical definitions/practices of birth, (2) their efforts to promote 'natural'/'normal' and 'mother friendly' birth, (3) their espousal of a rhetoric of choice and (4) their relationships to the various waves of feminist activism. However this literature says little about the practices through which these organizations seek to achieve their aims, which have been the focus of our research. Based upon a comparative study of four birth activist organizations in the UK, Ireland, Portugal and France, we show that not only were each of the organizations engaged in knowledge related activities, but that these activities were central to their action repertoires. Drawing on the concept of evidence based activism we highlight the range of knowledge activities they engaged in; Irish activism drew extensively on surveys on women's experiences; UK activism focused on the collection of statistical evidence on medical practices; scientific evidence was put centre stage by the French childbirth organization whereas the young Portuguese movement harnessed international authoritative evidence to support its change agenda. Our analysis reveals that through these activities the organizations not only acquired 'interactional expertise' but contributed to the production of knowledge, established or expanded discursive spaces, identified new fields of actions, and devised mechanisms to hold in productive tension the differing philosophies of coalition members. What becomes visible are the connections between evidence based activism and the re-shaping of organisational objectives and agendas and the constitutive role of these organisations in naming and framing issues relating to childbirth as distinct from merely opposing medicalization.

248. Investigating citizenship in a technological culture

11:00 to 12:30 pm
Solbjerg Plads: SP202

Contemporary social and political orders are inextricably connected with developments in science and technology. Therefore, the latter are matters of public concern as much as the former are. As scientific and technological orders connect to private and public conceptions of rights, responsibilities and power, they are an important ingredient of citizenship. Therefore, understanding citizenship should be focal to discussing the political dimensions of technological cultures. In this session, we therefore treat citizenship as a heterogeneous site in which people engage with their sociotechnical life world in multiple ways. Papers in this session thereby explore both several forms of these engagements and do so across a number of empirical domains. Through this session we aim to contribute to the understanding of citizenship in technological cultures. The idea of citizenship as created and enacted through socio-technical practices has gained increasing interest in science and technology studies over the last decade. Increasingly, the abstract concept from political theory is recognized as a phenomenon that can be studied empirically in citizens' everyday interactions with science and technology. In this light, the concept serves multiple purposes. First, it highlights the political and moral dimension of our membership of technological cultures. Second, it draws attention to the relevance of techno-scientific configurations that political theories tend to neglect. Finally, it captures the (potential) agency of

individual people to participate in the shaping of their socio-technical life world. Investigating citizenship in a technological culture thus contributes to understanding and empowering the role of citizens in the construction of socio-technical worlds.

Chair:

Erik Aarden, STS Program, Kennedy School of Government, Harvard University

Participants:

Citizenship and security technologies: a critical perspective. *Govert Valkenburg, Zuyd University*

To technologies of security such as automatic number plate recognition or biometric check-in facilities at airports, prevention of customization and modification is at the very heart of their design and essential for their potential to function properly. At the same time, for a democratization of technology design, some malleability is essential. This paper will discuss two case studies of security technologies, in which their resistance to malleability is confronted with the conditions of democratization. The paper will use a perspective of technological citizenship, and draw on important insights from the critical theory of technology. A central diagnosis in this theory is that dominant values become inscribed in our technologies, which thereby replicate those values. Importantly, dominant identities and rationalities are continued. Within the critical theory of technology, democratization of technology consists of opening up the process of technology development, in such a way that a wider range of values can find entrance to the design, and that people can take further control of the technologies that guide them. The concept of technological citizenship captures this engagement in the shaping of our technological lifeworld. The concept includes rights and duties, but also a vision of how to deal with epistemological difficulties in expertise-intensive situations. This paper will explore how such citizen engagement can take shape in the case of (recent) security technologies.

Privatizing Biomedical Citizenship. *Jonathan Kahn, Hamline University*

Genomic research is at an impasse. In the decade since the completion of the first draft of the human genome, few of the grand promised benefits of genomics have materialized. Biomedical researchers largely agree that one critical thing is essential to propel genomic promise and potential into the future and maintain its legitimacy: more bodies. In a prominent 2009 article , Ezekiel Emmanuel, then Chief of the Department of Bioethics at the Clinical Center of the U.S. National Institutes of Health, and others from his office, made the case for promoting a social, if not formal legal, duty for all citizens to participate in biomedical research. This paper will examine this and similar calls to promote such participation as a new duty of modern citizenship in the context other federal initiatives directly seeking to enlist subjects into massive biomedical research enterprises and consider them all in relation to the recent reconfiguration of the National Institutes of Health to incorporate a new National Center for Advancing Translational Science (NCATS). The other federal initiative considered include 1) a multi-year study conducted by the Genetics and Public Policy Center at Johns Hopkins University for the NIH to study methods of effectively recruiting subjects to a national biobanks; and 2) the "Million Veteran Program", an initiative of the Department of Veterans Affairs to enroll one million veterans in a massive biobanks to promote biomedical research; and 3) the passage of the Genetic Information Non-Discrimination Act (GINA). This paper will argue that these efforts at massive recruitment are not simply motivated by a desire to drive biomedical research to its next stage of promised critical breakthroughs. They also critically involve a tacit promotion of a privatized notion of citizenship, whereby the duties of citizens are configured so as to serve, not the public good, but rather the good of private corporations – pharmaceutical manufacturers in particular. Here citizens are

asked to participate to serve the public good of improving health, as they might serve on a jury or in the military. GINA serves as a critical adjunct to articulating this duty by reassuring prospective research subjects that data derived from their participation will not be used against them. What these arguments elide, however, is that where jury duty directly serves the polity, participation in research directly serves corporations seeking to develop new biomedical products and only indirectly promotes the public good. As recruitment efforts privatize citizenship to serve corporate interests, so does NCATS privatize the research resources of the federal government, essentially socializing the risk of drug discovery, to serve corporate interests – all in the name of serving the "public good" of health. There is a fundamental asymmetry in this model: citizens bear duties, government carries risk, and private corporations reap the commercial benefits without any concomitant duties or obligations. Indeed, by law corporations have only one duty – to maximize return to their investors.

(In)visible demarcations: Ambivalence in engagement on technology-related issues. *Ulrike Felt, University of Vienna*

At the beginning of the twenty-first century it seems to have become unquestioned and unquestionable that technoscientific innovations are the motor of societal development. The more recent European policy strategy which comes under the heading "Innovation Union" is but one example where such a vision is spelled out. Yet in order to fully realise such a future scenario citizens are increasingly expected to proactively deal with issues of technoscientific innovations, seek for information concerning these developments and act accordingly and engage in diverse processes of technoscientific choice. Numerous settings such as consensus conferences, citizen panels, focus groups, public hearings and other more experimental approaches are installed to sense citizens' visions on specific technoscientific developments. These initiatives are built on the tacit assumption that citizens are (1) interested in technoscientific issues, (2) ready to engage with these developments and (3) to take a more or less active (and supportive) role in the governance of the technologies. Citizenship in a technological culture would thus mean having the right to know and be involved, but above also the obligation of engagement and support. This is where this presentation sets in. It questions how citizens conceptualise for themselves in such a society driven by technological change. The paper will investigate the modes of ordering citizens deploy when do their positioning work towards technologies. To do so I will draw on discussion groups of diverse formats carried out over the last 7 years in the fields of biomedicine and nanotechnology. It will draw the attention to the more or less (in)visible demarcations between the technological, the social, the political, the cultural, …. which citizens create, dissolve, challenge in figuring out how to position themselves towards new technologies. The analysis will lead us to understand some of the more profound ambivalences citizens feel when it comes to rethinking the relation of technoscience and society and their position in this.

Exploring Sites of Scientific Citizenship: mediating a 'Low Carbon Scotland'. *Beverley Jane Gibbs, University of Nottingham, United Kingdom*

This paper takes a broad look at the current landscape of scientific citizenship in contemporary Scotland. Examining a wide range of science-public engagements – incorporating origins in state, civil and commercial sectors – I explore how the notion of scientific citizenship is constructed, mediated and understood at these different sites. Differing understandings of scientific citizenship have been observed in practice. On the one hand (and closely aligned with ideas of scientific literacy), there persists an idea that scientific citizenship is a threshold state to be achieved by a 'general' public. On the other hand, we can detect a much more nuanced field, where aspects of duty, rights, participation, power and knowledge are heterogeneously shaped by transient publics on a fluid basis. Against this general

backdrop, I draw on interview, observation and document analysis to focus on the case of 'Low Carbon Scotland'. Committed to the most ambitious renewable energy targets in the European Union, the Scottish Government creates an environment in which we can observe citizen-making (and citizen-limitatation) at first hand. How publics are imagined and formed, how they engage with the socio-technical networks involved in renewable energy technology and demand, the responsibilities cast upon local groups to mitigate national and international challenges all work to build a picture of citizenship in a technological culture. This presentation will contribute to a nascent understanding of scientific citizenship in the 21st century via an emergent typology of citizenship modes and commenting on the normative issues raised when conceptions of the scientific citizen are invoked.

Discussant:
Sheila Jasanoff, Harvard University

249. (52) Non-users, neglected users and anti-users - II
11:00 to 12:30 pm
Solbjerg Plads: SP205
Non-users, neglected users and anti-users

Chair:
Morten Krogh Petersen, DTU Management Engineering, Section of Innovation and Sustainability

Participants:

The Methodological Mind-set: How methods of gerontechnological user involvement foreground ageist images of older persons. *Alexander Peine, Utrecht University*; *Louis Neven, Utrecht University*

In this paper, we address the design of Smart Home technologies for older persons. We focus on the work and practices of designers to involve older technology users in innovation, and demonstrate how the existing repertoire of methods favours images of later life strongly associated with frailty and illness. More specifically, we have conducted 30 open interviews with key personnel in 12 design projects. We explored the methods used to involve older technology users, and applied an open coding scheme to understand the imagery of older users that has informed the projects. It was striking that, although most projects started with a broad and pro-active imagery of older persons, such images became gradually replaced by ideas of frail and ill older technology users. This suggests that incorporating an imagery of pro-active older technology users is posed with significant difficulties. We zoom in on one such difficulty: an imagery of frail and ill older technology users seems to fit nicely with existing methods to address and specify user needs as an input for product design. We explore in more detail this affinity between the methodological repertoire of user involvement we found in the analyzed projects and ideas about frail older persons. We conclude that the context in which designers have operated in these projects was highly conducive to ageist ideas, whereas it supressed more balanced accounts of older persons as technology consumers. Finally, we explore the design implications of these findings.

Users, non-users and 'resistance' to pharmaceuticals. *Kate Weiner, University of Manchester*; *Catherine M Will, University of Sussex*

This paper brings STS in conversation with medical sociology in relation to the uses and non-uses of a particular class of pharmaceutical – statins. These drugs to lower cholesterol have been widely available on prescription and sometimes over the counter. Our UK fieldwork explores not only their 'use' but also its limits. In medical sociology these limits have been described through the lens of 'resistance' to medicines (Pound et al, 2005),

as a counter to medical concerns with adherence. However such discussions have not referred to STS ideas about non-use and the domestication of technologies. We examine points of articulation and difference between these frameworks, which share a concern to rehabilitate non-use as a potentially purposive action rather than a deficit to be remedied. In particular we wish to consider the value of Wyatt's (2005) taxonomy of non-users (resisters, rejecters, excluded, expelled) for our case. Where Wyatt usefully points to the temporal nature of use (by distinguishing between resisters and rejectors on the one hand, and the excluded and expelled on the other) we take from medical sociology an interest in patterns of experimentation that may lead to rejection and the social negotiations that shape these trajectories. Rather than seeing people as 'want nots' (Wyatt's first two categories) or 'have nots' (the latter two) this approach reveals dynamic engagements with particular products mediated by social relations with health professionals as well as family members (Oudshoorn 2011). We also reflect on the methodological challenges of studying non-use in this context.

How diversity gets lost: Age and gender in design practices of information and communication technologies. *Nelly Oudshoorn, University Twente*; *Louis Neven, University of Twente*

Diversity has been a major concern in feminist and STS-inspired research on user and technology relations. As early as 1987, Ruth Schwarz Cowan already stressed that users come in 'many different shapes and sizes'. Because of the strong involvement of feminist scholars, most research on diversity has focused on gender. To overcome this problem, scholars in gender studies have developed the intersectional approach. In this paper, we would like to suggest that intersectionality provides an important heuristic tool to study how various categories of difference are constructed and what difference is prioritized or silenced in the construction of facts and artefacts. Following Joyce and Mamo's call for 'graying the cyborg', an invitation to study the 'age, technology, science and gender junction', the aim of this paper is to adopt an intersectional approach to investigate how age and gender are represented, silenced, or prioritized in design practices in information and communication technologies (ICTs). Based on a comparative study of design practices of ICT devices for young children and older people the paper describes important differences in the ways in which designers tried to cope with diversity. However, there were important similarities between the two cases as well. Both R&D teams did not take into account the feedback of the test participants. Instead of listening to test participants, developers relied on hegemonic views of gender and age. Because of the reliance on hegemonic images of gender and ageing , the focus on diversity among young and older users was eventually lost.

The paradoxical powers of anti-users: examples from a pilot implementation of a hospital information system. *Line Melby, University of Oslo*; *Pieter Toussaint, Norwegian University of Science and Technology*

A large number of different information systems are currently implemented in hospitals. Some systems prove to be an immediate success, others fail. Users' perceptions and adoption of a system play an important part in the system's destiny. But what is the role of users in the phases before operational use? We have studied a pilot implementation process of an 'awareness system' in a Norwegian hospital, as part of a decision process to acquire the system. The aim of the system was to improve coordination and collaboration between staff along the surgical patient's trajectory. Methodologically we draw on a combination of data from participant observation, interviews and questionaires. Through studies of the implementation process we identified different groups of users, and one user group that stood out was the anti-users. Here our objective is to expand the concept of anti-users by looking empirically at their actions (or

non-actions) and the possible causes, and how they influenced the uptake of the system in the hospital. Gossip, the spread of negative feelings about the system, critical remarks in meetings and simply non-use were predominant and could indicate that the pilot was considered a failure. However, management decided to buy the system. This leads us to question the anti-users power, and in general the possibility for users in hospitals to influence system acquisition and implementation, despite the widely acclaimed importance of user involvement.

250. Citizen-science: The 3.11 disasters and non-experts in action

11:00 to 12:30 pm
Solbjerg Plads: SP207

Responses to the Fukushima disasters are not confined to "expert" realms. When citizens assume the roles of experts today they have tools that were not available even ten years ago, particularly new media platforms; but how effective are these instruments in spreading information and building an actionable critique of socio-technical systems? Such questions extend the longstanding STS critiques of expert cultures and democratic challenges to expert power. This session features four papers that explore pathways of "non-expert" action in the face of overwhelming tragedy, confusion, and public anger after the 3.11 disasters. Ashley Kelly looks at efforts to measure and map radiation levels throughout the Fukushima prefecture and beyond. Responding to this exigency, data collection efforts were undertaken by what might be characterized as citizen scientists. Kotaro Kuroda considered concerned scientists and engineers who have established an organization that actively communicates for society, searching for new pathways in science-NPO APAST (Union for Alternative Pathways in Science and Technology). APAST evaluates potential, direct and indirect "negative impacts" on ecosystems and human societies caused by technology, and proposes practical measures for a form of human society that would avoid these problems. Mikihito Tanaka discusses his analysis of 1.4 billion tweet logs in the three months following 3/11. The research investigated (1) reaction towards scientists who declared risks on legacy media, (2) reaction towards the statements from academia, (3) comparison of the reactions between the distrusted "expert" scientists and the trusted "interactional expert" scientists, and (4) the difference of above tendencies and reactions between areas affected by the disaster and others. Lastly, Toshinori Yamaki considers public attitudes towards science from the perspective of a high school science teacher working within 50km of the nuclear disaster.

Chair:

Kohta Juraku, Tokyo Denki University

Participants:

Activities of Concerned Scientists and Engineers of Japan after the Fukushima Accident. *Kotaro Kuroda, Meijo University*

The Fukushima accident has led to great suffering for the people of Japan and has increased radioactive contamination across the globe. It has also sounded a warning bell throughout the world about the long-term health, environmental and economic risks of nuclear power. Concerned scientists and engineers of Japan have been working closely with local residents to examine the reliability of "seismic ground motion evaluation" and "seismic safety evaluation" of equipment. Using "the judgment of engineers," the government and the electric power company dismissed the possibility of severe damage from an earthquake as unlikely. Many question marks remain in the Fukushima accident. One of the more worrying is how much damage the earthquake did to the reactors. It is claimed that they weathered the earthquake, but some experts, such as Masashi Goto, a retired nuclear engineer, argue that there is evidence of significant damage due to quakes that sped up the subsequent meltdown. With quakes a more constant threat than monster tsunamis, these are the sort of lessons that Japan's "nuclear village" needs to learn. Concerned scientists and engineers have established an organization that actively communicates for society, searching for new pathways in science: NPO APAST (Union for

Alternative Pathways in Science and Technology), whose Director is Masashi Goto. APAST members believe we have entered an era in which what ought to be done in science and technology needs a fundamental review. APAST evaluates potential, direct and indirect "negative impacts" on ecosystems and human societies caused by technology, and proposes practical measures for a form of human society that would avoid these problems.

Functions of Twitter after 3.11 Disaster: Deliberative Tool or Echo Chamber Apparatus? *Mikihito Tanaka, Waseda University*

Under the uncertain conditions of a disaster, citizens have a thirst for "scientific" information. After the 3/11 disaster, the growth rate of Twitter users in Japan was 133% (from 5.6 million to 7.5 million) in a week. Unlike English, more information can be condensed in 140 characters using Japanese, therefore it has been said that Twitter had a crucial role in sharing and analyzing "scientific" information, and also mediated arguments online after 3/11. On the other hand, legacy media have been accused of a "churnalistic" attitude after the disaster in comparison to social media. In this study we analyzed 1.4 billion tweet logs in the three months following 3/11. We investigated the following questions from the point of view of how legacy media and Twitter interacted: (1) Reaction towards scientists who declared risks on legacy media, (2) reaction towards the statements from academia, (3) comparison of the reactions between the distrusted "expert" scientists and the trusted "interactional expert" scientists, and (4) the difference of above tendencies and reactions between areas affected by the disaster and others. Our quantitative and qualitative results of the above studies indicated that Twitter worked as an effective and flat argumentative tool between experts and citizens, but also amplified divides, confrontations and inequalities because of its tendency to cultivate the formation of an echo-chamber.

The Nuclear Accident in Fukushima and Popular Views on Science in Japan. *Toshinori Yamaki, Tokyo Institute of Technology / Fukushima Prefectural Tamura High School*

The reactors which collapsed following the Higashi Nihon Earthquake and Tsunami in March 2011 started to be built in the 1960's after a decade in which the nuclear energy policy in Japan had begun. Note, however, all of the commercial reactors in Japan had been imported from the U.K. and the U.S. in spite of the fundamental rule of autonomous management claimed by Japanese scientists and that was written into the Atomic Energy Basic Law in 1956. I have studied popular views on science in Japan from the viewpoint of the science education system. This includes the process of introducing Western science and technology to Japan as an aspect of Japanese modernization since the late 19th century. Historical conditions as such have affected Japanese views on science and attitudes towards decisions on science policies. I argue that an attitude towards science that favored immediate application of its products to society was an underlying cause of the dismissal of the pursuit of safety for nuclear technology--and this led to the terrible accident. I experienced the radiation exposure by the severe accident of the Fukushima Daiichi Nuclear Power Station from the perspective of a science teacher of a high school located about 50km away from the plant; and I intend to verify the hypothesis by surveying the views on science obtained with the teachers in the high school.

Discussant:

Kohta Juraku, Tokyo Denki University

251. (14) Beyond finality: design and displacement of death in biomedical practices - II

11:00 to 12:30 pm
Solbjerg Plads: SP208

Chairs:

Klaus Hoeyer, University of Copenhagen
Linda F. Hogle, University of Wisconsin--Madison

Participants:

Signing Off: Whole Body Donation and its Dis-contents. *Susan E Lederer, University of Wisconsin School of Medicine and Public Health*

Why do people choose whole body donation as the final disposition of their remains at death? What do these potential donors imagine in designating the circumstances of their exit and the recipients of their cremains? In the United States, the economic recession seems to have been a boon for whole body donor programs. The opportunity to save on funeral and other costs associated with death may represent a new incentive for body donors, but the other motivations for such programs have received little systematic attention. This paper focuses on the process of whole body donation, from initial inquiries, screening and selecting donors, the actual uses of the body, the final disposition of the remains, and the annual ritual commemoration of body donors by medical students and other trainees. This paper also analyzes the information to potential donors, the collection of individual and occupational data by donor programs, and the demographics of whole body donation in the Midwestern United States.

Orchestrating the death of the organ donor. *Anja Marie Bornø Jensen, Department of Public Health, University of Copenhagen*

Based on comprehensive ethnographic studies at Danish neuro-intensive care units among health care professionals and organ donor families, this paper discusses the processes of organ donation in Denmark. The experiences of facing brain death, deciding about donation and exchanging the organs can be troubling for both families and staff. The patient is declared brain dead, but death has somehow not reached a final state. As a consequence, organ donation can therefore be understood as a 'strange figure' in need of some sort of cultural mechanism or cultural translation (Hogle 1999). This paper discusses how death is designed and controlled in particular ways in order for organ donation to take place. The paper adopts the concept of "orchestration" to unfold how families, hospital staff and, on a larger scale, Danish society attempt to perform, reinterpret and translate death and organ donation into something culturally acceptable and sense making. Orchestration is closely linked to "ritualization", focusing on the strategies of how rituals are created (Bell 1992). Through orchestration, this paper will contribute with unfolding the complex social interplay between all actors in the donation process with particular focus on the shaping of death, the role of technology and the social meanings of the ambiguous body of the organ donor.

Hard graft: Living on after heart transplantation. *Margrit Shildrick, Linkoping University*

The field of human organ replacement, and most particularly that of heart transplantation, offers a prolongation of life through both biomechanical and organic protheses. Where a donated heart is commonly referred to as the 'gift of life' both in lay discourse and by those engaged in transplantation procedures, how does this imbricate with the alternative clinical term of a 'graft'? For recipients of donor organs, the experience of living on in the face of otherwise certain death is fraught with complex emotions not only about the self and the now dead other, but the persistence of the other within the self. In contrast to our expectations of the feel-good narrative of the gift of life, both donor families and recipients are often significantly troubled by the aftermath of the procedure, which may fundamentally challenge notions of personal identity, as well as having deep implications for our understanding of the relation between death and 'staying alive'. Indeed, when we think in terms of the graft, it is not entirely clear

whose life is being prolonged. Drawing on recent research into heart transplantation, I shall theorise the field through a reflection on the meaning the gift and of the graft, before moving on to consider whether a Deleuzian approach to both the assemblage and the 'event' of death might offer a more productive framework.

Simulating resuscitation – material and social practices as mediators of knowledge and meaning. *Karolina Lindh, Department of Arts and Cultural Sciences, Lund University, Sweden*

Cardiopulmonary resuscitation (CPR) courses teach the lay public a procedure intended to prevent death from sudden cardiac arrest. In these courses encounters with what might be a case of cardiac arrest and what one should do as a bystander is simulated. Knowledge is intended to provide hope. This presentation studies how the material and social practices that constitute the CPR class create a space for discussions and for experiencing what a real-life event of actually having to perform CPR would be like. The study is based on material gathered through participatory observations, carried out in 2011/2012, during CPR classes in two different settings. It elaborates on how the material and social practices that constitute the CPR class work as mediators of knowledge and meaning. During classes instructors and participants repeatedly return to how the real-life event might differ from the situation they enact during class. The practical exercises of chest compressions and mouth-to-mouth on mannequins engender lively discussions among participants. They wonder whether there is a risk of further damaging the victim when trying to help and if they themselves as rescuer really are strong enough to carry out the compressions. Experiencing the measures, chest compressions and mouth-to-mouth, with their own bodies is tiresome and participants sometimes complain about pain in their hands. The mannequin is occasionally treated as a living person gently approached and at other times made fun of, slapped in the face and confirmed dead by the participant. Self-doubt, worries, jokes, care and hope all converge.

Discussion. *Klaus Hoeyer, University of Copenhagen*; *Linda F. Hogle, University of Wisconsin--Madison*

Time for cross-cutting debate

252. (49) Design practices: material-discursive entanglements and interventionist approaches - I

11:00 to 12:30 pm
Solbjerg Plads: SP210

Chair:

Yvonne Dittrich, IT University Copenhagen

Participants:

Critical Design Practice with Crises in Mind. *Lisa Anne Wood, lancaster University*; *Monika Buscher, Centre for Mobilities Research, Lancaster University*; *Leonardo Ramirez, Fraunhofer Institute FIT, Bonn, Germany*

Crises inspire innovation. The sites of innovation are complex, distributed and rapidly changing, creating sociotechnical challenges and opportunities for practitioners, designers and researchers alike. In this paper we reflect on the material and discursive entanglements thus created as part of a project aiming to design technologies to support people in co-ordinating collaborative emergency response to disasters. The BRIDGE project attempts to design and bricolage together heterogeneous elements and through our participation within an ethnographically informed collaborative design effort, we are finding and negotiating a range of 'located accountabilities' (Suchman, 2002), frictions and tractions around the innovative tendencies occurring on the shifting grounds of crisis innovation. We draw on the field of design studies, where practitioners have

attempted to understand the social practices of design through analysis of situated reasoning and practical action (Luck & Ikeya, 2010; Béguin, 2009), and the field of STS in attempting to understand how actions, environments and objects are constituted and mobilised (Suchman, 2007). We draw on Beguin's notion that common worlds are not single entities and consider the contradictions embedded within the BRIDGE project's collaborative innovative endeavours. In combining this with STS notions of multiplicity and situated action, we discuss how it is possible for innovation to occur and succeed (if this is at all possible) to negotiate multiple, and sometimes contradictory, demands.

Three Regimes of Technoscience. *Andrew Feenberg, Simon Fraser University*

The concept of technoscience in STS scholars such as Latour and Haraway aims to erase the traditional hierarchy of theory and practice, knowledge and application, science and technology. It belongs to a whole slew of related concepts that challenge the distinction either philosophically or historically. This paper offers a modest view of technoscience as a specific phenomenon involving three regimes of knowledge making and decision-making. The paper focuses on cases in which the construction of an experimental apparatus is simultaneously the construction of a technological or commercial prototype. In such cases scientific and technical work form a single process. However, distinctions remain at other levels. The decision whether to "scale up" the project results from the coincidence of two very different regimes of decision-making, a scientific judgment of validity based primarily on epistemic tests carried out in the scientific community, and a commercial or political decision made (usually) by non-scientist administrators based on a wide range of considerations such as market position. Only where the two decisions coincide is a product likely to result from the research. A discussion of the case of cold fusion based on Simon Bart's book Undead Science confirms this analysis and also suggests the significance of a third regime concerned with the constitution of the research object. That regime mixes theory and a very different sort of practice, the politics of academic recognition and research funding,and, increasingly, public interventions.

Affective codings and discursive plasticity. *Doris Allhutter, Austrian Academy of Sciences, ITA*

While the notion of discursive practices has stimulated research on how discourse unfolds in design practices, Karen Barad's concept of material-discursive performativity inspires to think about how to extend methodological frameworks in design research and practice to consider the 'intra-action' of material phenomena with discursive socio-technological practices. Adrian Mackenzie's conceptualization of code as material and practice has pointed to the agentive and affective dimensions of 'something quite thing-like' like 'coding'. On this background, I suggest that disclosing entangled performativities in design processes can open spaces of inventiveness for communities of practice. Thinking about performativity has to consider the collective and structural dimensions of socio-technological imaginaries and practices and their immersion in materialities. My paper discusses how design practices are entangled with performative discourses and how understanding material-discursive relationalities is conducive to widening capacities for action. Based on this, my idea of process improvement aims to expand the 'discursive plasticity' (Hofmann 2011) of design teams, i.e. a team's capacity to (un)learn and change with regard to the material-discursive implications of its work practices and, as a consequence, to reconfigure processes.

Contested strategies for user involvement in product development. *Ulrik Jørgensen, Aalborg University*; *Yutaka Yoshinaka, Technical University of Denmark*

Research on user-driven innovation has mainly focused on situations where 'the user' and 'the use' is in an already

configured state as exemplified in studies of lead user innovation (von Hippel 2005). Even in processes of participatory design, the interests, the needs, the abilities and the identity of the user is often taken for granted to a large extent. In contemporary business anthropology the needs of users are expected to be uncovered. However, many activities resulting in innovations where companies involved users are contested and have lead to very changing views of outcomes and ways to organise and engage with users. This points to the need for developing spaces of practice and mediation for user-involving innovation, which do not build on existing patterns of use and users, but nurtures the emergence of new configurations of use, users and artefacts (Oudshorn & Pinch 2003). In the work, we will draw upon Science and Technology Studies and especially actor-network theory (ANT) and a series of exemplary case studies of power, knowledge and innovation (Latour 1996; Callon 1986; Law 2002). The study is based on how a number of Danish companies have staged and structured as well as perceived their interactions and involvements with users. This shows a rather turbulent process with dramatic shift in the staging, the engagement of competences, the process of interacting with users and in how outcomes have been made sense of and are translated into the structuring and framing of design and product development.

253. Beyond dual-use (part 2): Reconsidering the relationship between science and security
11:00 to 12:30 pm
Solbjerg Plads: SP212

This two part session invites STS scholars to challenge and explore the concept 'dual-use' and (re)consider its utility in the articulation of relationships between science, technology and society. Part Two of this session departs from 'design' on the path to 'displacement'. From the ashes of the Cold War arose a new enemy and a new security paradigm. Since the emergence of concerns about rogue states and insurgents, national and international security strategies have become increasingly interested in the activities and capabilities of non-state actors and the potential for individuals to use science and technology for criminal purposes. Unlike the era of super-power revelry, the security environment appears asymmetrical, unstable and unpredictable and proliferation concerns apply also to sensitive information and technologies within national boundaries. In this session, participants are encouraged to explore the ways that dual-use designs have been displaced and adapted to fit this problem space. Via the application of STS theories and methodologies, they (re)consider the ways that the term dual-use is being (re)negotiated and (re)defined by investigating contemporary security concerns and controversies or by illustrating the impact of security interventions and science-security interactions on sociotechnical systems. Similarly, problematizing the relationship between science and security may call into question assumptions about the characteristics of technology or the character of technological change and the efficiency and/or legitimacy of new dual-use policies. Ultimately the exploration of dual-use displacements offers insights into the connectivity between design, development, people and places and the interpretive flexibility of science and technology.

Chair:
Haico Te Kulve, University of Twente

Participants:

The H5N1 Controversy: Where Science Studies Meets Intelligence Practitioners. *Kathleen M Vogel, Cornell University*

In late 2011, virologists Ron Fouchier and Yoshihiro Kawaoka came under a swarm of government and public controversy from their creation of novel variants of the H5N1 bird flu virus. Prior to publication of these experimental findings, the U.S. National Science Advisory Board for Biosecurity (NSABB) reviewed the scientific manuscripts. The NSABB unanimously recommended that the, "conclusions of the manuscripts be published but without experimental details and mutation data that would enable replication of the experiments." The NSABB explained its

justification as being based on dual-use concerns: "publishing these experiments in detail would provide information to some person, organization, or government that would help them to develop similar viruses for harmful purposes." However, once the NSABB made its decision public, other flu virologists emphasized the difficulty of the experiments and how these experimental results could lead to new medical treatments. Other scientists, however, have sided with the NSABB and warned of the security dangers in publishing these bird flu results. In the middle of this context, U.S. intelligence analysts have been tasked by their superiors to provide up-to-date security assessments of these bird flu experiments. These intelligence analysts have struggled to make sense of the positions held by the NSABB and different scientific experts, as well as how to understand the roles of tacit and explicit knowledge in these experiments. This paper will discuss what happens when S&TS researchers are brought into dialogue with U.S. intelligence analysts on the dual-use concerns about the controversial H5N1 experiments.

A Bulwark at the Border of Science and Technology: The ontological foundations for a scientific commons in the age of Dual-Use concerns. *David Koepsell, Technical University Delft*

A troubling trend is threatening the traditional divide between that which is "designed" and that which is "natural." Dual-use concerns now tend to undermine what many scientists have for so long taken for granted: the existence and freedom of what we can call the "scientific commons." This commons should include nature, its laws, and its products. "Pure" or "basic" science should be free to examine the laws and products of nature without fear of restriction, even while innovators may be justly limited in the use of the findings of scientific investigations to create new things. But trends in science and technology are leading to a convergence of domains. Dual-use concerns now threaten the scientific commons as security concerns, as well as commercial opportunities, make investigations further upstream both interesting and threatening. As technology depends upon manipulations of ever smaller components, it approaches the traditional domain of science, and has recently invaded that domain, claiming as "invention" discoveries of nature's workings and her parts, and blurring what was once a more clear distinction. We are faced with a challenge: can we adequately define and defend the border between the "natural" and that which is designed? I argue that we can. The distinction between nature (the domain of science, and thus public) and technology (which can be justly restricted) is the very concept of "design." I elucidate this ontology in this paper, and argue for a framework of individual, ethical duties and responsibilities that preserve the freedom of the scientific commons.

Dual-Use Dynamics: Exploring the Connections between Concept and Context. *Keelie L.E. Murdock, Rathenau Institute; Barend van der Meulen, Rathenau Institute*

Historically, 'dual-use' has implied a demarcation between civilian and military technology and thereby a distinction between two possible applications. However, its meaning is expanding and in the process, re-positioning and re-aligning 'science' vis-à-vis 'society' and 'security'. The potential for accidents in the laboratory and for legitimate research to be 'misused' offensively has compelled the development of security policies that aim to minimize the risks and mitigate the unintentional side-effects. The boundaries of limitation are now less distinct and are made blurry by drawn-out debates over contentious descriptions of the threat and the appropriate measures to constrain it. This study analyzes the dynamics of defining the dualities of science and technology within the context of different systems of non-proliferation. It explores the relationship between dual-use definitions and political structures, governmental priorities and expectations for science and

technology and evaluates the process of negotiating when, where and how dual-use distinctions apply. This provides a basis for understanding the interactions between the different sectors and stakeholders and insight into the intricacies and implications of dual-use problem framing. In consideration of these lessons in relation to contemporary discussions about dual-use research practices, this paper proposes that at the interface between security control and scientific progress the complex assemblages of actors, artifacts, and contexts and various networks of synergy and conflict are creating new spaces for both scientific innovation and security intervention but the dual-use definition is limiting opportunities to prevent potentially undesirable research directions and military applications.

Discussant:

Barend van der Meulen, Rathenau Institute

254. (104) The governance of innovation and socio-technical systems: design and displacements - I
11:00 to 12:30 pm
Solbjerg Plads: SP213
Participants:

The Governance of Change in Socio-technical and Innovation Systems: Building blocks for a theory. *Susana Borras, Copenhagen Business School; Jakob Edler, University of Manchester*

More than twenty years of studies on 'socio-technical systems' and 'innovation systems' have yielded multiple academic approaches to study the way in which science and technology shape and are shaped by social, political and economic organization. The various stands of literature exhibit high diversity in crucial aspects about the role of agents and institutions in those systems, as well as about the dynamics that drive change. Unfortunately most of these approaches have not talked to each other because they belong to different disciplines. Strikingly, while most of the literature on the analysis of systems change centre around the nature and role of 'governance' of that change, the very concept of governance continues to be empirically and normatively indeterminate and ill-defined. This paper aims at developing the building blocks for a theory on the governance of change of socio-technical and innovation systems (ST&I systems). In so doing, it fills a gap in the existing literature. Taking the starting point from a workable concept of governance of change with normative but especially with analytical dimensions, the paper identifies four pillars as building blocks for a theoretical explanation of the governance of change in these complex systems. These pillars focus on the opportunity structures & capable agents, governance instrumentation, democratic legitimacy, and learning & reflexivity within the system. These pillars are the theoretical foundations from which a set of specific assumptions will be developed. This will form a consistent analytical framework to be applied in further empirical work.

Governance of the Discontinuation of Socio-Technical Systems. *Stefan Kuhlmann, University of Twente; Peter Stegmaier, Department of Science, Technology, and Policy Studies; Vincent Visser, University of Twente*

The governance of socio-technical systems has preferentially been associated with advancement and innovation. Discontinuation of socio-technical systems is, at most, discussed as regime change, innovation setback or failure—as if advancement and innovation was the only direction in which socio-technical development and its governance would go. This paper aims at a better understanding of the governance of the abandonment of socio-technical systems. As observed since Schumpeter's (1942) insight concerning the symmetry of creation and destruction, the anticipation of discontinuation and fading out is as important as the driving force of expectations

about innovation and progress itself. It is crucial to see how technologies are recombined, getting unpopular, liquidated, how promises dissolve—in short: disappear over the horizon of a different future than the one, which was anticipated in the past. The analysis is carried out in five steps: Firstly, we conceptualise the idea of 'discontinuation governance'; secondly, we provide a preliminary analysis of four exemplary cases placing exemplary emphasis on one of the cases, the phasing-put of incandescent light bulbs in the Netherlands; thirdly, we outline a heuristic derived from some explorative cases analyses that spot light on four key dimensions of 'discontinuation governance'; fourthly, we discuss and partially re-interpret the technological substitution pathway model of Geels/Schot; and we end with conclusions and outlook for further research and policy uptake of 'discontinuation governance' as a strategic challenge.

The governance of innovation and innovation in governance. *Jeremy Rayner, University of Saskatchewan*

The relationship between governance and the objects of governance has usually been treated in a simple, unidirectional way. That is, governance is conceived of as the attempt to steer social actors towards public goals and, although much of the emphasis in recent governance studies has been in moves away from top-down, hierarchical steering modes, the success or failure of governance arrangements is judged by the extent to which these goals are achieved or not. However, there is no reason to suppose that governance modes and mechanisms remain unchanged in the course of the steering attempt, ideally becoming more effective and more legitimate over time. Drawing on recent work on policy change, this paper proposes learning as the key feedback mechanism that drives governance change over time. Based on a four country comparison of public engagement and policy development for first and second generation biofuels since 1995, the paper identifies successive "rounds" of engagement and decision making that sometimes result in relatively simple policy development but, on critical occasions, in changed governance arrangements as well. The paper examines the utility of both the "reflexive governance" idea in critical policy studies and the "single, double and triple loop" learning literature from administrative studies for understanding learning in this context. It concludes that innovation poses a distinctive challenge to governance because of the increasingly ambivalent character of public responses to new technologies. Far from representing a failure of engagement, ambivalence is a key driver of both the governance of innovation and innovation in governance.

Technology decision making processes and innovation indicators. *Nuno Boavida, Karlsruhe Institute of Technology (KIT) - Institute for Technology Assessment and System Analysis (ITAS)*

The present work deals with the use of innovation indicators in the decision-making process. It intends to contribute to the discussion on the construction, use and analysis of indicator systems and also to evaluate its weight on decision-making in innovation. The goal is to help understand how innovation indicators can influence technology policy and through it, society at large. This work will start by analysing the use of indicators (their problems and consistency) and other sources of information that contribute to build the opinions of innovation decision makers. This will be followed by a survey and interviews with main innovation actors. The results will shed light on the impact of the use of indicators by the innovation community – both in terms of technology policy and in the social sphere. Proposals and implications for the future will be advanced, hopefully adding new contributions to the governance of the science, technology and innovation field.

255. (74) Knowing and working in hybrid research spaces - I

11:00 to 12:30 pm
Solbjerg Plads: SP214
Chair:
  Maximilian Fochler, University of Vienna
Participants:

Art, genomics and method. Art-science as 'third space'. *Matthias Wienroth, University of Edinburgh; Pippa Goldschmidt, ESRC Genomics Policy and Research Forum*

Art-science has the potential to constitute a 'hybrid' space, an 'interdiscipline', that can challenge the ontological assumptions of its contributing epistemic meta-cultures. We explore how this 'third space' (cf. O'Riordan 2010) can work as a trading zone in which novel links and relationships can be created between knowledges, stakeholders, artefacts and spaces (cf. Barry et al. 2008) of new and emergent technosciences, such as genomics; and how engagements and knowledges in a 'third space' can inform scientific and artistic knowledge production. The paper draws on outcomes from a pilot project conducted in the first half of 2012. This project was set up as an experimental space for four artists and two genomics scientists. The pilot focused on understanding the opportunities and challenges of collaborative work between artists and scientists. Their work consisted of producing artworks whilst developing a novel method to support the cross-disciplinary process of re-thinking a specific issue of their choice in genomics research. The genomics discourses and practices (subject), and the method development, reflection and deployment (object) operate here as 'trading zones' to encourage the forging of novel relationships. We report back on the outcomes of the pilot, especially on the role of what we term a 'boundary method' as space for interdisciplinary creativity and research. As part of the development of a cross-disciplinary framework encouraging socially sustainable knowledge production at the art-science interface, this work contributes to the literature on interdisciplinarity, hybrid spaces of knowledge production, and art-science.

The Visualizing Subject and the Art/Science Production Process. *Keith A Woodward, University of Wisconsin-Madison; Harriet H. M. Hawkins, Royal Holloway University of London; Sallie A Marston, University of Arizona*

How and with what significance do visual technologies and associated scholarship already forge spaces and practices through which art and science are entangled? Here we explore the ways that productive tensions in past and present formulations of art and science are enabling a new conceptual and practical terrain through which our place in and with the world is explored, mapped and renegotiated. Using an ethnographic approach we focus on an interdisciplinary team working with visualization technologies, a project that hinges upon the constant negotiation of what can be seen, what can sensibly be made of images, and with what import. We trace the particularities of the visualizing subject through a series of fields of techno-scientific visualization and ask what sort of materialities, technologies, practices and subjects emerge? We go on to track three interlinked facets of the social production of visualizations: 1) the visualizing subject as a social subject; 2) the relationships between the visualizing subject and tools and technologies, including those that enable collaborative visualizations, and; 3) the embodied visualizer and the turn towards studies that foreground the emotional, affective and material components of the production of visualizations. In focusing on the case of the Advanced Visualization Lab at the University of Illinois and its art and science collaborative orientation—self-described as a "renaissance team"—as they develop a dome visualization of Hurricane Katrina for the public, we argue that the production process is not incidental to the final product, but the central force that drives its singular 'signature'.

What are science classrooms for? Research in hybrid classroom spaces. *David Stroupe, University of Washington*

While STS scholars analyze science research in specific spaces, including laboratories and museums, they rarely include school classroom spaces as sites where "real" research occurs (Latour, 1987; Livingstone, 2003). This exclusion reflects findings of recent science education research, which conclude that many tasks given to students are antithetical to actual science practice (Chinn & Malhotra, 2002; Windschitl et al., 2008). To address this problem, I frame science classrooms as hybrid spaces for students to learn science through legitimate participation in science practice. While students cannot engage in the same cutting-edge research as laboratories because of a lack of resources, technical expertise, and access to expert peer-review, I argue that research in hybrid classroom spaces serves different purposes. First, classroom research should focus on constructing evidence-based explanations for puzzling phenomena or problems in students' local communities (Moje, 2004). Repositioning students as scientists that study and solve actual science problems in their community problematizes the typical cognitive division of labor, which elevates teachers as the cognitive authority and keeps students as technicians (Addelson, 1983). Second, teachers and students conduct science research as they bring together different knowledges and discourses from students' homes, school, and canonical science. Such research helps students learn to engage in the discourses and sense-making processes of scientists (Warren & Rosebery, 1995). Thus, reframing classrooms as hybrid spaces for research can inform discussions about the authenticity of school science practice, and helps redefine science teachers' roles in providing opportunities for students to learn through legitimate participation in science practice.

The tension between academic knowledge production and online peer production. *Eduard Aibar, Universitat Oberta de Catalunya*

Online mass collaboration projects, such as Wikipedia and those designed for developing open source software programmes, are remarkable examples of hybrid spaces where knowledge and information are co-produced by a wide variety of social actors. They share many features with traditional scientific practices: peer review mechanisms, a commitment for open publication of results, a meritocratic culture, etc. Nevertheless, there are also important differences: in online peer production peer review is often open and post-publication; the distinction between experts and lay people does not play a priori a crucial role – amateur contributions are welcome; not only results are published but the process of production – and thus intermediate results and procedures - is also open, etc. Though the present movement towards open science and open research pleads for importing some of these features to the realm of science and academia, it is not clear whether both cultures and ways of knowledge production are fully compatible. We try to address this issue through an empirical study on university lecturers' uses and perceptions of Wikipedia. The "free collaborative encyclopaedia" is known to be one of the widest used resources by university students, but there are no systematic studies on how lectures and researchers use and perceive this source of information - though they seem to share a more sceptical view. We will present the preliminary results of a set on interviews to professors in different departments of our own university, as a first qualitative stage of a longer on-going research project.

256. (36) Practice theory and beyond: emerging approaches to studying energy consumption - I

11:00 to 12:30 pm
Solbjerg Plads: SP216
Chairs:
Kirsten Gram-Hanssen, Danish Building Research Institute,

Aalborg University
Toke Haunstrup Christensen, Danish Building Research Institute, Aalborg University
Ruth Rettie, Kingston University
Kevin Burchell, Kingston University

Participants:

An Interdisciplinary Approach to Researching Residential Energy Consumption: A Holistic Practices Focus. *Chris Foulds, University of East Anglia*

In researching residential energy consumption, particularly the social implications of innovative technological provision, truly integrated approaches have not yet been undertaken. This paper investigates the scope of using a combination of quantitative (technical building monitoring) and qualitative (interview, participant observation) methods, whilst staying true to the same holistic aims. This more deep-rooted interdisciplinary shift is enabled by operationalising social practice theory to act as a holding force. This paper uses a 14-dwelling Passivhaus case study to illustrate the validity, feasibility and attainability of this mixed methods approach in enabling interdisciplinary household energy research. Building monitoring data (e.g. indoor CO_2, temperatures, energy) of unoccupied and occupied dwellings are first compared to demonstrate that technology-practitioner interactions (i.e. practices) are a suitable research focus and unit of analyses for household energy studies. The occupied dwellings are then investigated further, identifying differences in building monitoring data which are largely treated as proxies of practices-as-performances. How the interconnections of Gram-Hanssen's (2010) proposed elements of practice (know-how, institutionalised knowledge, engagements, technology) have shaped these differences is explored, helping to delve deeper into the concept of practical intelligibility. The discussion benchmarks findings against what would have been achievable through a quantitative- or qualitative-only study. Through examining the applicability of social practice theory, attempts are made to align mainstream household energy research (and its dominant technical methods) with sociological advances. Such work is of vital importance in understanding how occupants use new low carbon homes, ensuring triangulated conclusions, and thus aiding progress towards challenging carbon reduction targets.

Performing ultra-low energy consumption in passive houses. *Michael Ornetzeder, Austrian Academy of Sciences*

A 'passive house' is a building designed to meet extremely low energy standards. The overall energy demand for heating and cooling in such a building is lower by at least a factor of 4 compared to the consumption levels of residential buildings designed to construction standards presently used across Europe. In Austria, a first building according to the passive house standard was constructed in 1996. Since then the market for passive houses has rapidly increased. Statistics show that there were more than 7,000 residential units at the end of 2009. Per capita, this is more than in any other country of the world. Most of these buildings are newly constructed private single-family houses. Although the passive house standard has mainly been adopted in this sector, a broad variety of other types of buildings were realised in the last decade. Empirically, the paper draws on interviews with passive house users, representatives of relevant organisations as well as the analysis of various documentary sources. Against the background of practice theory approaches I will discuss how and why different visions of ultra-low energy buildings resulted in stable sociotechnical arrangements of ventilation systems, air-tight building envelopes, new heating devices, changed but also retained use patterns and new comfort requirements. Moreover I will show that early users of passive houses were active co-designers in the sociotechnical development process of passive houses.

The learning of energy efficient technologies. *Charlotta Isaksson, University West*

Energy efficient technologies are not just objects which might enable humans to carry out (more sustainable) practices; they are also objects that have to be learnt. The aim of this paper is to examine how inexperienced users learn how to handle various dimensions of a newly purchased heating system by participating in everyday social practices. Courses of action for gaining control over the technology in different situations are identified and discussed. Empirical data from 24 in-depth interviews, conducted in 2010 with Swedish house-owners who had recently converted to either bedrock heat pumps or district heat (12 interviews each), are used in the study. Both systems are classified as renewable energy in Sweden. The result demonstrate three courses of action related to the technology: Being familiar with a restricted set of operations, exploring various features, and gaining access to the craft skills. The newly acquired heating system was often not easily and smoothly appropriated by users, indicating that appropriating new technologies often involves resistance. One conclusion is that a significant dimension of this resistance concerns refusing to become involved with the heating system because of the problems the users might cause by their interaction. At the same time, lack of knowledge and/or insufficient involvement with the technology caused unexpected difficulties and malfunction. The overall contribution of this paper is to examine and problematize socio technical learning processes that changes energy consuming practices.

Projects, activities and appliances: A new energy order. *Helena Karresand, Linköping University*

In many countries around the world there is a shift towards building more energy efficient buildings. Passive houses are one alternative where indoor heating is mainly managed with the use of passive solar radiation, appliances, peoples' activities and good insulation. Research shows that the buildings have better energy performance but still they do not reach the overall targets of reduced energy consumption. This study focuses on the building as a socio technical energy system, and more particularly on the households who inhabit them and their use of appliances. The aim of the study is to increase knowledge on how households in fact live their every day lives in passive houses and more particularly on the use of household appliances and their role in every day life. Interviews have been made with households living in passive houses and are concentrated around the use of household appliances, in particular white goods and appliances used for media consumption (computers, TV-sets etc.). The material has been analyzed using a concept called "energy orders" which combines practice theory and time geography. The idea is to bring together the abstract concept of practice with the concrete concept of project to identify the possibilities for changes towards more sustainable energy practices in the home. Results show that certain practices change thanks to the passive house concept while others do not. Energy itself is sometimes the cause of change but just as often technology and design actually prevent more energy efficient practices.

How can Central Heating Installation Influence Habitual Space Heating Practices? *Faye Wade, UCL - Energy Institute*

This research investigates how central heating installers can influence the habitual space heating practices of householders. Domestic occupants often displace the design intentions of central heating systems, particularly in the use of thermostats, thermostatic radiator valves and programmers; this contributes to a higher than necessary space heating energy consumption. The installation or modification of a central heating system is a clearly defined boundary between the technical and the non-technical. Installation is a process of knowledge transfer, where information provided by the installer; which may include myths, technical and tacit knowledge, can become embedded in the householders' practices. We need to address how much the householder adopts the installer's knowledge in the routine operation of their system, and thus how this energy consuming practice develops. Consequently, a detailed understanding of the information exchanges, both verbal and non-verbal, that occur during installation is vital. For this, an ethnographic approach to data collection is required, this will involve shadowing installers on several 'jobs' to capture detailed accounts of the interactions discussed above, accompanied by follow up visits to understand the everyday behaviour of householders in relation to their central heating. This paper will detail exploratory work that has been conducted on the subject to date, contributing to an improved understanding of the appropriation of central heating technology during installation. This is early stage research, which can provide further information regarding routines of use; this is vital if we are to move towards more efficient space heating practices.

257. On STS and Psychology
11:00 to 12:30 pm
Solbjerg Plads: SPs01

In this Session we propose to discuss some topics of interest to Psychology using theoretical and practical contributions of STS. The Session is composed by three papers of Brazilian Psychology researchers who share the idea that the controversies about humanness are centered on the manner by which bodies, subjectivities and cognition are constructed. In this line of reasoning, Ronald Arendt will develop a serie of arguments whose aim are the translation to psychology Bruno Latour's considerations about the non separation of construction and reality, concluding that psychological entities like emotions, cognitions or learning are local stabilizations that are fabricated, indeterminate and open to risk. Marcia Moraes will discuss some possible connections between STS and Disability Studies. Investigating the ways in which visual disability is enacted in day-by-day practices in a Rehabilitation Service of a Special Institution, in Brazil, she asks: "What does it means to 'rehabilitate' a blind person?" Arthur Ferreira is interested in the subjectivation effect of Psychology and will present an analysis of the ways in which a canonical methodology of psychological research, the naïve subject design, is engaged with some subject effects. Concluding, if psychology can be included in science studies – and that is the main argument of the work developed by the three authors of this session, than a lot of new themes, as those here analyzed begin to affect and transform STS theory and research. That's our contribution to the field.

Chair:

Marcia Oliveira Moraes, Universidade Federal Fluminense

Participants:

Blindness in action: Notes on practices of rehabilitation with people visually disabled. *Marcia Oliveira Moraes, Universidade Federal Fluminense*

This work aims to investigate the ways in which visual disability is enacted in day-by-day practices in a Rehabilitation Service of a Special Institution, in Brazil. Theoretically we focus on visual disability without considering it neither as a natural fact, nor as a social event. The research is based on a praxiographic investigation of reality. Methodologically, there are some principles that guide the investigation: to study blindness in action and not in its internal qualities; to follow the ways in which blindness is enacted in some rehabilitation practices; don't pre-define the differences between to see or not to see. The inquiry has a political relevance because when we consider that disability is enacted in practice, we affirm that multiple actors take part on it, humans as well as non-humans. It has also a practical and theoretical relevance because we affirm that knowledge is not something that represents the other, but instead, it implies a practical engagement made with others. This paper is a contribution on the relation between STS and Disability Studies. STS is a powerful tool to investigate disabiltiy in action. In some classical literature about visual disability, blindness is defined only as a loss. With STS tools we can folllow the ways

in which blindness is enacted as a mode of existence with its own potentialities. We consider that STS is a strong discourse to remake the classical conceptions of disability as well as a discourse that enables rather than disables people who can not see.

Psychological researches as subjectivities factories: the naïve subject designs. *Arthur Arruda Leal Ferreira, Federal University of Rio de Janeiro*

We can study the subjectivation effects of psychology in three realms: 1) in some practical devices (mental tests, attitude scales, etc.); 2) in the diffusion of psychological knowledge; and even 3) in research models. In this work it will be exposed the last realm: the way in which the kinds of research construct us through some designs. To do so, some contributions from Bruno Latour and Vincianne Despret about scientific Knowledge are considered. Their main idea is that scientific knowledge is made not by sentence representations, but by proposition articulations between researchers and researched beings. Considering this position, they also point out that human beings are very docile when putted in contact with scientific authorities (especially in contrast with the recalcitrance presented by researched entities in natural sciences). In a more specific way, the central issue of this communication is to investigate the historical changes in the witness role in the psychological researches designs: from the experts of the experiments of the late 19th century to the naïve subjects of the recent researches. Traditionally this historical passage is understood in terms of the objectivity increasing of the researches designs, due the supposed control of the influence over the witness. Nevertheless, these changes will be considered in terms of its subjectivaction effects and its articulation ways. The central hypothesis is that naïve subject devices don´t exclude the influence of the researchers; they only increase it putting the psychological researched witness in a more docile state in front a scientific authority.

The Mental Test as a Boundary Object in the Early-20th-Century Russian 'Child Science'. *Andy Byford, Durham University, UK*

'Child science' (the bio-psycho-social study of child development) is a heterogeneous field of scientific work, carried out through collaborations between actors belonging to different disciplinary, professional and administrative structures – especially those pertaining to psychology, education, medicine and psychiatry, while also involving state bureaucracies and members of the general public (e.g. parents). Star and Greisemer (1989) have argued that to explain scientific work that takes place across diverse groups of actors, one should not look merely for the establishment of 'consensus' or of formal arrangements for 'collaboration'. Instead, one should analyse the generation of 'boundary objects' – strategically ill-structured social artefacts produced in, through and for particular scientific work (thereby becoming, literally and figuratively, instrumental to it), designed for flexible interpretation and mobility across distinct areas of work. The principal property of a 'boundary object' is its ambiguity, which emerges in and through the object's displacement, enabling scientific work itself to be displaced, despite the maintenance of divergent perspectives, priorities and practices between its various participants. Focusing on the historical Russian case, this paper will explore the ways in which the mental test served as a key 'boundary object' that held together (often controversially) the field of 'child science' in the early 20th century. Tracing the genealogy of mental testing in scientific experimentation, scholastic assessment, medical diagnostics, and bureaucratic accounting, the paper focuses on the ambiguous designs and displacements of mental tests along and across the boundaries of 'child science', especially those between its core realms of expertise – psychology, pedagogy and psychiatry.

258. (70) Science and the impact of organizational

practices - II

11:00 to 12:30 pm
Solbjerg Plads: SPs03
Chair:
Finn Hansson, Copenhagen Business School, Dept. of MPP
Participants:

On the way to academic search engine optimization? *René König, Karlsruhe Institute of Technology*

In the private sector the idea of modifying online content in a way that meets the criteria of search engine algorithms has become a vital marketing branch, namely search engine optimization. Since user studies clearly and repeatedly have shown that search engine users mostly follow the initial links in the results, these links are considered crucial for the visibility of a company and its products. This idea has recently been applied to the realm of science and humanities proposing a form of "academic search engine optimization." Recent studies in this area claim that academic publications are often not well-suited for the needs of search engine algorithms, suggesting instead that scholars should seek to meet generic search ranking criteria in order to achieve higher visibility in the results. Considering the mechanisms of search engine algorithms, this triggers a number of striking questions which have hardly been addressed from a more critical perspective: Can, should or must academia adjust to this new reality of information politics? Is there really a need for such steps or do search engines represent (offline) knowledge hierarchies mirroring well-established scientific positions? What kinds of social dynamics are triggered by this potential re-ordering of information hierarchies? The contribution tackles these questions by drawing on concrete empirical cases. It will discuss the applicability and the limits of existing methods from social science as well as informatics for this purpose to situate the market-driven algorithms in the world of academia.

Negative Impacts: The Role of Journal Impact Factor in Scientific Publishing. *Edwin Siu, Florida State University, Program in History and Philosophy of Science*

Journal impact factor was originally developed as a tool to identify trends in the flow of scientific information. This metric is now commonly used as an indicator of scientific prestige and quality, with high impact factors being highly valued in the scientific research and publishing communities. I argue that impact factor is a constructed measure that has become accepted as an objective fact by the scientific community, and therefore the emphasis on impact factor is unwarranted. To support this argument, I explore tenure and promotion criteria as an example of how journal impact factors are used for evaluation in an academic institution and explain how this creates a perverse incentive for researchers. Journal editors, seeking to attract more submissions from authors, also attempt to maximize their publication's impact factor through various competitive and manipulative strategies that further undermine the reliability of the metric. Finally, newer online and open access publications have challenged the usefulness of the journal impact factor and highlighted that other measures are more informative in evaluating the real impact of scientific publishing. Nonetheless, the continued emphasis on impact factor diverts attention away from these more substantive indicators of scientific productivity and quality.

Researcher Profiles: Accounting for Nonstandard Scholarly Output. *Clifford Tatum, Leiden University - Centre for Science and Technology Studies; Paul Wouters, Centre for Science and Technology Studies, Leiden University*

Scholarly use of digital media and the web has facilitated a proliferation of new communication practices and formats. However, limitations in the current academic reward system pose significant barriers in attributing academic credit not only for

research output disseminated in nonstandard web venues, but also for design and software contributions to the development of new communication platforms. Meanwhile, increasing popularity of researcher profiles provide a means of promoting nonstandard scholarly contributions. Individual use of researcher profiles commonly includes posting a CV on the web and creating an account in web-based system, such as LinkedIn.com or Acedamia.edu. In a more formal context, researcher profiles have an increasingly prominent role in institutional and national research information systems, e.g. Vivo (US), Pure (Denmark), and CRIStin (Norway). In this study we examine the technological affordances of the different kinds of platforms and the ways in which researcher profiles are being used. Of particular interest is the role of openness along two dimensions: (i) interoperability, which is a question about technical design and platform strategy, and (ii) the ways in which the institutional systems are (or are not) being networked nationally and/or internationally, and to what end. The empirical basis for this study draws on results from the in-progress European FP7 project, Academic Careers Understood through Measurement and Norms (ACUMEN). Researcher profiles are analyzed on the basis of their interfaces (e.g. content and user interaction) and infrastructures, with a particular focus on data models, interoperability, and configurations of openness.

Covering scholarly books in bibliographic databases: promises and problems. *Frederik Thomas Verleysen, University of Antwerp (ECOOM-UA)*

Difficulties in covering social sciences and humanities journal literature in bibliographic databases such as Web of Science and Scopus have been well documented. The extent to which scholarly books can be covered by such databases is, however, largely uncharted territory (Sivertsen and Larsen, 2012). At present, books remain a central publication output type for the social sciences and humanities, and their full bibliographic coverage would greatly enhance database functionality with regards to bibliometric research and assessment. This paper therefore makes a tentative comparison between two databases which comprise scholarly books and book chapters: Thomson Reuters' recently launched Book Citation Index for the social sciences and humanities (BKCI-SSH) (Adams and Testa, 2011) and the Flemish Bibliographic Database for the Social Sciences and Humanities (Vlaams Bibliografisch Bestand voor de Sociale en Humane Wetenschappen – or VABB-SHW) (VABB). As the VABB is in fact a full coverage database of peer-reviewed Flemish academic publications including books (full account in Engels et al., 2012), the question arises how well the BKCI-SSH fares in comparison. Combining 2004-2010 BKCI-SSH- and VABB-data based on publisher selection, our research analyses 1° overlap between BKCI-SSH and VABB regarding Flemish academic book publications in the social sciences and humanities, 2° the number and characteristics of publishers included in the VABB but not in the BKCI-SSH, and 3° the number and characteristics of publishers included in the BKCI-SSH but not in the VABB, having published books or book chapters by Flemish researchers. The paper closes with a discussion of possible future developments of improving coverage of scholarly books.

Changing governance of research activities: transnational convergence vs. diverse impacts. *Inga Ulnicane-Ozolina, University of Twente*

The aim of this paper is to analyse diverse ways in which public research institutes in different countries respond to isomorphic changes in organization of scientific activities. In the recent decades the research governance at the institute level has undergone a number of changes including transformation of reward, employment and funding systems with increased role of evaluation, temporary employment and competitive funding. These trends have spread across the national research systems due to several coercive, mimetic and normative isomorphic

change mechanisms related to policy processes (New Public Management reforms, cross-national policy learning, Europeanization) as well as dynamics of self-organization in scientific community (mobility, collaboration). However, the way these changes are taken up at the level of research institutes varies considerably due to the path-dependence of diverse pre-established national, local and epistemic institutional practices and cultures. The same governance characteristics – like evaluation, temporary employment, project funding – implemented in the context of specific organizational practices in different research institutes have diverse meanings and impacts on research activities. This paper, which aims to contribute to the literature on changing research governance, draws on findings from the study of influence of institute governance on international research collaboration in nano S&T in Europe, which combines multiple methods and data sources. Data from analysis of publications, organizations, projects, CVs and 60 interviews in 30 leading nano S&T institutes in Germany, France, Belgium, the Netherlands and UK are used for in-depth case studies and contextualized comparisons of institute governance.

259. (94) Emotions and affects in science: communities, spaces, and bodies - I

11:00 to 12:30 pm
Solbjerg Plads: SPs05
Chairs:

Staffan Bergwik, Dept. for History of Science and Ideas Uppsala University
Helena Pettersson, Umeå University

Participants:

Imaging Famine: Photography, Philanthropy and the Global Circulation of Emotions. *Anindita Nag, Jawaharlal Nehru University, New Delhi*

The paper examines the relationship between the visual imagery of hunger and the changing contours of emotions in colonial India, from 1880 to 1920. It delineates how the circulation and consumption of famine photographs between India and the United States converged with ideas of emotion to generate a humanitarian concern for the suffering of the hungry. Analyzing a selection of famine images by American missionaries in colonial India, particularly those of the Methodist Missionary Society and the Mennonite Brethren Church, I focus on how photographs of famine operated as emotional souvenirs in which forms of feelings were standardized and reproduced, forging new relationships between the humanitarian object and the compassionate subject. Attending to both the representational content of images and to the social processes of ownership, accumulation, circulation and exchange that characterize image forms as material objects, I describe the ways in which traveling images created transnational affective communities that firmly established famines as a humanitarian cause-célèbre by the last decades of the nineteenth century. Coinciding with such diverse contexts of viewership were technological innovations in photojournalism and scientific notions of observation, vision and truth which constructed a modern visual economy of famine. I draw upon the literature in science and technology studies to understand photography as an ongoing practice of assemblage and performance, and the changes in photographic technologies as an important venue to study the reconfiguration of emotions in the sciences, where research has broken down the strict dichotomy between reason and emotion, cognition and affect.

Imitating emotions? Hans Pettersson and the passions of early twentieth century oceanography. *Staffan Bergwik, Dept. for History of Science and Ideas Uppsala University*

This paper concerns how the Swedish physicist/oceanographer Hans Pettersson (1888-1966) learned science and simultaneously

a set of emotions towards the scientific endeavor. Pettersson inherited oceanography: his father, chemist Otto Pettersson greatly affected his son's career, giving him access to a mentor chain of academic father figures. In family settings Hans Pettersson learned the postures, attitudes and ways of life of his forebears. He copied desires from his mentors, in particular the drive to build scientific institutions. He also learned a set of emotions towards scientific work, collectively cultivated yet inwardly felt. Anxiety over productiveness coexisted with fatigue and happiness over breakthroughs. Home, the family and mentors had a special meaning: on the one hand they were moral examples of what and how one should feel about scientific work. On the other hand, their great influence also spurred feelings. The question of whether his mentors would accept his results created stress and frustration. The great influence of his father enraged Pettersson: when would get the chance to be an independent scholar? In the broadest sense, this paper will probe the possibility of using "imitation" as a tool to understand the formation of emotions in science. How are scientific sentiments learned and reproduced by disciples? How have researchers historically come to learn to feel like scientists?

Post-War Information Systems and the Digitization of Anxiety. *Luke Stark, Department of Media, Culture, and Communication, New York University*

Digital information systems and post-war information science have re-conceptualized, measured and coded anxiety, and sought to put its creation as an affective state to productive use in practices of knowledge work. Through an examination of archival materials from the Association of Computing Machinery, the Charles Babbage Institute and other sources, the paper seeks to understand how anxiety has been represented and expressed algorithmically in digital information systems broadly classed as "affective," including emotion/affect capture through facial recognition, sentiment analysis via the social web, and fMRI neural scanning in the service of neuropsychological research. By exploring the history and contemporary development of these technologies in tandem, the paper details the "digitization" of anxiety as a recognizable set of processable signals and signs, and its subsequent re-inscription into the design of emerging digital information technologies. The paper situates the coding and measurement of anxiety within the broader social and cultural histories of computers and their use, deploying a theoretical and methodological approach that places it at the intersection of the philosophy of technology, the history of media technologies and information systems, and social and emotional design in human-computer interaction (HCI). In doing so, the piece argues that the classification and production of digitized anxiety is both integral to the function of contemporary digital information technologies, and instrumental to contemporary techniques of information capture, surveillance, and control.

On the Margins of Scientific Reports: Archaeology, Local Communities and Emotions in Eastern Turkey. *Laurent Dissard, University of Pennsylvania*

In this paper, I take a single event --the building of dams along the Euphrates and Tigris Rivers in Eastern Turkey and its accompanying scientific salvage excavations-- and examine it from the perspective of "emotions" and "affective lives." Archaeologists make their discoveries visible to the world in final publications while simultaneously sidelining the conditions of their production. In other words, they hide the agency behind the discovery of scientific (arte)facts about the past. By scrutinizing the margins of excavation reports, I foreground places where the discipline's systematic methods and scientific logic deteriorates and where subjective emotions make unexpected appearances. Located on the outer limits of the archaeological laboratory, these traces, marginalized but not completely erased, are then recovered to make possible the reappearance of stories allegedly excluded from the research

process. Thus, by exposing the "affective lives" of foreign scientists and local villagers, I reveal the ways in which archaeological science is carried out in the absence of an explicit social engagement on the part of the researchers yet with deeply social and political implications. Among other things, this paper discusses the tragedy felt by archaeologists witnessing the submersion and destruction of their sites, the affects of local villagers deeply traumatized by the nation's modernization project, and life stories of the communities residing in these politically charged and passionately disputed territories of Eastern Turkey; a region that has, over the years, witnessed regular interventions (dams, power plants, development projects, economic adjustments, military interventions, etc.) from the State.

Mexican varieties of maize: the result of emotional knowledge production. *Wendy Cano, University of the Basque Country (UPV/EHU)*; *Andoni Ibarra, University of the Basque Country*

Most of the scientists that are involved in the decision making process on Biosecurity in Mexico affirm that emotions are subjective and just interfere with the objectivity of the scientific results. However, we consider that emotions can allow us to trace a new route in the Genetically Modified maize debate that has been taking part in Mexico. We examine another way to analyze the link between emotions and knowledge production in the different uses of the varieties of maize. During 2009 and 2011 we developed a workshop to know the narrations about the relationship of Mexican children with maize and their learning experiences underneath the different uses of maize. For the children, the maize-based food evoke happiness, enjoyment, and pleasure because it carries a long history (collective and personal) that makes good feelings arise. The different varieties of maize -as the crop, dough, drinks, and handcrafts- show how important maize still is for the so called "Maize-based cultures". The emotional component in the relation between human being and maize is the one that keeps children aware of maintaining alive their varieties of maize together with their traditions. The story of the transgenic maize would be other if an "emotional turn" had been considered since the beginning of the GMO debate. We think it is urgent to recognize the role of emotions in knowledge and society. Emotions are not merely instances involving a contextualization of cognitive production. Rather, they are directly involved in such production, guiding it from within.

260. (15) Knowledge production in the life sciences - II

11:00 to 12:30 pm
Solbjerg Plads: SPs07

Chairs:

Manuela Perrotta, Norwegian University of Science and Technology

Kristin Spilker, Department of Interdisciplinary Studies of Culture, NTNU

Participants:

Knowing the (blood) stem cell: Natural kind or biomedical construct? *Christine Hauskeller, University of Exeter, Sociology and Philosophy*; *Alison Kraft, University of Nottingham*

Cells are understood to be stable, natural, biological things, countable and contained, with a life path and their own 'skins' around them. This ontology is less settled when distinguishing kinds of cells. This paper discusses this problem considering stem cells as bio-objects. It reconstructs aspects of the intersection between presumed naturalness, design and artificiality in the transformations of the biomedical

understandings of the blood stem cell between the 1950ies and the 2000s. We recapitulate the success and limitations of conceptualisations of the blood stem cell, in particular the interplay between ideas and experiment to show how a critical activity, namely cell renewal, came to be seen as trait of a distinct biological entity, the stem cell. This cell took on a material reality through new laboratory techniques for its study, specifically bone marrow transplantation and the radiation chimera, and later was re-identified via molecular markers (eg. CD34 surface marker). The stem cell as a separate natural entity, resident in the bone marrow, has been inferred from indirect evidence from the regenerative effects attributed to it. The presentation focuses on the tensions between the conceptualization of this cell and the experimental evidence for it as a means to explore the construction and stabilization of its existence, identity and developmental potential – 'plasticity'. STS scholarship has explored aspects of stem cell research, taking the cells as a fact. Understanding the ontological uncertainties in the socio-medical contexts of radiation and cancer therapy and embryology and the objectification through biomedical practices will contextualise ongoing debates.

Doing Research from Platform 9 ¾. *Marie Auensen Antonsen, NTNU, Trondheim*

Visions of human biotechnology are frequently produced within a frame of doom and a frame of hope. Dystopic narratives about an out of control technology capable of creating laboratory monsters, are giving stories such as Frankenstein a new relevance. The positive narratives have focused on biotechnology as a cure for horrible diseases and conditions through stem cell research and therapeutic cloning. These two opposites, "Frankenstein versus The Ultimate Cure", are very limited approaches to what biotechnology is and can be, but where can we find alternatives? My aim in this paper is to develop a methodology that can cut through these framings and inform the analysis of human biotechnology in a different way. The aim is inspired by the way Donna Haraway reads science fiction as a way of creating new stories of humanness in Primate Visions, and John Laws suggestion of allegories as different stories about reality in After Method. As the title suggests, my path goes through the magical story of Harry Potter. As a story concerned with family (genes\blood), destiny (determinism\essentialism) and the power of knowledge (magic), it can be a valuable allegory for ways of thinking about biotechnology. Magic can be considered a technoscience with similar narrative discourses as biotechnology, including how it can get "out of control" and it's potential for making monsters (Voldemort). I will investigate framings of magic in Harry Potter, how it diverts and aligns with the usual frames of Frankenstein and the Ultimate Cure.

Sankofa Science-Making: A new-old toolkit for designing participatory science. *Ruha` Benjamin, Boston University*

In Roman mythology, Janus is a god of beginnings and transitions, two-faced because he looks towards the past and the present, mobilized by Bruno Latour to distinguish between what scientists say they do and what they actually do (1987). The Roman figure resembles (in kind, if not in form) the traditional Ghanaian (Akan) symbol of the Sankofa bird, which looks back over its shoulder to retrieve an egg perched on its back. Here too is a creature being pulled towards the past and the future, expressed by the Sankofa proverb, "It is not wrong to go back for that which you have forgotten." This paper draws upon the Sankofa bird to conceptualize the bio-constitutional struggles that have emerged around stem cell research and neighboring sites of politico-scientific experimentation. The Sankofa bird, with its implicit challenge to the dominant cultural motif of western knowledge-production, its integration rather than transcendence of history, and its incorporation of the egg – so central to stem cell research – provides an alternative symbolic framework to conceptualize participatory science. Looking backward and forward through the idiom of Sankofa we can attend to the fact

that what may bring healing and longevity for some may threaten the rights and dignity of others, in part because of the historically-mediated relationship different groups have with technoscience and biomedicine. The paper draws upon a two-year multi-sited ethnography of the California Stem Cell Initiative, which examines the impact and meaning of stem cell research for different social groups.

Rosettes don't exist, but are very real! *assunta viteritti, University of Rome Sapienza*

From an STS perspective, I aim to show how a multicellular structures generated in vitro, and name Rosettes, strives to emerge scientifically. They represent an intermediate step in the complex series of events that, from embryonic stem cells, lead to the generation of neurons. The most popular hypothesis is that Rosettes mimic in vitro the neural tube, a structure that appears during the early embryonic development and that later will give rise to the brain and spinal cords. Rosettes have been produced for the first time in 2001 by researchers that were setting up protocols to obtain in vitro those neurons that die in neurodegerative disease such as Parkinson's and Huntington's Disease. These studies considered the appearance of Rosettes a crucial step in the differentiation process that generate mature neurons from embryonic stem cells. Subsequently have acquired scientific dignity, but with alternating fortune. While some scientists consider Rosettes crucial to obtain neurons, others suggest that neurons can be generated without the formation of these structures and set them aside. More recently, Rosettes have been re-examined by Italian scientists studying Huntington's disease. This new study shows that Rosettes represent an interesting knowledge tool to understand the function of the gene that causes Huntington's disease. Rosettes attempting to change their ontological status, they do not exist in vivo but represent a model of knowledge, are still in limbo, their life encapsulated on a slide, already a part of experimentation and a new model of scientific knowledge, seeking scientific status.

261. (23) + (31) Configuring Climates - II
11:00 to 12:30 pm
Solbjerg Plads: SPs08
Chairs:
Lea Schick, IT University
Arno Simons, Technische Universität Berlin
Aleksandra Lis, Central European University in Budapest
Ingmar Lippert, Augsburg University
Participants:

Sociotechnical imaginaries in Polish energy policy – preliminary analysis. *Agata Stasik, Institute of Sociology, University of Warsaw*

In many societies and states in Europe climate change is perceived as a peril which has to be stopped and challenge which should be meet by radical sociotechnical transformation. However, this approach is not so obvious and universal as it may be seen from West-European perspective. In some Eastern European countries, and especially in Poland this perspective is not shared nor by politicians neither by majority of public opinion: Polish minister of environment has vetoed pact for reduction of greenhouse gas at European level in March 2012. What's more, main opposition parties with main labour union want to use European Citizens' Initiative to suspend European climate package. In my paper I'm going to present and analyze dominant approach towards energy issue observed in Polish politics, referring to two major issues of public concern: greenhouse gas reduction and shale gas exploration. I reconstruct main reasons and narration supporting current policy applying content analysis to articles from popular newspaper, official statement and public reports. I apply Jasanoff and Kim (2009) notion of "sociotechnical imaginaries" while looking for answer

which kind of social, political and technological risks are considered as relevant with respect to dominant vision of future development (understood as a part of political culture) in Poland. Jasanoff, S. & Kim, S.-H., 2009. Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea. Minerva, 47, pp.119-146.

From Global to Local: The Civic Epistemologies of Urban Climate Change. *Michael Mendez, UC Berkeley*

This paper examines the ways in which global climate change science and environmental health issues are understood at the local level. Scientists, engineers, and city planners hold a special authority on questions of global climate change and environmental health quality. This paper will investigate how this authority and scientific expertise is challenged amid the growing engagement of environmental justice (EJ) advocates to produce contextually relevant strategies that integrates climate change interventions with environmental health equity. Drawing on the case study of the City of Oakland's Energy and Climate Action Plan (ECAP), the paper seeks to identify the considerations local governments are giving to the needs of the most vulnerable populations (particularly individuals from communities of color), and the influence community-based groups have in 'localizing' environmental health equity in climate change decisions and actions. This paper argues that the localization of global climate science often involves a process of co-production, where technical issues are not divorced form their social setting and a diverse set of stakeholders engage in the development of policy solutions. Through the idiom of co-production, it is also argued that projects like the ECAP are modifying the civic epistemologies of democratic societies, transforming not only knowledge production but also political identities, relationships, and institutions. The adoption of the ECAP represents new arrangements for producing public knowledge and connecting it to public decisions, shifting power and authority to multiple scales. The principal objective of the research is to understand how civil society actors (in particular communities of color) can achieve a voice in decision-making processes and how the co-production framework can contribute to more scientifically legitimate and socially just decision-making related to urban climate change.

A history of the Passive House. The (in)stability of an immutable mobile. *Liana Mueller, NTNU*

The Passive House standard developed by the German physicist Wolfgang Feist and the Swedish Professor Bo Adamson at the end of 1980s gained terrain all over the world. The Passive House is presented by many experts as precondition to the "nearly zero energy building" that, according to the EU Directive on the energy performance of buildings (EPBD), must be achieved by all new buildings by the end of 2020 in the EU Member States. In this paper, I analyze the role of the Passive House Institute as center of calculation; the formation of the actor network around the Institute; and the (in)stability of the Passive House concept when adopted by countries with various climate conditions and building traditions. With the classic "Science in action" (Latour 1987) as starting point, I discuss the stability of the Passive House standard as immutable mobile and present implications of the differences between the Passive House "concept" and the Passive House "standard". The paper is based on in-depth interviews with key actors, observation at the 15th International Passive House Conference, and document analysis (conference proceedings and the website of the Passive House Institute). Through structural analysis of my data, I show how the Passive House became an immutable mobile, and I follow the "export" of the concept. The analysis of the Passive House success story and of the conditions in which a technical concept can be exported offers a model of technological innovation in the construction sector.

Shifting Aesthetics of Sustainable Energy Infrastructure.

Elizabeth Monoian, Society for Cultural Exchange; *Robert Ferry, Land Art Generator Initiative*

Responding to climate change, human health, and resource stability, public policy is paying serious attention to net zero carbon development strategies. As a result, utility-scale solar and wind energy installations are becoming more prevalent in exurban and urban environments. Recent trends in public acceptance of renewable energy infrastructure have shown that resistance to a transition from fossil fuel and nuclear dependence often takes refuge in arguments that hinge on questions of aesthetics. These questions pertain to both visual and audial environments and they are most relevant as installations come into closer proximity with urban centers and residential and hospitality districts. Throughout history, the urban constructed environment has undergone multiple reinterpretations in response to shifting technologies and cultural standards. The introduction of the automobile, the rise of industry, the establishment of use-defined zoning, building code improvements, and even the communication age coffee house culture have all had made a mark. The renewable energy revolution will undoubtedly have a resounding influence on the aesthetical norms of public space in the coming decades. Innovation through interdisciplinary collaboration and the expanding role of technology in art are playing an important role in defining the nature of this influence. Through a comparison of renewable energy infrastructure installations, both constructed and conceptual, the paper will discuss the usefulness of art and design in evolving social imaginaries as they pertain to popular acceptance of alternative energy, and will explore the balance between aesthetical and functional concerns in successful sustainable development strategies.

262. (84) Aesthetics in technological practices - I
11:00 to 12:30 pm
Solbjerg Plads: SPs10
Chairs:
Dick Willems, University of Amsterdam
Jeannette Pols, Amsterdam Medical Centre
Participants:

Aesthetics and Technological Innovation in Healthcare. *Dick Willems, University of Amsterdam*; *Jeannette Pols, Amsterdam Medical Centre*

The aim is to explore the role of aesthetics in the valuation of technologies in health care. STS has since long discovered normative questions as an object of study. Aesthetic values and considerations, as well as questions about their normative workings, has gained less attention. Altough this is rapidly changing due to interested industries, health care technology is often designed to be functional –and hence (?!) ugly. The rollator is an example: although it is used frequently, there has long been only one –and not even a very functional- design. Personal alarm buttons are another example: people are supposed to wear them around their wrists or necks, but they are clumsy big objects nobody likes to overtly wear. A last example is that the aesthetic perceptions concerning the goals of treatment ('what a beautiful scar!') may differ widely between patient and doctor. The main question of this paper is how aesthetical considerations should be incorporated in thinking about and evaluating health care technologies. The paper draws on ethnographic and interview studies in the area of: A)home care, addressing two forms of home care technology:. Firstly, the use of artificial respiration in the home in patients suffering from respiratory failure due to severe neurological diseases such as ALS. Secondly, the use of various telecare technologies for mostly elderly people living at home. B)Female oncology patients using technologies such as wigs, make up and scarfs because they lost their hair due to chemo-therapy. The home care patients using both forms of technology mention various aesthetical reasons to either love or

detest the technology, such as its outer appearance, the extent to which they can be made to fit into their home environment and geography, and their flexibility. Apart from aesthetic thoughts and feelings related to visibility, the kinds of sounds and noises emitted by technology, especially alarms, greatly contribute to their (un)acceptability. The study of the oncology patients shows that aesthetic values, contrary to abstract ethical values, are social values, organising how illness becomes an issue in their relations. Relevance for STS: (normative) studies in STS should not only address the usual ethical questions surrounding innovations, but also aesthetical issues.

Aesthetics as a technology of care in mental health services.
Brigit Morris Colton, Lancaster University

What can the use of art practice as treatment in mental health services reveal about aesthetics as a technology of care? This paper draws upon an ethnography of Create, an 'arts for mental health service' that is part of the British National Health Service. Create comprises six different art studios (e.g. Photography, Ceramics), each with a dedicated practising artist tutor. Service-users, categorised as having 'severe and enduring mental health needs,' access the service as part of their discharge plan from psychiatric hospital. They learn art skills and through 'making beautiful things' they also learn to (re)value themselves as people, rather than patients. To get a feel for this, I accessed the service as a service would do for six months. I also conducted qualitative interviews with staff and service-users, to discuss how this felt and what may be valuable, or not, about it. We discussed how working in mental health has shaped how the artists teach here and the ways in which art practice, materials and artworks become care-technologies. Aesthetic sensibility is materialised in the organisation of the service's spaces, and its practices of display, signalling something different is happening here than in arts and crafts sessions on hospital wards. Nor is this art therapy, where patients (r)enact trauma, but therapeutic art practice, where personal 'goods' are strengthened. Being in the art studio, rather than in-the-clinic or on-the-couch, imbues agency. As such, Create offers us a unique insight into the possibilities and limits of aesthetics as a care-technology.

An aesthetics of care? Attraction, attachment and alignment in online multiple sclerosis communities. *Fadhila Mazanderani, University of Warwick*; *John Powell, University of Warwick*

While interest in 'beauty' is a longstanding and diverse one, the 'Western' discipline of aesthetics has since the 18th century been associating 'beauty' predominantly with non-functional, transcendent values. For this reason, aesthetics has (contrary to ethics) played little part in thinking about the practices and conceptions of 'care' in STS. This paper problematizes this apparent incompatibility and argues that, rather than being marginal to care, aesthetics is implicated in it in various ways. Drawing on the specific case of social media in the context of multiple sclerosis (MS) – a neurodegenerative condition that results in unpredictable, but often severe, disability – we sketch out what an 'aesthetics of care' might look like. Through an examination of the content and structure of patient organisation websites, forums and online communities, and through an analysis of interviews conducted with a) people working on the design, management and daily running of these services, and b) service users, we put discourses on design and aesthetics in dialogue with care ethics. Instead of understanding aesthetics as concerned with universal 'beauty', we re-arrange it in relation to three contextually contingent dimensions of design that emerged from our discussions with service producers and users: namely, 'attraction', 'attachment' and 'alignment'. Furthermore, we explore how design influences the types of care and forms of knowledge enacted in online spaces, and suggest that the inclusion and exclusion of actual and potential users from these online services is influenced not solely by political and/or ethical factors, but also, significantly, aesthetic ones.

Cultures of Design in craft livelihoods: Interventions and Ideals.
Annapurna Mamidipudi, Maastricht University; *Wiebe E. Bijker, Maastricht University*

Are the 23 million people who are engaged in traditional craft livelihoods in India underdeveloped and static? Yes, they are, if seen from a linear technological progress perspective. Or are they cultural heritage that needs to be preserved and museumized? Yes, if seen from a cultural identity viewpoint. This paper argues for a third perspective: craft livelihoods can be studied as socio-technical systems, and we base intervention policies for innovation on such an analysis. We analyze the role of design as linchpin between aesthetics and technology, and as playing a key role for innovation and growth in the market for craft and handloom. Designers intending to mitigate vulnerability in livelihoods of craftspeople have to bridge the contradictory perspectives of technological progress and preservation. Design practitioners are torn between two ideals: cater for a mass market so that economic benefits for livelihoods are maximized, and customize products with an aesthetic value for discerning connoisseurs. This paper extends the STS concept of 'cultures of technology' to 'cultures of technology and design' to understand the complex relationships around skills, tools, technologies, materials, markets, geographical locations, identities, ideologies, visual cultures and rituals. In dialogue with independent design practitioners and development organizations working with craft livelihoods, we have explored practices of co-production in design interventions and analyzed processes of social construction of design. This paper explicates the multiple ways of knowing and doing in the socio-technical networks of craftspeople. We thus seek to transcend the polarities created by competing notions of 'ideal' design practice.

263. (63) Biotechnologies and immigration - II
11:00 to 12:30 pm
Solbjerg Plads: SPs12
Chair:
Ilpo Helén, University of Helsinki
Participants:

The Ethics of DNA analysis for family reunification. *Martin G. Weiss, University of Klagenfurt / Department of Philosophy*

DNA analysis for family reunification is a longstanding and widespread practice, but also a highly problematic one, as it is a battleground of conflicting values and interests, which have to be carefully weighed against each other: on the one hand, the right of the sovereign state to regulate immigration and prevent fraud and child trafficking; on the other hand, the right to privacy and family life. Beyond the problem of how to balance these different interests, DNA analysis for family reunification brings up the broader problem of biologisation/geneticisation of social relations, as this practice appears to reduce family to its mere biological notion. As there is no comprehensive account of the ethical implications of DNA analysis in the context of family reunification, the present paper will try to fill this gap by addressing the three most striking ethical problems posed by this issue: the privacy issues at stake; the problems concerning the conceptual, legal and social definition of family; and the question whether this practice intends to produce the immigrant as discriminated "bare life" (Agamben) or must rather be seen as a symptom of an ongoing general biologisation/geneticisation of sociality, also influencing family reunification procedures.

Biotechnologies of the Border: The "data bodies" within Eurodac. *Vassilis S. Tsianos, University of Hamburg, School of Economics and Social Sciences*; *Brigitta Kuster, University of Hamburg, Department of Sociology*

Based on the fact that private and government sectors are operating hand in hand for biometric identity assurance solutions to meet security requirements at borders, for elections or in

commercial fields, our paper will explore Eurodac as a surveillance assemblage (Haggerty and Ericson, 2000). In other words, as something that works its effects by being connected to other technologies, practices, systems, institutions and conventions, as Irma van der Ploeg repeatedly suggested (2005; 1999). To be clear, our interest in Eurodac is an approach to something that is inflected by social, symbolic, organizational and juridical cultures, practices and imaginaries that are beyond the literal realm of the electronic space. Our paper will thus include matters of data protection and other ethical concerns as well as issues of Europeanization in the exploration of the border technology Eurodac which is part of a larger deterritorialization of border controls: Its double function of politics at a distance and virtual data collection casts a net of control, which denaturalizes and virtualizes not only the form of surveillance but also the form of punishment by extending the risk of deportability of migrants. Here is where the fingerprints of asylum seekers, apprehended illegal immigrants or those who cross Eu-borders irregularly are stored and migrants are thus contained as 'data bodies', personifications of border crossing and mobility risks. In this way, the border becomes a property and feature of the migrant's body. However in between such data bodies and the real bodies of migrants accrues a third space where both operate, the control practices and the subjectivities of migration. To avoid the technodeterministic perspectives of control policies, our contribution claims for a situated analysis from the perspective of migration, that is a movement contained in the power relations of border zones and operating its own information exchange channels, sense-makings, understandings, and rules to access mobility and to cross borders. Understanding "doing border" from a 'bottom-up' perspective addresses always the question: How is the border constructed, managed, and by whom. In this sense, the European database Eurodac can be understood as a biotechology of mobile border. Drawing on multilocal interviews with transit-migrants as well as policy experts and on the findings of our transnational research (in Greece, Germany and Italy) conducted under the FP7 funded project MIG@NET on the mode of operation of Eurodac, our paper will explore the emergence of this biotechnology of the mobile border space related to the bodily and mobility patterns in liquifying and de-materializing of border control technologies.

Categories of 'Migrants', 'Race' or 'Ethnicity' in Genetics and Medicine – the German Case. *Andrea zur Nieden, Institut für Geschichte der Medizin, Heinrich-Heine-Universität Düsseldorf, Germany*

One of the current usages of biotechnologies in immigration contexts is the classification as 'immigrant' or 'non-immigrant' in medical surveys or clinical trials in order to find out about possible health disparities. In some countries, especially the US, it has also become common to differentiate between 'races' and 'ethnicities' inside the American population due to supposed innate or genetic differences, which has been called the "inclusion-and-difference-paradigm" (Epstein 2007): Despite the widespread notion that 'race' or 'ethnicity' are socially constructed categories, looking for biological differences along the lines of populations has a recent renaissance in the age of genetics. Although genetics can be seen as a highly globalized field of science and medicine, there are still national differences relating to different national health care systems, or local history and culture. Especially in Germany, the term 'race' when referring to humans is tabooed, and speaking of ethnicities in biological terms is politically extremely controversial - partly due to the NS history. Nevertheless, these categories are present in German scientific and medical discourses as well, but also at times are transformed into other, apparently more politically correct terms like 'Migrationshintergrund' ('migratory background'). In my explorative paper I will suggest that this on the other hand points to the fact that in contrast to an "inclusion-and-difference-paradigm", biopolitical citizenship in Germany can rather be

characterized as following an "integration- paradigm": even grand children of immigrants are still addressed as "migrants" that lack proper "integration".

264. Affective ecologies II
11:00 to 12:30 pm
Solbjerg Plads: SPs13

As both discipline and ontology, ecology is a contested field. The ecological sciences are currently being remade as disciplinary fields and modes of inquiry are stitched together to generate new modes of attention, new scientific objects, and new politics. Ecological concepts are proliferating wildly not only in the sciences, but also in social theories. And as the interdependent relations that engender lived ecologies are increasingly threatened and deemed at risk, they become catalytic nodes fomenting new social movements. This panel intervenes in current debates in STS to examine what work ecological concepts are doing in our analyses. We draw on theories of affect emerging in social theory, geography, and anthropology to explore how attention to "affective ecologies" might interrupt the impoverished capitalist, functionalist, and militaristic logics that are pervasive in ecological thinking in the sciences and beyond. By bringing attention to affective intensities we ask: how might we articulate ecologies differently? How can we hone our attentions to otherwise "imperceptible politics" and "forms of life"? The papers draw attention to the affective entanglements among humans (including activists, artists, scientists, farmers, consumers, and city dwellers), and the nonhumans (including chemicals, plants, insects, soils, worms, microbes, dogs, and cows) that ingather affections in sites as diverse as jungles, farms, laboratories, parks, oceans, and cityscapes. In the process we articulate a wide range of the affinities, repulsions, enmeshments and ruptures that intensify interdependent relations among more-than-human practitioners.

Participants:

Migrations of Light. *Eva Hayward, Duke University*

"Migrations of Light" describes my experience as a research assistant at the marine science center, Allied Whale in Bar Harbor, Maine, and my sensuous relationship to photographs of humpback whale flukes used for population and behavior studies. I suggest that animal matter, the literal material of beingness, surfaces and resurfaces as a constitutive force that cannot be digested in the acid fluids of representational concerns and semiotic codes. Indeed, these photographs of migrating and singing whales are testimonies to the interconnection of knowing and being; "we" and "they" are enmeshed, and as subjects and objects are mutually constituted, so too are these enmeshments being iteratively reconfigured. We are in the most literal sense the record of many some-bodies in a particular kind of togetherness.

Heteroaffection and Suicidal Microbes. *Astrid Schrader, Sarah Lawrence College*

Research into programmed cell death (PCD) in unicellular marine microorganisms or phytoplankton is relatively new. Until recently, phytoplankton - the primary producers of organic matter in the oceans – have been considered immortal, unless eaten by predators (Falkowski). With the recognition of the importance of marine microbes for the earth's carbon cycle in the face of climate change, the sudden termination of e.g. harmful algal blooms has called for an explanation. In multi-cellular organism programmed cell death has long been considered key to growth and development. In a multi-cellular context, an individual suicidal cells is considered to act as part of and on behalf of the organism as a whole. In unicellular organisms, however, programmed cell death has been difficult to imagine without questioning fundamental evolutionary paradigms. Here some cells seem to be sacrificing their existence to the benefit of the survival of the species. Aren't microbial populations supposed to be composed of competing, selfish individuals who cannot possibly be subject to a selective pressure for characters that increase the fitness of a population? Are we dealing with an

evolutionary unacceptable altruism among unicellular algae? Leading researchers on programmed cell death in phytoplankton suggest something else, namely the blurring of the boundaries between selfishness and altruism among unicellular microbes. Reading this research together with the Derridean move from autoaffection – giving oneself a presence – which forms the basis of selfhood in humans and cells towards heteroaffection that recognizes that death is always internal to life and that nature is always contaminated by technological repetitions, I explore how 'affective ecologies' disrupt assumptions about purely productive biological economies. At stake is a possible reconfiguration of 'natural teleologies'.

Affective Ecologies, Atmospheric Chemistries, and the Sciences of Plant Communication. *Natasha Myers, York University*

This paper extends conversations on lively materialities in STS in order to grapple with the peculiarities of plant lives and worlds. Most often rendered as the static, aesthetic objects of still-life paintings, plants are frequently left at the bottom of those persistent hierarchies that identify outward movement and action as signs of agency and aliveness. Yet, today researchers in the field of chemical ecology are producing accounts that render plants as pivotal actors that can catalyze ecological relations. Researchers in this field home in on the ways that plants communicate with one another and with members of the animal kingdom by synthesizing and releasing volatile compounds that act as atmospheric chemical signals. This paper examines current debates in chemical ecology in which questions of plant agency are at stake. Some accounts are challenging the neo-Darwinian evolutionary narratives that tend to dominate discourses in chemical ecology. If neo-Darwinian accounts model ecologies on militarized economies in which plants, driven by selfish-genes, appear to adapt to interspecies worlds by calculating cost/benefit ratios, minimizing their energy expenditures, and rationalizing resource use, alternative accounts are situating plants at the centre of ecologies contoured by affective entanglements (Myers, 2006) among species. This paper amplifies accounts that render plants as active, articulate, interested participants intervening in interspecies conversations. In this view, plants are not only loquacious, but also "articulate" (Latour, 2004); that is, they can discern subtle differences in their worlds and respond to these changes by inventing new kinds of chemical propositions.

Tracing Nature's Displacements: The European Expansion of a Bird Species. *Jens Lachmund, Maastricht University*

Since early modernity naturalists and academic biologists have traced the spread of 'alien' plant and animal species into new geographic areas. In this paper I study the engagement of ornithologists with the collared dove, a bird species of Asian origin that spread massively throughout Central Europe in the 1940s and 1950s. Never before had the spread of a single species attracted so much attention of European ornithologists. Ornithologists were not only fascinated by the exotic origin of the bird, but even more so by the unprecedented rapidity of its expansion. I use the case of the collared dove to probe the ways in which the dynamics of a large-scale natural process became tied to the cultural dynamics of knowledge-making. As I will argue, the expansion of the collared dove constituted a quasi-experimental "epistemic event" for ornithology: As a spontaneous dislocation of natural entities it generated a new set of phenomena and questions and redirected the trajectory of research. The paper traces how biological knowledge on the dove's expansion took shape in the social, discursive and material practices of a transnational observation campaign. At the same time it addresses how ornithologists' engagement with a capricious fauna both mobilized and unsettled entrenched cultural distinctions between places, between the native and the foreign, and between the social and the natural. Through a historical reconstruction the paper aims to contribute to STS debates on fieldwork as well as more generally on the role of

'natural mobilities' in late 20th century nature/culture.

Discussant:

Stefan Helmreich, MIT Anthropology

265. (20) Rearranging research relations: the making of new forms of collaboration between STS and science and engineering - II

11:00 to 12:30 pm
Solbjerg Plads: SPs14

Chairs:

Susan Molyneux-Hodgson, University of Sheffield
Paul Anthony Martin, University of Sheffield

Participants:

'We must avoid another GM!' Synthetic biology's call for help from social scientists. *Claire Marris, King's College London*

In the UK, social scientists (such as myself) are being funded by public research councils to participate 'early on' in synthetic biology research programmes, in public engagement exercises, and in initiatives for science and innovation policy such as 'technology roadmapping'. This paper will, based on my experience as a participant observer in some of these processes, discuss the ways in which the participation of social scientists is framed and constrained by deeply help cultural beliefs, among the scientific institutions involved, about the separation between 'science' and 'society', about 'the' ignorant/irrational/untrusting/easily misled 'public', and about linear innovation processes, along with a narrow understanding of risk and uncertainty. Together these all add up to a palpable fear of negative public responses among synthetic biologists, and their funders and promoters, routinely expressed as: "we must avoid another GM". This 'synbiophobiaphobia' is derived from a particular interpretation of the GM controversy, which continues to locate the root cause among an irrational public, misguided anti-GM campaigners, and irresponsible sensationalist media coverage - despite decades of STS (and other) research to falsify such interpretations. The paper argues that STS has perhaps not paid enough attention to the important interconnections between these different layers of cultural beliefs among scientific institutions, and that this contributes to their seemly unshiftable nature.

Securing the Data Economy: translation, entente, sousveillance. *Madeleine J Murtagh, University of Leicester*; *Barnaby Murtagh, University of Leicester*; *Ipek Demir, University of Leicester*; *K Neil Jenkings, University of Newcastle*; *Susan E Wallace, University of Leicester*; *Phillippe LaFlamme, Ontario Institute for Cancer Research*; *Vincent Ferretti, Ontario Institute for Cancer Research*; *Paul R Burton, University of Leicester*

Contemporary bioscience is seeing the emergence of a new data economy: the advent of new forms of social, ethical, institutional, academic, epistemic, national and international structure and governance with data as the fundamental unit of exchange. While data sharing within this new 'economy' provides many potential advantages the sharing of individual data raises important social and ethical concerns amongst public, researcher, funding and governance communities. We conducted a transdisciplinary collaborative study of the development of one technology, DataSHIELD, which appears to elide privacy concerns. This paper is based around the video ethnographic study of a workshop of the epidemiological and informatics development of DataSHIELD. During the workshop, protecting privacy was transformed into an issue of enacting security, one which fulfilled the requirements of ethics committees. Other translations (cf Callon) were also evident. For the team's scientists the transformation of the technology into research practice, and thereby data into knowledge, was key. Translation

was understood to be achieved via enrolment: persuading other stakeholders (policy-makers, funders, ethics committees and other researchers) of the safety and effectiveness of DataSHIELD. For the STS team the politics of interessement and the maintenance of fluidity in social and epistemic relations was key. We discuss these concerns, concluding that the entente achieved here requires ongoing sousveillance: a reflexive stance from all team members, or at the very least, in its early stages as we attempt to shift from surveillance, its leaders. We also present a short video installation based on the study and our reflections.

Creating a Developmental State out of "Nano"? Rationales and Rhetoric of Government Funding for Nanotechnology in the Developing World. *So Young Kim, Korea Advanced Institute of Science and Technology*

Hailed as the next general purpose technology (GPT) with great potential for another industrial revolution, nanotechnology has drawn increasing attention of scientists and policymakers wishing to step up R&D funding for emerging technologies. With an analysis of various public documents of thirty-two countries with large nationwide nanotechnology initiatives and programs, we track a genealogy of rationales and rhetoric underlying massive governmental funding for nanotechnology. Our analysis reveals a crucial difference between developed and developing countries; nanotechnology in the latter is more valued for its "instrumental" utility rather than its "intrinsic" character. This utilitarian emphasis on nanotechnology has enabled several nanotechnology players in the developing world to justify strong government presence in the economy in tandem with or in the aftermath of neoliberal deregulatory reforms. Visioning and promoting nanotechnology as key to catching up with or "leapfrogging" advanced economies, these governments are effectively trying to build "developmental states." We demonstrate that this tendency is closely tied to de-emphasis or marginalization of risks and hazards of nanotechnology development and applications in the developing world. This research thus helps us understand better how the promotion and regulation of nanotechnology (and other emerging technologies) is contextualized in a systematically different fashion in the two regions of the world.

266. (92) Connecting and comparing concepts of practice - I
11:00 to 12:30 pm
Solbjerg Plads: SPs16
Chairs:
Elizabeth Shove, Lancaster University
Nicola Jane Spurling, Manchester University
Gordon Walker, Lancaster University
Participants:

Pragmatist, praxeological, or performative? Versions of practice theory, their philosophical roots, and a way forward. *Niklas Woermann, SDU Odense, Uni of Constance*

When writing about theories of social practices, STS authors not only routinely stress the theoretical superiority and transformative potential of this perspective, but also acknowledge that there is no single theory but rather a more or less well connected field of theoretical positions. While such diversity is surely beneficial in terms of fostering theoretical innovation and flexibility, it can also be equally problematic to rely on incoherent theoretical vocabularies or incongruent methodological postulates. My contribution seeks to trace the roots of said discrepancies within the philosophical foundations of contemporary practice theory, most notably in diverging readings of Wittgenstein's notion of rule following and in the fact that some authors invoke Heideggerian thoughts while others do not. I continue by suggesting a rough framework which distinguishes between three versions of practice theory:

pragmatist, praxeological, and postmodern performative practice theory, briefly outlining their main features and noting specific shortcomings. Finally, I propose that in the works of Harold Garfinkel and Ted Schatzki, a fourth version of practice theory can be found, though being formulated in very different ways.

Standardising practices: the circulation of organic farming through certification. *Maarten van der Kamp, University of Cambridge*

The independent certification of specific farming practices is the precondition for the functioning of markets for 'sustainable' products: only once conformity with relevant standards has been externally verified can produce be traded legitimately as compliant. Such standards do not provide a detailed script which needs to be tinkered with to enact them in a local context (a longstanding STS concern), but rather provide general rules which can only be enacted through scripts for action which are written in the local sociomaterial settings in which they are performed as unique instances of practice. This raises an important question about how farming practices for 'sustainable' products circulate—what travels in order for individual enactments to become connected? I argue that this is achieved by intersecting 'doing' farming with 'doing' certification. Based on my empirical study of the enactment of standards for organic agriculture in the UK, I suggest that certification practice abstracts all site-specific enactments of organic standards into various formal spaces where they are made commensurable. These abstractions remove specifics of production—required for organic 'stuff' to circulate—and they facilitate the travel of organic farming practice: as certifiers draw on other enactments of standards in their assessment of a particular performance, they transform from objective and independent observers into active intermediaries between individual enactments. I conclude that the enactment of the organic standards through certification results in multiply authored standards in which the practices of individual licensees become connected and through which certifiers actively shape farming practice.

Theories of practice and socio-technical system transition. *Matt Watson, University of Sheffield*

In this paper I attempt to bring together theories of practice with approaches to socio-technical systems transitions. Both approaches have been applied to conceptualising the challenges of societal response to issues of environmental sustainability and each seeks to both problematise expectations that a technological solution somehow independent of the social, and contest individualistic explanations of human action. Despite this apparent commonality, bringing them together is not an easy feat. Theories of practice are commonly understood as focusing always upon the local and immediate, in the details of doing. Meanwhile for socio-technical systems transition approaches, systems are inherently scalar. This is exemplified by the influential Multi-Level Perspective (MLP), with its differentiation of distinguishable levels of niche, landscape and regime. My attempt at bringing the two approaches together springs from the following insight. For theories of practice, all of the social, including those properties which can be meaningfully represented as landscape or regime in the MLP, are constituted, reproduced and sustained through the performance of practices. Consequently, changes in socio-technical systems only happen if the practices which embed those systems in the routines and rhythms of life for practitioners throughout the system change; and if those practices change, then so will the socio-technical system. If the attempt is successful I will go on to consider the implications of understanding socio-technical system transitions as constituted throughout by transitions in practice.

Mol meets Knorr Cetina: Two concepts of practice that are currently not on speaking terms. *Stefan Laube, Institute for Advanced Studies (IHS), Vienna*; *Katja Schoenian, Institute for Advanced Studies (IHS), Vienna, Department of*

Sociology

Our paper envisions a meeting of Karin Knorr Cetina and Annemarie Mol in order to illuminate differences and similarities of their work. It does so by, first of all, examining their understandings of practice and the consequences that follow from these distinct conceptions. For instance, whereas Knorr Cetina invokes the notion of 'epistemic cultures' and relates it to the ethnography of practices, Mol refers to the term 'praxiography' so as to illustrate the multiple enactments of different practices. Even though both draw on ethnography as their methodological research strategy and both their approaches oscillate between practice theory and science and technology studies, their different conceptions of practice have several implications. For instance, they involve distinct ways of approaching the relation between human- and non-human actors, of understanding the 'sites' or 'locales' of practices, in fact, of conceptualising empirical reality. It can be expected that these topics would engage the two scholars in a lively discussion. The paper explores Knorr Cetina's and Mol's work with reference to their different concepts of practice, but also in relation to our own empirical research on contemporary work practices in the context of financial markets (Laube) and of intranet software (Schoenian). Focusing on methodological implications, the paper asks: what does it entail to research culture(s) as practice(s) in contrast to the multiple enactments of practices? In addition, it touches on the question whether and, if so, how are these concepts able to cover the dynamic and evolving interplay of practices.

267. Development and STS: empirical diversity, theory and methods

2:00 to 3:30 pm
Kilen: K143

During the last decade there have been several calls to integrate postcolonial perspectives in STS. Some prominent scholars within STS (for example Sandra Harding, Kavita Philip, Suzanne Moon) have published books about post-colonialism, science, and technology using philosophical, social justice, historical and cultural perspectives. Others have written chapters and articles about postcolonial technoscience or about how STS could become more useful for development purposes (for example Sergio Sismondo, Susan Cozzens, Warwick Anderson, Maureen McNeil). Some journals have produced special issues on the topic (Social Studies of Science in 2002 and Society as Culture in 2005). There is an emerging Development studies and STS dialogue illustrated by sessions and papers at recent conferences. For example, looking through the set of contributions to the conferences in Cleveland in 2011 there are quite a few addressing various topics of development from diverse approaches. This session aims to explore some of these diversity approaches that STS scholars are employing in empirical studies of development. Thus papers in this session will address: How are we studying science, technology and development? Session II (Development and STS: reflections on theory and method) is more focused on theory and method, asking for example what some of the challenges and opportunities are with the approaches and standpoints we engage with.The goal of both sessions is to fuel the emergent conversation by providing a forum in which to share work, enrich our theory, and elaborate our methodology. + During the last decade there have been several calls to integrate postcolonial perspectives in STS. Some prominent scholars within STS (for example Sandra Harding, Kavita Philip, Suzanne Moon) have published books about post-colonialism, science, and technology using philosophical, social justice, historical and cultural perspectives. Others have written chapters and articles about postcolonial technoscience or about how STS could become more useful for development purposes (for example Sergio Sismondo, Susan Cozzens, Warwick Anderson, Maureen McNeil). Some journals have produced special issues on the topic (Social Studies of Science in 2002 and Society as Culture in 2005). There is an emerging Development studies and STS dialogue illustrated by sessions and papers at recent conferences. For example, looking through the set of contributions to the conferences in Cleveland in 2011 there are quite a few addressing various topics of development from diverse approaches.

Chairs:
Veronica Brodén, Linköping University
Wenda Bauchspies, Georgia Institute of Technology

Participants:

The charismatic boundary object: Children, XOs, and the myth of neoliberal education. *Morgan Ames, Stanford University*

One Laptop Per Child (OLPC) represents one of the largest experiments in laptop-driven learning currently underway. Roughly two million of its "XO" laptops are in use around the world – most of them in Latin America – and it has inspired derivative projects in both education and low-cost computing. OLPC expects that children will take charge of their learning with the help of their specially-designed computer. What does child-centered learning look like? In Paraguay, OLPC's idea of computers as machines for self-directed learning competes with the meaning pervasive among students of the computer as machine for media consumption – a portal to the Internet, which is in turn a source of videos, music, and games. Though many at OLPC may celebrate the challenge the Internet has posed to rote classroom learning, research on multitasking and children's media use cautions against giving primary-school-age children unlimited access to video games and other media. I discuss two competing aspects of the kinds of learning I witnessed in Paraguay. On one hand, the laptop, and videogames in particular, often distracted children from their schoolwork, duties at home, and even physical play. On the other, the laptop provided motivation for learning or creative projects to a subset of students, from some of the most precocious to some who have repeated multiple grades because they did not know how to read. In this latter group, I show that home and school environments were essential in creating the conditions in which this learning could take place. In the process, I demonstrate that the myth of the self-taught hacker, drawing on Western individualism and childhood nostalgia, discounts the critical role that various institutions – including schools, families, and communities – play in shaping a child's motivation and educational interests.

Future Tense: Developing notions of ICT use in Jamaica. *Kaiton Williams, Cornell University*

My work analyzes the explosion of mobile phone adoption in Jamaica over the last decade and looks at how the functions of mobile devices and their accompanying infrastructure are co-constructed and debated by individual users, local and global corporate actors, and the state. I explore the mechanisms through which citizens move away from prescriptions of use inscribed by these social groups and define their own roles. A crucial element in this is an exploration of how "Jamaican" visions of a technological future are derived and how these imaginings co-created among corporations, consumers and the state inform ideas of personal and national capabilities and go on to affect ICT and Development policy and efforts. Emerging from this work are 3 considerations of relevance to the workshop: 1) a transnational perspective that brings in the role of multinational corporations in shaping development problems and their potential "solutions;" 2) methodology and theory that considers flows of knowledge wherein 'developing' contexts informing 'developed' technologies and values as much as the reverse, issuing from a notion of the separation of developing and developed world as it pertains to technology as no longer apt—and perhaps never was— with "developing world" disguises lively and contested technological marketplaces already replete with wholesale innovation; 3) how the subaltern uses of technology in the developing world that are expressed through the ordinary and everyday— for e.g. through informal markets based on resistance to the forms of legibility and rationalization that accompany development efforts— can have a marked impact on studies of personal and structural development.

Knowledge on the move: Understanding development aid.

Hilde Reinertsen, Centre for Technology, Innovation, and Culture, University of Oslo

How does knowledge travel? Within STS, and especially actor-network-theory, the concepts of translation, negotiation, displacement, and fluid technologies have been proposed to understand what happens when knowledge and technologies move across time and space (see for example Akrich 1992, 1993; de Laet and Mol 2000; Latour 1999; Law 2003). This approach is most valuable for the study of development aid, given that the potential of successful transfers of technology and knowledge has informed the field since its inception (although actors have increasingly acknowledged possible complications). In this paper, I analyze Norwegian development aid to the energy sector in an historical perspective. Building on Kristin Asdal's concepts of political technologies and government accounting practices (2008, 2011) and Richard Rottenburg's investigations into aid administration (2000, 2009), I propose to consider development aid as a double translation process: First, I investigate efforts to translate and transfer Norwegian energy management systems to developing countries. Second, I investigate efforts by the aid administration to build knowledge about the projects' results through systems for monitoring and evaluation. This circular movement – bringing Norwegian experiences abroad and project experiences back to Norway – produces a stead stream of documents of different genres: guidelines, reports, reviews, surveys, evaluations, press releases. Through numbers and texts, new worlds and realities are brought into being. But how exactly does this happen? And how do we go about studying it?

Organic Development: Reagency and the Production of Knowledge. *Antony Palackal Varghese, Loyola College of Social Sciences*; *Wesley Shrum, Louisiana State University*; *Paige Miller, University of Wisconsin, River Falls*; *Mark Schafer, Louisiana State University*; *Matthew LeBlanc, Louisiana State University*

Conventional theories of development focus on state and multinational actors in the shaping of scientific and technological institutions, while institutional theories focus on the process of modeling. The reagency perspective, by contrast, focuses on the initiatives and resources imported from faraway lands. We utilize this approach to examine the diffusion of organic trainings, treatments, and research practices in Africa and India. We begin with the development of organic research in nongovernmental organizations (Kenya), show the introduction of farmer training in the first "all organic" state of Kerala (India), and follow the "poison of fertilizer" in Ghana. Video ethnographic methods are used to display the diversity of practices that have accompanied the rollback of African methods to Africa itself.

Some of the Trees in the STS/Development Forest and Their Challenges to Theory. *Veronica Brodén, Linköping University*; *Wenda Bauchspies, Georgia Institute of Technology*

There is an emerging Development studies and STS dialogue that is addressing various topics and problems of development from diverse theoretical approaches. This paper will provide an overview of recently published scholarship (in the last 10-20 years) that is at the intersection of STS and development, in order to begin to map out the types of work being done, the types of questions being raised and the methods/theory being used to address them. We will merge the overview of recent scholarship with the eight papers presented in the two sessions on Development and STS, to highlight the questions, challenges, and opportunities occurring at this intersection. We will develop questions to be discussed at the end of the sessions in order to generate, motivate and encourage our own thinking about development and STS and implications for our future research in this area.

Innovation in Informal Settings – a research agenda. *Susan Cozzens, Georgia Institute of Technology*; *Judith Sutz, Universidad de la Republica Uruguay*

Large shares of jobs in economies in the global South are in the informal economy, which consists of firms and jobs outside state regulation and protection. Bottom-up innovation in the informal economy is an important potential source of inclusive development, since it both empowers grassroots actors and produces jobs at appropriate skills levels. Innovation in informal settings starts from local knowledge, often combined with formal knowledge, so studying it provides an opportunity to explore the dynamics of interaction between types of knowledge. Of the very few studies of this type of innovation, most have described men as innovators; studying women as grassroots innovators is thus particularly important. Scholars working in this area are using both actor-network and innovation systems theories; the research area provides a site for testing and modifying these theories, which were developed in quite different settings. The research area thus represents an intellectually rich research opportunity with practical importance. (This paper has been written as a background and framing review for the Program on Innovation for Inclusive Development at the Canadian International Development Research Centre.)

268. Spatiotemporalities I - Infrastructure and the Long Now
2:00 to 3:30 pm
Kilen: K146

Research infrastructures are built to last. Rather than one-off tools, they are intended to support heterogeneous purposes over extended periods of time and for many people. But in turn, such long term goals present challenges for the present: sustained funding, preserving and curating the past, managing change, or reinvention for contemporary relevance. This panel brings together four papers focusing on exploring and articulating the challenges of the long now. While the papers in this panel written from many perspectives and focus on different facets of time, the long term and research sustainability, all our papers will draw on case studies of the Long-Term Ecological Research (LTER) Network in the US, Europe and Asia.

Chair:

David Ribes, Georgetown University

Participants:

Data bite man: the work of sustaining a long-term study. *David Ribes, Georgetown University*; *Steven Jackson, University of Michigan*

This presentation makes one basic point: the work of producing, preserving and sharing data reshape the organizational, technological and cultural worlds around them. Data are ephemeral creatures that threaten to become corrupted, lost or meaningless if not properly cared for. We seek to push beyond the commodity fictions of data that too often characterize and limit studies of data sharing. In particular, we tell stories of data production that reveal the complex assemblage of people, places, documents and technologies that must be held in place to produce scientific data. The vehicle for our discussion is a distinctive case of long-term ecological research: stream chemistry data in the Baltimore region. Demanding and fickle, at the slightest change of condition data threaten to cease being useful for the scientific work they were born to accomplish. In this context, data – long-term, comparable, and interoperable – become a sort of actor, shaping and reshaping the social worlds around them.

Time to Degree: How Graduate Students Experience the Long Term. *R. Stuart Geiger, UC-Berkeley*

This paper focuses on the experiences of graduate students within the Long-Term Ecological Research Network, specifically the

challenges and concerns faced by students who perform socio-ecological research, that is, integrating research approaches from the social and ecological sciences. Our study captures the underlying ambiguities confronting graduate students in the LTER as the network strives to adopt a novel research program focused on socio-ecological research. Conducting workshops, surveys, and interviews, we found that graduate students hold many different, often incommensurable conceptions of how socio-ecological research ought to take place within the LTER -- and in many cases, what it means to be an interdisciplinary researcher. Not surprisingly, one of the biggest challenges these graduate students reported was a lack of time, particularly for those who were striving to learn a new discipline, collaborate with PIs from multiple disciplines, participate in an interdisciplinary research project, or work with an LTER site far away from their home institution. We found that many problems which are commonly seen as problems of distance, interdisciplinarity, or scale are often articulated and felt by graduate students as problems of time. As we show, graduate students are on quite different timelines as LTER sites, research staff, funding cycles, and Principal Investigators, and as such, expressed quite different temporal concerns compared to those of the 'long now' that are typically discussed in the LTER network.

Infrastructure cascades for interesting times. *Ben Li, University of Oulu*

Building infrastructures to last implies that such infrastructures are consciously designed with potential downstream stakeholders and uses in mind. However, we must also consider the sustainability of upstream infrastructures on which designed or emerged infrastructures rely. This case study examines how TFRI's EIWG explicitly selects infrastructure components, encapsulates their key capabilities, and internalises key dependencies to render their infrastructures more resilient against uncontrolled (internal and external) spatial and temporal externalities. It draws on three priority challenges identified by the EIWG: a) the planned retirement of its leader, and required transition of social and knowledge infrastructures and external linkages embedded in him to appointed successors and other individuals; b) pressures to replace existing local infrastructures with cloud-based ICT infrastructures, ranging from a national mandate to virtualize ICT functions as services through to the international politics of Open Source software and hardware; and c) tensions among EIWG's simultaneous identities as an established institution of ecological research and as a provider of infrastructures to existing and new LTER stakeholders nationally and internationally. By examining EIWG's specific decisions and actions regarding those challenge areas, we obtain a way to understand immediate and long-term infrastructure factors through each other, and to consider sustainable infrastructure cascades.

Infrastructure Time: Long-term Matters in Continuing Design. *Karen S Baker, UIUC - University of Illinois Urbana-Champaign*; *Florence Millerand, Universite du Quebec a Montreal*; *Helena Karasti, University of Oulu, Finland*

Cyberinfrastructure projects to date have largely been developmental efforts typically funded as short-term projects, and a few studies have shown a level of awareness of the long-term perspective inherent to infrastructures and their development. In this communication, we argue for addressing temporality, precisely long-term, as an infrastructure issue, and we suggest the notion of 'infrastructure time', as an example of more extended temporal scales. We reflect on an empirical case involving the development of a metadata standard within the US LTER, as a complex example of infrastructure development and a long-term collaborative activity. With a focus on the temporal scales of short-term and long-term, we analyze the practices and views of the main parties involved in the development of the standard (developers, information managers, scientists...), leading to two distinct temporal orientations in information

infrastructure development work, namely 'project time' and 'infrastructure time'. We show how these temporal scales are evoked, contested and blended in the process of collaborative infrastructure development. We suggest that both a temporal orientation of 'infrastructure time' and a design orientation of 'continuing design', can be useful in settings of long-term collaborative infrastructure development and invite to examine them critically.

Discussants:
Geoffrey Bowker, University of California-Irvine
Eeva Furman, Finnish Environment Institute

269. (47) Screen realities, synthetic situations, and scopic media - III
2:00 to 3:30 pm
Kilen: K150
Chairs:
Niklas Woermann, SDU Odense, Uni of Constance
Vanessa Dirksen, University of Constance
Stefan Beljean, University of Konstanz

Participants:

Looking at computer screens: from reflection to diffraction patterns. *Felipe Raglianti, Sociology Department, Lancaster University*

This presentation proposes a shift from the idea of computer screens as interfaces reflecting interactions between humans and computers, to computer screens as material surfaces in which diffraction patterns constitute the mobile boundaries that differentiate humans and computers. By following the project of mirroring sameness (Haraway 1997), representations displayed on human-computer interfaces would include or exclude human users from within figured assemblages like computer systems or computer networks. According to such an account, the computer screen would rather appear as uninteresting boundaries between humans and computers. In contrast, an agential realist framework (Barad 1996, 2003, 2007) following a sociotechnical approach to computers screens, would become critically attentive to how computer screens embody representations of figured human and computer 'interactions'. This way of thinking suggests that entanglements between humans, computers and screens interfere with the 'framing' of human-computer interfaces. Thus addressing them not as objects for geometrical reflection, but from physical diffraction patterns, would make room to know differently how screens agencies may matter to humans and computers.

In the Wild and Under Attack. Dismounted Infantry Combat and the Limits of Mediatization. *Stefan Beljean, University of Konstanz*

The growing proliferation of computers and screen technologies in society has provided social scientists with a trove of research opportunities. Among other things, scholars have started to explore the nature of work practices and social interactions in an increasingly mediated world. This line of research has contributed a lot to our understanding of the micro-sociology of face-to-screen work and computer-mediated interaction. What we still miss, however, is a better understanding of the limits of mediatization. As a result, we know only little about the boundary conditions of new micro-sociological theories and concepts that have mushroomed recently. In this paper, I make an attempt to remedy this situation. Taking advantage of the heuristic value of anomalies, I examine a case of mediatization "under extreme conditions": the attempt to use digital technologies in modern infantry warfare. This case is theoretically interesting because militaries' modernization plans have not succeeded thus far despite considerable investments. In the paper, I explore the reasons for this lack of success. I argue

that there are two central characteristics of dismounted infantry combat that impose severe constraints on the use mobile computing technology: (1) the fact that infantry soldiers typically operate "in the wild", and (2) that they are permanently confronted with either latent or manifest hostility when at war. In the paper, I discuss a series of problems that follow from these two basic characteristics of infantry combat. My analysis is based on a mix of data collected through ethnographic field work, qualitative interviews and archival research.

The Scientific Styles of e-Research. *Ralph Schroeder, University of Oxford*; *Eric T. Meyer, University of Oxford*

In recent years, large-scale research programmes have been implemented across the globe with labels like e-Science, e-Infrastructure and cyberinfrastructure (Meyer and Schroeder 2009). All of these efforts can be subsumed under the label 'e-Research', which we define as the distributed and collaborative use of digital tools and data in the production of scientific knowledge. One feature that e-Research efforts share is that they consist of online research technologies with a digital component, though what this component consists of varies among particular e-Research projects (such as data, visualizations, or processing power). We will argue that the range of variability in technologies involvedi is not inffinite, and can best be understood by reference to but that there are a limited number of these components which we will identify. Underlying this exercise is Ian Hacking's (2009) argument, drawing on the work of A.C. Crombie, that scientific knowledge is characterized by different scientific styles – he says there are six. In the full paper, we will discuss all six, and briefly give some illustrations here but for now we focus on three: 1. the experimental exploration and measurement of more complex observable relations (henceforth: experiment), 2. the hypothetical construction of analogical models (models), 3. and the ordering of variety by comparison and taxonomy (taxonomy) (Hacking 2009: 10). . If we apply these types of scientific styles to e-Research, there are a number of ways in which styles of science contribute to understanding the production of knowledge using digital technologies. For instance, we can categorize e-Research efforts by the digital tools and objects – the digital components - they use. So, for example, some e-Research focuses on 'in silico' experiments (thus, style 1), while others (style 2) model the heart, or model climate change. Still others, such as Wiki-style efforts, build taxonomies (style 3) of biological processes and the relations between them. Importantly, in each case, we can establish a typology of the digital components (often data) or the component of the and the computing operations that are performed on variousthese materials, such as Wiki-style taxonomies and simulated models. Thus we can identify different kinds of research technologies e-Research which transfe across disciplinary boundaries (Schroeder 2008; Shinn and Joerges 2002). One of the strengths of Hacking's idea is that scientific styles cut across the boundaries of disciplines, so. W what we see is thatwhen we examine the scientific styles ofacross e-Research technologies is that they are quite unevenly distributed across disciplines and fields of scientific endeavour. We argue that this is only partly accounted for by the prominence of different fields, and has more to do with the nature of the usefulness of different digital components. In addition, priorities in e-Research may be is due to several factors, mainly r: Are researchers driven by funding opportunities in the manner of Socio-Technical Interaction networks (Kling, McKim and King 2003), or in the manner of scientific/Intellectual movements (Frickel and Gross 2005). in the advocacy of different components? This leads us to ask: Is research being shaped by technologies which have an autonomous logic of their own, or how are they shaped by computerization and other movements? Since almost all current research relies on digital tools and data to varying extents, the answers to these questions will have profound implications for knowledge production.

Spontaneous strategies in innovation networks: Materialities in the stabilization of virtual worlds. *Emil Krastrup Husted, Department of Organization, Copenhagen Business School*; *Ursula Plesner, Copenhagen Business School*

To date, a fairly large amount of research has explored how social and organizational processes function and change 'inside' virtual spaces. In this article, add to the literature dismantling the longstanding dichotomy between the virtual world and the real world, by analyzing the importance of materiality in relation to the organization and structuring of virtual worlds. We examine various innovation processes in five Danish entrepreneurial companies where actors continuously struggle to stabilize virtual worlds as platforms for professional communication. With inspiration from actor-network theory and a site ontology, we show how physical sites and objects become constitutive of the inside of virtual worlds through innovation processes. This argument is in line with ANT's perspective on strategy, where sites and objects are considered a strategically relevant resource in the innovation process. Empirically, the analysis is founded on descriptive accounts from the five entrepreneurs. By highlighting the spontaneous strategies described by actors, we show how sites and objects are actively used as an element in their strategy, and also how the sites and objects end up facilitating new ways of thinking about virtual worlds and how these worlds should be organized.

270. Transparency
2:00 to 3:30 pm
Kilen: K275
Participants:

Organizational transparency in the Internet industry. *Mikkel Flyverbom, Copenhagen Business School*

Reporting from an empirical investigation at Google and Facebook, this paper conceptualizes the stabilization of transparency as a form and norm conduct connecting and shaping technical, financial, cultural and political processes in the Internet industry. Rather than approach transparency as a panacea to concerns about privacy, organizational conduct and accountability, this paper explores the boundary work that goes into doing and promising transparency Using insights from the literature on transparency, ´sociologies of translations' and process approaches to organization, this paper captures the enactments and circulations of transparency. The paper offers a theoretical contribution to existing STS scholarship by capturing the 'crystallization of multiple trajectories' at work when transparency orders and standardizes organizations and their surroundings. While there is a burgeoning literature on transparency, we have very few in-depth empirical investigations of its organizational and regulatory ramifications, particularly in the Internet industry. Based on interviews and extensive empirical material about Google's and Facebook's engagement with transparency idea(l)s, the paper shows how such institutionalized practices and norms are adopted, challenged and resisted.

Radical Transparency as an Ideology of Control. *Jan Nolin, The Swedish School of Library and Information Science, University of Borås*; *Nasrine Olson, The Swedish School of Library and Information Science*

With a critical take on Constructive Technology Assessment, we draw on the traditions of STS, to attempt a conceptual analysis of the term 'radical transparency'. Transparency holds many connotations: a leadership strategy (Bennis et al. 2008); a goal for open government (Lathrop and Ruma 2010); a principle for the open access movement, etc. The more specific concept of "radical transparency" was suggested as a more ethical approach to production processes (Goleman, 2010). This concept, portrayed as a leading ideology for Facebook, received wide

publicity after the publication of The Facebook Effect (Kirkpatrick 2010). Claimed to solve numerous social problems, individuals are expected to adopt 'one' transparent identity, regardless of the contexts in which they find themselves. Whereas users are to be transparent, the demands for transparency do not seem to apply to Facebook itself. Facebook is said to care for user privacy rights, although there have been numerous infringements on these rights. As stated by an insider, privacy is seen as "something Facebook should offer people until they get over it". That is, ultimate transparency (on the part of the users) is not a matter of choice, rather, an inevitable consequence of technological innovations. We aim to explore the diverse notions included in the concept of radical transparency as expressed in The Facebook Effect. We treat radical transparency as a particular philosophical worldview that contains implicit and explicit ideas about human beings, social relations and the role of technology in modern society. Our ambition is to critically scrutinize this worldview.

271. On the journal Social Epistemology's twenty-fifth anniversary

2:00 to 3:30 pm
Kilen: Ks43

The journal Social Epistemology's twenty-fifth anniversary invites not only an occasion to contemplate the past, but also an opportunity to explore where social epistemology, as a field of inquiry and a political movement, both stands currently and realizes a possible future. Initially staging a backward glance, the panel — comprised of the journal's founding, past and current editors — notes a shared anniversary with the publication of Bruno Latour's Science in Action. Interestingly Science in Action's publication, and Social Epistemology's founding, occurred on the twenty-fifth anniversary of the original publication of Thomas Kuhn's The Structure of Scientific Revolutions. Reflecting on the ascendency of The Structure of Scientific Revolutions and Science in Action the panel will address social epistemology's current limitations, and future prospects, as a normative force in, and beyond, STS. Social epistemology finds itself at odds with the neo-liberal sensibilities reproduced in much current STS scholarship. Moreover, while interest in epistemic issues — epistemic injustice, epistemic ignorance, epistemic humility — appears on the rise, social epistemology's purpose remains contested. Does social epistemology exist to assess the truth promoting practices of our activities? Does social epistemology exist to provide the philosophical basis for recasting a progressive scientific ideology? Or, does social epistemology's present and future reside with a rejection, modification or synthesis of these perspectives? In keeping with conference theme, the panel will consider the journal's role in designing the reception, and displacing the performance, of STS scholarship.

Chair:
James Collier, Virginia Tech

Participants:

Designing the Reception of Academic Work: Elements of Social Epistemology's Way Forward. *James Collier, Virginia Tech*

The future of academic print journals resides in doubt. Issues related to bundling, copyright cost, distribution and usefulness make print journals appear, especially in the age of social media, increasingly anachronistic. While Social Epistemology faces similar challenges as other academic journals, the nature of social epistemology itself — as an interdisciplinary movement concerned with articulating and designing the normatively appropriate means and ends for the social development knowledge — provides a basis for re-imagining the performance of academic inquiry. Specifically, Social Epistemology launched on 15 November 2011 the Review and Reply Collective (http://social-epistemology.com/). As an online platform, the Collective focuses on the normative obligations of scholars to the diffusion, reception and intellectual maintenance of their ideas. Among other practices, the Collective arranges and gives

extended replies and encourages comment on scholarship published in the journal. In so doing, the Collective asks researchers to consider their places in designing and disrupting the scholarly ecosystem. Using the work of the Collective and Social Epistemology's past and present as a future guide, this presentation will address the following questions: What responsibilities ought scholars bear in the relation to their own work? Should scholars arrange for (in much the same way journal editors contract referees), and respond to, public replies to their work? Ought scholarly work be judged, at least in part, on the basis of its designed reception? Might the process of designing, maintaining and governing the reception of scholarly work lend a certain, applied and sustained province for Social Epistemology and social epistemologists?

Can an Open-Ended World Be the Basis for an Open Society? A 21st Century Challenge for Social Epistemology. *Steve Fuller, University of Warwick*

The trajectory from Kuhn through Latour to today's STS has made social epistemology's task increasingly difficult. It tracks the dissolution of the idea of knowledge as a public good. First, Kuhn reinforced – if not outright legitimised – the 'path dependency' of scientific progress: i.e. a science's origins circumscribes where it can go; hence the inevitability of anomalies, crises and revolutions in science, which requires a new start – typically by new people. Latour then denied that science displays any clear sense of progress, other than simply enabling the indefinite extension of networks. Thus, science has descended from being a public good to a club good (Kuhn) to a positional good (Latour). STS typically places a positive spin on this trajectory: namely, that science is losing the hegemonic character it had acquired over the past two centuries by hybridising with non-scientific agendas and forms of life. No doubt, STS has recorded and celebrated many interesting innovations. However, the price of this open-ended pluralism is that the normative regulation of both science and society has been effectively turned over to the market, rendering STS the happy face of neo-liberalism. The challenge ahead will come from more extreme explorations of alternative ways of knowing and being that are currently mobilising personal and material resources – ranging from deep ecologists, on the one hand, to radical transhumanists, on the other. Social epistemology's task here will be to provide an academic discourse and policy orientation that allows these vast divergent world-views and lifestyles to flourish together within the normative bounds of what Popper might recognise as an 'open society'.

The Social Epistemology That Isn't But Could Be. *Joan Leach, University of Queensland*

The purpose of this paper is to examine 3 areas of contemporary scholarship relevant to science studies that have challenged social epistemology and discuss 3 distinct possibilities for a future social epistemology responding to these challenges. The first set of arguments might be termed the 'metaphysical move' in contemporary STS scholarship. The explosion of interest in 'things' would seem to be at least a move away from the socializing tendency of social epistemology, perhaps even to render an interest in epistemology irrelevant. I will explore the ways in which this is both true and an opportunity for social epistemology. The second challenge is one that social epistemologists have set but have yet to adequately address—the problem of the circulation of knowledge. And finally, the debt that social epistemology has to traditional studies in epistemology needs to be addressed and a number of relevant projects re-engaged. The point of exploring these 3 challenges is to point to the range of relevant projects in an ongoing agenda of social epistemology.

272. (71) The impact of 'impact': public-making and pseudo science-engagement - I

2:00 to 3:30 pm
Kilen: Ks48
Chair:
Richard Watermeyer, Cardiff University
Participants:

Engaging stakeholders in science and technology: Adapted European Awareness Scenario Workshops in the INPROFOOD project. *Christine Urban, Science Shop Vienna*; *Michael Straehle, Science Shop Vienna*

The authors present a concept for adapted and refined European Awareness Scenario Workshops (EASW) as a method for public engagement. Since about 20 years EASW have been conducted in local urban planning. In general EASW are geared at reaching a shared vision on a given topic among different actors and to gather their knowledge about barriers, experiences, and needs. Furthermore, EASW participants propose steps to make these visions come true. It is a precondition for EASW that they are on topics on which decisions still can be made. That way, they aim at promoting debate and democratic participation in decision making and form a basis for further discussions and assessments among policy makers, and, with outcomes being communicated widely, a broad range of stakeholders and society at large. In INPROFOOD the EASW approach is applied for developing shared visions of how to reconcile health concerns and innovations in food technology. In this project 39 EASW – three series of 13 workshops each - are conducted in 13 European countries. Among others, participants include policy makers, health and food professionals, representatives of consumer associations, trade unions, industrialist associations, organisations in public health, and self-help groups, and, of course, scientists. The authors present the set of rules of EASW, the adaptations and refinements they made for making it more effective, their efforts to make this approach credible and transparent, the pitfalls to avoid in organising such participative processes, and discuss the limits of this method and what can be expected from the workshops.

Should I stay or should I go? - The role of the scientist in the decision to pursue stem cell treatments abroad. *Megan Munsie, Stem Cells Australia*

Over the last decade, there has been a rise in the number of clinics aggressively promoting miracle 'cures' involving stem cells for a myriad of conditions. Often operating in jurisdictions with little regulatory oversight, and relying on pseudoscientific concepts to market their technique, these clinics have been able to capitalize on the desperation of those who feel they have no other options. While stem cell scientists have been quick to criticize the lack of supporting evidence for these treatments, engaging in meaningful debate within the community has been challenging especially when many returning from treatment abroad have had such a positive experience and all science can offer is hope for the future. This paper will examine the role of the stem cell scientist – both as an advocate for research but also as a 'siren' cautioning against premature uptake of the technology – from the perspective of a stem cell scientist. Specifically, the paper will review different engagement strategies and provide specific examples of innovative initiatives have been used in Australia to empower the scientific citizen in deciphering whether it is worth the risk to pursue stem cell tourism.

Innovations in Public Engagement and Participatory Performance of the Nations. *Mikko Rask, National Consumer Research Centre Finland*; *Saule Maciukaite-Zviniene, Research and Higher Education Monitoring and Analysis Centre*; *Jurgita Petrauskiene, Research and Higher Education Monitoring and Analysis Centre*

It is widely expected that citizens will play an even more important role both in governing and implementing innovation activities. To support a new culture of inclusiveness, new procedures of public engagement in policy making have recently been developed and experimented. In this article we analyze data from the EU funded MASIS (Monitoring Policy and Research Activities on Science in Society in Europe) project to study innovations in citizen engagement and the level of 'participatory performance' of 37 European countries. We will answer the following research questions: What types of public engagement procedures have in recent years been developed and experimented in the sample countries? How these processes have been reflected in national policy discourses? How do the countries perform in their public engagement activities? Resulting from the research, we will identify state-of-the-art practices in the field of public engagement and construct a model of 'participatory performance'. By applying the model we will classify the countries in six groups depending on their performance rates. Our results help policy makers and science-in-society practitioners to compare their country's performance to other countries, and find new means and examples of how to develop S&T priority setting, evidence based policies and governance mechanisms to be more inclusive. For the scholars of STS the paper will provide a timely contribution to the debate of the role and relevance of the deliberative governance approach in S&T policy.

Challenging the "strategic maneuvering" of life scientists in public dialogue. *Koen Dortmans, Radboud University*; *Maud Radstake, CSG Centre for Society and the Life Sciences, Radboud University*; *Tsjalling Swierstra, Maastricht University*

Based on our work as STS-scholars and facilitators of public deliberation on new and emerging science and technology (NEST), this paper discusses the performance of Dutch (life) scientists in such deliberations in terms of "strategic maneuvering". The evaluation of argumentative discourse, allows for a) identifying derailments of strategic maneuvering which risk producing "pseudo engagement" b) designing interventions to improve both fairness and competence (e.g. Webler, 1995) of deliberative processes on NEST-ethical issues. The notion of "strategic maneuvering" is key to pragma-dialectical argumentation theory and denotes the "delicate balancing" act between "the rhetorical (persuasion) and the dialectical (reasonableness) aims of argumentative reality" (Van Eemeren, 2010). It provides valuable insights for the reconstruction, analysis and evaluation of argumentative discourse. It allows us to open the "black box" of public deliberation and to focus on the quality of discourse. Thus we have been able to empirically study scientists' performances of their role of 'citizen scientists' (Wilsdon et al. 2005). The latter concept has been introduced in PEST literature to include notions such as social responsibility and ethical reflexivity. Drawing on empirical data from public dialogues on NEST that we have organized, we will show how scientists' strategic maneuvering derails: how they use arguments from expert opinion falliciously and how they evade the burden of proof (by demarcating responsibilities). We indicate how the critical questions used for the evaluation of arguments and the pragma-dialectical rules for reasonable discussion can be translated into interventions performed by organizers and facilitators of public dialogues on NEST.

273. (100) Displacing the laboratory and STS with it: new modes of engagement - Social scientists and the lab - II

2:00 to 3:30 pm
Kilen: Ks54
Participants:

Big Social Science Lab for Small Technology:Interdisciplinary

Collaboration at the Center for Nanotechnology in Society. *Sharon Ku, National Institute of Health, USA*

This paper explores the politics of interdisciplinarity be examining how interdisciplinary collaboration was framed and practiced in two NSF-funded Centers for Nanotechnology in Society in US. Since 2005, the NSF has invested over $ 13 million in establishing two Centers for Nanotechnology in Society (CNS), as a "clearing house" for nanotechnology-related ethical, legal, and societal issues. Due to the belief that "society," as well as "science," demands to be systematically investigated, the NSF categorized the CNS under the same category as other scientists-led nanocenters, expecting it to act as a "laboratory" where high degree of interdisciplinarity should be demonstrated by social science and humanities researchers to produce "sober, technically competent research" about "the society", and help facilitate the commercialization of nanotechnology. This strategic partnership opens up a series of inquiries about the practice of interdisciplinarity and the role of social science and humanities studies in contemporary science and technology. Practical questions related to resources distribution and management have created tensions for researchers who in the past were not operated under this "Big Science" model. Furthermore, they have to shift their role from "Big Science analyzers" to "Big Social Science partners" under their contract with NSF. The complicated social roles the CNS researchers have to play indicates that interdisciplinarity is not a generic epistemic formula, but heavy-duty politics among different disciplines, between public universities and the federal funding agency. Questions about how Big Science, laboratory-based model influences knowledge-making in social science and humanities studies will also be discussed.

Integrating Concerns in the Semi-peripheral Context: The Case of a Brazilian Nanoscience Laboratory. *Paulo de Freitas Castro Fonseca, Center for Social Studies, University of Coimbra*

Nanoscience and Nanotechnology (N&N) are well acknowledged as field where policy makers have pursued to implement innovative governance regimes, not only to promote the emergence of technological innovations and its economic benefits, but also to assure more responsible and desirable outcomes. One of the tenets that have been much advocated is the integration of social sciences within the laboratory practices. However, there are noticeable problems for its implementation, such as conceptions by natural scientists and engineers of science neutrality and of a hierarchical relation between natural and social scientists. In addition, little attention has been paid to the assessment of this model for the semi-peripheral contexts of science and technology. This work reports an ethnographic research developed at a Brazilian National Institute of Science and Technology focused on nanomaterials. From the micro-level of individual researchers, but also from the meso-level of the institute coordination, different issues concerning the researchers conceptions and institutional constraints for the engagement of social scientists in the semi-peripheral laboratories can be identified. The findings suggest that the role of the engaged social scientist, or the magnitude of his/her intervention, seems to depend heavily on particular conceptions of the leading researchers. Meanwhile, the economical and political constraints of the less industrialized countries are seen as a justification to the impossibility of changing research paths. Still, this study indicates that this kind of interaction is, at least, a feasible way to promote more reflexivity among scientists and students.

Post-academical insights and ethnographies. *Robert Bhatt, Department of Culture & Media Studies, Ethnology, Umeå university, Sweden*

The aim of my paper is to discuss findings and experiences from my on-going fieldwork in a community of medical imaging and visualization scientists. In this study I investigate the function of 'places/materialities' and 'identities' in science, under conditions sociologically described in terms like "Mode-2"(Nowotny et al 2001), "post-academic"(Ziman 2000) or "neo-liberalist" (Lave et al 2010). Analytical and methodological insights drawn from this research will be used to address questions relevant to the panel - "What is going on in science these days? And how do we find out?" I will argue that the methodological consequences of these "New modes of knowledge production" are two-fold: On one hand an increasing pluralism in scientific problem formulation and instrumentalism creates a space for ethnographers seeking to study these cultures. On the other, one might find oneself in representational competition with other professional "description makers", who use similar methods and sources of information. The latter situation clearly raises the stakes regarding 'ethnographic credibility' and social influence: Which story gets to tell the truth when critical analysts and marketing consultants share interviewees? More theoretical questions regarding contemporary values assigned to the materialities of science surface, when I explain more clearly why these PR-people dwell on-site in the first place. Such empirical observations invite an analysis of the symbolical roles assigned to experimental, medical visualization technologies in national political discourse, and the local, 'meta-scientific' strategies hereby enabled. This study furthermore revitalizes Henke and Gieryn's discussion about laboratories and scientific authority in a global context (2008).

Give me an Embedded Humanist and I will Displace the Laboratory. *Erik Fisher, Center for Nanotechnology in Society at ASU*; *Sharon Ku, National Institute of Health, USA*

Recent trends in laboratory studies have emphasized more active roles for the observer, whether in pedagogical, collaborative or confrontational modes. In one such approach, the STIR "laboratory engagement study," embedded humanists focus on the effects and their meanings of feeding their observations back into the field in real time (Fisher 2007). But while the "productively disruptive" outcomes of these studies have been analyzed and described (Schuurbiers 2011, Wynne 2011), less attention has been devoted to the role of the observer in contributing to them, particularly in light of scholarly understandings of the laboratory. This paper attempts to address this theoretical opening. Revisiting Bruno Latour's classic 1983 paper on the roles of the laboratory and of laboratory studies, we suggest that if labs obscure their own social and socially transformative roles for strategic purposes, they also render "the social" as such invisible to their own practitioners. Accordingly, embedded humanists in the STIR program are able, through their own instruments and transcription devices, to render what is invisible in the laboratory visible to the laboratory practitioners, in turn displacing the lab and reshaping its practices. To parody Latour, "If you reveal societal dimensions as essential actors in all laboratory relations, then you need to make room for them, and for the people who show them and can constructively engage them."

Being an 'in-house' social scientist: The failures of integration. *Ana Viseu, York University*

Contemporary science policy emphasizes the need for integration between the soft and hard sciences as a means to engage the public and thus produce responsible science. This is particularly true of current efforts in nanotechnology research and development , an effort that has entailed the integration of social scientists in nano-facilities. But has this integration has worked in practice? Drawing on ethnographic data during my three years as an 'in-house social scientist' at a U.S. nanofabrication center, I argue that this policy model is not working. My paper will examine how the 'social' is incorporated into a lab, namely on the ways in which the 'public' comes to stand-in for the 'social', and the ways in which this affects expectations regarding the role of the social sciences.

274. (88) The design and displacement of social knowledge practices - I

2:00 to 3:30 pm
Kilen: Floor Ground floor - Ks71
Chairs:
Kristoffer Kropp, University of Copenhagen
Per Wisselgren, Umea University, Sweden
Participants:

Social Knowledge Production through Measurement in Social Sciences: Case of Work Life Research Measures. *Katri-Maria Siponen, School of Social Sciences and Humanities, University of Tampere*

Survey has been a widely used data type in social sciences and in the field of work life research. However, rather little attention has been paid to the nature of knowledge and realities that survey data produce. Questions, such as how measures are analyzed and what kind of knowledge different statistical devices and methods produce call for answers. More research is needed on this subject. My presentation is based on PhD project where I explore a social scientific survey on temporary employees' well-being as an instance of social knowledge production. I focus specifically on the measures of temporary employees' contract motives. Temporary contract is common in Finnish universities. The presentation will conclude preliminary results of qualitative analysis of the contract motive measures. Methodological tools in my research are drawn from the literature of STS studies. Data analysis is focused on realities that are produced by measures, following ideas from John Law. According to Law, methods can be seen as techniques that describe reality, or alternatively, they are more performative in a sense that they create realities.

(De-)Constructing Technoscientific Futures: On the Modalities of Social-Scientific Scenario Building. *Gernot Rieder, University of Vienna - Department of Social Studies of Science*

Recently, claims have been made that one defining quality of our current moment was the thinking and living towards the future, marking a certain state of anticipation that asks societal actors in general and the sciences in particular to get hold of matters of uncertainty by fostering the continuous assessment of the 'not yet'. Within the social sciences, this ubiquitous call for anticipation has been answered by a plethora of theoretical conceptualizations, sophisticated methodologies, and empirical investigations, which can be understood as attempts to fathom prospective developments in new ways. Against this background, the presentation will report on research findings derived from in-depth examinations of projects using a range of scenario methods having sought to create and assess possible Nano-enabled futures by different sets of actors. Drawing upon qualitative interviews with scientists from Northern America and Europe, the paper attempts to shed light upon the assumptions and decisions, the practices and rationales that have guided the process of making future scenarios, thereby asking questions such as: How do cultural, academic, and situational resources inform and translate into the process of scientific future construction? What plays into the decision for or against certain methodologies and how do these methodologies frame the creation of future narratives? Posing these questions, the presentation seeks to tie into recent debates about the geographies of scientific knowledge production as well as the politics of method, exploring how and by what means the future is turned into an entity of design, deliberation and governance.

Aristocrats vs. Craftsmen: Understanding Where Today's Sociology is Going To. *Lukasz Afeltowicz, Institute of Sociology, Nicolaus Copernicus University; Radoslaw Krzysztof Sojak, Institute of Sociology, Nicolaus Copernicus University*

Science is not as old as some would think. The roots of modern experimental science go back only as far as 17th century. The modern science emerged as autonomous institutional field thanks to amalgamation of different cultural and social patterns, practices, and capitals. Among many others the credibility of scientific knowledge and experimental method was built upon elements of the aristocratic culture. Nonetheless the resources of aristocrats were insufficient for the constitution of experimentalism as dominant way of the examination of the Nature. Complex instruments were necessary. Thus aristocrats were forced to rely on competences of representatives of the lower classes – craftsmen. Craftsmen and their artifacts enabled aristocrats to convert the social capital into scientific authority. Aristocrats and their resources enabled craftsmen to convert their skills into symbolic and social capital. The story sketched above allows us to reconstruct two basic and persistent research styles: the aristocratic style (highly reflexive, exhibiting agency and authorship, concentrated on highly conventionalized process of discussion) and the craftsmanship style (highly pragmatic, concentrated on material manipulations and problem solving, avoiding deliberation). We understand research style as highly innovative and potentially changeable (Harrison White) convention of actions and cognition (Ludwik Fleck), which is integrated through tacit, quasi-esthetic values (Pierre Bourdieu). It encompass the ways of perceiving the world and conducting research, as well as legitimate traditions of reporting both processes. We use the distinction to depict and analyze the current state of the sociology understood as a filed in transition from aristocratic to craftsmen's style. At the same time we argue that the distinction of the research styles is much more useful for the analysis of science than most of the traditional methodological and disciplinary classifications.

Measuring the Equity of School Systems in Internatioanl Comparisons. *Radhika Gorur, The Victoria Institute - Victoria University, Australia*

Inequity has become an intractable problem in education. In the last decade or so, concern around inequity has led to the widespread measurement of inequity in terms of outcomes. Among these, popular in many countries are the OECD's international comparisons of school systems in the Programme for International Student Assessment (PISA). PISA's quality-equity grid and the comparative 'slope' of inequity are frequently used in education policy as the basis for significant decisions. These data circulate through use in a large number of influential reports and documents, and through policy advice given by various institutions and individuals. While the measurements are widely used, little is known outside the statistical community about how the messy, contextualised and complex phenomenon of equity is rendered comparable across nations and cultures, or of the models and assumptions that underpin such measures. Based on interviews with key PISA experts, and drawing on the analytical resources of STS, this study examines how the abstract notion of equity is rendered measurable and made commensurate across nations. Contrasting the policy use of PISA measures with the complexity of measurement and comparison highlighted by the PISA experts, I make a case for moving the conversation on equity measurement, following Latour, from 'matters of fact' to 'matters of concern'. Exploring the making of global knowledge in the form of international comparisons of education systems, this study contributes to the emerging collection of research on 'social science in the making' and also interrupts some taken-for-granted notions in education policy research.

Making of population: a welfare state inscribed into population knowledge. *Marja Alastalo, University of Tampere*

Enactment, making or shaping of social phenomena as objects of knowledge have been explored scantly. STS scholars have tended to choose the others – e.g. bio-, life- and nanoscience and scientists – as the objects of their investigation. In my presentation I follow how population is made up. Following Ian

Hacking, John Law and many others, I argue that population statistics do not only describe but also make population. The problematics of population and of knowledge on population was raised by Michel Foucault in his work on governmentality in the 1970s. People are governed as members of populations not as individuals. As members of populations people are objects of socio-political and medical interventions as well as of social research. These actions could not be taken without knowledge on populations. As an object of knowledge population is primarily a statististical artifact. The instance of my empirical analysis is the making of population and register-based statistical system in one of the Nordic welfare states, Finland. In this system population is assembled by means of personal identification number from numerous registers maintained by state and local authorities, a procedure that would violate laws on privacy protection in many countries. I trace the specific features of register-based population and its making especially in comparison to traditional census-taking. This presentation draws on documentary and interview data. It combines theoretical concepts from STS as well as from Foucauldian scholars and aims to assess their aptness in this.

275. (08) New forms of expertise and the new understanding of human difference in autism research and care

2:00 to 3:30 pm
Radisson Hotel: Radisson A
Chairs:
> *Gil Eyal*, Columbia University
> *Daniel Navon*, Columbia University

Participants:

> Redefining Autism through a Genetic Lens. *Jennifer Singh, Georgia Institute of Technology*
>
> Since the 1990's there have been tremendous social and scientific investments into understanding the genetic causes and etiology of autism. Despite these growing investments, the production, representations and implications of viewing autism through a genetic lens are not well understood. For example, there is limited research that investigates how new technologies are redefining what constitutes a genetic disease and how the transformation of genetic knowledge can influence how diseases are clinically defined, diagnosed, and treated in the future. Based on 19 interviews with a range of scientists who conduct autism genetics research and the implementation of grounded theory methods, this paper critically analyzes how biomedical technologies are shifting the genetic disease paradigm from inherited single gene causing mutations to rare genetic copy number variants that can be spontaneously acquired. I argue that the scientific approaches to the genetic understanding of autism are very much driven by technological advances in microarray technologies and the ability to scan the genome at higher resolutions. The emergence of this technology has generated a new class of genetic mutations and chromosomal disorders associated with autism, which are now being used in some clinical genetics labs as a first tier analysis to screen for autism. This paper contributes to the STS literature by investigating how science and technology transform what constitutes biomedical knowledge and the genetic contributions to disease, and how this knowledge becomes integrated into clinical research and practice.

> Autism as an 'Epidemic of Signification': Exploring the Affective Terrain of Autism Activism. *Michael Orsini, University of Ottawa; Sarah Wiebe, University of Ottawa*
>
> It is impossible to think, much less write about autism today without some recourse to the data. The language of exploding prevalence rates and of a public health epidemic dominates the media and policy landscape. Autism is depicted as unstoppable, difficult to contain. Failing to intervene early, we are warned, can

have disastrous consequences. While the experience of autism varies across individuals, statistics penetrate the public consciousness because they aggregate the rich, qualitative experiences of life on the autism spectrum into a language that is (too) easy to understand. I use Paula Treichler's notion of an "epidemic of signification" to explore how epidemic language communicates multiple meanings and produces particular activist subjects. AIDS, Treichler explained, was at once an epidemic of a "transmissible lethal disease and an epidemic of meanings or signification" (1999, 11). While epidemic language makes autism "intelligible" to a range of actors affected by autism and provides a much needed "discursive link" (see Eyal et al 2010) to justify policy intervention in the age of neoliberal state retrenchment, it does not communicate any fundamental truths about autism or about autistic experience. Drawing on a case study of autism advocacy in Canada and the U.S., I explore how epidemic language constructs a series of particular publics, including the parents of autistic children, who are exhorted to be hyper-vigilant in locating and acting on the early warning signs of autism. Specifically, I am interested in how the emotions of hope and fear shape the "affective terrain" of autism activism.

> Autism and performance in visual analytics: a research programme. *Richard Arias-Hernandez, Simon Fraser University*
>
> Two arguments and one hypothesis are established in this paper. The first argument is the understanding of technology as constitutive of the material conditions that structure opportunities and constraints of individuals. This is the argument of technology as enabler/disabler or technology as structure. The second argument is that social constructions of ability/disability are co-constructed with technological structures of individual constraints/opportunities. The Visual Analytics Lab at Simon Fraser University is currently using these two arguments as the basis for a research programme. Its goal is to displace traditional social constructions of autism as a disability towards an understanding of autism as a personal trait that could be re-signified as ability in the technologically dense environment of visual analytics. The main hypothesis of this research programme is that autism is one individual difference that correlates positively with better performance in visual analysis. This paper will present the theoretical and empirical bases of the two main arguments and the research hypothesis underlying the research programme. The paper will also raise critical questions about the ethical implications of such research such as the potential negative impacts on individuals with autism.

> The trading zone of autism genetics and the emergence of new categories of human difference. *Daniel Navon, Columbia University; Gil Eyal, Columbia University*
>
> The intersection of autism genetics and patient/parent activism has given rise to novel frameworks for understanding human difference. It has become increasingly clear that there is no 'gene-for' autism: dozens of genomic abnormalities have been associated with autism, but they only account for around 20% of caseloads and most have been observed in non-autistic subjects. We argue that a sociological analysis of the interface or "trading zone" between autism genetics research, clinical practice, patient advocacy and other fields can shed light on both the biosocial causes and consequences of this seemingly intractable state of affairs. Alliances between advocacy groups, therapists and clinicians led to a radical expansion of autism's diagnostic criteria, thereby incorporating new populations into the spectrum and increasing autism's genetic heterogeneity. This set the stage for a complex trading zone in which genetics research and the existing field of autism diagnosis, treatment and activism could converge to pursue cognate projects of knowledge production and social action. As a result, autism genetics is now characterized by heterogeneous, overlapping research paradigms. We focus on the radical strategy of 'genomic designation' – the idea that the genomic anomalies associated with autism should be

treated as new, independent syndromes that overlap with autism or count it as one of their symptoms. Drawing on analyses of biomedical publications, organizational records and interviews, we examine the biosocial processes that have shaped autism genetics as an open trading zone and the novel kinds of social mobilization and knowledge about human difference emerging from it.

Discussant:

Sarah Richardson, Harvard University

276. (62) Monitoring, identifying, displacing: on everyday surveillance & security practices - III

2:00 to 3:30 pm
Solbjerg Plads: SP112

Chair:

Jutta Weber, Institute of Media Studies

Participants:

Social Profiling in the use of Sound Based Security Systems. *Cathleen Rose Grado, University at Buffalo*

This paper examines sound based security technology systems in social profiling and population control procedures. The paper continues with a case study of The Mosquito, a device designed to prevent loitering through the emission of high frequency sound waves in the upper range of human hearing. Through analysis of The Mosquito, larger issues related to population control from the use and misuse of such sound devices in public space are addressed. The Mosquito targets select demographics through the use of sound waves in specific frequencies. For example, high frequencies are effective deterrents for teenagers and young adults while a variety of lower frequency ranges, audible to adults, target the homeless, vagrants, and loiterers. In both cases exposure to the sound waves has been found to cause inner ear discomfort, headaches, and disruption in equilibrium. Police Forces and Authorities see frequency specific audio devices as an effective and safe method for protecting property and managing antisocial behavior. Opponents view the devices as discriminatory, unsafe and a violation of human rights. The use of The Mosquito directly impacts arguments on the ethics of using sound technology for security applications in the public domain and questions its value as a tool for managing antisocial behavior.

Privacy and Security in the Media: A European-wide Analysis. *Jana Schuhmacher, Fraunhofer Institute for Systems and Innovation Research ISI; Simone Kimpeler, Fraunhofer Institute for Systems and Innovation Research ISI; Michael Friedewald, Fraunhofer Institute for Systems and Innovation Research ISI*

Several studies on risk perception recently stated that there is a traditional trade-off between privacy and security when it comes to technology diffusion. By constructing images, perceptions and beliefs, media play a crucial role in this process. Although there are many studies on privacy and several on the media perception of specific areas of security, a continuous and comparative content analysis that identifies discourse patterns and differences between different risks is still a desideratum. Our EU-funded project (2012-2015) tries to fill that gap, as it analyses which notions of privacy and security are (re)constructed by the media in the European public sphere as well as in the different EU countries and how they relate to citizens' perceptions. A representative sample of press and online media from 6 European countries is analysed in three steps: Firstly, privacy and security notions in the national media between the years 2008 and 2011 will be assessed quantitatively as well as qualitatively with regard to interrelations between actors involved and topics discussed. This will be followed by a monitoring of the actual media reporting during the field phase of the project's EU-wide

survey in order to match personal and public opinions expressed. The data will be used for the final step, the in-depth discourse analysis on selected topics to better understand the relation of personal and public opinions and the function of the media in this process of social construction of security and privacy understandings. In our presentation we will contribute to the discussion of the relation of privacy and security notions versus the everyday practices with regard to surveillance and privacy aspects of online data by providing an overview of the state of the art of media content analysis in the field of privacy and security perceptions, discussing our analytical framework and showing first results of the quantitative analysis; that is findings of frequence, timelines and co-occurrence of topics, actors, genres, regional aspects and discoursive patterns in the context of privacy and security.

Privacy for Global Village Cyborgs. *Francis Harvey, University of Minnesota*

This paper focuses on locational aspects of privacy in the global village. A good starting point is Marshall McLuhan and Bruce Powers outspoken assessment of privacy in the global village (1989), "Private identity which was tied to a specific place and time is already gone….". For McLuhan and Powers, this marks the culmination of a process that began with the advent of the telegraph: the gradual loss of the self-knowledge attained through the dynamics of small communities where everybody knew everybody else. The world-wide adoption of mobile technologies moved humanity into a cybernetic world where the extended capabilities of these technologies become central elements of identity. This paper examines privacy in terms of control of information based primarily on location. The demise of institutions and infrastructures sustaining broadly accepted arrangements and hierarchiacal scale of privacy is wide spread and people and society struggle to develop institutions and infrastructures that sustain privacy of interactions that have both a physcial and virtual (topological) dimensions. I question nostaligic idealization of privacy before the introduction of new technologies, for example the telegraph, photographs, and location based services. Following a dialectical analysis, I theorize in the paper that concerns about online and mobile-device privacy lead to a synthesis that is producing new institutions and infrastructures in the global village that take both physical and virtual locations into account.

Enacting Encryption: The Development of Encryption Technologies in the United Kingdom. *Richard Fletcher, University of Surrey*

The cryptography landscape changed in the 1970s. For the first time, digital encryption technologies were produced outside of the military and other intelligence gathering organizations. Authors such as Steven Levy, Whitfield Diffie and Susan Landau have described the scientific work on encryption carried out by universities and corporations in the United States, and the policy debates over national security, export controls and individual privacy that followed. However, parallel developments in the UK are less well understood. The 1970s also saw the start of a program of cryptographic research in the UK. Cryptographic research using computers was carried out within a number of different organizations, including universities, the civil service, and in industry. Using both documentary analysis and qualitative interviews, details about how each of these sites designed and constructed encryption technologies has been uncovered. Examination of the practices employed at each of these locations has revealed a divergent set of methods, operations and goals. This, in turn, has resulted in what Annemarie Mol has termed a 'multiplicity' of encryption technologies. Subsequently, a picture of a set of technologies has emerged that, although ostensibly designed with security and the inhibition of surveillance and monitoring in mind, exhibit divergence in the range of localized practices that produced and sustained them. Given that different sites designed and produced encryption technologies in different

ways and for different purposes, it may be possible to use this insight to understand the privacy and security policy debates that followed.

Mundane technologies of distrust: Colombia, the future of the world? *Malcolm Ashmore, Loughborough University*; *Olga Restrepo Forero, Universidad Nacional de Colombia*

A strong consensus among social theorists is that the very possibility of social life depends on the maintenance of interpersonal and institutional trust. While not wishing to contest this argument, we want to draw attention to a range of ordinary socio-technical arrangements ubiquitous in Colombia which operate, paradoxically, on the basis of taken-for-granted suspicion; on the active refusal of trust. In so doing, we aim to put empirical, and material, flesh on the common observation that Colombia is characterised by a 'culture of suspicion'. The mundane technologies of distrust we have examined through 'experiential ethnographies' include: 1. multiple-ID demand/provision, in the service of any transaction whatsoever; 2. document-authentication in the institution of the notary; 3. indiscriminate bag searching, by private security guards, at the entrances of shopping malls, universities and other ambiguous private-public spaces; 4. the equipping of private houses (of every social class) with multiple security devices, including razor wire or electrified fencing. These technologies configure their users in different ways and indeed can be classified in terms of the particular threat-figure they operationalize. However, all these common machineries produce the ordinary person as-if one or another kind of bad character, who is to be guarded against; this achievement being these systems' main justificatory logic. Cultures/technologies of suspicion, where everyone is configured as potentially guilty, are spreading throughout the world, particularly at sites of borders and passage like airports. We suggest that everyday life in Colombia today, offers an equally appropriate (and equally dystopian) vision of our global future.

277. (12) Redesigning age and ageing: anti-ageing science and medicine in the 21st century

2:00 to 3:30 pm
Solbjerg Plads: SP113
Chair:

Joanna Elizabeth Latimer, Cardiff University/ESRC Centre for the Social & Economic Aspects of Genomics

Participants:

From Degeneration to Regeneration: Ageing in the Age of Regenerative Medecine. *Céline LaFontaine, university of Montreal*

As a veritable re-engineering of the body, regenerative medicine is the purest manifestation of contemporary biopolitics ; it announces the concrete emergence of what sociologist Karin Knorr Cetina calls the 'culture of life', in which individual existence is symbolically assimilated to biological conditions. Erasing the distinction between the normal and the pathological, regenerative medicine aims to reproduce the biological processes that permit the body to reconstitute, and even to recreate itself. Whether it is a question of embryonic stem cells or of autologous stem cells, the principle of regeneration is biologically linked to youth, and to the possibility of reversing the effects of ageing. Moving beyond the mere clinical treatment of disease, this new biomedical paradigm aims specifically to enhance human abilities by controlling the molecular processes responsible for cell aging. Regenerative medicine aims to promote the biological processes that enable the body to repair and even recreate itself. The goal is no longer healing, but rather regeneration—an inherently unlimited process. Against the backdrop of an aging population, the efforts to combat aging that underpin research in the field of regenerative medicine raise important questions concerning the status of the elderly and the representation of

aging bodies. Based on a series of interviews conducted in Canada, with researchers and clinicians, this paper proposes to analyze the conception of the ageing body, as it is linked to the development of regenerative medicine.

Anti-aging medicine as a "technology of the self"? *Larissa Pfaller, FAU Erlangen Nürnberg - Germany*; *Mark Schweda, University of Goettingen*

In recent years, there is a significant boom of medical interventions aimed at the concealment, attenuation, deceleration, arrest or reversal of human ageing and the radical extension of the human life span. We examine in how far these "anti-aging" practices are related to the constitution of modern subjectivity. Based on qualitative empirical research and following a line of thought inspired by Michel Foucault, we discuss anti-aging as a „technology of the self" located between self-fulfilment and self-care and self-discipline. We analyze expert interviews, websites and congresses (e.g. of the German Society of Anti-Aging Medicine (GSAAM)) as well as narrative interviews and focus groups with users of anti-aging products and services in Germany (2011/2012) in order to explore their perceptions of anti-aging medicine. On the one hand, our empirical data puts oversimplifying models of "medicalization" into perspective: It shows that anti-aging is perceived and performed as a rational practice of designing oneself and one's body. Employing anti-aging interventions exhibits a well-planned life course that is modelled prudently and effectively by using the benefits of modern medicine (anti-aging as a competence to act). On the other hand, however, modern individuals pay for the prospect of designing their aging bodies by subjecting themselves to medical rationality and public health responsibilities. In this perspective, manifold forms of resistance against the interpretative authority of modern medicine and the activating welfare state can be observed.

Redesigning reproductive ageing in Switzerland: biomedical technologies and the extension of fertility time. *Nolwenn Bühler, Department of social and cultural anthropology, University of Zurich*

The view of a fixed pool of oocytes, declining in quantity and quality with ageing is at the core of reproductive medicine since decades. Biomedical technologies like IVF with donated eggs, egg cryoconservation, DHEA taking or the future possibilities opened by the presence of germline stem cells in ovaries may be used to overcome this biological limit and extend fertility time, thus challenging the strong association between youth and reproduction. This paper addresses the understudied relations between ageing and reproductive studies. While the former tend to focus on later life, thought as non-reproductive, assisted reproductive technologies studies usually fail to take into account age and ageing, although the postponing of childbirth is one of the main reason of their increased use. Drawing on debates about reproduction, ageing and the use of biomedical technologies to overcome age-related infertility in Switzerland, the controversial legitimacy of these "anti-ageing" technologies will be examined. Based on ethnographic data, it will be argued that, on the one hand, the naturalization of female age-related infertility is used to draw a boundary between legitimate and illegitimate uses, desires and dreams about family and motherhood. On the other hand, its de-naturalization is legitimized by the expected alleviation of the sufferings entailed by childlessness, and hopes for gender equality, but raises also fear of intergenerational relations disruption. The central contribution of this research is to highlight the complex intertwining of values and norms related to these discourses and the ambivalences of an ageless fertility dream.

Ageing and Biology. *Joanna Elizabeth Latimer, Cardiff University/ESRC Centre for the Social & Economic Aspects of Genomics*

This paper presents findings from an ethnography of ageing and

biology, funded by the ESRC at Cesagen and as a part the New dynamics of Ageing Program. This project included formal and informal interviews and site visits with leading biogerontologists, participant observation of conferences at which biogerontologists present and debate their work, examination of biogerontologists published research and discourses of theories of ageing, and other media, including radio broadcasts and internet videos. The study maps biogerontology and explores its alignments and interfaces; its discourses, practices, and materialities; and its organization, ethics and politics. The paper explores one aspect of the study: what 'ageing' becomes in biogerontology, how biogerontologists legitimate intervening in ageing, the kinds of interventions that they imagine are possible, and what the significance is of these imaginaries and practices, for concepts of ageing, and for being and growing old.

278. (101) Situational analysis at work - researching work practices in science and engineering - I

2:00 to 3:30 pm
Solbjerg Plads: SP114

Participants:

Methodological challenges of studying engineering design work and practice. *Søsser Brodersen, Department of Development and Planning, Aalborg University*; *Rikke Premer Petersen, Aalborg University Copenhagen*

For many years engineering practices have been studied by the use of ethnographic approaches, opening up for a multitude of methods such as qualitative interviews, observations etc. The purpose has been to study how engineers work and the challenges confronting their work and practice, thus giving the researcher a picture of the situation in the moment. Yet studying engineering practices is full of complexities, since it involves not only how the engineers work in the actual setting, but also how their educational background, professional network, and institutional settings interact. To account for this, the authors of this paper have applied a multi-sited ethnographic approach (Marcus, 1998) to a study of engineering design work and practice. In this paper we will discuss some of the challenges we have come across in applying this methodology, both in relation to which sites to study, maneuvering across the sites, which methods to apply to best explore the heterogeneous sites, and how to study design practices in companies where different disciplines are involved in design processes of different kinds. Our point of departure for starting this investigation is that understanding engineering practice also means understanding, capturing, and unfolding the heterogeneous interference in the engineer's work practices. Thus, we draw theoretically on STS and the Actor-Network Theory (Law, 1992; Callon, 1986). The research behind this paper is part of the research project PROCEED, aiming at studying opportunities and challenges in engineering education in Denmark

Situational Analysis of Engineering Practice. *Anders Buch, Technical University of Denmark*

STS inspired studies of engineering work practices provide new material for a richer understanding of engineering culture. However, the specific and strictly situated focus of many of these studies threatens to limit discussions of engineering practices to departmental and discrete institutional settings. This micro perspective potentially overlooks the inherent and overarching normativities that inform engineering culture. Furthermore, the micro perspective has difficulties in transgressing institutional boundaries in order to investigate the dynamics of cultural reproduction in engineering. The paper will propose a research agenda that – inspired by George Marcus' multi-sited ethnographic methodology (Marcus 1998) and Adele Clarke's situational analysis (Clarke 2005) – analyze (and contrasts) engineering practices in diverse settings (e.g. engineering education and engineering work) in order to uncover the

material-discursive transformations in these practices. Thus the research agenda intends to suspend the micro-macro dichotomy by making the situation the ultimate unit and point of departure of analysis. The paper will outline the research design of my studies and elaborate on my considerations for choice of a 'theory/methods package' (Star 1989) for my research. This elaboration will foreground my epistemological and ontological assumptions alongside my concrete practices and methods in going about my research. The paper will thus outline how my research has progressed through the use of ethnographic field studies, interviews and discourse analysis of texts.

Displacing the patient – a situational analysis of strategic patient figures. *Anja Svejgaard Pors, Copenhagen Business School, Department of Organzation*

The analysis is based on an empirical study of a hospital's communication strategy entitled: 'The Perspective of the Patient'. The paper asks how the strategy organizes communication work as situated displacements of the patient. Based on methodological elements from situational analysis (Clarke 2005) the analysis examines how the hospital's patient communication is not just about disease treatment, but rather about information treatment of the patient in order to attain a high level of patient satisfaction. The goal of patient satisfaction addresses care-oriented understandings of the patient as an affective care recipient, as a citizen with rights and as an individual need-oriented user on the one hand. On the other hand, the goal of patient satisfaction also deploys market perceptions of patients as homogeneous target groups to which information can be standardised. In the latter (market orientation), the patient is also a resource for organizational development and a customer with consumer behavior. Overall, the strategy presents an information-pursuing patient figure making it possible to streamline the organization's care orientation on market conditions. In contrast to Annemarie Mol's dichotomy of care and market as mutually exclusive (Mol 2008), care and market appear to be intertwined in political patient figures through which the organization is trying to manage and transform itself from the inside.

Of mice, polemics and toxins (dis)placed on stage of public consultation. Situational analysis of the GMO-discourse in Poland. *Yen Sulmowski, Leuphana University of Lueneburg*

In 2009 the law on genetically modified organisms (GMOs) was passed to the polish parliament for deliberation. Since then the discourse on agro-biotechnology has intensified and has bloomed in various forms. In public hearings, demonstrations, open letters, weblogs and print media articles poeple have argued over the question, if the GMOs should be banned from or introduced on the fields in Poland. While legitimating their positions on this question the arguers have created worlds of representation: they have called out things, institutions, animals, emotions, they have brought to life pasts and futures. To spinn their legitimation webs they have somewhat displaced some of these actants from their places of origin. In my presentetion I show, how I construct this empirical situation by using situational analysis as a research design. For the text analysis I employ further heuristics, like exidentiality, epistemic positioning and agency-analysis.

279. (06) Evidence-based activism: patients' organizations and the governance of health - III

2:00 to 3:30 pm
Solbjerg Plads: SP201
SESSION 3: DEMOCRATIZING HEALTH. PATIENTS' ORGANIZATIONS AND ACTIVISTS' GROUPS' EPISTEMIC AND POLITICAL VOICE

Chairs:

Vololona Rabeharisoa, CSI Mines-ParisTech
Tiago Moreira, Durham University
Madeleine Akrich, CSI Mines ParisTech

Participants:

Assembling Dementia Care. *Tiago Moreira, Durham University; Orla O'Donovan, University College Cork; Etaoine Howlett, University College Cork*

In this paper, we take the concept of evidence-based activism as a point of departure to understand how Alzheimer's disease associations have mobilized knowledge to re-articulate their role in the public sphere. We are specifically interested in political initiatives deployed by these organisations to shape the field of dementia care research, policy and practice in the last 5 years in the UK and Ireland. In both countries, the campaigns have emphasized the importance of developing and funding services and devices that mediate between the formal and the informal sectors of dementia care in order to support people living with dementia to stay at home for longer: training standards for care workers, support for informal carers, the promotion of dementia champions or advocates, and telecare and assistive technologies at home. Drawing on our analysis of documentary and interview data, our suggestion is that the transformation of dementia care into a 'matter of concern' is underpinned by Alzheimer's disease organizations' harnessing, fostering, sponsoring and circulating of social research conventions and methodologies such as the survey, the interview and ethnography. Our main claim is that social scientific techniques and ways of reasoning have been key in the production and maintenance of boundary relations between informal and formal care in dementia, a boundary which has long been problematized by feminist social scientists. Our work can thus be seen as integrated in a renewed interest in understanding the epistemic cultures of social research and its relationship with political institutions of contemporary societies.

3 decades of knowledge activism: An Australian healthcare consumer organisation. *Anni Dugdale, University of Canberra*

The Health Care Consumers Association of the Australian Capital Territory (HCCA) was formed in the late 1970s as a new kind of patient organisation. Rather than mirroring existing patient organisations focussed on a specific health condition, HCCA aimed to engage the population more generally, users of health services, in health activism. HCCA has been successful in opening up government health policy bodies, health services governance and community and hospital boards and committees to consumer representation. Over the past decade, consumer participation has become mandatory in the policy, planning and service delivery decisions of this region. Engaging healthcare consumers in health activism disrupts the earlier long-standing arrangement between governments and health professionals that positioned medical science in a privileged position in health policy and planning processes. This paper explores how the translations required to make a place for the knowledge of health service users in policy, planning, and service decisions occurred. What kinds of knowledge did the new health activists produce, contest and circulate? To what extent and how was a health care consumer knowledge politics generated and sustained and how has it changed? How does HCCA perform itself as a knowledge and knowledge governance organisation? If knowledge is emergent and contingent, rather than merely a resource, and given what we know of the very fluid boundary and boundary-making work that routinely occurs on expert policy making bodies, what is the work done by health care consumer activists participating in health policy and planning.

The voice of the silence: UK patients' silent resistance to the assisted reproduction regulations. *Ilke Turkmendag, Newcastle University*

Many medical conditions have support networks which offer advice to patients and facilitate interaction among them through discussion forums and face-to-face meetings. This paper draws on empirical data to examine the ways in which patient support networks have played a role in generating new forms of expertise and enhancing engagement in the governance of assisted reproduction technologies in the UK. Following the removal of donor anonymity on the 1st of April 2005, many fertility patients in the UK used online discussion forums hosted by the patient support networks to show their reactions to the new law. These discussion boards were snowed under with posts about treatment opportunities in other jurisdictions, and purchasing sperm online. Many would-be parents were reluctant to raise their voices during the donor anonymity debate because they did not want to be exposed to publicity. Their reluctance to mobilise around pressing claims against the removal of donor anonymity reflects the variety of ways in which they can avoid the impact of this legislation. The support networks not only enabled patients to develop strategies to avoid the UK law, but also played an active role in challenging the policy-makers about the law reform. Drawing on a virtual ethnography study on an online fertility support network, the paper provides important insights for health policy-making in the UK and contribute to the wider debates on participation as a tool for decision-making in science and technology governance.

"Distributed expertise" and an opposition to the anti-vaccination movement in Poland. How the structures of knowledge are being challenged in the public debate. *Andrzej Wojciech Nowak, Adam Mickiewicz University, Poznan*

The goal of this paper is to show how the established structures of knowledge are being challenged in the course of the public debate on the anti-vaccination movement in Poland. I will focus on an opposition to this movement that has been created in the Polish-language Internet by activists and bloggers, who called themselves "think-tank discourse-culture-science" (the group's discussions have been widely commented in the Polish press and mainstream websites). I will show how they created a network of self-appointed experts devoted to debunking anti-scientific myths and attitudes. My claim is that the activity of the network not only map contemporary socio-scientific controversies but also represents a challenge to the established structures of knowledge. Using the example of this network I will show how the specificity of the Internet (Hine) contributes to creating a "distributed cognitive system" (Hutchins, Clark), "distributed expertise" and "distributed database". In the paper I will present following claims: • the anti-vaccination movement in Poland forms a broad coalition of actors (parents, ecologist, libertarians, conservatives, etc.) and is a good starting point to analyse risk and anxieties (Leach, Fairhead) of the reflexive modernity • the examined network of blogs analyses the phenomenon of the growing anti-vaccination movement in terms of "matters of concern" rather than "matters of fact" (Latour). It does so in a way that is exactly opposite to the standard practices in academic social sciences • on more theoretical level the examined network of blogs can be perceived as a challenge to the established structures of knowledge and traditional division of labor in social science. It can serve as a model of a needed transformation of social science that should stop its attempts to emulate natural science (as it leads to its inevitable failure in the Science Wars). Old "high tone" analysis of philosophy of science focused mainly on episteme, contrary STS and ANT analysis can be treated as a form of techne too often. Instead, as Flyvbjerg suggests it should develop a new approach based on practical wisdom (phronesis). • the activities of the examined network of bloggers will be presented as the example of sensitivity and skills which I call (socio)ontological imagination. "Ontological Imagination" is a quest for a new version of C.W. Mills "sociological imagination suitable to STS after "ontological turn". Phronetic Social Science based on ontological imagination could be an useful tool to enrich critical potential of STS and ANT. This paper is a part of a bigger research project entitled "Structures of knowledge and socio-scientific controversies" funded by the Polish National Science Centre (research grant N

N116 695040).

Pain, and Its Ventriloquists. *Kyra Landzelius, LIME, Karolinska Institutet*

In 2010, the World Congress on Pain endorsed a Declaration of Pain Management as a Fundamental Human Right, calling for governments everywhere to formulate national pain policies. The move catapulted pain (and pain medicine) into a geopolitical governmentality; whilst promoting pain to human rights protagonist—with a mission, resources, rhetoric, constituents. This project examines the changing metaphysics of pain in our time, analyzed with an ear to pain's multiple voices and vocalizations, as resounding in the increasingly global arena of pain science, pain politics, pain-care ethics, pain representations (and counter-representations). The undertaking is motivated by the axiom that pain—how it is apprehended clinically, and how it is allocated beyond the clinic—has paid witness to a radical paradigm shift, prefaced roughly two decades ago yet in full swing today. Driven by revolutionary changes in medicine, this shift in the enframing of pain ontology and epistemology harbors profound implications—spanning from healthcare to workplace and from venture capital and industry to social media, along the way echoing in ability/disability debates, in novel alliances, in revised notions of mind, body, self. This work concerns itself with pain's reified agency in relation to knowledge-power (how "pain" is validated and valued) and personhood (how pain-filled identities are negotiated). To map pain's morphing politico-moral economy, and apprehend the cacophony of voices in its contested terrains of meaning, is to necessarily engage with the perennial is/ought ethics: who speaks for pain and who ought to speak for pain? But equally we must ask: who's listening??

280. Lateral moves in STS: Tampering with the conceptual/empirical divide - I

2:00 to 3:30 pm
Solbjerg Plads: SP202

Within STS and related fields, the notion of "conceptual" and "empirical" has been shown to be a complex affair. Studying technologists, scientists, and other actors who are routinely engaged in inventing new concepts, theories and models, by engaging in empirical and experimental practices, makes it difficult to draw a clear line between thinking and practicing. This difficulty extends, once it is recognized that the situation is replicated in STS research, the novelty of which is also based on moving uneasily back and forth between the empirical and the conceptual. To put the issue simply: Insofar as the people STS studies already do what "we" do, normally accepted distinctions between what is to be explained and what explains, threatens to collapse. One way of handling this problem is to reinforce the traditional view of the empirical field as practice. The problem with this solution is that it tends to define actors "in the field" by their "actions", which leaves available to the researcher the job of conceptualization. As an alternative, this session explores the possibilities in allowing for a lateral move that suspends, doubly, with the clear-cut distinction between "their" concepts and practices, on the one hand, and ours, on the other (Maurer 2005, Strathern 1999). This encourages both methodical and analytical experimentation. For example, data may be treated as theory, while social science concepts may already be found operational within the practices they were supposed only to characterize. Lateralization entails the use of devices that include comparison, contrast and analogy, adapted in the attempt to allow analysis to take place in a zone of indiscernibility between thinking and practice. Drawing on a mixture of relational anthropology, history of science and nonhumanist science studies, the papers in this panel strive to illustrate how lateralization may generate novel answers to long-standing questions, and pose new questions altogether.

Chair:

Birgitte Gorm Hansen, Copenhagen Business School

Participants:

Robust Scientists. *Birgitte Gorm Hansen, Copenhagen Business School*

The concepts of "socially robust knowledge" and "mode 2 knowledge production" (Nowotny 2003, Gibbons et al. 1994) have migrated from STS into research policy practices. Both STS-scholars and policy makers have been known to propomote the idea that the way forward for today's scientist is to jump from the ivory tower and learn how to create high-flying synergies with citizens, corporations and governments. In STS as well as in Danish research policy it has thus been argued that scientists will gain more support and enjoy greater success in their work by "externalizing" their research and adapting their interests to the needs of outside actors. However, when studying the concrete strategies of such successful scientists, matters seem a bit more complicated. Based on interviews with a plant biologist working in GMO the paper uses the biological concepts of field participants as the analytical framework for describing the complex relationship between academic science and its so called "external" habitat. Although relational skills and adaptability do seem to be at the heart of successful research management, the key to success does not lie with the ability to assimilate to industrial agendas and concerned citizens. By contrast, it is precisely by not becoming dependent on public opinion, political interest or corporate agendas that a group of Danish GMO researchers managed to survive decades of political resistance and scarce resources. The paper makes a comparison between the development of the danish GMO research group and one of their objects of study: A toxic moth capable of adapting to a hostile environment. Insect strategies for survival are not unlike those deployed by the GMO scientists who study them. The paper argues that scientific ecologies respond to policy change in ways that are unpredictable and difficult to control. Few Danish GMO scientists survived the commercialization-wave initiated by neoliberal research policy. However, the ones who did seem to have become more or less resistant to policy changes and public opinion. Rather than promoting socially "robust knowledge", Danish research policy seems to have helped develop politically and economically "robust scientists". Scientific robustness is acquired by way of three strategies: 1) tasting and discriminating between resources so as to avoid funding that erodes academic profiles and push scientists away from their core interests, 2) developing a self-supply of industry interests by becoming entrepreneurs and thus creating their own compliant industry partner and 3) balancing resources within a larger collective of researchers, thus countering changes in the influx of funding caused by shifts in political and industrial interests. The paper concludes by stressing the potential danger of policy habitats who have promoted the evolution of robust scientists based on a competitive system where only the fittest survive. Robust scientists, it is argued, have the potential to become a new "invasive species" in the scientific ecosystem and may threaten the bio diversity of academic research.

Cosmographic commitments: reimagining STS alongside Chinese medicine. *Mei Zhan, University of California, Irvine*

When articulating his vision for a cultural cosmography, Franz Boas argued that the personal feeling of man toward the world, which finds every single phenomenon, action, or event worthy of full attention, should be a force driving scientific research and conceptualization. This paper reconsiders these cosmographic commitments through transdisciplinary engagements with traditional Chinese medicine, an "experiential medicine" grounded in the empirical, the specific, and the contingent. It was amidst a process of scientization and standardization in the 1950s that traditional Chinese medicine solidified its professional identity as an empirical medicine in need of "uplifting" by scientific experimentation and theorization. Yet, in spite of the bifurcations of the empirical and the conceptual, which simultaneously constitute and undermine Chinese medicine within modernist regimes of knowledge and modes of knowing,

Chinese medicine's commitments to its own worldliness have engendered reimaginations of the oneness of the human and the world, thinking and being. This paper invokes these ideas of immanence and undividedness to examine whether "experience" can be made imaginable, thinkable, and doable as a conceptual and empirical device that allows for analytics in and of the specific and the contingent. In particular, I explore metaphorical and analogous thinkings at the center of everyday pedagogical and clinical discourse and practice, especially concerning the body, illness, and "environments" of various natures and scales. Rather than relying on deductive or inductive thinking, metaphors and analogies in Chinese medicine work sideways and in the specific, requiring and encouraging practitioners to think relationally and creatively while confronted with particular clinical situations. As in Boas' cultural cosmography, every single clinical phenomenon, action, or event is—or rather should be—worthy of the clinician's full attention. In this sense, the experiential articulates the indelible imbrications of the conceptual and the empirical—imbrications that challenge the modernist stance that TCM must be elevated to the level of empirically verifiable theory. A transdisciplinary and lateral conversation with STS, anthropology, and Chinese medicine thus allows us to reevaluate the experiential in order to unsettle the relations between the empirical and the conceptual, the concrete and the abstract, and the analytical and the analyzed. It pushes STS to look at phenomena that are too often consigned to the other side of the Modern Constitution. The result is not just the reversal of asymmetrical binary categories and relations but, more importantly, an immanent analytic of oneness grounded in the specific, the multiplictous, and the contingent. In other words, the empirical as conceptual enables ways of thinking, doing and being that insist on immanence, move analogously, and travel sideways. It follows that, rather than in need of conceptual uplifting, Chinese medicine as an experiential medicine could not only work as a critique of the Modern Constitution, but also force a conceptual disruption from within through its cosmographic commitments.

TOO BUSY FOR REFLEXIVITY? What Danish school managers can teach STS researchers about epistemological ideals and pragmatic morals. *Helene Ratner, Copenhagen Business School*

What Danish school managers can teach STS researchers about epistemological ideals and pragmatic morals. Reflexivity has an ambivalent status in both anthropology and Science and Technology Studies. On the one hand, the critique of representation at the heart of the reflexivity debates of the 1980s highlighted non-symmetric relationships between observer and observed and accused the academic text of enacting a realist genre, concealing the relativism entailed in textual production (Clifford and Marcus 1986, Woolgar 1988, Ashmore 1989). On the other hand, the reflexivity program produced fears of a "corrosive relativism in which everything is but a more or less clever expression of opinion" (Geertz 1988:2, 3) and it has suffered the little flattering accusations of piling "layer upon layer of self-consciousness to no avail" (Latour 1988:170) with little "interest [for] … theoretically ambitious colleagues" (Lynch 2000:46). Some 20 years later, these debates still linger in the shadows with some anthropologists refer to their work as "post-reflexive" (eg. Maurer 2005, Riles 2000). This suggests a need to move beyond reflexivity without leaving it entirely behind. While reflexivity today still addresses relevant epistemological matters of concern, it has nevertheless been absorbed by an "empirical impulse" to describe everyday lives and practices (Maurer 2005:6). This paper explores some of the difficulties and frustrations related to imagining and realizing the epistemological ideals of reflexivity. However, instead of re-visiting these somewhat tired epistemological debates, it explores Danish managers' of primary schools analogous difficulties with realizing a prevailing ideal of reflexivity. The paper draws on

ethnography in two Danish schools. The idea that the world is constructed – and the reflexive version that this is also the case for one's own practices – is also found outside epistemological debates in anthropology and STS. Danish education policies and organizational theories used by school managers advance the idea that schools should question their assumptions and traditions through reflexivity in order to change their practices. Reflexivity is thus imbued with a sense of optimism: awareness about how practice is constructed is seen to improve the possibilities for changing it (Ratner 2012). Despite this optimism, "implementing" reflexivity proves difficult as risks of "infinite regress" and "navel gazing" become practical problems which school managers need to deal with. Moreover, they find that the emancipatory hopes of reflexivity (cf. Schön 1991) produces new problems in terms of failing to meet teachers' practical concerns or even excluding teachers who do not master the vocabulary of reflexivity. Facing these challenges, the managers employ a pragmatic moral, which allows them to bracket or defer their epistemological ideal of reflexivity while keeping it alive as exactly that: a promise of a future settlement. The paper concludes by comparing academics' and school managers' versions of reflexivity, using managerial strategies as a commentary on social science reflexivity debates.

Liquidity with Fidelity: Lateralizations in Mobile Phone Enabled Financial Services. *Bill Maurer, University of California, Irvine*

Encountered by 'mobile money' professionals—industry and philanthropic actors seeking to bring mobile phone-enabled financial products to poor people in the 'developing world'—the anthropologist moves together with new collaborators to inquire into a problem they had been grappling with for some time. This is the problem of agency, specifically, the agency of 'mobile money agents,' the people 'on the ground' or 'in the field' who form a crucial function in permitting others to put cash into an electronic money transfer system and pull cash out of it. These 'human ATMs' or 'bridges to cash' become the object of analytical scrutiny for mobile money experts and anthropologists. This paper takes that analytical scrutiny—and not mobile money agents themselves—as its object. It seeks to understand how 'agency' inflects debates over money, its meaning and its pragmatics, and its transformation in new communicative infrastructures, and how it might inform anthropology and political struggles over money and payment. Documenting the author's engagement with mobile money intellectuals for the past six years, the paper also reflects on how research on infrastructures gets folded into the creation of infrastructures, and the analytical apparatuses of one's interlocutors to account for them. It takes one such apparatus – the concept of Liquidity with Fidelity, developed by two of the author's interlocutors – as a vehicle for understanding communications, channels, and currencies in new networked computational environments that, some hold, herald the demise or, alternately, infiltration of cash. The paper thus takes up the question of cashlessness in relation to the agency and sociality of money more generally.

Precise Tautologues: data and measurement in the Brazilian Amazon. *Antonia Caitlin Walford, IT University of Copenhagen*

Drawing on fieldwork with an international Brazil-led scientific programme in the Brazilian Amazon, this paper enquires as to the limits of dissolving the boundary between the empirical and the conceptual. It first asks what forms such a dissolution might take, suggesting that analogy is one form that anthropology has found to move away from previous idioms of representation. At the same time, as analogy instates its own boundaries as it dissolves others, such a move itself can be subject to the same recursive refiguring. I suggest such a subsequent move may be the comparison with another form of relationality, "tautology", as encountered in the relation that certain sorts of scientific data have to the world for the researchers and scientists I worked with

in the Amazon; and as encountered in the work of some "endo-anthropologists" who understand the inability to gain analytical distance as a form of repetition and restatement, which itself becomes an ethnographic object that reinstates that distance (see Annelise Riles 2001). What (and how) can the data technicians' tautologues teach us about the repetitions we seem to find in our own work? "Repeating yourself" is itself in fact a crucial metrological capacity, taking the form of "precision" – the indication of how internally coherent a set of measurements is, irrespective of accuracy. "Accuracy" on the other hand indicates how externally coherent a set of measurements is in relation to a target. The difference between the metrological notions of "precision" and "accuracy" therefore also provides means of probing the limits of moves that insist on a radical commensuration between analytic and empiric. These moves may extend beyond themselves, but also into themselves. Taking concepts discovered in the field into new territory altogether is not necessarily restricted to trafficking over a discarded analytic-empiric boundary, but may be a question of putting them in relation with themselves. How precise is it to deploy the metrological difference between accuracy and precision in order to understand the increasing "nationalization" of a Brazilian metrological institution?

281. (52) User communities and techno-scientific practices - III

2:00 to 3:30 pm
Solbjerg Plads: SP205
User communities and techno-scientific practices
Chair:
Torben Elgaard Jensen, Technical University of Denmark
Participants:

The online sociotechnical organization of deviant technology users: the example of the iPhone "jailbreaking ". *Paolo Magaudda, University of Padua*

The presentation describes and discusses a specific practice of technology modification that actively involves their users. It regards the Apple iPhone and is commonly referred as iPhone "jailbreaking". The relation between the iPhone and their users is particularly interesting. Indeed, iPhone and iOS (its operating system) present a highly configured user experience, limiting in a strict way users' actions. This rigid configuration has been the basis for the generation of an articulated "hacking" work around the iPhone that evolved allowing more inexpert users to be able to modify in a simple way their devices and to perform activities not permitted by the producer. The story of the jailbreaking is presented using documents, empirical data and observations collected during more than one year of online research on the hacking of Apple devices. The story proposed is analysed focussing on the role of users in the development of the jailbreaking, stressing those aspects that enrich the STS debate on users online networks and the understanding of the user-technology relation. The example help to reconsider simple conceptions of the boundaries between lay users and experts, allowing to consider how lay users' competences play a role in shaping deviant technological practices. Moreover, the empirical case will be used to reflect about the participation of users in deviant technological practices and how this participation represents an increasingly force in the development of technologies and of new sociotechnical scenarios, combining in novel ways technologies and competences, market and consumption, political activism and utilitarian perspectives.

Governance of learning processes in transdisciplinary climate research projects. *Wouter Boon, Rathenau Institute*; *Edwin Horlings, Rathenau Institute*; *Peter Van den Besselaar, VU University Amsterdam & Rathenau Instituut*

Dealing with grand societal challenges, such as climate change,

calls for knowledge production that involves a wide range of knowledge producers and users. Users and producers can engage in knowledge production by participating in 'science teams' that are characterised as 1) involving a large array of scientific disciplines and societal actors; and 2) taking place in a context-specific setting. Much is known about user-producer interactions in the context of technological development. However, the way in which collaborative knowledge production is embedded in the individual, organisational and institutional backgrounds of actors involved is not well understood. Particularly interesting aspects of this type of knowledge production are the extent to which users and producers are represented in these teams, how the incentive systems of team participants are in line with incentive systems in their home organisations, and the extent to which the results of local knowledge production are useful for other contexts. This boils down to the following central research question: to what extent do individual, organisational and institutional factors influence the effectiveness of teams consisting of a large range of scientists, users and practitioners, disciplines and locations? We study the characteristics of actors involved in these teams in the context of climate adaptation projects and compare these projects to monodisciplinary team projects in climate science. Event history analysis based on document research and in-depth interviews are used to capture the individual, organisational and institutional factors, and learning processes. The analyses contribute to formulating recommendations on the governance of user-producer knowledge production.

User groups, knowledge and politics: expertise and activism in advocating traffic safety. *Jane Summerton, University of Oslo*

Within STS there is a considerable body of work on the engagements of user groups in (re-) configuring relations between technoscience and politics, particularly with regard to the struggles of effected or concerned users to shape various specific issues as matters of political and public concern. This scholarship has focused on e.g. the emergence and transformations of lay expertise and collective user identities (Epstein 1995, 1996; Oudshoorn, 2004), the conditions under which emergent groups become stakeholders (Callon and Rabeharisoa 2008) and the contestations and specific sites where materialities and political interventions are enacted (Barry 2001; Moser 2008). Empirically much of this work is situated in important areas of technoscientific practice within health and medicine. An empirical area that constitutes one of the most urgent public health problems in both western and non-western societies has, however, been largely neglected to STS research to date, namely the issue of deaths and maiming of subjects/users in traffic accidents. As noted in the recent United Nations Global Plan for Road Safety Action (2011), deaths through traffic accidents are expected to become the fifth leading cause of death in the world unless immediate action is taken. The purpose of this paper is to explore the engagements, practices and processes of knowledge production whereby concerned groups (e.g. advocacy groups, effected groups, activists) struggle to shape traffic safety as an matter of political and public concern. Who are these groups (e.g. Mothers Against Drunken Driving; Ghost Riders movement), what are their roles as spokespersons for effected users (specifically those who can be referred to as bruised or deleted users), and how do they acquire knowledge/expertise and forge their collective identities? How can we conceptually view these groups and the intertwinings of humans and non-humans in their interventions, and with what implications for our understandings of user practices, politics and materialities in these processes? These issues will form the core of this paper. Methodologically the paper will draw primarily upon text analysis, as well as interviews with relevant organizations and groups.

Exploring and describing non-functional aspects of emerging

design spaces. *Pedro Sanches, KTH, SICS*

The emerging application of ubiquitous computing in large technical systems creates an open design space where non-functional aspects of the technology, such as the association of the technology in question with ethical values or appropriateness of the technology for a certain social context, are unclear. In these domains, the design of technology can benefit from the application of divergent design methods that, instead of focusing on developing particular solutions, are centered on creating new understandings of the design space. End-users and other relevant stakeholders play a central role in the process of uncovering the non-functional aspects of the new design space. However, ubiquitous computing is not well understood by end-users. The gap between perceptions of technology and the possibilities it enables is particularly visible in value discussions regarding privacy and information technology. The exploration of the design space of ubiquitous computing lacks methods that allow users to actively construct and explore the possibilities of a technology. We draw on critical design and probology to produce design artifacts that: 1) bridge the gap of expertise between the designer and the end-user, by allowing users to first-hand explore and experience the technology, 2) provoke thought and induce reflection and 3) provide designers with rich descriptions of non-functional aspects. We demonstrate this artifact-driven method with the design of a critical probe on the use of geographical location of users of mobile telecommunication networks and show how it can be used to explore in advance this particular design space.

Domesticating play. *Kristine Ask, Norwegian University of Science and Technology*

Digital games and player cultures are showing themselves as promising arenas for studies of emergent and at times conflicting user practices. Previous research has shown synthetic worlds as places for social interaction (Steinkuehler and Williams 2006), trade (Castronova 2005), work (Yee 2006), increased literacy (Gee 2007), user generated content (Sotamaa 2010) and even pseudo-scientific discourse (Paul 2011). It is a space for emergent practices (Karlsen 2009), deviant strategies (Mortensen 2008) and may be best described as a "mangle of play" where player norms and systems "amplify, enhance, negate, accommodate, complement, and at times even ignore hard-coded game rules" (Steinkuehler 2006). Yet in this mess of facts, artifacts, play and practice, there are standardizations and stabilizations being held in place. How may we understand this? Based on qualitative interviews with players and a one year ethnographic study of expert player culture in the online game World of Warcraft, this paper will use domestication as a theoretical framework to analyze how players negotiate the interpretative flexibility of the game design, and how heterogeneous player practices are being stabilized in processes of local configurations and community building activities. A particular focus will be given to the domestication process as a collective effort that connects different arenas and technologies across a symbolic, practical and cognitive dimension (Sørensen et al 2000). In such the paper will contribute to the growing link between STS and Game studies, as well as providing an empirical case study of new mediated user practices.

282. Discourses of disaster: Post-3.11 Japanese and international perspectives on communication, science, and democracy

2:00 to 3:30 pm
Solbjerg Plads: SP207

The Fukushima disasters opened up a space for discourse over the safety of nuclear power, the efficacy of nuclear regulation, and the reliability of scientists in predicting and managing public health. STS scholars are familiar with the ways in which science is employed as a realm of uncontested truth, particularly in the service of private sector risk-taking,

and in government attempts to influence public opinion. This panel engages these STS themes with particular attention to the nuclear industry, and to the ways that scientists have been engaged in framing the disaster and their role in causing and/or controlling it. Hideyuki Hirakawa argues that since the explosions of the Fukushima Dai-ichi Nuclear Power Plant, Japanese society has suffered from a "politics of risk discourse" that has reduced political, ethical and social issues at stake in public anxiety and controversies over radioactive contamination to matters of techniques of risk communication or misunderstanding of science. William Kinsella and Tudor Ionescu address the concept of nuclear regulatory effectiveness through review of regulatory agency documents, industry perspectives, critiques by independent technical specialists and advocacy groups, and academic analyses. The paper also reviews critiques of such technocratic approaches, drawing on models of public discourse, risk communication, and STS Masahi Shirabe argues that after Fukushima "scientific" evidences and "scientified" discourses have been exploited by political as well as scientific authorities to marginalize trans-scientific and/or ascientific factors/matters/objects to be considered. In the process of such marginalization, we can see that even scientific experts have equally and arbitrarily adopted various levels of "scientific" evidences, some of which are actually non-scientific. Lastly, Kenji Ito closely examines arguments for nuclear energy advocated by several conspicuous scholars and intellectuals. His paper aims to shed light on what kind of empirical, logical, and rhetorical resources are mobilized to deal with the Fukushima-1 nuclear disaster, an evident setback to nuclear power, and what socio-cultural and institutional environments exist to give an appearance of validity to these arguments.

Chair:

Atsushi Akera, Rensselaer Polytechnic Institute

Participants:

Politics of Risk Discourse on the Nuclear Disaster: Risk Communication and Beyond. *Hideyuki Hirakawa, Osaka University*

Since the explosions of Fukushima Dai-ichi (No.1) Nuclear Power Plant, Japanese society has suffered from a "politics of risk discourse" that has reduced political, ethical and social issues at stake in public anxiety and controversies over radioactive contamination to matters of techniques of risk communication or misunderstanding of science. In this paper I analyze this problem with various examples. A typical one is the problem for profound public distrust in government, Tokyo Electric Power Company (TEPCO), scientists and mass media. It always lies in seemingly scientific questions about safety and the validity of safety standards of foods, water and tsunami debris, but it has been addressed as public misunderstanding of science (i.e. deficit model). A more serious problem is the "inaction," lack of appropriate countermeasures, of government and TEPCO in relation to issues such as compensation to farmers whose fields were contaminated by radioactive fallout. These inactions have led people to conflicts between consumers who want less contaminated foods and farmers in Fukushima who have to sell their products in order to survive. Similarly severe is the lack of democratic processes in decision making concerning how to address radioactive contamination in local communities. Furthermore, there is an effect of risk discourse called "affective individualization"—in which the political, social and ethical concerns of people are reduced to the lack of sufficient understanding of science and a matter of moral sympathy with sufferers of the triple disasters. This ends up with a moralistic call for supporting them without reliable scientific grounds and legitimate democratic process. In this respect, deficit-model thinking works not only to make matters apolitical but also to dismiss scientific scrutiny by regarding officially-announced science as sound and reliable.

Effective Nuclear Regulation: Design, Displacement, and Democratic Discourse. *William J Kinsella, North Carolina State University; Tudor B. Ionescu, University of Stuttgart*

The Fukushima-Daiichi disaster has strongly affected global

discourses of nuclear energy. Prevailing understandings of nuclear safety, regulation, and economics are at risk for displacement, in whole or in part. New regulatory principles may need to be designed to address technical and institutional issues raised by Fukushima, to improve safety, transparency and public trust. Emerging technology designs, promoted as safer than existing systems, may also require re-examination of regulatory policies and practices. All of these questions interact with a changing global context for nuclear energy, potentially displacing existing national-level regulatory systems and requiring the design of more integrated, global frameworks. Addressing the concept of nuclear regulatory effectiveness, we review regulatory agency documents, industry perspectives, critiques by independent technical specialists and advocacy groups, and academic analyses. We use these materials to characterize how effective nuclear regulation is understood within the prevailing, primarily technocratic framework. Next, we review critiques of such technocratic approaches, drawing on models of public discourse, risk communication, and STS. Guided by those critiques, we examine how concepts such as nuclear safety, risk, and regulation are understood differently within broader, more inclusive discourse communities. Comparing prevailing technocratic concepts of nuclear regulation with concepts circulating in society more generally, we argue that there is a need to bring these two perspectives into greater alignment to improve the quality and effectiveness of nuclear regulation and the legitimacy of nuclear regulatory institutions. Our analysis contributes to the STS literatures on public engagement, knowledge production, sociotechnical systems, and technological governance.

Reality Marginalized: How Have Science and "Science" Been Used in Discourse about Low Dose Radiation Exposure? *Masashi Shirabe, Tokyo Institute of Technology*

As Weinberg (1972) analyzed, health effects of low dose radiation is a typical trans-scientific question, which can be asked of science but cannot be answered (merely) by science. Since the nuclear accident at the Fukushima No. 1 nuclear power plant, however, many "scientific" discourses about such health effects have appeared to control the public mind and/or to divide public opinion in Japan. In the present paper, I analyze the political and scientific situation using a case study approach. The cases to be dealt with here are anxieties denoted by the term "radiophobia", manipulation of public opinion by the emergent lecture seminar of the Science Council of Japan, a repressive atmosphere fostered by the term "harmful rumors" in mass-communications, and fraudulent means of the Governmental Working Group on risk management of low dose exposure. The analysis clearly shows the following things. First, "scientific" evidences and "scientified" discourses have been exploited by political as well as scientific authorities to marginalize trans-scientific and/or ascientific factors/matters/objects to be considered. Secondly, in the process of such marginalization, we can see that even scientific experts have equally and arbitrarily adopted various levels of "scientific" evidences, some of which are actually non-scientific.

What Can a Nuclear Disaster Prove about Nuclear Energy?: Nuclear Scientists and Robustness of Nuclear Discourse in Post 3.11 Japan. *Kenji Ito, Graduate University for Advanced Studies*

The nuclear accident at Fukushima-1 Nuclear Plant on March 11, 2011 appears to have raised serious doubts over the overall desirability of nuclear power as a dependable source of energy. Even in Japan, however, support for nuclear power dies hard. This paper examines some pro-nuclear arguments by Japanese nuclear scientists, engineers, and other experts, and analyzes them from the viewpoint of science studies. STS scholars are familiar with situations in which a single experimental result does not refute a theory. Similarly, one accident does not necessarily terminate a technological system and/or the political system that supports it. By closely studying arguments for nuclear energy advocated by several conspicuous scholars and intellectuals, this paper aims to shed light on what kind of empirical, logical, and rhetorical resources are mobilized to deal with the Fukushima-1 nuclear disaster, an evident setback to nuclear power, and what socio-cultural and institutional environments exist to give an appearance of validity to these arguments. In particular, this paper focuses on those who seem to have a genuine belief in the benefits of nuclear energy, rather than those motivated by exterior interests, political or financial. I argue that personal and professional experiences as well as socio-cultural environments shaped their belief in nuclear power, a belief robust enough to withstand the impact of the nuclear disaster. This talk reports a part of results of research collaboration led by Sulfikar Amir (Nanyan Technological University) for a comparative study of the Fukushima-1 nuclear disaster's epistemic impacts on technoscientific regime of nuclear power.

Discussant:

Atsushi Akera, Rensselaer Polytechnic Institute

283. (16) The end(s) of the Human Genome Project - I

2:00 to 3:30 pm
Solbjerg Plads: SP208

Chairs:

Adrian Mackenzie, Lancaster University
Ruth Margaret McNally, Anglia Ruskin University.
Maureen McNeil, Lancaster University
Richard Tutton, Lancaster University

Participants:

Biomedical expectations as projections into the future of constructed pasts: protein and DNA sequencing. *Miguel Garcia-Sancho, Spanish National Research Council (CSIC)*

This paper will show the role of history for a critical reappraisal of the expectations which emerged around DNA sequencing with the launch of the Human Genome Project in 1990 (HGP). My argument will be that molecular biologists inserted the HGP into a progressive story of revolutionary achievements around the DNA molecule: the Project culminated a series of pictures at increasing resolution, which started with the double helix of DNA in 1953 and finished with the complete nucleotide sequence of our genome. This narrative shaped the social and political expectations which arose around the "new discipline" of genomics. If molecular biologists had been able to define the detailed structure of DNA in the past half century, the sequence would be the beginning of a promising era of struggle against hereditary diseases. By reconstructing the history of sequencing, I will show that genomics and the HGP were not the culmination of a line of progress, but rather particular configurations in the long and intricate trajectory of a practice which started with proteins in 1943 and predated the double helix of DNA. This suggests that molecular biologists were contingent actors rather than a driving force and that sequencing could have been practiced differently outside the scope of the HGP and genomics, thus generating other socio-political expectations. My paper will, thus, offer a historical perspective which complements the increasing STS scholarship on biomedical expectations and the contested outcomes of the HGP. García-Sancho M. (2012) Biology, Computing and the History of Molecular Sequencing (Palgrave-Macmillan).

After the Exuberance: Contested Futures of Personalized Medicine. *Richard Tutton, Lancaster University*

In the past decade, personalization has become a major feature of contemporary biomedicine. Personalizing the prevention,

prediction, diagnosis and treatment of disease has promised to bring about a 'revolution' in the practice of medicine, public health, and in our experiences of health, illness and ageing. Yet, after what has been called the 'irrational exuberance' of the late 1990s, disappointment with the 'pedestrian' pace (in the words of a recent Nature Biotechnology editorial) in the production of new personalized pharmaceuticals has become pronounced. Some are becoming increasingly sceptical about the value of personalization as a vision of changing the way that drugs are developed and brought to market yet new investment is being made to facilitate the commercial development in this area. In this paper, drawing on work being undertaken for a larger monograph project, I trace the emergence of the vision of 'personalized medicines' in the 1990s and how this was bound up with claims about how understanding human genetic variation was the basis of a new way of developing drugs that would depart from a paradigm of 'therapeutic universalism' and 'tailor' drugs to individuals. I discuss the different 'promissory stories' told about what personalized medicines would be like and how more recent commentaries have sought to hold these stories to account through analysis of the low number of 'personalized' drugs on the market. I also consider the different stories told about why personalized medicines did not live up to expectations.

From Turkish Genome Project to Vision 2023: key attributes, actors, and the impact of biogeopolitics. *Melike SAHINOL, University of Duisburg-Essen*; *Emre SUNTER, Middle East Technical University, Ankara*

The Turkish Genome Project (TGP) started with the analysis of 17 individuals; first results and aim of TGP have been shared and discussed in workshops. Mass media campaigns sought to draw public's attention for TGP, which has been supported by Ministry of Development, and conducted by Department of Molecular Biology and Genetics of University of Bogazici as significant place in Turkey's history of technology. The long term plan of S&T development, declared by a governmental report "Vision 2023" defines central place for life-sciences related technologies, aiming to increase in health awareness through objective genotype, in international competitiveness of Turkish economy, further to develop bioinformatics, biomedicine and their teaching, latterly to support the integrated development of economic and administrative areas through various applications of gene technology. This paper examines Sociotechnical Imaginaries of Turkey by showing the set of complex relations and interplay of various dimensions. Our target is to show both networks of scientific knowledge and other discourses at the edge of values, institutions, laws, and symbols common to Turkish society by giving a historical overview and analyzing the TGP as complex interplay of S&T with other dimensions (e.g. legal regulations, ethical issues). Considering the genome projects of Iran and Saudi Arabia, local actors with similar backgrounds, we will go further and enlarge this imaginary through biogeopolitical aspects of these projects, incorporated into national and international imaginations. It would be crucial for STS to see global and local coproduction processes indicating the construction of different and similar key attributes creating representations.

Genetics at the State Fair: Potentiality and Life Sciences Research after the Human Genome Project. *Karen-Sue Taussig, University of Minnesota*

The Human Genome Project (HGP) was funded with the promise of new knowledge that could and would be translated into novel interventions for enhancing human health. The eleven years since the publication of the first rough draft sequence in 2011 have been marked by repeated efforts to realize that promise. In the United States, these efforts have involved a mode of biopolitics that seeks to organize the social relations of knowledge production to facilitate work perceived as necessary

for realizing the promise that appears to continually recede onto the horizon. This ethnographic paper examines one such attempt—a multi-year project collecting DNA from children and parents at the Minnesota State Fair, the largest state fair in the United States. It argues that at the heart of the promises made for the HGP is a commitment to the idea that DNA holds unrealized potential that, with the right knowledge and technologies, can be made to improve health. This commitment means that no matter how unrealized promises or expectations are, the construction of potential as an objective aspect of the genome, means that new promises can always be made. This paper illustrates both this commitment to potentiality and the interactions through which it works across scales to set social action in to motion even in the face of repeated failure to achieve promised results. The paper develops the concept of potentiality, offering an ethnographic contribution to STS work on genomics, the Human Genome Project, promise, and expectations.

Heroism in Genomics. *Maureen McNeil, Lancaster University*

The Human Genome Project began with a flourish of promise, turned into a race, was celebrated as an international/national achievement, was marred by scandal and, …. This presentation considers how the trope of heroism has figured in various phases and structured the representations of genomic technoscience since 1990. This will include an analysis of the 'race' between Craig Venter and John Sulston to sequence the human genome. The staging of the 'completion' of the HGP through the public announcement headed by Bill Clinton and Tony Blair in 2000 will also be reviewed as a key event in the unfolding of the HGP and in the extension of expectations for genomic science. The rise and fall of Woo Suk Hwang will be analysed as a dramatic episode which unsettles the story of the progressive march of genomic science. The presentation will also explore: How have the images and interventions of other actors been linked to the sense of possibilities of this field? What is the relationship between the casting of heroes and anti-heroes and the practices of, and prospects for, this biotechnological field? How have expectations for genomic science changed since 1990 and since 2000? Is the trope of heroism useful in tracing these changes? Finally, the session will reflect on the strengths and limitations of the trope of heroism as a tool for STS more generally.

284. (49) Design practices: material-discursive entanglements and interventionist approaches - II
2:00 to 3:30 pm
Solbjerg Plads: SP210
Chairs:
Doris Allhutter, Austrian Academy of Sciences, ITA
Christina Mörtberg, Linneaus University, Sweden
Participants:

The Legacy of the Scandinavian School of System Design and its Displacements. *Hans Glimell, University of Gothenburg*
Information system design and use(ers) discourses in computing continue to provide a fertile field for exploring relations between design intentions and their displacements. A rivalry between two epistemic strands fuels recurrent contestations and innovations. In the US, the 1990s witnessed the emergence of a social computing community sharing the historical mission to counterbalance the misapplications and bias brought about by a computing mainstream dedicated to the exploitation of codified knowledge detached from its context. Several of those challengers credited certain unorthodox developments in Scandinavia with a catalyst role during this phase of the deconstruction of rational design, at the same time as emphasizing that substantial differences in political and corporate cultures would preclude any lasting of such impact. Refuting this prediction, notions of a distinct Scandinavian school of design (SSD) exerting influence on current developments still crop up

within respectable US informatics circles. This paper initiates an investigation of the substance, form, knowledge orientation and practices linked to these notions. It searches out some cognitive-institutional linkages rendering an assimilation, dissemination and transformation of SSD ideas into US contexts possible, whereupon a small number of 'truth spots' in which further empirical studies could be productive are introduced. This includes taking stock of specific initiatives or actions concerning (participatory/ interactive) design which may have been launched by Scandinavian countries in recent years. Further, it comprises a discussion of the interdependencies between stereotypes and xeno-stereotypes in the enactment of the US-SSD exchange.

Planning and Performativity in Urban Design – Experiences from a Swedish Case. *Linus de Petris, Techoscience studies, Blekinge Institute of Technology*; *Pirjo Elovaara, Techoscience studies, Blekinge Institute of Technology*

In this paper we explore different understandings on participation, departing from local government policies, emphasising citizens´ participation, and urban planning practices as understood and implemented by the local authority. Focus is also to investigate diverse participatory activities, initiated both by civil servants and researchers. Empirical work forming the basis for this paper stems from a current project of urban planning in a small Swedish town. The project was initiated by the local government in response to the citizens experiencing a negative transformation of the town centre. The project was launched to collect ideas on how to reverse the experienced transformation and try new expanded forms for participation in planning processes. The conducted activities are intervened by politics of the processes and artifacts, as well as by different motivations, imaginings and understandings of the actors participating in the planning project. Controversies emerging within and through these heterogeneous assemblages will be discussed by juxtaposing the processes and practices together with artifacts and methods used in the case. Inspired by the notions of design things (see e.g. Ehn, 2008) and assemblages of methods (see e.g. Law, 2004), we present an understanding of participatory design by contrasting and intertwining the concepts of planning and performativity (see e.g. Barad, 2007).

Knowledge on the move: index cards, post its, and the materiality of knowledge across design, development and academic contexts. *Dawn Nafus, Intel Labs*; *Andrea Ballestero, Rice University*

From experiments in creating knowledge about oneself, to development interventions that combine local and global knowledges, to governance regimes organized around the collection of information, the creation of knowledge is a ubiquitous practice that transcends conventional roles of experts, academics, and researchers. Often it does so through the shared material form of the index carded, post-it-noted workshop in which desirable futures are collectively imagined. This paper explores a performative workshop where knowledge generation techniques shared across technology design settings and NGO development work was used reflexively in an STS context to foster interdisciplinary and collaborative thinking. At a broader level, the workshop took this technique as a heuristic to explore notions of wellbeing, technological innovation, and political agency. This paper analyzes the workshop as a space of exploration, playful and open-ended. The chosen method operates under the assumption that knowledge and ideas move across time and space, and that they can be materialized using different objects such as post its, index cards and posters which themselves are designed for movement and rearrangements. Yet there is more movement happening than this simple material form suggests. The paper also explores the possibilities that "doing" rather than "talking about" affords for creative interdisciplinary intellectual work. Our exploration sensitized us to the ways in which methodological design and collaborative

contexts are located in these doings, not just for people "out there" who we might study but "in here" as a scholarly enterprise.

How to make privacy by design a driver for technology acceptance? *Michael Hahne, Technical University Berlin*

Users tend to see privacy not as an easy to do and useful task but only as an important value and a feature that should be integrated into any technology by default. Thus it is difficult for a privacy concept to contribute to technology acceptance. To accomplish this anyhow it is necessary to create a material-discursive entanglement which enables users to translate their perception of privacy as a feature into an empowering part of their general usage practice. For a software development project we did this by using a multistage PD approach. It started with the reconstruction of privacy perceptions and practices and an assessment of a broad set of common privacy enhancing technologies. Thereafter we conducted workshops to derive initial requirements and built a clickdummy for subsequent discussions. Finally the acquired concept was realized as a prototype that was conclusively evaluated by a number of test users. We found out that many users are indeed willing to cultivate an active privacy practice if the technology involves them in an interactive way and allows them to make comprehensible decisions. Although such a privacy concept does not focus on the highest legal standards and technological possibilities regarding privacy it achieved much better results in terms of fostering technology acceptance then mere informative or privacy by default approaches. Our findings showed the necessity to mediate between the heterogeneous perspectives on technology design project and that the best technical or legal solution might not self-evidently be the best solution for technology acceptance.

Facilitating and navigating user knowledge in an organizational context. *Chistian Clausen, Aalborg University Copenhagen*; *Signe Pedersen, DTU Management Engineering*; *Yutaka Yoshinaka, Technical University of Denmark*

The paper explores the staging of innovative processes concerned with the transformation of knowledge concerned with users and use practices in an organizational context. The paper focuses on the facilitation and navigation of such knowledge across diverse worlds of conceptions and practices informing the understanding of users, in relation to strategic concerns, path dependencies, market creation or engineering systems and practices. The paper draws upon empirical illustrations based on concrete industry practices concerning the Front End of Innovation. It raises questions on how particular organizational competences and knowledges are made mutually relevant while undertaken in and through particular initiatives and processes in the context of an organization. Mobilising knowledges through engagement with differences and mutual relevance in a productive collaborative undertaking of exploration and synthesis is far from obvious and unproblematic (Binder & Brandt, 2008; Buur & Matthews 2008). The paper suggests that an orderly integration of user knowledges bound in clearly delineated organizational competencies is seldom the case. Instead, it is suggested, that the sites and actors where user knowledges are translated in confrontation with different knowledge domains are occasioned and framed as part of emerging configurations of networks of innovative practices (Clausen and Yoshinaka 2007; Star 2010). Facilitating and navigation hereby involves the framing of forms of interaction and exchanges of user related knowledge across disciplines and perspectives.

285. (78) Engineering design, displacement in practice - I
2:00 to 3:30 pm
Solbjerg Plads: SP212
Chair:

Sarah Bell, University College London

Participants:

Freedom of or freedom from? Pluralism of values and determinism in design of technological artifacts. *Gianluigi Viscusi, University of Milano-Bicocca*

Design science is recognized as one of the main paradigms of research in information systems. At the state of the art, the major issue for design science in information systems still concerns the result of the research: the IT artifact. Notwithstanding, a relevant dimension is missing: technology as representation. As pointed out by Kallinikos (1995), representation is technology in terms of "an overall world orientation concerned with the objectification of the natural and social worlds in ways which render them amenable to calculation and mastery." The discussion on the malleability of representations in situated approaches to design rather than on the regulative regime of technology has produced significant contributions to social study of information and communication technology. Nevertheless, the question on the values enabled, bounded, enacted or allowed by technology and as a consequence by design is still poorly explored. Whereas freedom as a value promoted by information technology adoption and diffusion seems to be an a priori premise of both positivistic and interpretative perspectives (as an example, consider the emphasis on the role of social networks on collective actions and movements). As a consequence, in this contribution we aim to analyse the concept of freedom in both technology and design. To this end we will start by the analysis of Isaiah Berlin as theoretical background for carrying out a clarification of the different conceptions of freedom at stake in the considered domain. This preliminary activity will allow to investigate determinism and pluralism of values in design of technological artifacts.

A Cautious Approach in the E-Humanities: Research as Design in a Science/Humanities Collaboration. *Park Doing, Cornell*

This paper follows a group of engineers as they research, network, conduct outreach, and engage art historians and curators with regard to the use of computational "weave mapping" technology that they are developing. The technology counts the threads in canvas. What can it be used for? How can it be useful in answering questions of interest to art historians and curators? What kinds of questions does this technological approach raise for questions of art scholarship? How does such technology threaten the role of the connoisseur in painting identification? This paper follows the engineering group as they self-consciously approached and engaged scholars in the art world about the possible uses of their thread counting research. The paper sees this E-humanities collaboration as an active attempt on the part of the engineering group to 'make themselves useful' and questions the distinction between 'independent' research and epistemologically separate socially driven design.

Gender-specific requirements for the design of human-machine interfaces. *Siegfried Sharma, Vienna University of Technology, Institute of Management Science; Michael Filzmoser, Vienna University of Technology; Köszegi Theresia Köszegi, Vienna University of Technology, Institute of Management Science*

For the commercial success of goods, ergonomics and design are key product differentiators. Specifically, gender - a core user characteristic - is already gaining attention in the development of consumer goods to improve product positioning and sales. However, to date, the design and development of machinery and human-machine interfaces often lack gender-specific characteristics. In this paper we present the scope and first results of the research project Ge:MMaS*, which focuses on gender aspects in the design and development of machines and their user interfaces. The research question and aspired ultimate result of this project is to develop general guidelines for the gender-

aligned design of machines and their control devices. The empirical study focuses on laser engraving systems by Trotec GmbH. This industry exhibits comparatively low gender segregation and consequently, a high share of female operators. Based on expert interviews, we developed a questionnaire addressing general, ergonomic and gender-specific customer satisfaction topics plus future design requirements for the human-machine interface of the laser engraving systems. The resulting responses do indicate a number of gender-specific topics concerning the machine speed and initial training. The next step is to connect research methods from ergonomics (workflow and function analysis) and the social sciences (focus groups) to further refine the problem definitions and, to develop solutions for this particular application. The latter will also form the basis for the deduction of general guidelines for gender-aligned machine and control device design. *Ge:MMaS is partly funded by the Austrian Research Promotion Agency FFG under grant No. 826182.

The Chainsaw-Case: Gender-Specific Exclusions in Tool Design and Handling. *Roswitha Hofmann, uebergrenzendenken; Gabriele Mraz, Austrian Institute for Ecology; Mathias Knigge, grauwert – Büro für demografiefeste Produkte und Dienstleistungen; Gabriele Bernhofer, Austrian Institute for Ecology*

The production of firewood is embedded in narratives of hard and dangerous work and masculinity, of technical tools like chainsaws and their use by "lumberjacks". Therefore, many women and some men and older people are often excluded from firewood production despite the fact that more and more people in Austria and Germany are producing their own firewood to become independent of fossil energy. In this paper we will present project results dealing with gendered and intersectional patterns of exclusion and inclusion in tool design (chainsaws, garden shredders and protective apparel), product communication and social dynamics related to private firewood production in those two countries. The aim of the project was to investigate persistent elements and barriers of existing sociotechnical regimes concerning tool design, tool handling and agency in firewood production. In cooperation with a tool-producer and a forestry training centre a series of user-tests and a training course for women in firewood-production were designed. Data were collected using multiple methods (observation, videos and qualitative interviews) and analyzed employing a multi-level approach. The results of the project should promote changes in tool design towards universal design and contribute to diversity-sensitive product communication and the empowerment of women for firewood production. The project provides rich empirical data and analysis of the STS literature on how tool design is co-constructed by and embedded in narratives of hegemonic masculinity and facilitates/hinders inclusion in social and work arrangements.

286. (104) The governance of innovation and socio-technical systems: design and displacements - II

2:00 to 3:30 pm
Solbjerg Plads: SP213

Participants:

Transitioning Sustainability: Performing 'governing by standards'. *Allison Loconto, Institut National de la Recherche Agronomique/Institut Francilien Recherche Innovation Societe, Université Paris-Est Marne-la-Vallée; Marc Barbier, INRA, UR1326 Sciences en Société, F-77420 Champs-sur-Marne, France*

Sustainability, as a collective action problem, presents an opportunity for several different groups to compete over what type of agriculture should be considered sustainable. A variety of sustainability standards have emerged in the private sector that

stake claims on different niches in the market for sustainable food and agriculture products. This is illustrative of an observed trend in the use of standards to govern agrifood innovations for sustainability. Over the past ten years there has been increased collaboration among sustainability standards within the International Social and Environmental Accreditation and Labelling (ISEAL) Alliance. Relying upon data from participant observation and content analysis, we argue that ISEAL's Assurance Code is part of the construction of a 'tripartite standards regime' (TSR), which is a techno-economic regime of governance based on the interrelated processes that constitute governing by standards. We find that the construction of a TSR is important for the transitioning of this socio-technical system into the mainstream of sustainability debates in agriculture. Moreover, this transitioning process is fundamentally a process of performation, and as such, allows those involved actors the possibility of defining and interpreting how the value of sustainability should be enacted. Through an analysis of the contestations that are part of the assurance code development process, we highlight those aspects where the actors have voiced concern as well as the analytical boundaries that we see emerging. We reflect upon the implications for both the valuation of sustainability and 'governing by standards' as a means to govern socio-technical transitions.

The Co-evolution of an Emerging Mobile Technology and the Services: the challenges of managing socio-technical transitions. *Jee Hyun Suh, University of Edinburgh*

This paper analyses in parallel the processes of technological innovation and diffusion of a mobile communications technology, WiBro(Mobile WiMAX) in South Korea, that have been captured within the conceptual arenas of spectrum, R&D, standards and services. The arenas represent the more or less concurrent spaces for major interactions involving alignments and misalignments of various interests towards the development and the implementation of the technology under concern. The spectrum, R&D, standards and the services have been observed as the key themes for action, upon which the major interactions have been co-shaped. Through the observation of these arenas of spectrum, R&D, standards and services towards the development and the diffusion of an emerging mobile communications technology, the paper addresses the limits and the challenges of linking the coordinated arenas of technological innovation with the services arena where the interpretative flexibility brings about misalignments and discrepancies towards an inter-generational transition or fixed-mobile convergence. It aims to contribute to STS research by bringing insights into the processes of the socio-technical configurations and the co-evolution of a mobile technology and the services. The research has been based upon qualitative data analyses of primary and secondary data including interviews, panel discussions at conferences, and documents relating to the development and the commercialization of WiBro in South Korea.

Coupling epistemic and politico-economic claims in the Danish biofuel debate. *Janus Hansen, Department of Business and Politics, Copenhagen Business School*

How come the biofuel trajectory continues to be promoted world-wide despite serious concerns about its potentially adverse social and environmental effects? Most explanations rightly consider incumbent economic interests in the global value chains as the key driver. This, however, does not explain in details how a controversial technology manifests itself in specific contexts. This paper describes a case study on public debates on biofuels in Denmark. Particular emphasis is placed on how epistemic and political claims are coupled in this debate. It shows how two competing scientific perspectives on biofuels map onto the policy debates through articulation by two competing issue coalitions. One is a 'bottom-up' perspective originating in biochemistry, which is favoured by biofuel optimists. The other is a 'top-down' perspective originating in life cycle analysis, which is favoured

by biofuel sceptics. While epistemic perspectives do not determine policy frames exclusively, clear affinities between knowledge production in different scientific disciplines and policy positions can be identified in both camps in the debates on biofuels.

The Framing of Network Neutrality Governance: Economists, Lawyers & Engineers. *James Perry, Copenhagen Business School*

The neutrality of the internet with regard to applications (e.g. search, social networking, email, to mention only three) has been central to innovation and growth in the knowledge-economy over the past two decades. Until recently, neutrality was built into the internet's design via its core standard, Internet Protocol (IP), which rendered obsolete many of the "normal" restrictive business practises deployed by dominant telecoms companies. As both legal scholars and technologists have explained, the engineering "purity" of IP made the internet a platform for development that was truly generative: Useful innovations in applications of the internet could take hold easily, and it was difficult – or indeed impossible - for incumbent business interests to disrupt or sabotage them. However, this neutrality is now under threat. New technologies have given incumbent businesses the ability to discriminate between applications and engage in a form of rent-seeking that threatens the generativity of the internet. A "Network Neutrality" regulatory arena has thus emerged as the subject of intense and heated debate among politicians, policy-makers and business leaders. At stake is not just who profits from the internet, but also whether it remains an open platform for future growth and innovation. This paper examines the interaction between the key professions driving Network Neutrality policymaking, namely Lawyers, Economists and Engineers. Combining a mapping of their observable policy inputs with a critical analysis of their respective operational paradigms, the paper seeks to understand who is framing the debate, how they are doing so, and to what (systemic) effect.

287. (74) Knowing and working in hybrid research spaces - II

2:00 to 3:30 pm
Solbjerg Plads: SP214

Chair:

Maximilian Fochler, University of Vienna

Participants:

Shifts between Epistemic and Applied Contexts in Humanities and Social Sciences. *Juha Tuunainen, University of Helsinki; Terhi Esko, University of Helsinki; Reijo Miettinen, University of Helsinki*

The turn of the millennium witnessed a radical transformation in the ways of understanding the relationship between science and the society. The transformation of academic research was discussed in terms of the changing norms of science, altering contract between science and the society, and with reference to such popular catchwords as use-inspired basic research, the Mode 2 knowledge production and triple helix of the university-industry-government interaction. Common to all these conceptualizations was the understanding of science as a deeply societal endeavor where epistemic activities intermingle with practical utility considerations. Despite this viewpoint, the studies tended to neglect analysis of the dynamic relationship between epistemic goals and applied objectives in academic research practices. The contribution of this paper in the context of science and technology studies is twofold. First of all, it seeks to shift the focus of analysis from technological research and natural sciences to the neglected areas of humanities and social sciences. Second, it pursues an empirically well-grounded understand of the dynamic context shifts that take place between epistemic goals and applied objectives in university research

practices. The empirical data comes from three case studies, that is, Finno-Ugric and Baltic-Finnish Languages, multidisciplinary urban studies and research on learning difficulties. By using inductive content analysis the study will contribute to the conceptual understanding of the ways in which interaction between societal developments and academic research takes place at the level of university research programs.

Between health and research: an ethnography & design study of the Technology Research for Independent Living (TRIL) clinic in St. James Hospital Dublin, Ireland. *Chiara Garattini, Technology Research for Independent Living (TRIL) centre, University College Dublin*; *Marie Bay Brøndum, Copenhagen City Council*; *Ting Ting Shum, Technology Research for Independent Living (TRIL)centre, University College Dublin*; *Flip van den Berg, Technology Research for Independent Living (TRIL)centre, University College Dublin*; *Rose A. Kenny, Department of Medical Gerontology Trinity College Dublin*

The TRIL clinic focuses on the development and evaluation of new technologies and assessments to enable independent living in older adults. Participants and staff interact with new technologies and practices in an iterative learning process to inform design. This can be perceived as exciting, cutting-edge and reassuring, but also unfamiliar, threatening and produce displacement and disempowerment. During 2010-2011 ethnographic observation of 36 assessments and 15 interviews were conducted to explore the interaction between the three actors that occupy this social space: staff, participants and technologies. Because this place is at the interface of health and research, the social roles of the staff and participants constantly switch according to different assessments and tools, from health providers to data collectors and from participants to patients respectively. This paper aims to discuss how technologies' perceived association with health or research, their levels of 'transparency', and fluctuating expectations regarding their efficiency and authority influences this process. When technologies are perceived as experimental and unintelligible they may disempower and objectify the clinical research staff and the participants, while carrying the potential of being 'playful' and unassuming. Conversely, the more medicalized technologies are perceived to be, the more staff and participants have insight into their results and can clearly connect them to health outcomes. This has the potential to empower while increasing the possibility of associated anxieties. We suggest that awareness about these phenomena, involvement in the design process and visualisation of results can support individuals managing technology rather than be managed by it.

Coproducing knowledge in hybrid research spaces: hybrid management strategies as 'balancing acts'. *Rik Wehrens, Institute of Health Policy & Management / Erasmus University*

Researchers are increasingly expected to deliver 'socially robust knowledge' taking into account demands from actors outside academia. However, this is a predominantly meta-level debate, addressing general changes in the research landscape (e.g. Mode 2). Further discussion amongst these lines will likely be unproductive. However, there is a growing number of 'hybrid research spaces' in which extra-scientific quality criteria are explicated as equally important to 'traditional' scientific quality criteria. Balancing these is not an easy task, however, as research produced in collaboration with other actors (policymakers, professionals) needs to take into account multiple accountabilities. Rather than focusing on such meta-level discussion, we believe the analytical focus should be on empirical investigations into how such spaces work and how research is coproduced in them. We provide such an empirical investigation through an analysis of the Dutch Academic Collaborative Centres for Public Health, which form an infrastructure for structural collaborations between researchers, policy makers, professionals and other stakeholders within the field of public health. In our research we draw on (and extend) concepts of 'boundary organizations', 'hybrid management strategies', and 'front stage / back stage settings'. Through four case studies (based on 52 interviews, observations and document analysis) we empirically investigate how the actors involved try to deal with the multiple accountabilities they are facing. We outline the general lessons we can draw from our four year study and how to theoretically make sense of the dual processes of consensus seeking and maintaining accountability that are at the centre of such settings.

When research meets policy-making: a Brazilian case-study of a think-tank. *Camila Carneiro Dias Rigolin, Federal University of São Carlos (UFSCAR), Brazil*; *Maria Cristina Innocentini Hayashi, Federal University of São Carlos (UFSCAR), Brazil*

A think tank is an organization that conducts research and engages in advocacy in public policy. In fact, think tanks are institutions that work in the front line of academic circles and governmental spheres. They are hybrid research spaces and a privileged locus of policy making, where power disputes are framed in terms of idea issues. However, think tanks are largely overlooked players in STS studies. Who are these organizations? What is the nature and impacts of these background voices that bring technical analysis to long term policy discourse? The study of these institutions allows us to better understand how expert knowledge influences political decision and how do experts build prestige and status in contemporary society. This paper explores the relationship between knowledge and political decision or between expertise and the design of public policies in Brazil, through the case-study of IPEA (Institute for Applied Economic Research) a Brazilian think tank closely engaged in policy advice since its foundation (in 1964), recently included in a United Nations University´s global ranking of think tanks. The case-study was done in 2011/2012 and included field-research and document analysis. The paper presents a theoretical framework for the characterization of think tanks, according to its actors and networks, social fields and expertise profiles. Theoretical concepts came from Science, Technology and Society Studies and Political Theory. Together, they provided the analytical framework to investigate the ascendancy of expertise in the building, implementation and evaluation of public policies.

Explaining Field Differences in Openness and Sharing of Scientific Knowledge. *Theresa Velden, Cornell University*

This paper discusses how openly research groups share scientific knowledge with one another, and how to explain differences across research fields. It is based on an ethnographic analysis and comparison of research groups in two fields in the chemical and physical sciences. How research fields differ in their scientific communication practices and what differences to consider when designing new communication services enabled by new information and communication technologies has been studied e.g. by Garvey and Griffith, 1967; Crane, 1972, and more recently, e.g. by Walsh and Bayma, 1996; Nentwich, 2005; and Fry and Talja, 2007. However, a systematic understanding of how field differences shape scientific communication practices is still missing. In spite of insightful empirical work like Knorr Cetina's Epistemic Cultures (1999) the literature on scientific knowledge lacks a theoretical framework to compare characteristics of scientific knowledge across research specialties, and to link such characteristics to differences in the social organization of research specialties (Gläser, 2006). The analysis presented in this paper builds on Gläser's theoretical model for the collective production of scientific knowledge. This model posits that social order is an emerging property and that a shared scientific knowledge base is the crucial resource that

indirectly coordinates the local research activities of scientists within a scientific community. The paper identifies a range of epistemic and material aspects of research cultures that link behavioral patterns of openness and sharing in a field to field-specific competition dynamics, confirming and extending results by Hong & Walsh (2009) and Haeussler et al. (2009).

288. (36) Practice theory and beyond: emerging approaches to studying energy consumption - II

2:00 to 3:30 pm
Solbjerg Plads: SP216
Chairs:
Kirsten Gram-Hanssen, Danish Building Research Institute, Aalborg University
Toke Haunstrup Christensen, Danish Building Research Institute, Aalborg University
Ruth Rettie, Kingston University
Kevin Burchell, Kingston University

Participants:

Designerly approaches to studying energy consuming practices.
Lenneke Kuijer, Delft University of Technology

Triggered and inspired by the work of amongst others Reckwitz, Warde, Shove and Gram-Hanssen, design approaches drawing on theories of practice are emerging within the design discipline, particularly in the area concerned with reducing domestic (energy) consumption. This paper provides an insider's overview of developments in 'practice-oriented design' and highlights characteristics of its particular ways of studying practices. Practice theory transforms and is simultaneously being transformed in the practices of design. Design's future oriented nature, opportunistic outlook, time constrained projects, integrative character and participatory orientation have resulted in the emergence of 'designerly' approaches to studying practices. Examples of such designerly characteristics are the use of interventions, in the form of tasks or objects, and involving subjects as (communities of) participants. In the latter case, participants are involved both as researchers, by enabling them to critically reflect on their routines and as designers, by challenging them to (collectively) invent and perform alternative ways of doing. Here we see that in parallel to exploring the opportunities and challenges of taking practices as a unit of analysis – through studying situated practices, tracing their historic career or studying variety – practices are taken as a unit of design. While other fields might gain inspiration from design, these developments also ask for critical reflection. For example on the extent to which practices can be designed and what the role of designers could and should be in these processes. Maybe this is where STS and design could benefit from further cooperation.

Sustainable design for intangibles: everyday design and experience of user values in energy practices. *Svenja Jaffari, SPIRE Research Center, University of Southern Denmark*

This paper articulates the nature of the relationship between users' everyday repurposing of artefacts and designers' practices for developing sustainable products for intangible aspects of users' lives (e.g. values, beliefs, experiences, etc.). Users' practice of 'designing-in-use' can form an empirical and inspirational basis for design for sustainability because these make visible users' tacit values. While designers in general are interested in intangible aspects of users' lives, these are often aspects that elude easy elicitation from standard methods of involving users in design processes. This paper presents empirical cases of everyday designs and simple 'repurposes' of artefacts within an indoor climate context. It investigates consequences for a better understanding of (un-) sustainable user values with regard to indoor climate and comfort and for the development of sustainable indoor climate technology.

Theoretically, this paper will draw upon literature in marketing, design (e.g. everyday/ intuitive design, design-in-use), and social (practice) theory. With the help of the ethnographic approach to design and context of use (e.g. participant observation, video ethnography, semi-structured interviews, cultural probes), it will practically investigate and show results on how people modify and/ or adapt to indoor climate and its related technology in buildings. Method of investigation and results are interesting for both Design for Sustainability (DfS)and STS with an emphasis on everyday energy practices.

Emerging energy practices in the context of participation in green community organisations. *Rebecca Wallbridge, University of Southampton; Milena Buchs, University of Southampton; Graham Smith, University of Southampton*

Extant literature situates energy consumption as a constituent part of broader everyday practices, such as food preparation, washing and cleaning, making your home comfortable, home renovation, and so on. However, with increasing attention given to both energy consumption and generation in government policy and community-level action in Britain, the way may be opening for the emergence of a new context in which energy practices can be seen to exist in their own right. This paper will draw on early stage qualitative data from the ESRC/EPSRC funded project "Community-Based Initiatives in Energy Saving", which aims to evaluate the effectiveness of third sector organisations (TSOs) in fostering pro-environmental attitudes and practices, specifically sustained net energy demand reduction. It will explore the argument that involvement in green community initiatives results in the emergence of energy practices as individuals start to intentionally engage with their domestic energy consumption, and in so doing bring together novel assemblages of 'images, skills and stuff'. The emergence of such energy practise furthermore opens the way to explore the role of domestic energy technologies in such practices.

Energy knowhow and practice: what do people need to know about energy? *Kevin Burchell, Kingston University; Ruth Rettie, Kingston University; Tom Roberts, Kingston University*

Although practice theory stresses the importance of practical forms of knowledge in its accounts of everyday life, this element of practice remains relatively under conceptualised. Within the context of concerns regarding domestic energy consumption, our objective in this paper is to explore and develop the ways in which knowledge about energy is conceptualised. The concept of energy literacy tends to prescribe a set of generalised facts, attitudes and behaviours regarding energy and climate change (DeWaters and Powers). The concept of carbon capability emphasises skills-based knowledge, understanding of one's own consumption, political engagement, and the ability to judge the reliability of information (Whitmarsh et al). Drawing on the concept of metis (Scott) and empirical material from a community action project, we propose the novel concept of energy knowhow. While retaining many of the features of carbon capability, energy knowhow encompasses three distinct domains of understanding: how one's energy consumption compares to others'; where and how to access local and trustworthy guidance, as opposed to merely information; and, how to share knowhow. In recognition of the challenges associated with public engagement with carbon and climate change (Whitmarsh et al), energy knowhow also moves the emphasis to the more accessible domain of energy.

Practice theory and beyond: emerging approaches to studying energy consumption. *Elena Battaglini, IRES (Economic & Social Research Institute)*

Private consumption like household energy-efficiency renovation cannot be adequately understood as a matter of 'personal choice'. Individual attitudes and behaviours approaches do not take into account the complex and dynamic regimes of everyday life.

Therefore, the main aim of my contribution is to re-analyze the empirical findings on 28 study cases selected among household energy-efficiency renovation (global intervention: envelop, windows, roof, deck) within the theory of practices frames shaped by Schatzki (1996, 2001) and Reckwitz (2002) and more recently introduced by Warde (2005) and Shove/Pantzar (2005) into the consumption studies. Applying the results constructed by the recent households' energy consumption literature (Gram-Hanssen 2007, 2010, 2011; Bartiaux, 2008; Wilhite, 2008) my paper is based on a study run in five European countries (Germany, Switzerland, Italy, Spain and France) managed by Alphéeis (Fr) and cofinanced by ADEME (National Environmental Energy Agency). Space in the T. of P. is under-theorised. The scope of my paper will therefore tackle the question whether or not space should be seen as an independent variable affecting practices. On the basis of my empirical research findings, the variable of space will thus be used in better reflecting on "how changes occur" in household energy renovation practices, including changes related to local public policies, as questioned by Warde (2005). Using spatial analysis self-correlation techniques (Lisa Index, Truglia 2011) to be applied to the Italian study-cases, I will discuss the factors which tight/hold our selected household energy-efficiency renovation practices together, contending that it is the spatial dimension which links the practices the way they are

Practice routines: public and private. *Ruth Rettie, Kingston University*

Drawing on individual, household and group interviews conducted in the UK on domestic practices, such as laundry and personal cleanliness, this paper discusses the transmission and dispersion of practices and the norms embedded within them. Although participants seemed to believe that their practices were widely shared and normal, practices actually varied widely. Householders explained their practice routines with reference to childhood experiences, salient social identities and technology rather than knowledge of other people's practices. Although they referred to the same socially shared meanings (e.g. 'clean', 'dirty', 'fresh', 'smelly') participants differed widely in their understandings of the rules and skills required to achieve or avoid these states. The paper tries to explain the wide variation in practice routines, by drawing a distinction between aspects of practices (e.g. rules, routines) that are visible or subject to social discussion and therefore 'public', and more 'personal' practices that are less visible or amenable to discussion outside the household unit. For example, line drying is relatively public, but re-wearing clothes without first washing them is more private, perhaps because of the social stigma of attached to not being clean. The paper argues that the more private aspects of practices are less likely to be held in common because their privacy inhibits diffusion. Interestingly, participants do not feel that following private rules is discretionary, and they feel uncomfortable if they infringe their own rules. These findings highlight the importance of developing a theory of practice that encompasses variations in individual versions of practices (Schatzki, 2005).

289. (70) Science and the impact of organizational practices - III

2:00 to 3:30 pm
Solbjerg Plads: SPs03
Chair:

Finn Hansson, Copenhagen Business School, Dept. of MPP
Participants:

The Design of Science. *Alexandra Dr. Kraatz, iFQ - Institute for Research Information and Quality Assurance*

What makes good science? This presentation will investigate how funding agencies determine the shape of science and how they define a project worthy for funding. Within the last years it has become more and more important for universities and research institutes to acquire third party funds. How does the increasing dependency on such external resources affect the form and content of research? This presentation shows how the design of research projects has been formalized and condensed into predetermined frames. Researchers are constrained to create projects that fit given time schedules and follow a strict guideline of its accomplishment. What is meant to be a method of quality assurance also narrows the pattern for research. We will present an example from our study of a collective research cluster of the DFG (German Research Foundation) where we observed and analyzed the evaluation processes and funding decisions and interviewed all reviewers and personnel afterwards. Therefore our study is highly relevant for STS as it asks the important questions what influences the reviewers expectations, how the evaluation criteria differ between persons and between disciplines, and what roles structural issues such as gender equality and early career researchers play. Employing triangulation to gather empiric data, we work with different methods and instruments which we selected and developed for this special environment, such as e.g. participant observation, expert interviews and cognitive methods. In our presentation we will show our latest results and discuss how to design excellent research projects accordingly.

Designing for Multidisciplinary Open Access: PLoS ONE. *Lindsay Kelley, Public Library of Science*

How do design practices shift when the largest peer-reviewed journal in the world works collaboratively with a 3000 member Editorial Board? This paper considers the Editorial Board community that supports the open-access scientific journal PLoS ONE. PloS ONE has designed social and technical systems to handle both the volume and multidisciplinary nature of its manuscripts. During the submission and publication process, authors and editors interact inside a hybrid system designed to trigger both automated workflows and high touch social interactions. After publication, PLoS ONE has redesigned public engagement with scientific knowledge by transferring decisions about "impact factor" to the readers of individual papers. Much has been displaced in this process, including, arguably, dominant models of scientific communication. Less sweeping displacements are also at play in the evolving structure of the PLoS ONE ecosystem, including topics and outcomes related to scalability, motivation, and organizational knowledge management. Presenting preliminary findings from our most recent work with the PLoS ONE Editorial Board will entail discussion of practice-based interventions with measurable outcomes as well as speculative insights into spaces of radical multidisciplinarity, human-machine communities, and processes of digital democratization. PLoS ONE (eISSN-1932-6203) is an international, peer-reviewed, open-access, online publication. PLoS ONE welcomes reports on primary research from any scientific discipline. The Public Library of Science is a non-profit organization of scientists and physicians committed to making the world's scientific and medical literature a freely available public resource. See www.plosone.org, www.plos.org.

Do changes in science governance affect research direction and agendas? *Laura Cruz-Castro, CSIC Institute of Public Goods and Policies (IPP)*; *Pablo Kreimer, CONICET, Universidad Maimonides*; *Luis Sanz-Menendez, CSIC Institute of Public Goods and Policies (IPP)*

Over the recent past public funded research organisations have evolved in the context of new governance systems in which funding agencies and strategic priorities have become key elements. How has the diversification of funding sources and the emergence of national strategic programs affected the research agendas of public research? Have new policies and funding arrangements been able to really steer research at the micro

level? These are two guiding questions of the paper. The aim of this paper is to address these questions empirically by comparing and analyzing the historical and the current features of science governance in two different countries, Spain and Argentina, to show the effects of the governance changes developed during the last decade on two large research performing organisations (CSIC & CONICET) and the ability of influencing the research agendas. The methodology for this comparative study was based on the implementation of an in-depth questionnaire-based survey, applied to public authorities, researchers and key informants in both countries, combined with documentary research. Preliminary findings show that interests of the "traditional scientific community" tend to prevail in both countries, despite the institutional changes. Indeed, the pervasive role of the international scientific elites, through reputation and recognition mechanisms, seems to shape research directions and agendas. Despite institutional differences between Spain and Argentina, a factor that appears to underlie the common dynamics is the active role and presence of researchers in the research evaluation and funding agencies, together with the traditional self-referencing process of science to the international scientific community.

Research on preferences in scientific collaboration between china's universities. *Dechun Sha, Institute of Science , Technology and Society, Tsinghua University*

Cooperation is a significant way to make progress in modern science and an important form of contemporary scientific production. Scientific cooperation has various participant groups based on its levels and sizes. University is an important one of them and plays an important role in scientific cooperation. Scientific cooperation between universities takes on a variety of forms: a joint commitment to carry out a project, to disseminate scientific products, to publish papers by co-authored and so on. Co-authored papers of any two institutes can be easily retrieved from Chinese Journal Full-text database (CJFD) in CNKI developed by Tsinghua Tongfang, which facilitates the scientific cooperation study from the perspective of co-authored papers. Taking CJFD as data resource, the absolute frequency of scientific collaboration, Salton index of collaborative intensity and the ratio of observed value to expected value as scientometric indicators, and the matrix analysis, network analysis, visualization technique as scientometric methods, this paper makes a survey of the collaborative preferences existing in inter-"985 project" universities collaborations, and within the "985 project" universities and the local universities collaborations, reveals the impact of geographical factor and discipline nature on scientific cooperation, thereby reaches the following conclusions. (1) Geographic neighboring is the most important factor affecting scientific cooperation between universities. (2) The discipline nature is of great importance to scientific cooperation between universities.   These conclusions enriched Katz's and other researchers' thoughts on the relation between "Geographical proximity and scientific collaboration".

290. (94) Emotions and affects in science: communities, spaces, and bodies - II

2:00 to 3:30 pm
Solbjerg Plads: SPs05

Chairs:

Staffan Bergwik, Dept. for History of Science and Ideas Uppsala University
Helena Pettersson, Umeå University

Participants:

'Vasudhaiva Kutumbakam': The Family in the 'Knowlede Economy'. *Aalok Khandekar, Maastricht University*

Discourses and practices of family figure prominently in the transnational circuits of Indian technomigration – the movement of highly skilled workers in the global economy (of Indian

engineers between India and the United States, in this case). For Indian technomigrants, the family is at once a locus of material and affective investments, a scaling down of "trust" in the nation-state, a metaphor for their relationship to India, and, consequently, a site of affirmation and reproduction of their Indianness in the face of increased transnational mobilities. Monetary remittances to India, for example, are mainly channeled not to state-sponsored developmental projects, but largely, into domestic savings accounts managed by local family members. The family, as the locus of 'Indian' culture, also articulates a space of belonging within preexisting racial hierarchies in the United States. Anxieties around the loss of selfhood and identity are also often expressed in the idiom of the family – those around child-rearing in places and cultures deemed not 'Indian', for example. The family, thus, articulates multiple forces – local and global, cultural and political-economic – making it possible for Indian engineers to be mobile at all. This paper traces the everyday practices and discourses through which the family, as an affective and ideological construct, becomes central to Indian technomigration. More generally, then, this paper hints at how the family can become a productive lens for understanding the technoscientific mobilities that sustain the "knowledge economy."

Boundary Work and Symbolic Capital Exchange. *Helena Pettersson, Umeå University*

Contemporary research environments are signified by post academic knowledge production. Instead of single academic disciplines, area studies are defined as nodes of knowledge making (Ziman 2000; Knorr Cetina 1999). The aim with this paper is to problematize the links between emotions and knowledge production and how knowledge and skills are defined, negotiated and transferred within a multidisciplinary research institute in ICT (information and communication technology). The data is based on ethnographic fieldwork with observations and interviews with professional researchers as well as autodidacts. The discussion of the paper focus on how knowledge and skills operates as capitals in relation to boundary work when defining research. Given academic rank and merit, who is allowed to conduct research and set a research agenda? Which type of knowledge generates valuable capital within the research arena? How is "research" as activity interpreted and negotiated? What type of knowledge and skills can be transferred into research and which ones can not? Due to this type of interaction and negotiation, are emotions collectively cultivated, performed and reiterated within the scientific community? And how are they played out in interactions? What emotions are regarded creative or, conversely, non-scientific? I will use the concept of boundary object and boundary work to analyze the trading of skills in the attempt of legitimizing the individuals' efforts at conducting research. Pierre Bourdieu's concepts of symbolic capital will be used when problematizing academic ranks and acts of legitimizations within the studied research institute (Star & Griesemer; Bourdieu. 1993a; 1993b; Pettersson 2011b).

Belonging in/to the laboratory: emotion, affect and scientific practice. *Anne Kerr, University of Leeds*; *Lisa Garforth, Newcastle University*

This paper explores the kinds of activities, practices and connections that bring laboratories into being and keep them going as coherent and meaningful entities. STS studies have tended to privilege a productionist logic of the laboratory, emphasising its outputs in the form of new claims and knowledge-objects. We argue that the lab is simultaneously a space of reproduction, in which effort and emotion is invested in the ongoing constitution of the lab/team itself. This brings into the foreground questions of the care (or neglect) of places and objects, people and relationships, careers and reputations. Drawing on findings from observation studies and interviews in two bioscience laboratories, we focus on the emotional and

affective dimensions of belonging in and to the laboratory and their implications for knowledge practices. First we explore the movement of actors in and out of teams and constructions of core and marginal actors in the lab, and their entanglement with individual emotions and affective dynamics. We explore how peoples' sense of who did and did not belong in/to the lab related to scientific projects, findings and careers. Secondly we highlight some socio-material dimensions of belonging, focusing on the things (findings, methods, materials, ethics) that circulate in and out of laboratories and how actors' feelings about things mattered in their performances of belonging or not belonging to the laboratory. The paper ends with some reflections on the implications of our findings for understanding laboratory practice through the exploration of emotion and affect.

Tales of hope and fear. Postdocs, career-work and peer-to-peer relations in the life sciences. *Ruth Mueller, Univ. of Vienna & Austrian Institute for International Affairs (oiip)*

This paper explores life science postdocs' perceptions of contemporary academic career rationales and the related affective states such hopes, desires, anxieties and fears. It shows that these emotional experiences play an important role for postdocs' social and epistemic relations to other scientists in shared research contexts such as lab groups. The paper is based on qualitative interviews with 25 life science postdocs in academic institutions in Austria and the US conducted between 2008 and 2011 in the ELSA research project "Living Changes in the Life Sciences". The period of employment between obtaining a PhD degree and a more permanent academic position is referred to as the postdoc. Being a postdoc is mostly characterized by short-term contracts, geographic mobility and intense competition for more long-term academic employment. Under these conditions, postdocs' accounts on their present work and life as scientists show meaningful affective dimensions regarding a future in academic science: While there is often strong desire to continue and succeed on an career trajectory in academia, there are also vivid anxieties about failing both intellectually and existentially. Postdocs' peer-to-peer relationships are shaped by these tensions. Anxieties about the future lead to mostly entrepreneurial and instrumental relationships, straining more community-oriented aspects of academic labor such as collaboration and education. Yet, the emotional regime of the corporate university offers rhetorical space to reframe this self-focused behavior as indispensable for making an academic career.

Affective labour and academic capitalism: the emotional politics of publishing. *Dagmar Lorenz-Meyer, Charles University Prague*

Over the past two decades STS scholarship has explored the changing conditions of knowledge production, particularly the intensifying commodification of knowledge. Academic capitalism and the triple-helix of university-industry-government relations are conceptual frameworks for theorising these developments. However, relatively little is known about how affective labour and emotional politics are implicated in these processes. This paper takes the practices of academic publishing as a mode in which academic capitalism is enacted and contested. Publishing is a complex nexus in which traditional academic values of circulating knowledge in the public domain are overlaid – and clash – not only with confidentiality agreements by industry but also with market-like behaviour of scientists aiming to maximise the exchange value of their publications. The paper contributes to the literature that considers how affect arises out of particular material relations and organises them. More specifically it seeks to bring theories that emphasise the transformative dimensions of 'autonomous' affect into dialogue with feminist theorising on how emotions also work as a technology of subjectification. Drawing on participant observation with Czech bioscientists I explore the moral economies of publishing that novice researchers are enculturated into, the calculation of co-authorships, journal venues and

editorial decisions, and scientists' experiences of submitting work for peer review as an 'adrenaline sport'. Examining these affective economies throws light onto the question of why scientists submit to a system of peer review that they identify as flawed and draws attention to vocational identities that at times mitigate the imperative to publish.

291. (15) Narratives of research and policy making in the life sciences - III
2:00 to 3:30 pm
Solbjerg Plads: SPs07
Chairs:

Manuela Perrotta, Norwegian University of Science and Technology
Kristin Spilker, Department of Interdisciplinary Studies of Culture, NTNU

Participants:

Reproductive or productive value? Embryonic life at the intersection of IVF and stem cell research in China. *Kerstin Klein, Homerton University Hospital NHS Foundation Trust*

The argument that it is morally permissible to conduct destructive research on human embryos that are 'not wanted', because these embryos are no longer needed and therefore 'spare', is the core of national stem cell policy in much of the developed world. The paper discusses the value of human embryos, and the role of 'wanted' and 'unwanted embryos' at the intersection of in-vitro fertility (IVF) and contemporary stem cell science. It pursues the distinction that 'embryonic life' has reproductive value in the former, and productive or bioeconomic value in the latter. 'Embryonic life' as a term signifies that, like life and population, human embryos have also become objects of biopolitical strategies of the state, e.g. through screening IVF embryos as future citizens or as a source of bioeconomic development with stem cells. The development of a bioeconomy demands high levels of participation from populations, and the paper argues that a peculiar combination of national bioeconomic development and Chinese-style regulatory intervention by the state aide the creation of a productive bioeconomic relationship, between the reproduction of the population in IVF clinics and the transfer of embryos to the research laboratory. Using policy analysis, the paper shows how regulatory devices like the Ministry of Health's Guidelines for Artificial Reproductive Technologies and Sperm Banks and Confucian Bioethics aide the fostering of this relationship, by creating a productive surplus of spare embryonic life through alteration of what are 'unwanted' but could be 'wanted embryos' in China. The paper contributes to the STS literature on life sciences governance in Asia.

'Leftover' Ova and Embryos and Stem Cell Research in Korea. *Yeonbo Jeong, Hanyang University*

This paper explores the ways in which the meanings of waste, nationalism, and women's bodies are (re)framed in ethicalizing the use of 'leftover' embryos and ova for stem cell research in South Korea. Although bioethics laws have been formed since the Hwang scandal, it was too easily reduced to the discourse of 'informed consent,' and the use of 'leftover' ova and embryos produced in fertility clinics as an alternative, while the current structures deeply related to the Hwang scandal still remain. This paper first traces the ways in which stocks of ova and embryos have become available for scientists, by looking at the history of proliferation of IVF clinics in South Korea both in relation to regulations, and to cultural discourses of nationalism and normal family ideology. The latter part of this paper explores the current cultural, economic, and political considerations of making meanings surrounding 'leftover' ova and embryos by interviewing researchers, bioethicists, and people working in the IVF clinics. Not only is the 'leftover' produced with routinized superovulation technology, but also the meanings of leftover are

produced and rediscovered in stem cell research and fertility treatments. The 'leftover' is not a simple and easy source for research, but is always contested, as it embodies the power politics of having stem cell research embedded in fertility clinics, and the many contested meanings of the human body, nationalism and reproduction.

Brazil: 'line of flight' to international research tests with nonhuman primates? *Ana Tereza Pinto Filipecki, FIOCRUZ; Carlos Saldanha Machado, Oswaldo Cruz Foundation; Márcia de Oliveira Teixeira, FIOCRUZ*

Nonhuman primates (NHP) as animal models for the study of human diseases are on the border line between preclinical research and humans clinical trials. Biomedical use of NHP includes immunological studies and drug and vaccine-development studies against infectious diseases. One example is vaccine for Leishmaniasis, one of the major infectious diseases primarily affecting some of the poorest regions of the world. However, regulations on the use of NHP are becoming increasingly restrictive in developed countries, e.g. the United Kingdom and the United States. Has Brazil become a 'line of flight' for the tests with PNH? Brazilian law for scientific use of animals, sanctioned in 2008, makes no restriction on the use of NHP. Rather, some public research institutions (IPPs) that maintain breeding NHP colonies are confirming their policies to become a procurement route for large research institutions and biotechnology companies. Based on content analysis of documents involving engineered mice (a viable alternative to testing in NHP) and captive NHP, published by a biomedical IPP between 2006 and 2011, and interviews with IPP researchers, technical staff and managers, the study examines contractual forms of biomedical research cooperation/services, between Brazil and the United States. The investigation main contribution to STS studies is to shed light on the design of transnational biomedical research contracts.

Growing meat from stem cells as 'normal science': managing the marginal and mainstream. *Neil Stephens, Cardiff University*

In Vitro Meat technology involves the growth of stem cells taken from animals into muscle tissue that can be consumed as meat. I have been conducting interviews with the leading protagonists in the field over the last two years. The technology promises significant gains in reducing the ecological footprint of meat production, producing healthier meat, and minimising animal suffering in meat production. However significant socio-technical challenges remains before a working prototype product can be developed. Not least, the perception by many that growing meat in laboratories is weird and unusual. This paper reports the experiences of scientists within the field in negotiating their position somewhere between the mainstream and marginal. The last five years has seen the field struggle for credibility as a serious technological development. In practice the leaders of the field pursue In Vitro Meat research as a side project to their typically mainstream bio-medical university jobs. The unusualness of In Vitro Meat, however, has provoked an unusual context for producing early stage scientific work, for example the significantly increased media attention received by these scientists and the unusual constellation of funding sources supporting the field. In this paper I report the ongoing boundary work of the scientists themselves as they negotiate their mainstream and marginal status to bound In Vitro Meat as 'normal science'. As such it contributes to our understandings of innovation in bioscience, scientific career maintenance, and the specific instance of a technology that may in the future sit on our plates.

292. (23) + (31) Configuring Climates - III

2:00 to 3:30 pm
Solbjerg Plads: SPs08

Chairs:

Lea Schick, IT University
Arno Simons, Technische Universität Berlin
Aleksandra Lis, Central European University in Budapest
Ingmar Lippert, Augsburg University

Participants:

How does one localize climate change? Climate symbols and the case of the Ilulissat Icefjord. *Lill Rastad Bjørst, Aalborg University, Denmark*

The former Danish Minister for Climate and Energy, Connie Hedegaard, targeted the UNESCO World Heritage site Ilulissat Icefjord as a prime example of 'the Greenlandic case' and called it a strong 'climate symbol'. Between the years 2005 and 2009, she invited other Ministers and heads of state to visit the venue for dialogue meetings about climate change. This process also attracted many other interested parties, such as journalists, scientists, royals and tourists. During this time, there was a consensus that the Icefjord is a strong symbol in the climate-change debate – and quite a powerful one. Using an analysis that draws upon Peirce's three analytical categories (icon, index and symbol), this paper explores the role and position of the Ilulissat Icefjord in global climate discourses. As a case, the Ilulissat Icefjord serves to effectively demonstrate how climate symbols are constructed, and how they influence our perception of the global phenomenon known as climate change. A central STS-question in this article are: How does one localize climate change, and what kind of role do climate symbols like the Ilulissat Icefjord play in this process?

Carbon Credits: The Displacements in Design. *Anup Sam Ninan, Bremen International Graduate School of Social Sciences*

Carbon credit is a piece of document that connects the world: between the emission-reducers and emitters, developing and developed countries (often referred South and North), local and global, citizens and nations, individuals and earth, consumers and products, and the like. Though often framed in binaries, the interrelations of these categories are complex interactions involving multiple scalar configurations. This presentation, based on an ANT-inspired ethnographic study on how carbon credits are generated in a small-scale biomass renewable energy power plant in India, goes into the details of how the politically significant inclusions and exclusions are crucial in the generation of carbon as an exchange object. Carbon credits – a medium through which the consumers in the advanced western societies outsource their greenhouse gas emissions – engage in different forms of displacements. This presentation traces the generation of carbon credits in a CDM offset project to illustrate how science, organization and market collectively produce this tool of governance inherent with deep political significance. By combining the insights from ANT and practice theory, this presentation elaborates how commensuration is the basis of organizing globalization. Inherently, commensuration is a project of design and displacements. The tools and the processes by which things, places and time are made fungible to make exchange possible are acts of inclusion and exclusion. The case is especially interesting since the physical reduction of emission, a commonly held premise for exchanging emissions, does not takes place at all in this project.

Re-thinking scaling of environmental markets. *Aleksandra Lis, Central European University in Budapest*

This paper contributes to the debate on performativity of economics by conceptualising how creation of environmental markets involves enactment of various scales which reorganize many areas of society. We propose a conceptual differentiation of how effects of scaling can be analysed and ought to be understood when practically engaging with performing environments as subject to market networks. This conceptual

differentiation helps to emphasise decisive characteristics of the performativity of markets. In policy discourses, environmental markets are discussed in normative, prescriptive ways with a positive notion of scaling up markets. Typically, economic and ecological efficiencies are sought. Critics, on the other hand, point to unintended effects of or limitations to up-scaling. In our paper, we would like to critically examine the underlying assumptions of what scaling entails in policy and critical discourses on environmental markets. We point to the fact that these discourses focus mainly on the quantitative aspects of scaling and neglect the multiplicity of scales. Therefore, we open up the question of what kind of scales exist? How are they performed? Who performs them? What effects do they produce locally? Why do they have the effects they have as part of the way they are performed? In other words we want to turn from studying for or against scaling to studying scaling itself. We argue that such an approach has to set out with the question what scaling entails and how scaling has ambiguous and troubling effects that are never constant and given but continuoulsy re-enacted. The paper illustrates our approach with findings from the doing of environmental markets as policy instruments, of the practical problems of performing supply and demand as well as extra-market effects of putting markets into economic practice.

Epistemologies of Ignorance, Feminist Standpoint Theory, and Climate Change Science. *Heidi Grasswick, Middlebury College*

I consider the extent to which feminist standpoint theory and epistemologies of ignorance can help us (1) understand patterns of public doubt concerning climate change science and (2) develop relevant ideas of what constitutes a "responsible trust" in climate change science. Many social interests are at stake in the highly politicized arena of climate change science. Additionally, it is well recognized that the problem of climate change will likely affect certain groups of people, particularly the globally marginalized, more significantly and rapidly than others, even if ultimately it concerns everyone. This makes it an intriguing case to consider through a situated approach to epistemology as found in feminist standpoint theory and epistemologies of ignorance. Standpoint theory's focus has been on the relationship between social location and one's ability to generate sound knowledge of a particular kind (Harding 1991, Wylie 2003). The case of climate change science doubt, however, deals with another dimension of the epistemic game: judgments of whom to trust for our knowledge. I argue that both standpoint theory and epistemologies of ignorance have resources to offer in terms of understanding how social location affects one's willingness to trust a particular area of research, and one's reasons to trust in a particular area of research (Scheman 2001). Through these frameworks we can develop an account of cases of "irresponsible doubt" of certain areas of scientific research, such as climate change. The paper contributes to STS by linking these philosophical frameworks with studies on patterns of public doubt.

293. (84) Aesthetics in technological practices - II
2:00 to 3:30 pm
Solbjerg Plads: SPs10
Chairs:
Dick Willems, University of Amsterdam
Jeannette Pols, Amsterdam Medical Centre
Participants:

Embedding tasting. Appreciating food within mundane medical practices. *Anna Mann, University of Amsterdam*

What is beautiful, nice, tasty? Philosophy has often sought a general answer to this question. Pierre Bourdieu's "Distinction" has located aesthetics in society by empirically studying groups of people and mapping the aesthetic judgments they pass.

Antoine Hennion's work situated aesthetic judgments as being part of attachments, practices of relating to one object in which people passionately engage in. This presentation pursues the endeavor to locate aesthetics. It does so by ethnographically exploring one practice of aesthetically valuing, tasting food, and what happens around it. The presentation draws on ethnographic fieldwork I engaged in between 2009 and 2011 and during which I observed tasting practices in different sites in "the West". In this presentation I will mobilize fieldnotes from meals and everyday life in a hospital in the middle of Western Europe. I will convey three stories on tasting food and what happens around it: treating patients, getting better, and caring for bodies. Tasting and appreciating food is affected by these other day-to-day ongoings and becomes transformed in different ways through them. The three stories will highlight how appreciating food is situated in a place, such as a hospital, and will lead me to suggest that tasting is embedded in mundane medical practices. The case of appreciating food in a hospital will thus contribute to an understanding of aesthetic values as enacted in technological and scientific practices.

From paper to pixels: e-readers, e-reading and aesthetics. *Thomas Franssen, University of Amsterdam*

The e-book was developed in the early 1970s as an electronic copy of the text of a paper book. It was supposed to be as simple as possible, just text and nothing else. With the introduction of the e-reader by the end of the 90s this changed. The e-reader became an alternative to the paper book, and the e-book started to develop into something with aesthetic possibilities of its own. Starting out as a copy of the paper book, the e-book has developed into an artifact in itself, which demands its own way of reading: e-reading. This paper explores the differences between paper and pixels and the ways people enact these differences based on an explorative analysis of user reviews of e-readers and blog posts on peoples experiences with e-readers. What does it mean to read electronically and how does one e-read? What type of texts 'work' electronically and which don't? What material qualities do pixels have and what kind of experiences can be achieved through them? Through these questions I aim to show the coming-into-being of a new art form and its aesthetic possibilities. This paper contributes to the sts-literature on art and aesthetics (cf. Hennion, 2008) a deeper understanding of the role technological devices play in the formation of aesthetic experiences.

Music making as urban guerrilla: Challenging the aesthetico-political orderings of Berlin's public spaces. *Christoph Johannes Anatol Michels, University of St. Gallen*

Analyzing a guerilla concert of a young string ensemble from Berlin the paper presents music making as a set of socio material practices which aesthetically organize a wide range of people, technologies and places. The composition of the concert is presented as an enactment of various kinds of socio-material relations, which rely on their mechanical, symbolical and aesthetical performativity. As the concert takes place outside the concert hall, the ensemble encounters various challenges and resistances with respect to the participation of various human and non-human actors. Different modes of organizing music, the city's public spaces, the audience and the young musicians become visible as they interfere with the ordering logic of the ensemble. By means of an audio-visual ethnography the study explores how multiple logics of organizing music performances in Berlin overlap, produce tensions and enact multiple versions of "good" music. Drawing on the literature of Actor-Network Theory (and its developments after) as well as on conceptual advances made in human geography under the label of "More-than-representational theorizing" (such as a the coupling of the relational materialism with the concept of affect), the paper aims at analyzing the complex politics of making "good" music. I will argue that such a politics cannot be framed as a simple struggle for or against specific modes of aesthetically enacting music but

largely relies on the unfolding of affective dynamics which allow to accommodate multiple and contradictory modes of participating in the music event. For a preview of some of the material see: http://vimeo.com/26186028

Pretty, pretty understandable: social scientists and visualization. *Andreas Perret, Swiss Center for Expertise in the Social Sciences (FORS)*

Social scientists using data rely on statistical software for their work. These tools are not passive actors: they feature specific sets of analyses, offer selected modules of visualization, and are more or less open to customization from the user. They may have different requirements such as computer programming, and switching from one to another comes therefore at a cost. Our aim is to investigate how the tools –specifically the visualization tools- and their respective communities function, and also how the communities are in turn shaped by these tools. We suspect that the field of sociology does experience a significant reluctance when it comes to using visual communication to convey scientific information. Our hypothesis is that this caution prevents the mainstream of sociologists from using visualization or any esthetic features, either as a means to understanding the underlying logic of social facts or as non-verbal rhetoric arguments. We also believe that this caution is reflected in the practices involved in publishing in scientific journals. We intend to demonstrate the above through a series of interviews with visiting and resident scholars at the Swiss Center for Expertise in the Social Sciences (FORS). Our findings show three emblematic situations where the choice of an analytical tool has led to unexpected outcomes for researchers in social sciences.

Through the looking glass. About aesthetic values and mirrors as a social technologies. *Jeannette Pols, Amsterdam Medical Centre*

In this paper I will analyse aesthetic values in the practices of women who lost their hair as a consequences of the chemotherapy they received as a treatment for cancer. To do this I borrow one of the mudane but pivotal technologies the women used as a tool to construct my analysis: the mirror. What is it these women see in the mirror, and how do they use the mirror in different ways? Clearly, their vision is not a mere neutral or objective reflection of their faces, but entails an aesthetic appreciation of what they see reflected. I will demonstrate that the women, in order to make these aesthetic appreciations, were not alone in the privacy of their bathroom, but 1) regarded themselves through different, mainly negative, cultural imageries of female baldness, and 2) used their mirrors together with other technologies, such as wigs, scarves, and make up, to manipulate the reactions they would get from different, contextualised others.

294. Temporality in the sociomaterial mangle

2:00 to 3:30 pm
Solbjerg Plads: SPs12

Recent work within organizational and sociotechnical studies point to the limitations of overt distinctions between the social and the technical. Instead, within STS a different lens has been adopted, one that acknowledges that people and technology are co-constituted, rather than being a set of independent, if interdependent, forces (Orlikowski, Leonardi, etc). The current 'sociomaterial' approach allows for a reframing of key conversations in our field including the well-trodden discussion regarding the intermediation of our social and professional lives. If we adopt the lens of sociomateriality, what new can be seen? Our panel will look specifically at the nature and patterning of temporal adjustments that are enacted in a few of the sociomaterial assemblages that comprise new forms of work, play and social interaction. How, for example, do we articulate the assemblage of ubiquitous technology relative to the accomplishment of personal and professional goals? How does the porosity of local and global via online networks create new ways or needs to see and engage with our environments? Through a set of grounded case examples, our panel will

educe a targeted set of questions and issues that can help to develop the deftness of the sociomaterial lens for continued investigation of 21st century life.

Chair:

Steve Sawyer, Syracuse University

Participants:

Corporate playgrounds for innovation: A material and virtual analysis. *Payal Arora, Erasmus University Rotterdam*

New work spaces are emerging in physical and digital domains and with it, an expectation of a new work culture. Pool tables, video games and dance classes are becoming a signature of these new labor landscapes. Bicycles, scooters, and slides enable employee movement. Play is infused in the design and shaping of board rooms. This corporate usurping of leisure space is becoming visible across different sectors and the globe, manifesting in technology, industrial, science or/and information parks. Simultaneously, we see corporations inhabit leisure spaces online, such as Blogger, Facebook and Twitter; LinkedIn strives to resemble more a social than a work space. There is recognition of the role of leisure spaces in the labor of ideas. This is seen as restructuring the private-sector model from top-down to a more employee-driven and customer-oriented culture for corporate innovation and competitiveness. This paper takes an investigative and critical approach to this phenomenon. It is investigative in a sense that corporate harnessing of leisure space for labor is occurring within both online and offline domains but few studies bring this together cohesively; it is critical in a sense that there is much hype about the novelty of corporate usage of digital leisure spaces without situating it within the larger sociological and historical frame. Overall, it provides a comprehensive perspective on the architecting of work spaces materially and virtually through leisure by addressing labor, innovation and business culture.

'Personal' time: Investigating the hybridization of a temporal zone. *Melissa Mazmanian, University of California, Irvine*

It is 8pm and you're home watching TV, doing dishes, chatting with your spouse. A colleague needs to get in touch with you to ask a quick question before tomorrow's meeting. Would you prefer they call or email? In my research with workers in a variety of industries, the overwhelming response is email, of course. Why? "The phone is so intrusive," "With email I can respond when it works for me, in my time." However, the ubiquity of email-enabled phones qualitatively changes what 'my time' means. People are frequently glancing down at a smartphones throughout periods of self-reported 'personal time.' And they are often responding to the 'un-intrusive' email messages within only 5 to 10 minutes. How do people negotiate the conflicting social, technological, and interpersonal demands of such situations? How can we make sense of a temporal zone that is not work, but is also not separate from work? I argue that the 'at the ready' worker, glancing at email, and responding in 'their' time regardless of physical location or social context is instantiating a hybrid temporal zone. It is worth investigating fundamental shifts in the nature and experience of 'personal' time from a sociomaterial perspective in order to move beyond metaphors of colonization, blurring, or spillover. In this work, I investigate the ways in which we might describe today's worker as an assemblage, co-constitutive with expectations of accessibility, conceptions of productivity, experiences of control, and intimacy with mobile communication devices.

Deboundaried work: Insights from the vanguard. *Steve Sawyer, Syracuse University*

Work boundaries – demarcations dividing where and when work happens, or not – are an artifact of the industrial age. Boundaries arose from the creation of large-scale work-oriented organizations that industrialization enabled and created a framework for our current conceptualizations of work, of

management, of workers, and working time. The recent growth of knowledge-driven organizing has, however, mostly been done through these industrial-organizations mechanisms. When work is no longer tied to a place (because it is either done in one's head or through portable, rather than fixed, devices) or confined to specific times, industrially-inspired boundaries remain legally and culturally relevant, but operationally paradoxical. There are a number of professions where flexible work boundaries have always been the norm: focusing on these provides us a lens into how new forms of work and working might evolve both formally -- in the kinds of rules and technologies that are taken up -- and informally – in the social norms and practices that are developed – to accommodate an always blurred boundary between work and non-work. Drawing on a comparative analysis of two such professions, police officers and real estate agents, whose work has always been debounderied, analysis focuses on articulating formal, informal, and technological mechanisms to support these worker's ability to manage their work and non-work time. The selection of police officers and real estate agents as the basis for this analysis is to leverage fifteen years of field work done in these areas.

Constant connectivity: Rethinking interruptions at work. *Judy Wajcman, London School of Economics & Political Science*

While the subject of interruptions has received considerable attention among organizational researchers, the pervasive presence of information and communication technologies has not been adequately conceptualised. Here I consider the way knowledge workers interact with these technologies. I present results from a small study that reveals the crucial role of mediated communication in the fragmentation of the working day. These mediated interactions, which are both frequent and short, have been commonly viewed as interruptions – as if the issue is the frequency of these single, isolated events. In contrast, I argue that knowledge workers inhabit an environment where communication technologies are ubiquitous, presenting simultaneous, multiple and ever-present calls on their attention. Such a framing employs a sociomaterial approach which reveals how contemporary knowledge work is itself a complex entanglement of social practices and the materiality of technical artefacts. I conclude that employees engage in new work strategies as they negotiate the constant connectivity of communication media.

295. (34) The epistemic and political authority of expertise in environmental governance - II

2:00 to 3:30 pm
Solbjerg Plads: SPs14
Chairs:
Silke Beck, Helmholtz Centre for Environmental Research
Eva Lövbrand, Linköping university
Participants:

The Changing Roles of Expertise in 30 Years of Global Environmental Assessments. *Maud Borie, University of East Anglia*; *Mike Hulme, University of East Anglia*

Fifty years ago, Michael Polanyi wrote his classic essay in defence of the autonomy of scientific enquiry: The Republic of Science: its political and economic theory. Polanyi had high regard for the contribution of science to the ideal of (individual and social) self-improvement. But this could only be achieved under certain conditions of scientific self-governance: " ... we reject today the interference of political or religious authorities with the pursuit of science [and] we must do this in the name of the established scientific authority which safeguards the pursuit of science". Polanyi's argument reveals a tension which is still felt today in the practice of science and its appropriation by society, a tension between the unencumbered search for scientific truth on the one hand and the need for science to be marshalled

towards specific societal goals on the other. Not least is the goal of securing environmental integrity and protection. How then can science maintain its core strengths as outlined by Polanyi and yet bend to a global 'public interest'? This paper examines the ways in which scientific expertise has been designed and deployed in a series of global environmental assessments over the last 30 years. These assessments are prime examples of where scientific and public authority have met and at times collided. The assessments studied are the OSAP, the GBA, the MEA, the IAASTD and the emergence of IPBES today. In what ways has the tension between science's 'governing authority' and (global) society's 'political authority' been handled in the mobilisation of scientific expertise for global environmental assessments? How has this handling changed during 30 years? Is there evidence of learning? To what extent has expertise become a form of authority governing the boundaries of environmental sciences and global publics? Can we observe a displacement between the epistemological and political dimensions of expertise?

Modelling Consensus: Science, Politics and Malaria at the IPCC. *Jonathan Suk, University of Edinburgh / European Centre for Disease Prevention and Control*

The Intergovernmental Panel on Climate Change (IPCC) has in recent years faced critique about bias in its peer-review processes and inaccuracy in its reports. Hence the need to carefully examine the ways in which the "hybrid" nature of the IPCC leads to a "warranting" of climate science: how do knowledge claims – often uncertain, controversial and situated – find their way into IPCC assessments? A useful focal point for such an analysis is the communities of experts that populate IPCC writing teams. Based upon a detailed case study developed via in-depth interviews and textual analysis, this paper follows how disciplinary interests have influenced the ways in which IPCC has produced its chapters on human health. Of particular focus is the IPCC portrayal of a longstanding controversy surrounding the impacts of climate change on malaria transmission. It is observed that the IPCC portrayed the controversy as being less polarised than it actually is. Moreover, the writing team's composition inevitably influenced the assessments, for example through how co-authors were selected or how peer-review comments were deemed relevant (or not). Through this case study, the paper reflects upon the implications of enrolling specific types of expertise with the aim of legitimising policy-relevant climate science. It reveals how values can be embedded in assessments, co-constructing particular science/policy orderings at the expense of alternative ones. Finally, amidst ongoing debates about how to fix the IPCC, this paper argues that the IPCC tendency towards producing consensus may, paradoxically, jeopardize both its policy-relevance and its scientific credibility.

Methods of synthesis in IPCC assessments: a limit to formalisation. *Ingemar Bohlin, Department of Sociology and Work Science, University of Gothenburg*

From the early 1990s on, the proedures of the Intergovernmental Panel on Climate Change (IPCC) have gradually been formalised. Increasingly detailed guidelines have been introduced for practices such as the selection of lead authors and the use of non-peer-reviewed material, as well as for the entire peer review process. The process in which the relevance and quality of studies are assessed and their findings synthesised, on the other hand, is at the discretion of the author teams. This is in contrast to other academic areas, including medicine, ecology and quantitative social science, where the methodology of meta-analysis and systematic reviews is employed in order to formalise reviewing practices. Despite the vast scale of IPCC assessments, and though climate models are powerful formal tools, there is a sense in which the reports produced represent the tradition of informal reviews, disparaged by advocates of evidence-based practice and policy. In this paper, an attempt will be made to account for the character of methods of synthesis employed by the IPCC. Attention will be paid to the degree to which different

types of data are amenable to pooling. Some forms of scientific data, I will suggest, can profitably be combined either through meta-analysis or by being fed into models. Other types of data are more productively summarised informally. Both forms of data are indispensable in IPCC assessments, and hence the boundary separating them may constitute a limit to the formalisation of climate science.

Institutional ontology of GAIM's Earth System knowledge infrastructure. *Ola Uhrqvist, Department of Thematic studies - Water and Environmental Studies*

Present governance of the climate system and other global change issues rely on integrated global models, simulations and modelling practices without which anticipations of future trajectories are rendered impossible to calculate. The production of these integrated models provides an opportunity to study novel ways of understanding the relations between humans and nature, such as the Anthropocene. This paper studies how practices of modelling the Earth System stabilised roles for researchers, public and policymakers and thereby produced knowledge on global change able to migrate and be performative. The analysis draws on a genealogical approach to understand the institutional ontology underpinning present Earth System modelling through its emergence in the Global Analysis and Interpretation Modelling Task Force (GAIM). GAIM is chosen for its central role in integrating the heterogeneous projects of International Geosphere and Biosphere Programme (IGBP) aiming to predict the future state of 'the Earth System'. Textual analyses of documents produced by GAIM from 1986 to 2004 and interviews with key participants constitute the empirical material. This case of transdisciplinary knowledge production address how understandings of science, public and policymakers were produced and integrated in modelling practices and also in experts reflections on scientific legitimacy. Understanding this 'place' where ontologies for producing knowledge about the future was shaped contributes to current discussions on geographies of knowledge, mapping knowledge ability to travel. This is also a central component in discussions on the role of future scenarios in human-nature relations.

Occupy climate expertise? *Cordula Kropp, University of Applied Sciences Munich*

The question behind the paper proposal is whether a civic appropriation of climate expertise is needed to govern sustainable transformation in regional planning. It first investigates the modes and frames in which planning expertise mobilizes climate knowledge in German regional management and how in consequence climate change and its challenges are perceived by local publics and decision-makers. It then gives a short outlook into German realities of regional planning where today's decisions create tomorrow's path dependences: while the focus is on demographic and structural change, climate change adaptation and mitigation is regarded as one of several long-term goals to be achieved by applying technologies of sustainable building and energy supply. The regional climate adaptation realities portrayed are compared with Naomi Klein's analysis of an ideology clash of "capitalism vs. climate", which concludes that the climate change message contests the capitalist belief system in growth and progress, but asks "to systematically disperse and devolve power and control to the community level" (2011: 5). Against this background the expertocracy, technocracy, expansionalism and individualism of the experts' climate discourse in regional planning is reconstructed and confronted with the resulting incapacity of conceptual integration and translation in local decision-making. Coming from more 'compositionist' ideas of socio-technical transition governance (Latour 2011, Stengers 2011), the paper aims at a discussion of whether rebuilding the public sphere through participatory knowledge production is integral to meeting the climate challenge at a local level and what the responsibility of social scientists therein might be.

296. (92) Connecting and comparing concepts of practice - II
2:00 to 3:30 pm
Solbjerg Plads: SPs16
Chairs:
> **Elizabeth Shove**, Lancaster University
> **Nicola Jane Spurling**, Manchester University
> **Gordon Walker**, Lancaster University

Participants:

Methods of capturing the dynamics of social practice. *Elizabeth Shove, Lancaster University*

For practices to persist over time they have to be consistently reproduced by those who carry and enact them. Successive enactments and performances have to be fairly alike. At the same time there is always scope for variation, and it is through variation between one performance and the next that practices, viewed as recognisable entities, develop and evolve and sometimes die or disappear. This paper explores some of the methodological challenges involved in studying and analysing the dynamics of social practice. The discussion, which is illustrated with reference to empirical research undertaken as part of the Sustainable Practices Research Group, is organised around four core questions. The first two deal with the challenge of definition – how to decide what to count as 'a practice', and how to use such definitions when tracking change over time and when showing how practices circulate and travel? The next pair of questions have to do with matters of scale and aggregation, first considering how situated performances of a practice relate to the changing contours of that same practice when viewed as an 'entity', and then examining ways of revealing how practices (as entities) interact with each other. In showing how these issues are tackled in a series of projects focusing on changing practices that involve eating, cooling and consuming water, we demonstrate the theoretical and methodological potential for moving between the tiny details of daily life and the analysis of large scale, 'macro' level trends.

Policy Intervention and the Dynamics of Practice: developing a practice-informed historical case study approach. *Andrew McMeekin, Manchester University; Nicola Jane Spurling, Manchester University*

In this paper we discuss the potential of practice theory-informed historical case studies to develop a better understanding of intentional efforts to deal with widely recognised and often contested social problems. In particular we are interested in problems deemed to require changes in the ways that individuals go about their everyday life and to related interventions, which concern themselves with seemingly mundane and personal activities. There is currently significant interest within policy arenas in how contemporary ways of living can be shifted to deal with major societal problems (including climate change and obesity). Our work contributes to this debate. Within these policy arenas, a reliance on 'behaviouralist' models of change means that current understandings of intervention are static and a-historic. Our paper draws on historical case studies of road safety interventions in the practice of driving, to suggest that a practice-informed historical approach reveals dynamics which challenge these predominant models. These dynamic and temporal aspects include: the framing and reframing of social problems; the negotiation of appropriate and legitimate forms of intervention; how interventions become woven into everyday life and configure normality; the accumulation of legislation and the structuring of future possibility; the significance for changing practices of the variety of interventions, their sequence and mix. Our paper contributes to the 'policy relevance' aspect of the 'Comparing and Contrasting Concepts of Practice' panel, and contributes to the overall conference theme in its focus on how

interventions intersect with existing socio-technical arrangements.

Data Treatment and Analysis within a Radical Practice Perspective. *Ardis Storm-Mathisen, SIFO National Institute for Consumer research (Norway)*

This paper discusses how taking "practice" as a central unit of analysis presents specific methodological and analytical challenges when studying how objects and daily life is related. Drawing on empirical work the paper discusses how data from questionnaires, interviews and observations shall be treated in analyses departing from a late wittgensteinian perspective on meaning. The late wittgensteinian perspective on the context dependency of meanings – that meaning comes to existence through use in various contexts – is radical in its demand that data must be interpreted in contexts sensitive ways. This implies making it a main concern to show 1) that there are variations in peoples answers and doings tied to context and 2) how these connections and variations are tied to the similarities and differences in the communicative contexts people gave their answers. This radical practice perspective prefers methods that produce data as rich on context as possible. This however, does not mean that the application of the perspective is restricted only to data rich on context. In instances where investigations sensitive to contexts prove difficult, it can still be fruitful to analytically operate with an assumption that those patterns we identify are context specific expressions. Such an approach represents a radical alternative to conventional interpretations of questionnaires that in various degrees assume a consistency and context independency of meanings. In studies where both questionnaire and interview data are applied – data that are respectively poor and rich on context – such an assumption is necessary in order to achieve ontologically consistent interpretations.

Researching situated nursing practices. *Britt Kramvig, University of Tromsø*; *Ann Therese Lotherington, University of Nordland, Norway*; *Aud Obstfelder, Universityo f Tromsø*

Talk about nursing practice is commonly about care, and care in this respect is represented as something distinctively different from technology. We hear about technological change and displacement of patient oriented practices, as nursing discursively is bedside care. At the same time we know from former research that nursing is a heterogeneous situated practice made possible by technology. Hence, when researching nursing practices the research design must contain something more than talking to/interviewing healthcare practitioners. The research design must depart from ontology of material heterogeneity in order to produce knowledge about heterogeneity. In this paper we reflect on what this means. We will tell stories from a research project on ICT in healthcare where such a design was applied. We will elaborate on a specific way of doing ethnographic research, which includes being sensitive towards materiality's. This design will make us aware of the heterogeneity and situatedness of practice, and of the intersection of the working-lives of healthcare practitioners and the materialities of the hospital wards. It will further more make us see nursing practice as a situated socio-material co-construction that always can be different, and become something else. Towards the end, we ask: how can the co-constructive approach be embedded in the organization as such and what methodological challenges does this bring about?

Translating dividual practices into individual lives. *Jo Helle-Valle, SIFO*

A core issue in practice theory is that social life is not guided by some underlying forces but always formed in/by the concrete, practical settings there and then (Helle-Valle 2010). Hence, actors' meanings and motives must similarly be generated by concrete situations – what Wittgenstein calls language games (Wittgenstein 1968; Burkitt 1999). One logical implication is that

persons think and act differently in different context (Ewing 1990). For this reason terming an actor 'individual' is misleading. Rather, we are dividuals. On the other hand we face a problem of how to explain 'the integration of the person'. The challenge lies in handling the relationship between the practical person-in-context (dividual) and the academic, and ideological, propensity to treat persons as context-insensitive (individual). We need an academic design that fruitfully handles the interplay of dividuality and individuality – an in/dividuality. This presentation seeks to address this analytical challenge by way of a case of persons confronted with a new technological gaming-innovation. The aim is to contribute theoretically to the STS tradition by focusing on the how to deal with personhood in a practice perspective.

297. Hearing and heeding citizen voices: Designing and evaluating transnational citizen deliberations

4:00 to 5:30 pm
Kilen: K143

The legitimacy of international organizations is often questioned on grounds of limited effectiveness and remoteness from the citizens they serve. At the same time, civil society has not significantly mitigated the slow displacement of the national state by facing global issues head on. Many democratic theorists argue that deliberation among ordinary citizens can legitimize policies that heed their informed and considered views, and thus these processes bear important implications for global governance. This workshop focuses on transnational deliberative processes, a new phenomenon in the field of deliberation practice and science-in-society dialogues. In particular, the workshop discusses the first results of the World Wide Views on Biodiversity global citizen consultation held September 15, 2012, and reflects research perspectives emerging for scholars of deliberation studies and political participation. Presenters will include both practitioners and researchers, and make brief presentations addressing their respective titles in order to inform an open discussion. The workshop contributes to a timely discussion of current work on transnational deliberation, presents the early results of the world's second global citizen deliberation process, and provides a platform for practitioners and scholars to investigate and reflect on emerging issues. The workshop also affords an informal and accessible forum for people interested in designing and evaluating large-scale deliberative processes.

Chair:

Mikko Rask, National Consumer Research Centre Finland

Participants:

The (social) construction of nothing less than a 'global public sphere': on designing and organizing transnational deliberation processes. *Nina Amelung, Technical University of Berlin*

This presentation focuses on a rarely investigated field of social construction and social shaping of designs of 'democratic innovations' (Saward 2000). The look into the making of 'democratic innovations' allows a perspective on actors who are involved in the innovation process and on their (inter)actions shaping and influencing the innovation path. Those are "experts of community" (Rose 1999), who claim to hold the expertise on how to create forums that give voice to publics, end up designing, operating and shaping techniques of citizen participation. By doing so they inscribe certain meanings of 'democracy', 'the citizens' and 'the public'. This presentation will highlight how designs are shaped and coordinated in one of the few existing transnational deliberation cases, the World Wide Views on biodiversity, and how this affects the practice and implementation of transnational deliberation. In the empirical case of the World Wide Views the designing and coordination process is challenged by 'fixing' a design twofold. First the design faces the trade-offs between the functional requirement to have a standardized global design that coordinates the complex local practices and the legitimate requirements to serve for local

needs (for instance the diversity of being concerned by issues of biodiversity) and second, the design is to be established as a global design that is robust in diverse cultural and political traditions. Preliminary results from empirical studies - based on participant observation undertaken during the preparation and coordination process among partners and the deliberation itself and expert interviews with selected partners and the coordinating organization - will give insights into how participation experts and professionals shape and coordinate the design for the transnational deliberation, how they coordinate themselves and which meanings of a 'global public' and relations of 'global' and 'local' derive from that.

Amplifying results to access policy networks: the role of informal science institutions. *Gretchen L Gano, Arizona State University*; *Rick Worthington, Pomona College*

Deliberative mechanisms like World Wide Views on Biodiversity involve only a small number of citizens in questions about the global issues that they address. Amplification activities to communicate results cast a wider net, typically through traditional and social media, but increasingly through partnerships with informal science education (ISE) institutions. The ISE outreach role in WWViews is part of a broader shift in mission for this community of practice, from one primarily focused on science education, or public understanding of science, to one of public engagement with science, a mission frame that refers to mutual learning by experts and the public. Our research on this development complements and extends inquiry about embedded deliberation to explore understudied aspects of the connection between deliberative events and S&T governance. This includes policy impact, but is expanded to consider other deliberative democratic civic habits, or indicators of social capital. Our project examines the relationship of information exchange and structural arrangements in the outreach network to a sustained engagement with WWViews results. This research establishes a basis for discerning the degree to which amplification through ISE networks builds capacity for sustained citizen engagement, and whether this supports civic behaviors that would enhance deliberative democracy in the US.

Biodiversity as glocalization: citizenship in transnational spaces. *Edna F. Einsiedel, University of Calgary*

The enactment of citizenship has historically been tied to place, and place in turn has been typically bounded by the political circumference of the state. Global issues – from climate change to biodiversity – have new challenges in transforming citizenship in the context of communities of fate. When such 'fate' is understood or learned primarily in the context of local and political geographies, what are the conditions for learning that can provide a bridge between the local and the global? In the context of learning processes embedded within Worldwide Views on Biodiversity, this discussion will focus on the opportunities and challenges in acquiring or strengthening global forms of citizenship through the lens of the biodiversity issue.

Transnational deliberation: gain and loss. *Kobayashi Todashi, University of Osaka*

The World Wide Views on Biodiversity is the second trial of global citizen consultation. The first one on Global Warming was held in 2009 and left many challenges in spite of making considerable achievements in transnational comparison of people's opinion on the issue. So this workshop is a good opportunity for considering how these challenges were coped with and what remained unsolved. The first challenge was a translation cost not to mention a financial one. In order to make a transnational comparison all information materials to be given to participants should be translated in each participant country's language in addition to standardize methodology of the conference. Though the cost was enormous we could not check the quality of translation of each country. Further we could not consider the difference of the social and political context of each

country the WWViews was embedded. We could not ignore that WWViews possibly fall the pitfall of playing "a good teacher" of democracy. The second challenge was on a design of the conference. In the case of the first WWViews participants were discontent with short discussion and many questions. The compromise of deliberation and transnational comparison seemed to become betwixt and between. How this was improved in the next WWViews? The third challenge is a connection with policy. Who is the addressee of the result of WWViews? Without clear understanding of it in advance WWViews cannot provide a significant input for legitimate policy making process. And finally I would like to touch on the possibility of using the methodology of WWViews for a national citizen consultation. After 3.11 the citizen consultation about energy policy and nuclear policy is urgent and critical for Japanese society. Standardizing methodology in national level, enough deliberation and political legitimacy of the citizen consultation are all serious problems for Japan.

Science engaging Society: An Experiment in Co-Production. *Bela Irina Passos Natário Castro, Centre for Social Studies*; *Daniel Neves Costa, Centre for Social Studies*; *Rita Serra, Centre for Social Studies*; *Sandra Silva, Institute for Molecular and Cell Biology*; *José Julio Borlido-Santos, Institute for Molecular and Cell Biology*; *Sónia Martins, Institute for Molecular and Cell Biology*; *Joao Arriscado Nunes, CES University of Coimbra*

The project "Biosense – Science engaging Society: Life Sciences, Social Sciences and Publics", funded by the Portuguese Foundation for Science and Technology, was created to build in Portugal the first Science Shop experience. Biosense has been supporting the development of participatory action-research projects at the intersection of the social sciences, life sciences, health, environment and other domains of knowledge. Biosense seeks to promote and support collaborations between scientific institutions and civil society organizations that promote new and innovative modes of science-society relationships, based on a public engagement with science paradigm. In this paper we discuss the major challenges faced by these projects, as they are engaged by universities, research centres, students, local communities and civil society organizations, working together to identify problems, implement and assess adequate responses to problems of common interest or to the development of innovative projects with social impact. Currently, Biosense is involved in more than ten action research project with organizations liked to the promotion of the rights of persons with different types of disabilities or potentially stigma-generating conditions, immigrant communities and schools, among others, as well as with a vast partnerships network with other research institutions, both in Portugal and abroad, in the fields of the life science and health, and with PhD´s and postdoctoral fellows. These projects are expanding the scope of the voices challenging the usual ways of research and paving the way for new relations with other modes of knowledge and intervening in the world.

298. Spatiotemporalities II: Space and Infrastructures

4:00 to 5:30 pm
Kilen: K146

How we understand, experience, and make use of space — terrestrial, outer, inner, virtual — depends in large part on our tools for mapping it, modeling it, imaging it, and moving within it. Many such tools have the signature characteristics of infrastructure: ubiquitous, robust, widely shared, robust, taken-for-granted, invisible except upon breakdown. This panel considers how space shapes infrastructures, and how infrastructures shape space.

Chair:
Paul N. Edwards, University of Michigan

Participants:

Digital mappings in use: The non-representational use of spatial infrastructure. *Barry Brown, Mobile Life Centre, Stockholm University*

Maps of have had a longstanding role in our movements and actions in space. As the paper map has died, to be replaced by digital maps, so they have multiplied in form, design and use. In this paper I discuss two studies of different forms of digital map to explore their changing role as a essential infrastructure of mobility. The first is an interview study of local review websites use (specifically Yelp and Tripadvisor), uncovering how their use goes beyond simply recommendations to create a limited, yet valuable, local literature about places. In the second study, we look at video of driving using GPS to understand how their instructions are ignored as much as they are followed. I use these studies to remind us of non-representational uses to which maps are put, and the freedom to ignore instructions inherent in the use of infrastructure.

Global Dimensions: Water, Ships, & the Infrastructures of the Panama Canal. *Ashley Carse, Whittier College*

1000 x 110 x 41.2 ft. These seemingly humble dimensions – the length, width, and depth of the Panama Canal's lock chambers that can be utilized by passing ships –format global transportation networks, regional geography, and everyday life in Panama. The locks draw our attention to the capacity of infrastructures to order space by bringing multiple scales (or scale-making projects) into relationship with one another. On the one hand, the dimensions of these massive concrete chambers, which were designed to accommodate the largest ships built a century ago, limit the size of passing vessels and shape networked port facilities worldwide. On the other hand, they use and flush 52 million gallons of fresh water out to sea with each of the canal's 35-45 daily transits. This paper examines how two intersecting infrastructures – that of regional water management and transnational shipping – coproduce space by following the ships and water that circulate together through the Panama Canal. First, I examine the reengineering of the Chagres River in relationship to the Panamax ship, the standard lock-maximizing vessel that has long shaped shipping. Second, I focus on the Panama Canal Expansion project (projected completion 2014) and track the transformative effects that the expanded post-Panamax lock dimensions of the future are already having for global transportation logistics and Panamanian environmental politics.

Producing Space: The infrastructures of planetary exploration. *Janet Vertesi, Princeton University*

Space exploration is an infrastructure-intensive task. Scientists and engineers distributed across the United States and Europe must collaborate using a variety of software, hardware, and communications infrastructures to coordinate their activities, resulting in a list of instructions that will be executed by a robotic vehicle millions of miles away. The robot's actions, the images it takes and instrumental readings it gathers, and thus our very understanding of outer space are all contingent upon this messy assemblage of tools on Earth. But these Earth-bound infrastructures must negotiate many boundaries across a mission's organization as they bridge institutions, disciplines, and national borders. This paper will examine how actors in a multi-national planetary exploration mission, the Cassini mission to Saturn, work with computational, hardware and communications infrastructures to respect, transgress, and ultimately produce mission organizational lines. With particular focus on transnational and inter institutional relationships, I show how work with infrastructure not only produces the organizational spaces of work practice on Earth, but constructs our understanding of outer space as well.

Scaling Disaster: Simulating the Extent of the Deepwater

Horizon and the Fukushima Meltdowns. *Paul N. Edwards, University of Michigan*

After the Deepwater Horizon oil rig explosion, data about the movements of the undersea oil plume were difficult to come by; competing simulations arose which presented very different pictures of accident' extent. Similarly, as the Fukushima nuclear disaster unfolded over a period of many weeks, uncertainty about its scale was a major feature of world reaction. Data on the atmospheric spread of radiation were available, but secret; as a result, computer simulations were used to model it from publicly available data. This paper connects the increasing use of simulation models to analyze disaster with its historical origins, reflecting on modeling infrastructures as a basis of contemporary knowledge.

Discussant:

Francis Harvey, University of Minnesota

299. Contested sovereignties. STS perspectives on the analysis of sovereign political action.

4:00 to 5:30 pm
Kilen: K150

Global technological, environmental and economic issues challenge the practices of national sovereignty and raise questions about the construction of supranational institutions. Scholarly works have displayed the redefinition of the expertise of international organizations facing climate change (Miller, 2001), the production of the legitimacy of original political formations (e.g. the European Union) (Barry, 2001), the difficulties raised by the emergence of new biological entities for the actions of states (Jasanoff, 2005), and the construction of national economies by foreign powers through techno-economic devices (Mitchell, 2002). The session will analyze the constructions of national and international spaces of political action. The objective is to adopt an STS perspective in the study of sovereignty. This articulates two approaches. First, the session considers the public life of technoscientific entities and problems as a locus for the analysis of the exercise of sovereignty. Second, the session will analyze political practices through the study of the instruments and devices that produce and maintain national or supranational sovereignties. Sharing scarce natural resources, dealing with technological uncertainties and managing global issues imply (re)defining the scale and the modalities of authority and government. Such empirical problems thus constitute a window for the analysis of sovereignties. The session will focus on situations where national sovereignty is contested and/or uncertain and/or where emerging forms of sovereign action are constituted. Thereby, it will consider sites where the infrastructures of sovereignties are rendered visible, and interrogate the practices of citizenship, the potential re-compositions of democratic legitimacy and the constitution of the common good.

Chair:

Brice Laurent, CSI - Mines ParisTech

Participants:

Mapping Sovereignty: The Influence of Colonial Materialities on Palestinian State Maps. *Jess Bier, University of Maastricht*

In this paper, I argue that past and present colonial materialities circumscribe contemporary Palestinian mapmaking in the West Bank. Through an analysis of the influence of British, Israeli, and United Nations maps upon computer cartography in the emerging Palestinian state, I investigate the links between digital technology, restrictions on movement, and legacies of imperial control. In particular, I seek to better understand how the division of the West Bank into islands of limited autonomy after the 1994 Oslo Accords has affected Palestinian efforts to map the West Bank as a single sovereign territory. Palestine and Israel have long been the site of intensive mapmaking (Gavish 2005), but Palestinian organizations have only recently begun to produce maps in earnest. Here I analyze how unique forms of local and international mobility—in the context of both the Israeli

occupation and the advent of the internet—encourage Palestinian cartographers to utilize colonial maps as sources for geographic data; using semi-structured interviews and participant-observation at Palestinian Authority ministries and related supra-national organizations, I then trace the resulting influences upon Palestinian cartography for purposes of planning and development. This research extends STS and related work that analyzes cartography's impact on the constitution of sovereignty in Palestine and Israel (Abu El-Haj 2001; Khalidi and Elmusa 1992; Kimmerling 1997; Newman 2001; Weizman 2007). Ultimately, the aim is to demonstrate how the production of empirical knowledge of sovereign territories, in the form of a map, is reconfigured by the ways that colonial material legacies (Edney 1997; Mitchell 2002; Winichakul 1994) are inflected through contexts of ongoing conflict and control (Benvenisti 2002; Falah 1996; Hanafi 2009; Leibler 2006; Zureik 2011).

Honesty as an economic skill The Democratic Republic of Congo, a country preparing itself to monetize the carbon stored in its forests. *Véra Ehrenstein, CSI - Mines ParisTech*

Since 2005, the climate negotiations bring governments together to discuss the construction of an international mechanism that would reward developing countries for their efforts towards decreasing deforestation on their territories. Some countries, like the Democratic Republic of Congo, receive multilateral funding from northern governments, benefit from technical assistance provided by the World Bank, and host privately financed on-the-ground projects to "prepare" themselves to such a future "system of positive incentives". Based on fieldwork conducted in the Democratic Republic of Congo, the paper proposes an empirical exploration of Congo's "readiness process". I follow the making of legal and administrative procedures, through which foreign NGOs and private entrepreneurs acquire the right to implement forestry projects in Congo and generate carbon credits. The paper analyzes how and why the procedure is expected to play such a role, while also helping "fight national corruption". It argues that the instrument enacts a transnational "agencement", by assembling a new set of relations between the Congolese Minister of environment, money laundering procedures, foreign project developers, and World Bank-managed money. The procedure thereby performs a double operation. First, it connects the country with extra-national entities in order to protect it from investments perceived as damaging to the national interest. Second, it re-labels the use of monetary transactions in decision-making processes from "corruption" into something acceptable by Northern governments, international organizations, and foreign investors. The transnational 'agencement' is expected to make the Democratic Republic of Congo, as a Party in the future UN mechanism, properly make good decisions.

On Sovereignty and Scientific Knowledge: The Work of the Law in Brazilian Development Initiatives, 1947-1965. *Allison Powers, Department of History, Columbia University*

What work does the law do the production of development knowledge? In 1947, a U.S. law prohibiting hybrid non-profit-for-profit companies forced a nascent Rockefeller development corporation to diverge into two separate organizations. The American International Association for Economic and Social Development (AIA) functioned as a non-profit designed to create research and educational programs. The International Basic Economy Corporation (IBEC) operated as a for-profit company with the purpose of developing national economies by promoting competition and investment. At the behest of the Brazilian government, both the AIA and the IBEC launched operations in the states of São Paulo and Minas Gerais during the 1950s, creating development models designed to address the problem of "discontinuous space." Brazilian agronomists, politicians calling for national unification through a marcha para o oeste, and teams of U.S. scientists, urban planners, and economists maneuvered national and international legal systems to develop hybrid companies, lending institutions, and research programs that

gained scientific legitimacy through their distinct legal statuses. This paper examines the ways in which scientific forms of knowledge were produced and disseminated through fictional purities within hybrid networks of development in 1950s Brazil. I use the colonization of the campos cerrados, an IBEC-AIA project designed to increase agricultural productivity through migration, education, and research, as a case study through which to examine the functions of evidence within a series of embedded hybrid networks. Focusing on the IBEC Research Institute (IRI), which passed from the IBEC to the AIA to an independent organization within the span of a decade, I interrogate the ways in which organizational hybrids created pristine sites for the scientific production of biological, economic, and social knowledge. Approaching legal systems as technologies that interfaced scientific and juridical knowledge through the materiality of documentary evidence, I examine the ways in which the IRI used distinct modes of proof to configure the social and the economic together as matter of fact.

On natural resources and local sovereignty. Nickel mining in New Caledonia. *Julien Merlin, CSI - Mines ParisTech*

My paper focuses on nickel, studied as a phenomenon that integrates and shapes a complex interplay of actors and stakes in New Caledonia, a French territory in the Pacific with a complex institutional history, and where the local economy is widely based on the exploitation of nickel. Considering nickel as a core element of a network of actors, objects, controversies, concerns and various interests, I analyze the controversies about this mining resource as sites where "good and bad" uses of nature are negotiated, different forms of knowledge are produced, and the political status of New Caledonia is made explicit and contested. This will enable me to study how a mining resource, positioned at the heart of an economic contest, sparks off debates about the circulation, mobilization and legitimization of knowledge, and thereby questions the modalities of the sovereignty of a territory depending (under unstable modalities) on the French Republic. The primary analytic ground for this study is the extraction and processing of Nickel in the south of the country at Grand Terre, in Goro. This industry is run by a Brazilian multinational company, and is regarded as one of the largest Nickel extraction complexes in the world. The industrial process is itself interesting, as it involves a new Nickel refining technical process (Hydrometallurgy – Process PAL4). The experimental nature of this provoked a controversy involving scientists and their institutions, administration, environmentalist and autochthonous associations, experts, elected representatives and local communities.

International State rating and the production of national sovereignties. *Benjamin Noël Lemoine, CSO - Sciences Po*

Financial markets providing resources to National States are organized at an international scale. Consequently, the evaluation devices performed by credit rating agencies appear as interesting analytical and empirical entry points to question the making of different "spaces" of sovereign action, with mixed geographical, economic and political characteristics. Rating agencies enact multiple separations of political spaces, as they map the world of finance in various dimensions, both geographical and economic (such as sub-sovereign, sovereign and "supra-sovereign" issuers). This paper focuses on the differentiation performed by rating agencies among different type of risks – "country risk", "country ceilings", and "sovereign debt ratings". By attributing rates and stabilizing criteria that support them, the agencies face the interpenetration of various aspects they have to examine, such as the nature of financial regulation devices, the game of local politics, the risk of a political crisis and the ability to repay the debt. As agencies calculate and categorize different risks, they undertake a purification work among these intermingled dimensions. The specific conventions on risk evaluation are made explicit by credit rating agencies, as rates circulate in public spaces, through their use by investors, bankers, experts,

political representatives and journalists. This paper analyzes how these criteria and rates, evaluation apparatus and instruments contribute to shape public debate, political agenda, policymaking process in economics and structure the leverages on financial regulation. The making of credit rating thereby appears as a site where the modalities of national sovereignties are made explicit and contested.

Discussant:

Andrew Barry, University of Oxford

300. Social Epistemology review and replies collective panel: conceptualising social design as a collective process

4:00 to 5:30 pm
Kilen: Ks43

The conference theme states that 'one can even think of societies and social arrangements being "designed"'; this panel seeks to determine in what sense one may do so. As the medium through which positive knowledge is utilised for industrial purposes, design may be celebrated as an expression of humanity's promethean genius. However, this positive connotation usually evaporates when we think of designing societies, which to us suggests technocracy, or even the totalitarian imposition of a 'blueprint' on a recalcitrant population. In this panel, we propose to tackle the question of whether it is possible to conceive of collective, collaborative forms of social design to which such critical reaction would not apply. The journal Social Epistemology was founded to address normative questions about knowledge, without giving in to the 'dark age' mentality of traditional epistemology, which conceived knowledge as a regulative but unrealisable idea in a world indifferent to intellectual norms. Against this, a continued commitment to enlightenment would be possible through grappling with the problem of 'bounded rationality' inherent in given social conditions, leading to theoretically informed but ultimately practicable design proposals for the institutionalisation of knowledge. The journal's 'Review and Reply Collective' (SERRC) is intended as a mechanism for the transformation of knowledge, through providing space for early career academics to engage in epistemic collaboration: itself a design in the making. The presenters are members of the Collective, whose sense of the problems of institutional design has, in varying ways, been sharpened by participation in the Collective itself.

Chair:

James Collier, Virginia Tech

Participants:

Philosophy and post-philosophy as methods of collective social design. *Stephen Norrie, Unaffiliated, PhD graduate of Warwick University*

Unlike industrial design, effective social design must depend on the consent of its 'materials' (human beings). Thus the most influential social thinkers are not the authors of 'blueprints' which must be 'imposed' on people, as contemporary anti-utopianism suggests. Rather, they have employed a philosophical method, supposedly able to secure collective assent for social designs, through rational inference from premises naturally shared by any cognitively mature human being ('rationalism'). However, philosophy is only a pseudo-collective method for social design: as the putative validity of its social recommendations derives from cognitions ascribed to the generic subject, its apparent rationality ceases in the relation to particular subjects and the application to concrete circumstances. Its relation to the concrete must then be an irrational one, and this congenital abstraction implies a genuine complicity with state violence. Recognition of this link has generally resulted in philosophy's total or partial delimitation ('scepticism', 'empiricism'), with intellectuals being urged to efface their own knowledge, to become defenders or blank conduits ('facilitators') of the tacit knowledge of non-intellectuals. Social interaction is then determined as a design-free zone. However, this commendation of intellectual non-interference is itself

dogmatically context-independent, ignoring the location of intellectualism within the social world it supposedly 'imposes' on. By contrast, I will argue that Marxist criticisms of philosophy—sharpened by Mannheim and Gouldner's 'Marxist critique of Marxism'—provide the basis for a new methodology of intellectualist social interaction, containing a moment of 'design' modelled on a localised appropriation of the idea of a 'social contract'.

Reconsidering roles: design by community in online education. *William Davis, Virginia Tech*

Online education courses seem poised to alter how we acquire and negotiate knowledge. MITx and the Kahn Academy, two providers of online education, appear distinct in their methods, but they both rely on a traditional understanding of knowledge transmission and acquisition: a top-down model where an authority/expert provides information that the student will absorb and restate. MITx offers syllabi, lectures, assignments and quizzes to educate a population without access to these in-person courses. The Kahn Academy relies on a similar claim: here is the content; if you watch/listen to the instructor's examples and explication enough, you will master the content through replication. Education demands more than access to information, and removing the in-person element from classes alters the information itself. Thus, we need new theories of learning that re-envision the teacher-student-information relationship to aid in the development of these emerging technologies. Should online education augment traditional in-person courses, pace the Kahn Academy; replace in-person classes, like MITx; or, embrace the opportunity to make educators and students both designers of content and evaluation? Through an analysis of the two forms of online learning mentioned above, I will propose a theory of knowledge acquisition and conveyance that promotes online education as a communal activity, encouraging students/users to become designers. Individuals and communities utilizing technologies often interpret and employ them in ways the designers could not have conceived, and taking advantage of this collective insight could prove fruitful in designing the next phases of online learning.

Design pitfalls in scientific and technological policies in Mexico. *Melissa Orozco, Universidad Autonoma de Queretaro; Ivan Eliab Gómez Aguilar, National Autonomous University of México*

In a country where science and technology policies and the institutionalization of science itself began during the economic crisis of 1982, design of policies that consolidate a national system for the production and dissemination of knowledge has been a constant struggle. In this paper, we would like to discuss some problems regarding the design of scientific and technological policies by analyzing a 25 year period. To this end, we will discuss a recent study that analyses the contingencies of this period in scientific and technological policies (Canales 2011). This period also shows that the consolidation of a scientific and technological system has failed for reasons other than the lack of a 'good design' of such policies. One interesting question in this is whether scientists should be more involved in the design of scientific and technological policies, and to what extend? Responding to this question implies addressing a set of more specific problems that, in the last years, have been more pressing for policy-makers: how should new policies be designed so as to include the view of scientists and non-scientists and, at the same time, decentralize the academic science that over the last 50 years has been confined to two institutions? Reference to: Canales, A. 2011. La política científica y tecnológica en México 1982-2006. Mexico: Porrua-UNAM

301. (71) The impact of 'impact': public-making and pseudo science-engagement - II

4:00 to 5:30 pm

Kilen: Ks48
Chair:
Richard Watermeyer, Cardiff University
Participants:

Can non-policy related public engagement be of value? The challenge of symmetry of learning for scientists. *Melanie Smallman, University College London; Kajsa-Stina Magnusson, University College London*

This study is concerned with the current debates in STS looking at the potential value of non-policy related engagement events and the impact of attitudes and behavior of participating scientists. Building on current literature, practice and a series of semi-structured interviews held with UK scientists working on nanotechnologies, we look at a live public event hosted by the Guardian newspaper on nanotechnologies and aging as a detailed case study. The paper argues that there is often a lack of symmetry in learning and a tendency to focus on the technical details of the issue on the part of scientists in such events, stopping such engagement exercises being true dialogues. We discuss the possible causes of this lack of two-way communication and what that it might mean for science and public engagement practitioners.

The false dawn of dialogue: Impediments to publics' decision-making and the management of choice in techno-science. *Richard Watermeyer, Cardiff University*

This paper reports on inconsistencies in the use of dialogue as the preeminent means of upstream engagement with science and technology (PEST), and concurrently dialogue as evidence of the democratization of knowledge processes and mobilization of public groups as licensed decision-makers in matters of science and technology governance and policy. In reassessing the efficacy of dialogue as a choice-mechanism, discussion focuses on both formal and informal iterations of dialogue as conduits and catalysts of publics' participation and choice-making in science debate and by way contributes to an emergent discourse of critical public engagement in STS. Normative characterizations of dialogue in PEST as effortlessly invoking an interface of scientific citizens and publicly engaged scientists harmoniously involved are herein revisited and contrasted with a notion of dialogue as an exercise in public-making, consensus building and pseudo-science engagement, which inadvertently or deliberately insulates scientific elites whilst enervating publics' critical agency and 'dialogic capital'. Discussion concludes on the potential of digital 2.0 platforms as alternatives in the production of equitable dialogue and choice making in science and as sites of 'uninvited' dialogue.

Constructing the meaning of public communication of science: expert discourse analysis. *Anda Adamsone-Fiskovica, Centre for Science and Technology Studies, Latvian Academy of Sciences*

The paper is based on the analysis of the expert discourse of public communication of science in Latvia with regard to the goals of this communication and the involved aspects of science–society relations. Data analysis of in-depth expert interviews is based on the principles of discourse analysis, with the main emphasis laid on informal discursive strategies employed by experts, and discursive argumentations related to these strategies, which reveal the views of these agents regarding public communication of science – its goals, tasks, audience, implementers, and institutionalised practices. These discursive strategies and argumentations have been used to identify the perception of science–society relations encompassed in expert discourse, by analysing the underlying elements of segregation and integration. The analysis has been based on three central discursive strategies conceptualised by the author, which are denoted as the discursive strategies of (1) substantiation of activity, (2) justification of passivity, and (3) delegation of

functions. Each of them comprises a number of subordinated discursive argumentations, which reveal more detailed micro-structures of the discourse characterising the model of science–society relations. An additional strategy – (4) the discursive strategy of civic engagement and the underlying discursive argumentations – has also been conceptualised to embrace the diverse expert views concerning civic engagement in setting the science agenda and exerting an influence on S&T-related decision-making.

302. (100) Displacing the laboratory and STS with it: new modes of engagement - Natural scientists and the lab - III
4:00 to 5:30 pm
Kilen: Ks54
Participants:

Different labs different dangers: How scientists working with nanomaterials perceive risk. *Mikael Johansson, Center for Nanotechnology in Society - UCSB*

Based on ethnographic fieldwork among scientists working with nanomaterials this paper explores how researchers in different laboratories perceive risk. It is well-known that different landscapes produce different risk behavior, and it applies to high tech landscapes such as laboratories. The scientists working in labs need to orient themselves not only around dangerous materials but also around dangerous behavior produced by colleagues. For example, scientists in larger labs are more rigorous following regulations than are researchers in smaller labs. They seem to trust their own judgment to deal with dangerous materials but are less sure of the judgment of others. Strict protocols become a way to control unsafe behavior of others. Different types of researchers also perceive different types of risk based on their scientific outlook. For example, engineers do not perceive potential risks with nanomaterials while biologists who engage in toxicology work with the same compounds perceive the materials as hazardous. Factors such as scientific discipline, the size of the lab, the purpose of the research, etc. influence how laboratory scientists perceive risk, even while working on the same compounds. As different laboratories generate different perceptions of risk, it is difficult to generalize risk behavior among scientists without being aware of the physical and social surroundings that induce risk.

Skipping through Research Fields: the Trajectory of a Bioenergy Lab. *Thomas Tari, Université Paris-Est, LATTS & IFRIS*

How does a lab move across research fields while reshaping its design? This is the theoretical question we tackle through an ethnographic study – including shop talk analysis – of a specific workplace. The Laboratory of Environmental Biotechnology in Narbonne (France), initially devoted to winemaking process, successively dedicated its activities to by-products valorization, water decontamination, waste treatment, bioenergy and microalgal biofuel production. To understand those turns, we consider various sets of knowledge (disciplines, sciences, epistemic cultures, research objects [Miettinen, 1998]) and use a distinction between the concepts of lab specialty and laboratory research field. The former, in this case anaerobic digestion, makes sense for the actors who imagine, publish and discuss works labeled this way; the latter constitutes a transitional, object-oriented inscription within social stakes. Engaging into an emergent field is a means to revalorize a form of scientific knowledge previously considered impure [Lenoir, 1997]. This approach implies a dynamic conception of the laboratory as a set of processes [Knorr-Cetina, 1999; Doing, 2009]. We intend to describe those displacements from one field to another, not as externally driven, but within the mangle of scientific practice [Pickering, 1993]. We therefore depict how, starting from a

graduate student's experiments, a research group defined a set of doable problems [Fujimura, 1987] inside their lab. We finally analyze the articulation tasks this group performs, to conciliate their internal subcultures [Galison, 1997] and construct new affiliative objects [Suchman, 2005]. Seeing these tasks through leads to the constitution of a strong research collective, involved into a research field.

Developing scientific instruments, shaping new laboratories.
Federico Neresini, University of Padua

Based on a research realized in three Italian laboratories (two in the field of molecular biology and one in that of organic chemistry) the presentation aims to discuss how new scientific tools – like, for example, NGS (New Genomic Sequencing) or XRS (X-Ray Diffractometry) - goes together with other relevant transformations in the research process and in the organization of the laboratories. In particular, it will be analyzed the growing importance of technicians, mainly those who work at enterprises which have constructed and sold these scientific instruments, and the role of data-bases, mostly displaced outside the laboratories and structured as a functional service for many different research groups, in shaping the networks of heterogeneous actors in which the laboratories are embedded.

Managing Demands for Social Engagement. *Cecilie Glerup, Copenhagen Business School*

In recent years numerous calls have been made to enhance the social responsibility of biotechnology from both social scientists (e.g. Nowotny et. al. 2001) and political institutions (e.g. Royal Society 2004; U.S. Congress 2003; EEA 2002). The demands vary in form and content: From state incentives to make biotechnology the driver of the knowledge economy thus creating jobs and growth, to pleas for more public influence on the development science and grassroots movements' attempts to prevent future environmental and social harm caused by technologies. The various – and contradictory – calls put pressure on the biotech research organizations that find themselves in a jumble of demands to engage themselves with society. Mccarthy and Kelty, for instance, quote a nano-technologist for saying that he is afraid of "too much responsibility" (2010: 407). Based on a laboratory ethnography, this paper explores how two research organizations in the field of synthetic biology strategically manoeuvre among the many discourses on scientific responsibility. One of the labs defines itself through user-inspired science and focuses on the development of 'products' that benefit abstract stakeholders such as 'the general public' or 'the troops'. The other lab has many diffuse 'side-activities' with bio-hackers, government and policy groups, but partly seems to engage in order to stay ahead of policy-makers and protect their core activity, which they find to be 'basic research'. The paper finally argues that the way society's expectations are managed have severe implications on how research projects are organized and prioritized among the organizations' employees.

303. (88) The design and displacement of social knowledge practices - II
4:00 to 5:30 pm
Kilen: Floor Ground floor - Ks71
Chairs:
Kristoffer Kropp, University of Copenhagen
Per Wisselgren, Umea University, Sweden
Participants:

The Role of Statistics, and Statisticians, in Producing 'Race-ethnic' Data. *Dvora Yanow, Wageningen University*

"Statistics are neutral." That is the notion held by many statistical scientists working, for instance, in national Bureaus of Statistics, as stated in interviews. But the categories created to enumerate "minority" populations – typically, the children (and now, grandchildren) of migrant laborers who either consider themselves not to be integrated into the dominant population or who are considered by "natives" not to be (sufficiently) integrated, or both – are far from neutral. In the primary case examined here, The Netherlands, those categories – non-Western allochthon, in particular – are experienced as punishing and discriminatory, much as the US American hyphenated categories (e.g., African-American) were until about two decades ago. This paper will explore the state creation of categories to enumerate such populations and their implementation at the hands of statisticians, comparing the US, France, and The Netherlands, with the latter as the central case. The method is interpretive policy analysis; data are drawn from census and statistics bureau reports and interviews, participant and non-participant observation, legislative documents, and media coverage. The paper addresses the question of how this form of social science is used to produce knowledge that then shapes not only public discourse, but public policy. This is part of a larger project looking at the contemporary and historical creation of such categories, building on earlier work on the US case. The paper contributes to that segment of STS looking at the relationship between science and public policy, as well as the literature that focuses on scientific practices.

Visualizing Sociological Imagination. *Gerald Beck, University of Munich*

The role of visualizations in the making of scientific knowledge has been a classic topic of STS. Most of the literature deals with visualizations that are produced and used to show evidence in the production of knowledge in natural sciences. As we learned from science studies, the design of visual representations has far reaching consequences on the process of knowledge production and thus on the object of research itself. For social sciences this also means that to design visual representations always means to design social knowledge. In the proposed paper I will present results of a study on the roles of visualizations in making social knowledge. The study collected and analyzed visualizations that are designed to make proof, inform, persuade, engage or open debates in various cases of knowledge production in the social sciences. Special interest is drawn on visualizations that are designed to represent the contested knowledge produced in controversies. Their purpose is not to close controversies but to enable debates and help, in the words of Bruno Latour and Peter Weibel „Making Things Public". To design such visual representations requires cooperations between social science, arts and design. The underlying question is, what roles visualizations of social knowledge play in knowledge production and at the fuzzy interface between social science and its publics.

Using a multi-sited approach for studying social scientific knowledge and "fact" making. *Andreas Schadauer, Institute for Advanced Studies*

Turning STS towards Social Science will shed light on topics not commonly discussed and recognised within the own disciplinary debates, reflections and methodological discussions. For my paper I would like to address one of these topics: the multi-sited character of making social scientific knowledge or "facts". Discussed within STS from different angles and authors, e.g. Latour's "circulatory system of scientific facts" or Jasanoff's "co-production idiom", scientific knowledge making is seen as continuous practices involving and interweaving temporally and spatially dispersed actors and actants, including, but not exclusively, researchers, their colleagues, the (technical) devices, the different organizations involved and the actors who take part in media and policy making. Based on material generated within a case study on two connected quantitative surveys in Austria and utilizing Clarke's "Situational Analysis", I will elaborate on this approach to scientific knowledge and "fact" making for studies on social science. How numbers and statistics on society and human beings commonly gain their "fact" like status, become "knowledge" about society and resources for policy making and beyond, is grasped as a complicated and, in my case

also contested endeavor of various actors and actants. Moreover, not just the produced numbers and statistics, but also social science and society itself is co-enacted within these practices. Developed for and usually applied on natural science and technology, I will also reflect upon the problems and merits of transferring this approach to studies on social science: are there differences in the emphases, forms or even blind spots?

Practices of Foresight: How Cold War Scientists Developed Social Research Methods. *Christian Daye, Univ of Graz, Austria, Dep of Sociology*

The assessment, most recently by Camic, Gross and Lamont (Social Knowledge in the Making, 2011), that research on the practices by which social knowledge is produced, distributed and assessed is generally lacking from the STS field has a parallel in the field of the history of social science. In the latter field, the missing focus on practices contributes to an ongoing neglect of the history of social science methods and empirical research in favor of a dominance of the history of theory. However, changes are underway in both fields. Based on a comparative study on the development of two social research methods, the proposed paper aims to contribute to these changes by showing how both fields can profit from getting involved with each other. The two methods under scrutiny, political gaming and the Delphi method, have both been developed in the early 1950s at the RAND Corporation, a prominent U.S. think tank whose employees contributed in manifold ways to the shaping of U.S. Cold War strategy. Both methods rely on expert knowledge and essentially structure interaction process between selected experts. This process is expected to result in an estimation of a problem or research question that cannot be fully answered by other research means, for instance a future situation or development. The paper explores how the proponents of these methods struggled with combining the practice of integrating experts into a methodical structure with methodological standards and epistemological considerations they understood as being required for perceiving of their doing as "scientific research".

Research synthesis: Negotiating and adapting methods for social science knowledge integration. *Laura Sheble, University of North Carolina, Chapel Hill*

Research synthesis, also called systematic review or meta-analysis, is a family of document-based research methods in which primary research studies are analyzed in a transparent, systematic manner with the goal of generating new knowledge or interpretations. Proponents argue that research synthesis provides more objective interpretations of what is and is not known about a given research problem due to use of systematic methods to select, evaluate, and integrate study findings. Skeptics counter that research synthesis excludes not only experiential knowledge, but also research-based knowledge since the design of primary research studies often is used to select what is – and is not – reviewed. In contexts in which research synthesis is the preferred method of review, it is argued that knowledge, evidence, and understandings gained through methods or processes other than those congruent with standard research synthesis methods are at best, ignored; at worst, delegitimized. The politics of knowledge notwithstanding, research synthesis has changed approaches to research integration within and at the boundaries of science following its emergence in psychology and education in the 1970s. My research focuses on the technical, cultural, and political factors associated with the heuristic process of negotiating and distributing change, as research synthesis methods have been adapted in the context of one research field. Findings are derived from a longitudinal content analysis of published discourse about research synthesis and implementations of the method. This study contributes to research on negotiations of and debate about scientific methods and epistemologies within social science disciplines.

304. Civic logon: Exploring technologies for civic

engagement
4:00 to 5:30 pm
Radisson Hotel: Radisson A

Hand in hand with the increase in networked technologies over the last two decades has come the assertion that networked, technical infrastructures and applications will play an increasingly vital, and even constituting, role in the civic aspects of society. Indeed, Benkler and others suggest that the Internet is a medium of democracy by design, and use of popular social media in recent social movements such as the Arab Spring and the Occupy movement has only reified the apparent necessity of networked tools for contemporary social action and civic engagement. This panel seeks to separate the rhetoric from the practice to better understand the contours of the increasingly interwoven relationship of technology and civic action, a growing issue within the STS community. Building on empirical cases, we will attempt to elucidate not only the agentic role technology plays, but equally importantly how and why technological interventions are legitimated and celebrated, and what tradeoffs arise when mediated strategies for civic engagement are adopted by communities and societies.

Chair:

Ingrid Erickson, Rutgers University

Participants:

Civic Engagement and Collaborative Media: The Case of Bambuser. *Bo Reimer, MEDEA Collaborative Media Initiative, Malmö University*

Media infrastructures and the media texts (viewed very broadly) that are produced on the basis of these infrastructures are becoming increasingly interlinked. Within these processes of infrastructuring, we see designers, media professionals and citizens collaboratively re-working the technological and media materials at hand in creative ways not initially foreseen. A case example of this type of creative redesign is the live video streaming service Bambuser (http://bambuser.com/), a service that allows users to broadcast live on the Internet with the use of smartphones. Initially created for social uses, Bambuser was reframed by activists during the Arab spring into a key tool for citizens in the Arab countries to showcase live, local happenings to fellow citizens and people around the world. Bambuser was perceived as so important that it was closed down by the Egyptian government before nearly all other networked service in use by protesters. Notably, during the current conflicts in Syria, almost everything broadcast on BBC, CNN and Al-Jazeera has come from citizens using Bambuser as practically no journalists are allowed into the country. In my presentation, I will show how Bambuser was transformed by users into the service that is currently is, and discuss the implications of that transformation for how we may look upon the relationship between technology, collaborative media and civic engagement.

Hacking Digital Universalism in the Andes. *Anita Chan, University of Illinois*

Channeling the promise global interconnection, and framed as the mark of contemporary optimization, "the digital" has come to represent the path towards the future for diverse nations, economies, and populations alike. In the midst of its accelerating pursuits across distinct global spaces, however, little has been made of the "universalist" underpinnings that mobilize digitality's global spread, or of the distinct imaginaries around digital culture and global connection that emerge outside the given centers of techno-culture. This paper will attend to experiments in innovation spaces from the periphery, including the development of rural hack lab spaces in Peru, that distinctly engage materialities of nature, technology, and information to disrupt the dominant logics of innovation. By fostering collaborations between Latin American free software activists across a range of rural and urban site, and between transnational media producers and indigenous communities, such networks press a cosmopolitcal urging to "think with the unknown," and open up possibilities for uncovering distinct collective futures

through an interfacing with multiple local pasts.

Evolving p2p economies: towards a practice perspective of designing online platforms for local economic activity. *Gabriel Mugar, School of Information Studies, Syracuse University*

The concept of a peer-to-peer economy posits social arrangements whereby, in working around traditional organizations that provide services or goods, latent resources in a neighborhood are not only made visible in some way, but the transaction of such resources are mediated by relevant institutional form. Internet based neighborhood information systems (IBNIS) like neighborhood listservs and social networking sites have long played a role in both facilitating the visibility and transaction of local resources. By providing a virtual public space, IBNIS have allowed neighbors in disparate physical locations and conflicting time schedules an opportunity to support each other. In the past few years, niche sharing sites like neighborgoods or taskrabbit have emerged as a new brand of IBNIS. While they also bring visibility to and facilitate transactions of local resources, niche sharing sites are unlike traditional IBNIS in that they focus on the sharing of specific resources and employ mechanisms to cultivate trust between users. Using Bourdieu's theory of practice, this paper explores the relationship between trust and context of activity and what this relationship means to social arrangements that facilitate visibility and transaction of local resources. This exploration is then used to compare niche sharing platforms along side traditional IBNIS to consider what their respective design approaches offer to facilitating local peer-to-peer economic activity.

Beyond Access and Expression: A New Mandate for Design. *Nassim JafariNaimi, Georgia Institute of Technology*; *Ingrid Erickson, Rutgers University*

A key element of the discourse surrounding digital media today is the ability for social and mobile media to enable new modes of distributed collective action. Looking closely at a few recent exemplars such as Occupy Wall Street and the Arab Spring, it is clear that shared concern (as opposed to any one key technology) is the locus that brings people together across varied socio-economic, ethnic, and religious backgrounds. The move toward social movements such as these that spill beyond the traditional bounds of time and space demand a new mandate for design--one that leverages a more nuanced understanding of the origins of grassroots collective action and the constituents of democratic forms of relationship. This presentation will problematize the oft cherished foci of access (i.e., digital divide, citizen journalism, crowdsourced reportage) and identity & expression (i.e., enabling stories to be told and heard, e.g., vozMob) to identify the assumptions regarding what it means to be civically engaged in the context of this discourse. We conclude with speculations on how designers might orient their future work in ways that support new forms of mediated collective action and civic participation.

Researchers' blogging practices in two epistemic cultures: the scholarly blog as a situated genre. *Sara Kjellberg, Lund University*

This article presents a study of scholarly blogs. The aim is to gain an in-depth understanding of what characterizes blogging as part of the scholarly communication within epistemic cultures. A study was conducted of 16 scholarly blogs, from two different scientific areas. Eight blogs from high energy physics (HEP) and eight from digital history were closely followed. The analysis was made by employing an analytical framework based on genre theory. The results reveal common communicative purposes in the scholarly blogs; there are many similarities in form features and content, which also relate to the purposes of the blogs. In addition, the context in which the blogs are situated is based both in the blogging researchers' epistemic cultures and in their knowledge about blogging practices. A conclusion is that the scholarly blog is an addition to the landscape of scholarly

communication, including communication with the public, and that the scholarly blogs contribute to our understanding of how research is done.

Discussant:

Tad Hirsch, Intel Labs

305. Cybernetic technologies of the self

4:00 to 5:30 pm
Solbjerg Plads: SP112

Recent scholarship on the history of cybernetics by Andrew Pickering and Mara Mills has emphasized the embodiment of cybernetics in material technologies as well as the central role of mind and self in the field. In this session, we will explore cybernetic understandings of techniques and technologies with origins outside the cybernetic discourse—thermometers, video recorders, and the practices of of ethnography, therapy, and fertility tracking. These material and social technologies share Foucault's category of technologies of the self, "which permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state." Through interacting with these devices and discourses in specific ways—particularly through practices which they characterize as feedback—the actors we study have conceived of the self as an entity defined by its interactions with machines and other people. Our research contributes to scholarship on the construction of the self through the enrollment of technologies and systems of expertise, and proposes that cybernetics had a central role in the development of twentieth century technologies of the self.

Chair:

Geoffrey Bowker, University of California - Irvine

Participants:

Infolding the Self: Video Feedback in Cybernetic Art and Psychiatry. *Peter Sachs Collopy, University of Pennsylvania*

In the years around 1970, the portable video recorder became a boundary object which facilitated interaction between artists and human scientists, particularly psychiatrists. Both communities of users interpreted were interested in the psychological experience of watching recordings of oneself. Enrolling the discourse of cybernetics—and influenced particularly by anthropologist, cybernetician, and family therapist Gregory Bateson—they termed this phenomenon feedback. Video feedback was often regarded as therapeutic. Artist Frank Gillette's first video experiments were "with the effects of videotape on kids with bad trips—burnt-out acid cases," leading to a friendship with philosopher and therapist Victor Gioscia, who installed a video recorder "in a family therapy agency so families and therapists could play back their sessions during their sessions." Psychiatrist Milton Berger described feedback as "a new opportunity to experience and become aware of oneself," and compiled therapists' writings on the technique in his 1970 book Videotape Techniques in Psychiatric Training and Treatment. Drawing on published and archival texts and videos, this paper demonstrates how both artists and scientists used cybernetics to understand video, the human mind, and the interaction between them. It also explores the intersection of Foucault's concept of a technology of the self and Bateson's cybernetics of self, suggesting that video provided artists, audiences, therapists, and patients with a new way of establishing and understanding the self.

From Ovulindex to Lady-Comp: Natural Family Planning and Cybernetic Subjectivity. *Deanna Day, University of Pennsylvania*

Personal medical care in the twenty-first century is increasingly organized around quantified self-surveillance; in the standard biomedicalization narrative, a technologically-implicated tracking impulse moves from the domain of professionals into that of lay users as tools become cheaper, smaller, and more accessible. This paper historicizes this trend by examining the practice and implications of natural family planning, a method of

determining fertility that has been practiced since the early twentieth century. Building on this historical narrative and the material experiences of my actors, I propose a new model for understanding the effects of our current biomedical paradigm. Despite its name, natural family planning requires an intellectual, social, and material technological infrastructure to implement; practitioners quantify, chart, and statistically interpret their temperature on a daily basis in order to pinpoint the moment of their ovulation. Although they understand temperature charting as a holistic and natural approach to health care, at the same time they describe their bodies as "walking biological computers." I argue that this dissonance can be reconciled by understanding this view as a cybernetic subjectivity, a sense of self that is developed and embodied in the monitoring and manipulation of the data that their bodies both emit and record. This paper draws on multiple STS literatures, including those on biomedicalization, gendered embodiment, and cyborg studies, to contextualize the intimate practices of temperature trackers over the course of the twentieth and twenty-first century and illustrate how ritualized technological medical care has created a new cybernetic subjectivity.

The Difficulties of Gift-Giving: Lévi-Strauss and the Technologies of Man. *Bernard Dionysius Geoghegan, Humboldt University of Berlin*

In his celebrated Introduction to the Work of Marcel Mauss (1950), French anthropologist Claude Lévi-Strauss suggested that famed French ethnographer Marcel Mauss's studies of primitive gift-giving practices were proto-cybernetic inquiries waiting only for the proper mathematical procedures to extend and confirm their findings. Although mainstream French scientists rejected Lévi-Strauss's attempt to re-interpret ethnography according to recent technological research from the United States, in time his claims curried favor with eminent and diverse scholars. Psychoanalyst Jacques Lacan, linguist Roman Jakobson, and literary critic Roland Barthes were among those who adapted aspects of Lévi-Strauss's analysis. In this talk I consider how postwar scientific policies for modernizing French universities shaped the interest (and disdain) Francophone scholars expressed for cybernetics. Adapting Michel Foucault's concept of a "technology of the self," I argue that cybernetics and information theory suggested a novel construction of the human person and the human sciences: in contrast to the egocentricism of existentialism, these methods defined "man" and "the sciences of man" in transversal relationship to the environment, technology, social practice, and material inscriptions. Drawing on archival research and textual analysis, this paper will offer new insights into the relations between American and French science after World War II, as well as insight into the scientific ambitions associated with the early days of "French theory."

E-waste: cartography for a techno-environmental controversy. *Blanca Callén, Centre for Science Studies. Lancaster University*

Access to electronic communications and the availability of perennial updated information has transformed our lives and social habits in a positive way. However, there also exists a controversial reverse of the Information's Society. We are referring to electronic waste. It is an environmental problem that requires the implication of every social agents and responds to the promotion of unsustainable patrons of technological consumption. Only Europe produces 10.3 million tons per year of electronic waste, about a quarter of the world's total amount and it is expected this number to rise up to 12.3 million tons a year by 2020. Despite of the striking data and the alarm raised from international forums and ecological organizations, we are facing an environmental (ecological and socio-tecnical) controversy which we don't know many of its components: the current institutional responses are very limited (practically, they come down to apply the Extended Producer Responsibility (EPR)) and the possible daily and innovative responses emerging from

citizenship remain invisible. As the previous step towards an ethnographic fieldwork, and through content analysis methodology, we will present the state of the art, fruit of the news, documents and social science and STS' literature that deal with this increasing problem. This will allow us to draw a cartography of involved agents, their positions, practices and arguments, and also their different relationships around e-waste. Who and how is defining what an electronic device is or stops being? How the limits and possibilities of electronics' lifespan are being controversially defined?

306. (12) Redesigning age and ageing: anti-ageing science and medicine in the 21st century - II
4:00 to 5:30 pm
Solbjerg Plads: SP113
Chair:
Joanna Elizabeth Latimer, Cardiff University/ESRC Centre for the Social & Economic Aspects of Genomics
Participants:

DHEA and the fountains of youth: sociology of a medical promise. *Boris Hauray, National Institute for Health and Medical Research/IRIS; Sébastien Dalgalarrondo, CNRS/EHESS*

Hormone replacement therapies (that aim to compensate the natural decline in hormones secretion during the ageing process) stand as one of the major medical strategies developed to address biological ageing. From the mid-1980's on, some scientific claims have raised hope about a sex steroid – the DHEA – which came to be presented as a "fountain-of-youth" molecule. In spite of the doubts expressed by public authorities and other scientists, DHEA consumption rose all around the world and bolstered the very idea that biomedicine could "cure ageing". In France, media coverage of this hormone was particularly important - a famous French scientist being one of the "scientific pioneers" in this field. After a period of intense controversy about the status of this new therapy, its risk/benefit profile and its implications for the future (involving even the French health minister) and disappointing clinical results, DHEA returned to relative anonymity, even if DHEA is still a component of anti-aging medical practice. This paper, relying on an analysis of DHEA trajectory in France (1980-2010), will show that understanding the institutionalization of anti-ageing promises – and the challenging of these promises – requires exploring the interactions between different social spaces: media, market, scientific and political spaces. In doing so, it will contribute not only to the debates surrounding the impact of biomedicine on the conception of old age, but also to the study of the complex articulation between borderline science/practices and mainstream medicine as concerns ageing.

"Stopping the Clock": Anti-Ageing as a Technology of Hope. *Mike Laufenberg, Center for Interdisciplinary Women's and Gender Studies, Technical University Berlin*

Regarding the long history of dubious attempts to control the process of human biological ageing, one wonders how manipulating the molecular mechanisms of ageing can today be declared a legitimate goal for publicly funded science and medicine. My presentation addresses this question by developing a concept of anti-ageing as a technology of hope. In doing so I suggest to make use of a broader concept of technology as we can find it in the work of Foucault, Deleuze & Guattari. Here, technology is not reduced to mere equipments or tools but is determined as a discursive-material assemblage of tools, expert knowledge, capabilities, bodies, subjectivities, desires, rationalities of productivity, and practices of governing and control. In this sense a technology can be used and shaped by single actors (states, companies, patient groups, individuals) while none of them can control it entirely. The anti-ageing

technology arises decentrally as such a cluster of relations between different elements, actors, and interests. These relations only become possible through practices of communication and recursion and I will argue on the basis of chosen examples that "hope" becomes one of the key symbolic currencies here. Governments hope to find solutions for demographic developments, scientists hope to solve the puzzle, companies hope to make a lot of money and individuals hope to live longer and happier. As a technology of hope, anti-ageing "exploits" the subject's desire to live – a desire we need to address more explicitly as STS scholars to understand the bonds between humans and anti-ageing technosciences.

Longing for Longevity: Anti-Ageing Science, Longevity and Immortality in Genre Fiction. *Joan Haran, Cardiff University*

This paper presents the results of a preliminary mapping of contemporary genre fiction, including science fiction, horror and romance, on the topics of Anti-Ageing Science, Longevity and Immortality. Imagined interventions to enhance health and longevity, or to eliminate mortality entirely have been represented realistically as the telos of contemporary biogerontology, or as the unintended consequence of other – beneficently or malevolently motivated – biotechnological experiments. They have also been represented in more fantastic modes, drawing on cultural myths about immortal beings. Recipients of these interventions are portrayed variously as scarce individuals who must hide their difference, lone pioneers of experimental technology, abused experimental subjects or the entire adult population of advanced countries. I discuss how hopes and fears attached to health and ageing are mobilised in these genre texts. How are anti-ageing interventions imagined? What are the imagined consequences of their application, for both individual recipients and the societies they inhabit? To what extent do these texts work through pressing social and ethical challenges presented by ageing populations and biogerontological solutions and to what extent do they tackle existential concerns about what constitutes the good life? I also discuss how the distinctive address to the reader of specific genres enables different thought experiments or particular emotional investments in the technoscientific scenarios portrayed and the subjectivity of the fictional protagonists. I explore the extent to which a comparative analysis of these texts can provide a comprehensive mapping of contemporary longings and anxieties in relation to ageing and potential biogerontological responses.

Re-Imagining Ageing. *Sophie Elizabeth Davies, Cardiff University*

This paper, complementary to the paper presented by Joanna Latimer, also presents findings from an ethnography of ageing and biology, funded by the ESRC as part of a project that aims to explore different ways that people understand and negotiate their own mortality. The project included data yielded from secondary analysis of interviews conducted with leading biogerontologists alongside a number of informal interviews conducted during fieldwork undertaken at relevant conferences. In this paper, I explore the way that discourse circulated within biogerontology by biogerontologists pertains to a re-imagination of ageing. Instead of being seen as something to be stoically accepted, ageing is being re-positioned as a disease and thus I will be exploring the impact that this has upon common cultural understandings of ageing. The paper looks at the reciprocal relationship that was found to exist between culture and biogerontology as well as considering some of the legitimation practices employed by scientists in order to validate the political dominance that biogerontology claims for itself in within the context of this imagination.

Regulating aging: the emergence of biomarkers of aging. *Tiago Moreira, Durham University*

This paper is integrated in an on-going project concerned with the epistemic cultures of aging research, and reports on an historical analysis of the emergence of biomarkers of aging since the 1970s. Drawing on published papers, archival data and interviews, the paper documents the controversies and uncertainties deployed in the shift from a focus in measures of physiological or biological age to a concerted interest in establishing 'biological parameter(s)… that either alone or in some multivariate composite will, in the absence of disease, better predict functional capability at some late age than chronological age' (Baker and Sprott, 1988).The paper argues that this transition is indicative of the establishment of forms of regulatory objectivity (Cambrosio et al, 2006) in aging research, and explores the proliferation of explanations that have been put forward by aging researchers themselves to explain why, despite consistent public and private funding and policy interest, no biomarkers of aging have yet been validated. Because those explanations focus mainly on the epistemic architecture of aging research, it is possible to suggest that they constitute a form of 'practical STS'. The paper reflects on the methodological issues related to integrating these accounts into the social study of ageing research.

307. (101) Situational analysis at work - researching work practices in science and engineering - II

4:00 to 5:30 pm
Solbjerg Plads: SP114

Participants:

Transport Hubs as STS Laboratories: A multi-sited ethnography of surveillance, deletion and the account-able. *Inga Kroener, Lancaster University and University College London*; *Daniel Neyland, Lancaster University*

This paper reports on two STS researchers' involvement in an international project focused on the design of a new ethical surveillance technology. In particular, this new technology is predicated upon an ethics of deleting; shifting the focus of video surveillance from storage and (at least in principle) endless analysis, to data expunging and organised forgetting. Underpinning the STS researchers' engagement with the project designers, engineers and consultants is an ethnomethodological focus on who and what is rendered account-able. Hence questions arise of how deletion ought to operate in practice and what are the consequences of deleting surveillance footage, but also of who and what is rendered account-able. Multiple account-able entities are brought to the fore in the ethnographic study including designers, engineers, consultants, fragments of digital code, computer servers and of course STS researchers and their peculiar sensibilities. Based on a multi-sited ethnography involving the development and testing of the new technology in transport hubs (the end user environment), this paper asks: what should the role of STS be in the design, development and deployment of new technologies? What are the consequences of STS being made account-able? Is STS research compromised by practical engagements?

Data Meets Design. *Yanni Alexander Loukissas, MIT*

In social studies of science and engineering, qualitative researchers are facing new challenges from 'big data.' Grand projects from genome sequencing to cyber security are built by quantitative practitioners on vast, digital data sets, collected, structured and interpreted in ways that are not fully understood from a social perspective. Many practitioners are embracing visual design as means of managing data at an unprecedented scale, displacing the cognitive and cultural work of information processing in unexamined ways. This paper expands on existing software and visualization studies to account for recent changes in visualization design tools and their implications for the social distribution of judgment, perception, and skill in technical work. Focusing on the software platforms themselves, such as

Processing, Impure, or Many Eyes, this paper examines how visualization tools shape and are shaped by their developers, operators, and audiences. Understanding visualization tools beyond their instrumental value, for how they augment human roles and responsibilities, is important for quantitative practitioners and qualitative researchers alike. However, such studies need not only give rise to social critiques; new visualization tools bring quantitative and qualitative data together as never before, opening opportunities for more engaged collaborative relationships between qualitative researchers and the quantitative scientists and engineers they study.

Information Technology in the Icelandic Fishery: Unintended Consequences, Challenges and Opportunities. *Hrönn Brynjarsdóttir Holmer, Cornell University - Information Science*

This ethnographic study looks at modernization in the Icelandic fishery by way of information technology uptake. Information technology has historically carried the promise of increased safety, efficiency and productivity for the fishery. However, it has also introduced the risk of irrevocably over-harvesting the fishing grounds. The collapse of the cod, for example, would have far reaching implications not only in an environmental sense but also in terms of the Icelandic economy, culture and society. In an effort to address this risk, the Icelandic government established the Individual Transferrable Quota (ITQ), a system of tracking and managing access to the natural resource in the mid 1980's. The ITQ remains a hotly debated practice by stakeholders throughout the fishery as manifested in public debates on the radio, in the news, personal blogs and so on. Early fieldwork data indicates that rather than clarifying the situation by increased information communication, information technology has contributed to several new issues on the ground. For instance, management efforts have become more intricate while the complexity inserts a wedge between fishing professionals and regulatory entities. Similarly, new forms of discourse describing the natural resource, access and management thereof have emerged from increased reliance on digital data capturing efforts. These changes factor prominently in conflicts over who knows the state of the ocean, what ultimately is involved in sustainable fishery practices and who has a say in shaping the future of the Icelandic fishery.

308. Lateral moves in STS: Tampering with the conceptual/empirical divide - II

4:00 to 5:30 pm
Solbjerg Plads: SP202
Chair:

Birgitte Gorm Hansen, Copenhagen Business School
Participants:

Form and Variation in STS and Relational Anthropology. *Casper Bruun Jensen, IT University of Copenhagen*; *Brit Ross Winthereik, IT University of Copenhagen*

Recent years have seen an increasing traffic of ideas across the disciplinary boundaries of STS and anthropology. On the one hand, STS has become increasingly attentive to certain forms of anthropology, not least inspired by the work of Marilyn Strathern and her students and colleagues. On the other hand, anthropology has become increasingly familiarized with certain forms of STS, especially actor-network theory. While this exchange, as we see it, has been mutually beneficial, it has also given rise to renewed discussion, as regards the analytical and empirical concerns of each discipline. Based on empirical material on current efforts to increase accountability and transparency in aid development partnerships, this paper offers a discussion of the differences and relations between anthropology and STS, and on what each might learn from the other. We use the notion of monitoring movements as a way of engaging with ontologies of monitoring, including their embedded tensions, their inconsistencies and their generative transformations. Monitoring movements, we suggest, offers a specific mode of analytical and conceptual engagement, which functions as an anchoring point for our attempts to 'come to terms' with monitoring. This requires us to rethink analytical and methodological issues about sociotechnical form and variation at the intersection of science and technology studies and relational anthropology.

Living in fear or disagreeing with the field? – reverse colonization and lateral complications. *Christopher Gad, IT-University of Copenhagen*

Laterality (cf. Maurer) refers to new, exciting discussions currently taking place across anthropology and STS. Among other things, they illustrate how ethnographically oriented studies always rely on the creativity of others for their own creative endeavours (cf. Strathern). One important tenet is that one should avoid colonizing or explaining (away) theories and ideas encountered in the field. These rather offer opportunities to experiment with 'the conceptual' and 'the empirical' and this very distinction. While embracing this idea, I face some specific dilemmas as a participant in a 'modern' trans-disciplinary and strategic research project about digitalization of the voting process in Denmark, involving computer scientists, public and private partners, and other STS-researchers. STS has shown how politics are always implicated in science and vice versa and being situated 'post-STS' thus entails that the term 'scientific' cannot justify practices or a certain course of action. Yet, in this project, science is exactly invoked in this way, which, of course, is not surprising as such. What does feel strange, as an STS-researcher, is being repeatedly referred to as a representative of science, as an expert in trust, user-friendliness or the social, and even straight out as a 'scientist'. In many situations there is little possibility to disagree with this positioning, not to mention the implied division of the social/political vs. science/technology. When I once questioned such division and argued that it should remain an open question whether we really needed to modernize the voting process, one project participant simply told me that I was "living in fear". The strategic and cross-disciplinary frame of the project makes it hard to question its modern premises, even if I was invited to join by virtue of my expertise in STS, which entails exactly this competence. The lateral move might reject a classic STS solution to this problem, to position for instance scientific concepts and theories about science as secondary to practice –as ways of organizing information or as providing legitimacy. In my situation, however, to use 'their theories' to question my own conceptual ballast seems equally tricky. Maybe this is because the 'others' involved here are not quite 'other' enough? The project frame at least seems to influence the possibilities for engaging in the creative exploitation of the creativity of others. In this paper I discuss such dilemmas. Laterality, I argue, becomes complicated in situations where the problem of researchers colonizing the field is, so to speak, reversed. Sometimes the argument about not colonizing the field is supported by the idea that one can hereby take informants more seriously (cf. Pedersen). Could taking seriously, however, not sometimes involve the work of creating spaces for profound disagreement with theories encountered, without explaining them away? How can one handle laterally that 'they', and maybe without as much hesitancy, position 'us', in rather strange ways, which cannot be subtracted from the empirical encounter in the first place. Does "living in fear" contain any creative potential?

Synthetic Kin and Kingdoms: Thinking Laterally about Transgenic Exchanges. *Sophia Roosth, MIT*

In 2009, artist Daisy Ginsberg imagined a new biological classification model, in which kingdom synthetica joined bacteria, archaea, and eucarya. Ginsberg's taxonomy, in intention an art project, was readily adopted by synthetic biologists, a group of researchers who seek to apply engineering standards to living substance. Her classification even appeared as the cover

image of a 2010 issue of Nucleic Acids Research. Such taxonomies posit that synthetic living things, rather than being artificial instantiations of extant species, constitute a new branch of earthly life. In this talk, I take data about new genetically engineered transgenic biological systems as a means of generating theories of emergent forms of biological and social relatedness. Exploring the classificatory and taxonomic schema adopted by synthetic biologists, I describe the biological parts and systems they manufacture. I begin with an ethnographic account of a team of MIT undergraduates who in 2006 built a biological system in which bacterial colonies expressed different odors (banana, wintergreen) dependent on culture growth rates. The system combined in a single biotic system materials from three biological kingdoms: eubacteria (E. coli, P. aeruginosa), fungi (S. cerevisiae), and plants (Petunia x hybrida). I read this example across other efforts by synthetic biologists to manufacture artificial pathways for retrobiosynthetic design -- that is, combining components from multiple naturally occurring synthetic pathways to engineer artificial target compounds. Such research, upon which I here report, constructs artificial systems composed of trans-species multi-organismic exchanges. It scrambles genealogical classifications of living things. Following these examples, I claim that for synthetic biologists, the trans-species transfer and circulation of genetic material mirrors and underwrites Open Source and Free Software approaches to transferring intellectual property amongst scientists. In short, transgenic engineered systems knit together species as biological kinds, but also knit together communities of researchers dedicated to their propagation. Biotic and social modes of relatedness here hybridize. In working toward this conclusion, I draw upon anthropological theories of kinship, as well as recent ethnographic accounts of queer "voluntary kinship" and analyses of the denaturalization and renaturalization of relatedness under circumstances of assisted reproductive technologies.

Lateral Waves. *Stefan Helmreich, MIT Anthropology*

Imagine a rippling sea. Imagine, next, the electromagnetic waviness of a radio transmission skimming the surface of that sea, trippling above and below the water. As these radio waves propagate along the interface between water and air, something called a "lateral wave" is formed, a wave that emerges as a compound, mutiple form in the zone where stratified media meet. Drawing on yet-to-be formulated ethnographic research, this paper follows how lateral waves are managed in near-shore radio transmissions (a case in Ghana seems intriguing, and I will be there in February). Such management requires designs that anticipate constant displacements — technical, watery, legal. The paper itself hopes to operate laterally, sideways, and athwart by following the relay of analogies, disanalogies, and interferences between water waves and radio waves.

309. (52) Critical evaluations and new perspectives on user studies in STS - IV

4:00 to 5:30 pm
Solbjerg Plads: SP205
Critical evaluations and new perspectives on user studies in STS

Chair:

Nelly Oudshoorn, University Twente

Participants:

Finding participants: How research methodologies define 'users'. *Anna Harris, University of Exeter*; *Susan E. Kelly, University of Exeter*; *Sally Wyatt, Maastricht University*

Genetic testing, once confined to 'the clinic', has recently developed a market online. One of the most famous direct-to-consumer genetic testing companies was launched in 2007 amidst a series of 'spit parties', where celebrities and socialites were pictured in black dresses and dinner suits discreetly depositing saliva into little spittoons. Users of this technology

have since expanded beyond this elite group. As the social, political and ethical implications of the growing industry are explored, there is a call for more research about those being tested. Researchers have adopted a range of methods to learn about users, including online surveys, authoethnograhy, and interviews with early adopters. In this paper we examine these research methodologies along with methods we have used including focus groups and interviews with potential users, and following users through their online traces. While consideration has been given to how users are defined conceptually in STS (Oudshoorn and Pinch 2005), less attention has been paid to how users are defined methodologically. From our analysis, we argue that different social science research methods bring particular kinds of users into being. Certain users are privileged (e.g. the 'internet savvy') while some are largely ignored (e.g. doctors required to order the tests in some geographical regions). Other users are harder to access, such as non-users and anti-users. We explore the implications of methodology on the potentialities attributed to users, the role of social scientists in 'collecting' user accounts (considering the ubiquity of user-generated data), and the ethical aspects of user research.

Making Sense of User-driven Innovation: soft capitalism or tricky co-habitation? *Torben Elgaard Jensen, Technical University of Denmark*

In the past 5 years, a great deal of national funding (50 million Euro) and a great deal of effort (more than 100 projects) have been invested in user-driven innovation in Denmark. The flood of projects has worked on a range of different products and services, and has engaged users in a number of different ways (Elgaard Jensen 2012). Due to the scatteredness of the efforts, it has so far been rather impossible to gauge the commercial results of the UDI programs, let alone the positive effect on the Danish competitiveness, which was declared the aim of the policy makers. However, other types of evaluation might be possible, and perhaps even more relevant. The paper will attempt to discuss the Danish UDI projects in light of two distinctly different interpretations of contemporary capitalism in a globalized world challenged by ecological crises (Thrift, Latour). More specifically, the paper will examine if or how UDI projects contribute to a new virulent form of capitalism that "squeezes every last drop of value out of the system" (Thrift 2006) by mobilizing social sciences as a means to get closer to the consumers and their everyday lives. Or alternatively: if the UDI projects can be seen as a positive contribution to the collective articulation of matters-of-concern and to the negotiation of practical ways to co-habitate (Latour 2005). Empirically, the paper is based on qualitative investigations of policy discourses and of 10 Danish UDI projects.

The everyday enactment of "the everyday" in an innovation project. *Morten Krogh Petersen, DTU Management Engineering, Section of Innovation and Sustainability*

The everyday is often believed to hold an important key to innovation. Hence, private and public sector organizations alike are currently developing a keen interest in descriptions of the everyday lives of consumers, users, employees etc. (Thrift 2006; Cefkin 2009; O'Dell & Willim 2011). Through a wide range of methods and activities, everyday lives are laboriously scrutinized and attempts are made at bringing the resulting descriptions into innovation processes. Literature within the field of STS on innovation and users have noted this development and conceptualize the everyday in different and programmatic ways (e.g. Akrich 1992; Suchman, Blomberg et al. 1999; Halse, Brandt et al. 2010; Pantzar & Shove 2010). But what is this everyday and how, more precisely, is it handled in innovation projects? This paper develops a close analysis of how "the everyday" is enacted and handled in a Danish, government supported user-driven innovation project concerning work practices at a hospital. The analysis shows how different versions of the everyday at the hospital are enacted and handled in the innovation project. While

some of these versions are seen as valuable to the project's goal of innovating a new organization of work at the hospital others are discarded as standing in the way of such innovation. The focus is on the project's different ways of enacting and handling the everyday lives of the users involved. It is argued that this handling of the users' everyday is an important aspect in understanding how innovation happens – or not – in contemporary innovation projects.

Taking user representations seriously: past, present and future. *Sampsa Hyysalo, Aalto University*; *Mikael Johnson, Aalto University*

"User representation" (Vedel, 1987; Akrich, 1995) is one of the most cited STS concepts related to design-use relationships. It links the multiple modalities that the design of usages takes on prior to actual use: visions, claims, assumptions, ideas, pictures of user-practices, sketches, prototypes, the artifact wrapped for sales, and the technology entering hands of users (Hyysalo, 2004). The early studies highlighted how the referent of "the user" was not necessarily any person out there, but often derived from developers own practices, which notions such as "I-design" and "configuring the user" highlight (Woolgar, 1991; Akrich, 1995; Oudshoorn et al 2004). Since then several lines of enquiry have rendered the original concept more fruitful within and outside STS. We trace four such lines of enquiry, exemplify the key findings with in-depth case studies and pose some future questions: 1) Sources of user representations are not just explicit or implicit, but can be traced to eight different major source areas with 40 subcategories 2) The trajectories and operationalizations of user representations provide an important topic of enquiry. Accumulation, erosion, shadowing over, conflict, inter-animation and piggy backing are some of the salient interrelations (Hyysalo, 2010). 3) The creation of user representations can continue throughout multiple generations of product development, and is strategic and cumulative rather than 'accountable' in nature (Pollock & Williams, 2008; Johnson forthcoming). 4) User representations' material basis and their ties to different professions in R&D deserve further attention (Williams et al. 2005; Kotro, 2006; Hyysalo, 2010).

Technological versus use regimes. *Roel Nahuis, Saxion University of Applied Sciences Deventer*; *Ellen Moors, Innovation Studies, Copernicus Institute, Utrecht University, NL*

A growing body of STS literature addresses the merits of user involvement, but there are many barriers to effectively organise it. Elucidating this user-producer paradox, Hyysalo (2009) reviews three frameworks: (i) "learning by doing/using/interacting", (ii) "social learning in technological innovation", and (iii) a micro level framework studying new health technology. This paper contributes to this literature by discussing a fourth framework, focusing on rules and routines that orient and coordinate the activities of actors with regard to innovations. When rules are shared in communities of practice, they constitute a regime. We distinguish between technological and use regimes and show how this distinction helps interpreting a case study of a patient organisation that is only marginally involved in a R&D consortium on celiac disease. We claim that this lack of interaction is a manifestation of the lack of alignment between the technological and use regimes. The technological regime provides R&D actors with rules to routinely acquire relevant information about users and markets. If this information suffices, there is no perceived need to involve patient representatives in deliberations about the proper course of action. The technological regime coordinates the development of a pill for celiac disease patients regardless of reservations of the patient organisation. The reserved reception of the pill is understood against the background of an incumbent diet-based use regime that guides the way the target group is currently dealing with celiac disease.

310. Social dynamics and structures around nuclear technology: Pre- and post-Fukushima stories
4:00 to 5:30 pm
Solbjerg Plads: SP207

The Fukushima nuclear power station (NPS) accident on March 11th, 2011 was one of the most serious nuclear accidents in history. The causes of this terrible accident are now being investigated by numerous accident survey committees, journalists, and scholars, including STS researchers. Their investigations will enable us to know what happened at the station during and after the accident. However, this accident is also an opportunity to go beyond approaches treating nuclear technology merely as an object of investigation-survey-style work, and instead examine the social dynamics and structures around this technology. Nuclear programs are typically embedded in a highly structured social system. During periods of stability and absence of large accidents, we tend to illustrate these social systems as static and robust, yet highly complex structures. However, this accident inspires us to examine the more dynamic and subtle reality of interactions between nuclear technology and society. In this session, such interactions in the pre- and post-Fukushima nuclear scene will be examined from various points of view: co-existence of societal failure and policy success, impact of this nuclear accident on knowledge production, changes in the nature of "nuclear debates" in other nuclear utilizing countries than Japan, and delicate inter-governmental relationships between the national government and local governments in the areas hosting nuclear installations. Insights from the papers presented in this session will provide complex, yet deep and precise understandings on the social dynamics related to the nuclear technology in contemporary societies.

Chair:
Miwao Matsumoto, University of Tokyo

Participants:

Failure of the Japanese "Successful" Nuclear Program: Structural Problems Revealed by the Fukushima Nuclear Accident. *Kohta Juraku, Tokyo Denki University*

The Fukushima Dai-ichi Nuclear Power Station (NPS) accident on March 11th, 2011 must be counted as one of the most serious nuclear accidents in the history of nuclear utilization by human beings. The cause of this accident is now being investigated by the set of accident survey committees, journalists, and scholars including STS field researchers. Those efforts will show us a great deal of problems one after the other. However, from the point of view of sociological STS research, many structural, institutional and path-dependent background factors can be pointed out which triggered the accident and made it worse. These factors are not found in the process after the accident happened, but have been historically shaped since long before this tremendous earthquake and tsunami hit Japan. In this presentation, I will identify historically shaped factors which "made Fukushima worse." Those factors made the accident worse independent of the root cause of the accident or any other details of this accident. Those were hidden risks behind the Japanese nuclear program's "great success." The risks have never become matters of concern until the huge tsunami hit the Fukushima Dai-ichi NPS. I would like to explain why those were problems for this nuclear emergency and how those were constructed in Japanese nuclear history from the point of view of sociology of science and technology.

The Fukushima Insight: How Disaster Changes Knowledge Production in Global Nuclear Energy. *Sulfikar Amir, Nanyang Technological University (NTU)*

The hype of a "Nuclear Renaissance" that marked a global enthusiasm for nuclear energy abruptly went down after the Fukushima nuclear power plants were struck by earthquake and tsunami. However, although the expansion of global nuclear energy production is greatly affected by this catastrophic event in Japan, it is very likely that nuclear energy will remain steady. This paper situates nuclear power as an epistemic network that is sufficiently agile and robust, resulting from decades of

institutional reinforcement that takes place at the global level. Delving into the mechanisms and processes that drive knowledge production of nuclear energy, this study aims to explore the impacts of the Fukushima disaster on knowledge production of nuclear energy, and to investigate how the natural disruption has prompted nuclear scientists and engineers to reconstruct their knowledge to adjust to the new environment. More specifically, this study is set to shed light on the epistemological implications of the Fukushima disaster on nuclear power at the global level. It revolves around one simple question: How does disaster change knowledge? This question relates both to institutional structures and epistemological features of global nuclear power. Three empirical questions are further addressed. First, what have nuclear scientific communities learned from the Fukushima disaster? Second, how has the Fukushima disaster transformed the way nuclear scientific communities comprehend and cope with nuclear risk and hazard? Third, what are the potentially new directions of knowledge production in nuclear science and engineering that have emerged in the post-Fukushima era? The study takes a new direction in which the link between disaster and knowledge change is established. Rather than situating disaster as a consequence of technoscientific utilization in contemporary society as STS scholars have repeatedly pointed out, it views disaster as an external force that sparks the production of new knowledge and innovation.

Did Fukushima Mark the End of the "Nuclear Renaissance"? Analysis of Media Debates in Finland, France, and the UK.
Markku Lehtonen, University of Sussex

Until the Fukushima accident on 11 March 2011, nuclear power seemed to be experiencing a "renaissance" as numerous countries, including Finland, France and the UK, were using climate change and energy security to justify their plans for nuclear new-build. Fukushima brought the issue of nuclear safety back onto the public agenda, and led to a reassessment of the safety of nuclear power plants and/or revision of the plans for new-build in many countries. The impacts of Fukushima could be expected to turn out particularly significant in countries with far-developed new-build programmes, such as Finland and the UK, as well as countries with a strong nuclear industry and high reliance on nuclear for electricity supply – France being a case in point. Relying on an innovative methodology of "socio-informatics," centred around the "Prospéro" software (Chateauraynaud 2003), this paper examines the consequences of Fukushima events on the debates concerning nuclear power in Finland, France, and the UK, with particular attention to the role of (pro- and anti-nuclear) experts. The analysis draws on recent work concerning the key discursive strategies and their use in the context of different 'state orientations' in the three countries (Teräväinen et al. 2011), and argues that the consequences of Fukushima will be largely determined by such historically shaped state orientations. In particular, the analysis seeks to explain the reasons for the contrast between the relatively tame post-Fukushima discussion in Finland and the UK and the extremely lively political and public debate in France.

The Challenge of "Safe Levels" of Radiation before and after the Fukushima Nuclear Disaster. *Paul JOBIN, CEFC Taipei & University of Paris Diderot*

So far, the nuclear crisis of Fukushima is characterized by a situation of relative ignorance with regard to the possible consequences of radiation on public health. Due to the long latency for cancers and other health disorders caused by low doses of radiation, only a few victims have been identified. The Japanese government experts pretend there is no reason for worry below the established "safe levels" of radiation (up to 100 mSv a year), basing this assertion on the epidemiological surveys that were conducted in the aftermath of Hiroshima-Nagasaki and Chernobyl. These "safe levels" are being challenged by growing public criticism, the most salient part of which comes from worried citizens of the Fukushima prefecture and is transmitted

by Japanese and foreign websites, as well as some traditional media outlets. Based on interviews conducted after the 2011 disaster (and in a comparative perspective with previous fieldwork conducted at the Fukushima nuclear plants in 2002), with workers, safety managers, labor groups and NGOs, as well as government experts, I will argue that disagreement now arises more sharply within the scientific nuclear establishment itself, both in and outside Japan. I will pay particular attention to the reinterpretation of previous epidemiological surveys on nuclear plant workers. This will bring insights for the burgeoning STS subgroup working on disasters and industrial risks, as well as the larger discussion on uncertainty and relative ignorance.

Discussant:
Miwao Matsumoto, University of Tokyo

311. (16) The end(s) of the Human Genome Project - II
4:00 to 5:30 pm
Solbjerg Plads: SP208

Chairs:
Adrian Mackenzie, Lancaster University
Ruth Margaret McNally, Anglia Ruskin University.
Maureen McNeil, Lancaster University
Richard Tutton, Lancaster University

Participants:

Exploring the data topographies of NGS genomes: Towards a post-ELSI sociology of Big Data. *Adrian Mackenzie, Lancaster University; Ruth Margaret McNally, Anglia Ruskin University.*

Since the completion of the HGP, it is increasing commonplace to refer to a 'data deluge' in genomics. The rise in sequencing capacity is said to be 'democratising' sequencing as individual laboratories, and not just large multinational consortia, commission data to address biological questions in projects that they initiate independently. The dramatic increase in genomics data is usually attributed to the advent of NGS instruments, and typically conveyed using Moore's Law-style graphics of falling costs and greater speeds of NGS sequencing. However, whilst these renderings make instruments and databases highly visible, they tend to hide the diverse factors and relations that shape the terrain and channel the flow of data between research projects, instruments and databases. Hence there is a need to develop empirical methods to coax the socio-technical topography of NGS data flows into greater relief. In partnership with genomics, bioinformatics and computer science researchers, we are developing such a topography. Starting with three disparate genomics datasets that we treat as data about data, our approach uses data analysis and visualisation methods from contemporary bioinformatics and the fields of data and text-mining, as well as 'data science' more generally. In this paper we illustrate and describe our practices and results in the acquisition, organising, modelling, visualisation and analysis of these datasets, and discuss our approach as an example of mixed-method, collaborative post-ELSI research.

Molecular being – post-genomic life between genes and proteins. *Adam Bencard, Medical Museion, University of Copenhagen*

The gene has, as Evelyn Fox Keller wrote some years ago, "had a glorious run in the twentieth century." But since the publication of the human genome, it seems that the life sciences are at a juncture, requiring new concepts, terms and metaphors to grasp life in productive ways. The faith in the genome as the key with which to understand, decipher and decode 'life itself' is changing, partly due to the realisation that the translation process from gene to cell is a world unto itself. Post-genomic biomedicine is increasingly turning to the study of proteins for

new concepts, terms and metaphors. The understanding of life is shifting towards ideas of a multidimensional material body, made up of a complex system of proteins, where molecular structures, movements and interactions carry out the regulated work of the cell. Post-genomic researchers are no longer satisfied reducing the organism to the informational logic of coding system embedded in biological software (DNA); rather, the organism is now increasingly seen as a substantive, material architecture, filled to the brim with three-dimensional protein interactions. The change from a genetic to a protein-based understanding of life in molecular biology runs in an interesting parallel, I will argue, to the attempts to develop new material and object-oriented ontologies within philosophy and STS. Using empirical examples from the protein research, I will argue that understanding what takes place within molecular biology and the implications it has for our understanding of life and subjectivity can be fruitfully accomplished at the intersections of new material thinking, genes and proteins.

Organic processes digitalised: human bodies in bioinformatics.
Jan van Baren-Nawrocka, Radboud University Nijmegen
In human genomics, the focus has shifted from one-to-one associations between genes and traits (usually rare diseases) to more complex connections. As research progresses the basic models for connection between genes and traits are getting more complex, networked and probabilistic. While work is done to figure out the step-by-step paths between linking genes and traits, a large part of the work still consists of finding these links as such. With the increased focus on complexity, computational analyses become more important in establishing these networked relations. On the one hand, the use of computer technologies and their increasing calculative power enables a more complex view on biological processes – and thus functioning of human bodies - than before. On the other hand, the growing use of computer related technologies has its effects on what this complexity means for what bodies are made to be in biology. The logic of networked gene-trait relations for example, follows the logic of the binary relation. In this paper, following Bowker and Star's call to study infrastructure (2000) and building on McKenzie's analysis of the human body in bioinformatics (2003), I analyse this issue based on observations of a basic bioinformatics course and bioinformatics conferences and of interviews with bioinformaticians. I will analyse how bioinformatics discourses - as I find them in this empirical material - connect the analytical logic of informatics to organisms and human bodies, answering the question to what extend the analytical logic of informatics pervades views on biological processes and bodies within bioinformatics.

Promise Management in Emerging Life Sciences. *Martin Ruivenkamp, Radboud University Nijmegen*
Genomics research, notably within healthcare, has been riding the wave of hype. Both abroad and in the Netherlands, massive investments in life sciences were supported by impressive umbrella promises and far-reaching claims as to economic and societal benefits. More than a decade after the complete sequencing of the human genome, applications really affecting actual healthcare practices have hardly been realized. Currently, life sciences in the Netherlands are on the threshold of new developments: consortia are realigning, repositioning themselves and setting new agendas to realize new goals and to secure funding for further research. Competition is fierce and, additionally, (governmental) research funding is being restructured. This puts high pressures to spell out new promises creating new societal expectations. In this paper, promises made by four Dutch platform-technology institutes and societal expectations are mapped, and are compared to actual realities of the research as formulated by life science technology researchers. This overview of promises, expectations and assumed research realities has been used as input in multi-actor bridging events, where dynamics of alignments between scientific and societal

agendas have been explored in order to increase transparency of life science developments and to reflect critically on the production of promises and expectations to acquire future research funding. To conclude the paper reflects on whether produced promises for healthcare occur within a dominant trajectory of technology development. And, whether initiatives can be discerned, that go beyond a dominant instrumentalist rationality of life science developments, indicating first steps towards a reconstruction of life sciences.

312. (49) Design practices: material-discursive entanglements and interventionist approaches - III
4:00 to 5:30 pm
Solbjerg Plads: SP210
Chair:
Ann Light, Northumbria University
Participants:

(De)coding India's poor: An information infrastructure promises poverty eradication. *Sumitra Nair, Virginia Polytechnic Institute and State University*; *Nimmi Rangaswamy, Microsoft Research India*
This study examines the socio-technical work of digital record-keeping for tasks allocated under India's Mahatma Gandhi National Rural Employment Guarantee Act (NREGA, 2005). A job-guarantee legislation, the NREGA is India's most ambitious anti-poverty drive, with the government having provided employment to over 50 million households in 2010-2011 alone. Pre-empting corruption, and aligning itself to governance goals of accountability and transparency, the act provided to build a nationwide digital information infrastructure to manage this project. This paper investigates the work of building this technical artifact. The State envisages it as a seamless flow of human and non-human processors, ultimately servicing the citizen through a public web portal. However, the infrastructure itself is constituted by great diversity: built on a private-public partnership model, it encounters varying normativities in system design itself. Additionally, it must contend with existing grassroots expressions of information design. Further, it engages with multiple interfaces: a hierarchy of computer screens, web portals, biometric devices, paper-based musters, and plain village walls. In the process, it re-animates discursive categories like work, information, worker, citizen. Based on ethnographically informed investigations of this infrastructure in India, this paper examines this 'solution' as it emerges at the intersection of diverse and even divergent normativite practices. It undertakes an 'infrastructural inversion' to a) challenge the seamlessness envisioned by this system's architects, b) highlight the affordances of seams and sutures that build this infrastructure, that holds the promise of democracy or total opacity for one of the world's largest communities of largely illiterate and poverty-ridden people.

Accountability in practice: data cleaning in Afghanistan. *Tjitske Holtrop, University of Amsterdam*
This is a paper on the computer program Microsoft Excel, based on fieldwork in Afghanistan working as an evaluator for an Afghan research organization evaluating development projects in the South. In the evaluation process Microsoft Excel changes from an empty grid to an ever-expanding workbook, to an ultimate series of concise, clean rows and columns. In the process all kinds of different data come together. In the evaluation of an education project explored in this paper this leads to countability and categorization problems. Salaries and blackboards might be easily countable, but what counts as a school when many children are homeschooled? Another issue is the reliability of the data. Local surveyors have secure, cultural, and linguistic access to educational data in the field. While internationals don't have this, they claim to know what education

should look like and claim to have more and better research skills and experience. In order for Excel to do its magic of producing rapid and visible results and insights in the data and present these in its powerful aesthetic, the heterogeneous mix of color-coding, Farsi/Pashtu/English words and numerical values, empty and filled cells, comments, and question marks that occupy the grid needs to be cleaned. This paper investigates this process of data cleaning, how the problem of the reliability and accuracy of data is dealt with and how different logics of, among other things, aesthetics, office politics, and accountability protocols factor into what counts and what doesn't count as a development fact.

Boundary work in designing "global" interdisciplinary research projects. *Katharina T. Paul, Erasmus University Rotterdam*

This paper seeks to contribute to the growing literature on "boundary work" in scientific knowledge production, focusing on research on 'global health'. Drawing on scholarship in the field of STS –inspired development studies, this paper focuses on how 'the global' functions as a 'boundary configuration' in the growing research agenda on 'global health'. We report on collaborative efforts to develop research proposals by a consortium of academic and non-governmental partners in the Netherlands. The aims of this paper are threefold: First, we provide an account of the 'backstage' activities that led to this study, particularly highlighting the 'boundary work' that took place between public health researchers and social scientists. Second, we address the role of research grant opportunities in encouraging what is termed 'global' and 'interdisciplinary' health research. These terms assume clearly defined national boundaries as well as boundaries around specific disciplines to begin with. At the same time, calls for 'global interdisciplinary research' invoke the notion that overcoming those boundaries is a scientific and political necessity. To illustrate this, we report on our experiences with designing 'global' collaboration, specifically conference calls and the ways in which 'internal' movement in the call content and 'external' movement in these calls are dealt with (such as disruptions by human and non-human 'noise'). Finally, we reflect on our own role as an epistemic community and argue that the meaning of 'the global' in scientific knowledge production cannot be taken for granted but is actively (re)produced in specific socio-technical arrangements.

Technological Activism and the Non-Human Design of the European Borders. *Lukas Verburgt, University of Amsterdam*

In this paper I assess the on-going creation of a state-of-the-art technological European border-regime in the light of the recent re-appraisal of the work of Gilbert Simondon. With Bernard Stiegler (1994/1998) I argue for a non-anthropological account of technology that conceives it as (i) having an autonomy of its own that is not reducible to a simple means-end rationality and (ii) developing according to its own logic that cannot be exhausted by a human telos. This innovative conceptualization of technology does not seem to sit well with the so-called two contradictory attitudes to technical objects that has come to characterize both our common sense as well as prominent scholarly work on the socio-historical construction of technological projects such as the European border regime (Bijker & Hughes 1987, Mackenzie 1999). As Simondon (1958/1980) described it, on the one hand, technology is treated as 'dead matter' that is without true meaning and only provides utility, but on the other hand it is assumed that technical objects (e.g. visualization tools, data sets) are highly hostile to man. On the level of political scrutiny, Simondon's conceptualization paves the way for the development of strategies for dealing and responding to the technologies that the grand European enterprise makes use of. Given that technologies escape human or political rational intentions I argue that this indeterminacy can create a crucial site for contestation and 'technological activism'. Quite unlike attempts to create more deliberation or participation, it is

also the dynamic of the design of technologies itself that can strengthen the political, social and juridical position of, for instance, migrants.

Technological Jugaad as a 'Culture of Innovation' in India. *Pankaj Sekhsaria, Maastricht University*

Jugaad is a word in many languages in Northern and Western India that has been characterised in literature variously as 'creative improvisation' (Krishnan, 2010) or "developing alternatives, improvisations and make dos" (Prahalad & Mashelkar, 2010, p. 3). It is also considered in this literature as unsystematic, unscientific and of "sub-optimal quality." In many quarters, therefore, there is a reluctance, even an embarrassment, in acknowledging and accepting it – it has never been allowed a seat in the high echelons of 'innovation'. Jugaad is also conspicuous by its absence in any discussion related to science & technology in the country. In this paper I discuss a form of jugaad that can be found in the street, in industry as well as the modern scientific laboratory. I call it 'technological jugaad', a form of innovation where reconfiguring materiality (often with stuff gathered from junk markets), bridging ways of knowing and operating in situations of resource constraint are some of its main characteristics. The paper also discusses jugaad in light of well established concepts such as bricolage and 'user-driven innovation' and suggests that socially embedded forms of innovation have parallels and similarities that bridge barriers of geography, culture and language.

313. (78) Engineering design, displacement in practice - II
4:00 to 5:30 pm
Solbjerg Plads: SP212
Chair:
Sarah Bell, University College London
Participants:

Boundary objects and their circulation under collaborative design processes. *Angelos Balatsas-Lekkas, Technical University of Denmark; Yutaka Yoshinaka, Technical University of Denmark*

Boundary objects, as a notion has served to unfold studies of knowledge mediated practices and how objects are implicated in settings of collaborative work. In a number of instances the notion has inspired further expanding of the scope and nuances of inquiry, towards articulating their intermediary as well as transformative roles in organizational arrangements, spawning new concepts such as e.g. intermediary objects, conscription devices, etc. Common to the studies is that they deploy ethnographic approaches to understanding collaboration across disciplinary engagements. In this paper, we address concern that such studies may be prone to leave potentially pertinent aspects entailed in collaborative practices unaddressed or underexplored. While we acknowledge that such collaborative setups facilitate the study of multiplicity and sociomaterial (in)coherence, framing the collaborative setting as the primary fulcrum of investigation may leave out potential behind-the-scenes configurations and orderings, that may bear upon those who are implicated in the collaboration and how, out of the scope of inquiry. Some aspects, such as political concerns underpinning practices the collaboration feeds upon, may be prone to be neglected. The paper contributes to further STS inquiry in and through boundary objects and ethnography of sociomaterial practices of collaboration. Here, the circulation of materials within such environments is explored, identifying how translation is collective yet distributed, through actors with different degrees of engagement in the collaborative design process. Based on an ongoing project we thus explore mediating processes and (ir)reversibility which qualify an object, with possible implications on creative processes entailed in

collaborative work.

STS Assisted Engineering Design and Its Teaching Experience.
Jeng-Horng Chen, National Cheng Kung University

The teaching of STS related courses for engineering students can lead to a new form of cooperation between STS and engineering: the development of STS assisted engineering design. Its future need more research oriented development, but its contribution to both STS and engineering has been shown in the case reported in this paper. The author teaches an STS based course "Engineering History" for both engineering and non-engineering undergraduate students. One double major student (Industrial Design and Electrical Engineering) took this course and learned STS point of views, as well as Actor Network Theory. He and his project partner then took another STS course "Science, Technology and Society" from another professor in the next semester. They integrated STS methods in their engineering design project by applying ANT and object's point of view to analyze the need and relationship among human and emergency tools. Their work "Curvy Scissors" and "Nursing Kit" won one domestic design award and iF Design Award in 2010, and Best of the Best Award in Red Dot in 2011. Their success came from the combination of STS point of view on design need, relationship analysis, and the integration of STS methodologies into traditional industry design procedure under the instruction of the author and a faculty from industrial design field, according to their own description. This case proves the possibility of combing STS methodologies and engineering to form a better product design process.

Sino-French engineering curriculums: what kind of education design ? *Richard Marion, University of Lausanne*

Theoretical framework and methodology. This multisite case study paper offers to be part of sociology of translation. I will rely on Rigas Arvanitis' works, showing China's major gap is trust lacking between innovation actors . Chinese industrialists are used to collective work but mainly within closed groups as organized competition between atomized actors has become a Party strategy to keep power. Preliminary results. The story seems to run as if French engineering schools had been designed to cooperate and to become integrated into Chinese traditionnel university frame. Nevertheless, the cooperation process works through organisational asymmetry, as Chinese political push contrasts with French mostly relying on industrialists. Sino-French engineering education is part of an ongoing bargaining, recasting, translating and thus displacing process aiming at building mutual confidence. Contribution and significance of research. In the end, what is striking here is not only that French style graduate education had to be adapted to China. It is interesting to assess you cannot reduce this adjustmemts to any incremental change : part of the process led to important displacements, out of French managing team's will as well as their Chinese counterparts, namely as critical spirit is at the heart of the educational project, within and about Sino-French engineering teaching frames. This questions the consequences for the introduction of a hybrid framework in a dichotomic innovation context as far as the hybrid is to displace and, thus, redesign a wider network for innovation in China, which is explicitly Chinese government's medium term strategy.

Designing a STS program for Engineering Education to Enhance Inclusiveness and Diversity. *Wen-Ling Hong, National Kaohsiung Marine University*; *Jr-Ping Wang, National Kaohsiung Marine University*; *Jeng-Horng Chen, National Cheng Kung University*

The curricula of higher engineering education in Taiwan reflect little efforts in encouraging students to perceive engineering as inclusive and diverse. Technical specialized courses are separated from liberal education courses, or can be viewed vice versa. Integrated abilities emphasized in engineering accreditation criteria like abilities of life-long learning, understanding engineering impacts and modern social challenges, etc. are often overlooked, neglected, absent from engineering curricula. Since 2007, the Advisory Office of the Ministry of Education in Taiwan supported several multi-year STS programs in engineering schools as an attempt to develop new approaches to integrate humanity, social science into engineering. Four engineering schools of different universities were funded and each developed unique ways in incorporating STS into Engineering. More than 40 scholars from engineering, humanity, social science, history, and other disciplines were involved. We focused on three colleges in southern Taiwan for their program designs and outcomes. Surveys in this study show that engineering faculties and students develop new abilities to perceive engineering as more inclusive and diverse, enhance communication abilities, be more socially responsive (or even responsible) about modern engineering controversies. When engineering courses integrates STS in case studies of real life issues, students understand the close tie between engineering and social science. For example, a course like Engineering Ethic can explain complex problems, but isn't merely a set of moral codes. For Taiwan's exam-oriented engineering students, STS courses have interesting flavors: 1) teaching style, open-end discussions with no exact correct answers; 2) class syllabus, domestic and international case studies; 3) changes from seeing engineering and social science / humanity as dualism to integration. For the scholars of engineering, humanity, social science and history, being involved in STS community nourishes their professional growth and establishes new network. Overall, bringing in STS is a good way to improve engineering students' professional competence with thoughtfully designed programs. However, finding qualified cross-disciplinary instructors remains the biggest challenge.

314. (104) The governance of innovation and socio-technical systems: design and displacements - III
4:00 to 5:30 pm
Solbjerg Plads: SP213

Chairs:

Susana Borras, Copenhagen Business School
Jakob Edler, University of Manchester

Participants:

Governing markets for radical products by designing market infrastructure. *Aurelie Delemarle, Universite Paris Est - LATTS/IFRIS - ESIEE Paris*; *Philippe Larédo, Universite Paris Est, ENPC, LATTS - Manchester Business School*

Markets are socially constructed and can be designed (Abolafia, 1996; Callon, 1998). Markets are not only the place for buyers and sellers to meet; markets are also constituted by the elements that need to be in place so that transactions can occur. We label these various elements "market infrastructures" and argue that the governance of markets is based on the design of these infrastructures. We define this concept based on Goffman's frames (1974), on Callon's notion of "framing and overflowing" (1997), on Geels's "niches and transition pathways" (2002, 2005) and on work on infrastructures (Lee, 2010). Market infrastructures are a sum of rules, norms and values that allow the exchange to take place. They are "vital, but unglamourous and forgotten until something goes wrong" (EU Commission, 2012). We argue that the difficulties for radical products to find their place on the market is due to the lack of market infrastructures and that they thus need to be created or modified. We illustrate our argument with the nanotechnology case. We show how actors shape a new market infrastructure by setting a vision of the unfolding of the field (ISO) defining a common vocabulary (in ISO), by setting good practices (with Code of Conducts), by creating a toxicology repertoire (within ICON). These constitute the generic infrastructure common for all nanotechnology based products and industries while specific

infrastructures are created at the industry level. We conclude on the new role of the international standardization in the governance of nanotechnology based markets.

Governing Socio-Technical Systems: Standards, Certifications, and Public Proofs. *Patrick Feng, University of Calgary*

In recent years, certification programs have proliferated as part of a larger movement to promote more environmentally sustainable choices by producers and consumers. Comprising a range of initiatives including eco-labels, rating programs, and voluntary standards, certifications have emerged as one possible alternative to government regulation when it comes to promoting sustainability. Proponents see certification programs as a practical way of encouraging environmental change; critics view them as having limited effectiveness and amounting to little more than greenwashing. This paper examines the role that certification programs play in environmental governance. Drawing on published data from certification bodies as well as interviews with organizations involved in developing certification programs, this paper asks how and under what conditions certification programs can shift socio-technical systems towards environmental sustainability. I argue that the rising popularity of certification programs is consistent with broader shifts in governance (e.g., the rise of co-regulatory and market-based governance systems). Furthermore, the increasing use of certifications can be seen as a response to demands from varied stakeholders for both government and industry to provide "public proofs" of their commitment to sustainability. Indeed, providing credibility to environmental claims is one of the key design considerations when developing a certification program. This paper will investigate how power and credibility is established through certification programs, thereby contributing to STS literatures on expertise, governance, and S&T policy.

Innovation by Regulatory Design: Incentives Versus Mandates for Green Chemistry. *Arthur Daemmrich, China Europe International Business School*

The concept of green chemistry – producing new substances with fewer inputs, less waste, and environmentally benign long-term disposal – has excited academics, regulators, and some industry participants over the past 15 years. New approaches to regulatory governance, including coordination of regulators and industry, now seek to displace of toxic chemicals with "green" counterparts. Yet, the idea of green chemistry on an industrial scale has encountered predictable epistemic disputes concerning proof of harm of existing compounds and proof of safety for new chemicals, as well as economic challenges regarding affordability, opportunity costs, and unsustainable consumption. Furthermore, despite numerous success stories and apparent industry interest, green chemistry has made only modest inroads in the large-scale commodity chemical industry. Clear cases of substitution are rare and few hazardous chemicals have been taken out of commerce. For firms in the low-margin chemical industry, environmental considerations remain peripheral to manufacturing and pricing strategy. This talk presents findings contrasting voluntary incentives to regulatory mandates for green chemistry drawn from a larger comparative research project into the regulation of industrial chemicals in the United States and European Union. In the United States, a mix of government-sponsored research funding, public and private prizes, and other financial and regulatory incentives have been used to incentivize green chemistry research and manufacturing scale-up. In the European Union, by contrast, the major new regulatory law REACH requires firms to develop and implement innovation plans for safer alternatives to hazardous substances. Associated with these systemic differences, environmental NGOs and industry trade associations have played strikingly different roles in the two approaches to driving innovation. Broadly, the talk contributes to the comparative sociological analysis of regulatory governance.

Bioethics, Governance, and the Corporation. *Jenny Dyck Brian, Asian University for Women*

For-profit private sector corporations are increasingly more engaged in shaping both the normative and the technical aspects of emerging technologies. Companies are taking a lead role in deciding what is ethically appropriate, through a variety of mechanisms: private sector bioethics committees, public consultation, in-house ethics and policy research teams, the active involvement in anticipatory governance consortium. This paper demonstrates the institutional fluidity of governance through an analysis of corporate ethics activity. This paper will offer an analysis of ethics governance structures, by focusing on the design of bioethics committees in the private sector and their new place within the corporate setting, and will offer insights about how ideas about bioethics and governance are currently imagined and enacted within corporations. Corporations, through their private sector bioethics committees, lay out futures they deem both attainable and desirable. Findings from a research project (that used qualitative semi-structured interviews, ethnographic analysis and literature review) on three private sector bioethics committees in bioscience companies show that different ideas about expertise, authority, credibility and representation emerge from private sector bioethics committees. What bioethics governance mechanisms and structures do different groups deem most effective or legitimate? What kind of impact do these structures have within the corporations and beyond? Do these committees and other corporate self-regulation activities represent a neoliberalization of governance? Finally, this presentation will reflect on the ways in which corporations are shaping larger governance systems—within bioethics and within science and technology policymaking.

315. (74) Knowing and working in hybrid research spaces - III

4:00 to 5:30 pm
Solbjerg Plads: SP214
Chair:

Maximilian Fochler, University of Vienna

Participants:

Academic spin-offs as intermediaries: From transfer to collective exploration. *Liliana Doganova, MINES ParisTech*

The creation of academic spin-offs, which are new ventures exploiting knowledge and technologies generated in public research organizations, has become a central aspect of contemporary innovation policies. This paper examines the intermediation work of academic spin-offs by distinguishing two conceptual frameworks: the transfer model and the exploration model. While the former has hitherto been predominant both in the practice and scholarly analysis of academic entrepreneurship, its underlying assumptions have been questioned by studies depicting spin-offs as mediators that actively transform the entities that they transmit and the worlds between which they move. Building on a case study that traces back the emergence of a French spin-off, this paper sheds light on an alternative model of intermediation which views academic entrepreneurship as a process of exploration. The socio-technical uncertainty inherent in exploration raises a significant challenge in terms of governance and calls for new forms of public intervention.

The promise of interdisciplinary people centered design in practice: a case study of the making an Internet-of-Things application creation platform. *An Jacobs, Vrije Universiteit Brussel; Laurence Claeys, Alcatel-Lucent Bell Labs; Johan Criel, Alcatel-Lucent Bell Labs; Katriina Kilpi, IBBT SMIT, Vrije Universiteit Brussel; Marjan Geerts, Alcatel-Lucent Bell Labs; Dries De Rouck, IBBT CUO KULeuven; Karin Slegers, IBBT CUO KULeuven*

Innovation and creativity are highly valued concepts in today's industrial discourses. Interdisciplinary teams are seen as a way to avoid innovation failures (people centered design). Also in European research culture these ideas are put into practice during collaborate projects between universities and R&I company labs. Theoretical discourses on this topic are omnipresent, but showing impact of interdisciplinary work stays difficult because reflections on how this works in practice is limited. From a STS perspective we want to analyze the displacement between the plans and the path(s) such a team took, to learn more about the complex constellation and situational drivers that help or withheld the concepts of "interdisciplinary research" and "people centered design" to be realized in practice. Our case is the trajectory of the Belgian team working with members at universities and in industry during the ITEA2 project DIYSE. The project resulted in "Sensetale", an Internet-of-Things application creation platform that makes it possible for non-technical users to create own visualizations of self-installed sensors and defined concepts. In this paper a self-reflective study on the meta-process is presented, using interviews with the team reflecting on different types of the boundary objects (presentations, demonstrators, user research material, pictures, …) as data. Starting to trace back from the Sensetale platform as a formal end point, we present the different views in the team on "interdisciplinary research". In this way we try to recollect the paths that turned into dead ends and the informal, less visible impact. Finally, the main lessons learned are presented, e.g creating new mixed methods, tracing impact.

Academic Entrepreneurship between Scientific Careers and Industrial Collaborations: Case Studies from Italy. *Matteo Serafini, University of Bologna*

During the last two decades the European policy makers placed more and more emphasis on the role of academic research in fuelling economic development. In the attempt to imitate the successful US pattern these innovation policies are overbalanced on the sole aspect of university-industry technology transfer – underestimating the more complex issue of academic research (Pavitt, 2001). Therefore, my paper aims at exploring the intersections between academic research (and careers) and technology transfer initiatives – in particular, which entrepreneurial strategies the university researchers develop and how these strategies contribute to establish hybrid research spaces within and outside university. In so doing, I focus on a main Italian case (University of Bologna) in which the institutional attempts of establishing new transfer channels according to the rationale promoted at European policy level have to interact with the strategies developed by the professors over the years. I consider ten UniBo's professors involved in technology transfer and active in chemistry, medicine, and engineering. My research highlights: the development of different patterns of collaboration with industry; how these strategies foster also academic objectives; which hybrid research spaces support mixed academic and transfer activities. The study relies on various sources about the professors' academic and transfer activities, and exploits the analytical tools developed by STSs concerning how scientists and engineers manage their careers (e.g. Latour, 1987; Heilbron, Seidel, 1990). The paper is an attempt to adopt the STS perspective in the discussion of issues generally tackled by economic studies of innovation, providing qualitative analyses of academicians' entrepreneurial strategies.

Scientific lives in „the hothouses of innovation". A person-centred perspective on life-science academia/business hybrid spaces. *Maximilian Fochler, University of Vienna*

Two places are central to both the current imaginations of innovation policy makers and academic analysts of the macro-level dynamics of innovation systems: the "excellent" basic research laboratory and the small academic start-up firm. Science and technology studies has said a lot about how knowledge is produced and how scientists live and work in the former. Interestingly however, but for very few exceptions detailed qualitative inquiry into the cultures of knowledge production in start-ups and in related hybrid contexts between academia and business remains a desideratum. This paper will discuss first results of a project which aims to study how people working in hybrid contexts between academia and business in the life sciences in the Vienna region talk about which possibilities and limits these spaces open up for them as contexts of knowledge production and knowledge work, and which rationales, norms and values guide their actions. My arguments will be based on a novel variant of the qualitative biographical interview – the reflexive peer-to-peer interview (Felt/Fochler). This approach is specifically designed to trace the intertwinement of epistemic developments, individual careers, institutional contexts and societal issues in scientists' biographical narratives. Using this interviewing approach allows to trace issues which have proved rather hard to address in ethnographic approaches to studying the cultures and practices of knowledge production, such as the entanglement of epistemic work with contexts beyond the laboratory.

The demarcation of science: a construct of the 'scientists'? *Yin-Ling Lin, Manchester Metropolitan University*

The demarcation of science has been widely discussed by Science and Technology Studies (STS) scholars. When Gieryn first developed the concept of boundary-work he argued that the demarcation between science and non-science is ideological, constructed by scientists to present themselves as more authoritative than non-scientists. The demarcation was then made more secure as a result of 'rhetorical games of inclusions and exclusions'. This paper revisits Gieryn's idea through natural science and Humanities and Social Sciences (HSS) students' discourse about Genetically Modified (GM) food. In university students' discourse, the boundary between science and non-science was not only constructed by those who consider themselves as 'scientists' but also by those who claim to be 'non-scientists'. Natural science students in this study presented themselves as part of the 'scientific community' and claimed their modest authority in scientific knowledge reflecting on their role as scientists. By contrast, HSS students presented themselves as outside of the 'scientific community' and disclaimed their authority in science reflecting on their role as non-scientists. This paper suggests that the demarcation of science is a co-production of those who, include themselves in, and, exclude themselves from, the 'scientific community'. While scientists enjoy their authority in science, non-scientists consider having no authority in science as an entitlement. University students have not only taken the 'rhetorical games of inclusions and exclusions' for granted but also re-enforced the demarcation of science by taking part in the rhetorical games.

316. (36) Practice theory and beyond: emerging approaches to studying energy consumption - III

4:00 to 5:30 pm
Solbjerg Plads: SP216

Chairs:

Kirsten Gram-Hanssen, Danish Building Research Institute, Aalborg University
Toke Haunstrup Christensen, Danish Building Research Institute, Aalborg University
Ruth Rettie, Kingston University
Kevin Burchell, Kingston University

Participants:

Tracing the Variable Practices and Sustainabilities of the Everyday. *Mike Hazas, Lancaster University*

Implicit in many quantitative studies of energy consumption is a sense that energy can and should be expressed in units like

kilowatt-hours, or metres-cubed of natural gas. This paper begins by considering these possible ways of framing and expressing resources (such as energies and water), firmly within the context of the practices those resources support. Illustrative examples are given from a qualitative/quantitative study of four student flats over twenty days, focusing on two areas of practice with significant variation among our participants: food preparation, and interaction with digital media. From a broader standpoint, quantifiable resources are but very specific inscriptions of sustainability. I will go beyond resources to also consider the technologies and literal consumables like food observed in our study. These can be put in other terms which have been used to evaluate alternate sustainabilities, both locally and globally (such as greenhouse gas emissions). This exposes challenges and limitations in investigating everyday practice and energy: (1) the way that resources and other "impacts" are accounted emphasises certain framings of sustainability while sidelining others; (2) accounts of the mundane and everyday are necessarily local and specific, and a multitude of knock-on effects and externalities proliferate, making it difficult not only to track shifts in practice/technology, but also shifts in sustainability.

The Ethnography of Everyday Energy. *Janine Morley, Lancaster University*

This paper asks how a social science of energy consumption in everyday life materialises, values and problematises its object: energy. This is a particular challenge for research that aims to achieve "sociotechnical" descriptions of quantitative energy consumption in combination with qualitative accounts of day-to-day activities, a type of research that has been strongly advocated. Here, I illustrate these challenges with reference to a study of energy consumption in student residences. First, I follow critical insights from STS, to consider the "mattering" (Law, 2004) of energy in this research. I find that, just like other infrastructure, it appears as a "relational property, not as a thing stripped of use" (Star and Ruhleder, 1996): it is diverse, multiple and different in different contexts. These qualities are significant if local micro-studies, such as mine, are to speak to larger-scale problems of energy demand reduction. By questioning how concepts of energy are materialised, I hope not to complicate this "mattering" unnecessarily, but to explore additional analytical choices for such research. In particular, I ask how theories of practice when applied to the analysis of energy consumption, as is increasingly the case, reformulate the central topic of enquiry. By applying and extending STS insights, I discuss the implications for methodology: not just for how qualitative and quantitative data is collected, used and combined, but also for the types of questions asked, and the forms of ethnography capable of witnessing and describing energy consumption in multiple, routinely invisible practices.

User practices and heat pumps in a low carbon transition. *Lars Ege Larsen, Aalborg University*; *Inge Roepke, Technical University of Denmark*; *Mai-Britt Quitzau, Technical University of Denmark*; *Sophie Nyborg, Technical University of Denmark*

Current energy systems face the challenge of including more renewable energy sources (RES) in their supply. While some RES are almost as flexible as fossil fuels other are inherently fluctuating. In Denmark wind power is put forward as a main RES and is expected to increase substantially towards 2025. This has shaped ambitions to push an increased electrification of heating and transport services. One example is the promotion of central heating heat pumps (CenHPs) as a main heat supply in residential buildings. To fulfill their potential CenHPs must be operated in respect of wind availability and grid congestion. This presents a new situation where users are confronted with a demand for flexibility. The paper aims to deepen the understanding of the user perspective in relation to CenHPs in order to address the likely acceptance of CenHPs and the extent of flexibility in use. The paper employs an understanding of residential energy consumption developed within the social practice approach. Here consumption is seen as a result of the performance of everyday practices. Hence the analysis draws on a variety of qualitative methods ranging from desk top studies of reports about heat pumps to research interviews with central actors and household users. Due to the stage of development, the household interviews have been targeted at families enrolled in various 'flexibility testing' projects. This leads to an investigation of the practices related to heating services. These encompass both comfort practices and practices related to the budgeting and information gathering preceding a CenHP installation.

Households' role in the smart grid: A comparative study. *Toke Haunstrup Christensen, Danish Building Research Institute, Aalborg University*; *Kirsten Gram-Hanssen, Danish Building Research Institute, Aalborg University*; *Freja Friis, Danish Building Research Institute, Aalborg University*; *Ainhoa Ascarza Plata, TECNALIA-Energía*; *William Throndsen, Norwegian University of Science and Technology*

The electricity system is subject to thorough changes these years due to a number of challenges, including the need to mitigate climate change and replace fossil fuels with renewable energy. This calls for new solutions at all levels of the electricity system. Households are assigned a key role in these changes by system developers, researchers and policy makers, e.g. through realising electricity savings or providing a more "flexible" electricity consumption (called "load management") in order to optimize the electricity system and make the consumption side follow the fluctuating electricity generation from e.g. wind power. Thus, the development of the so-called "smart grid" is an example of how the changes of a large technological system are affecting all elements of the system. On the basis of a comparative study of Norway, Spain and Denmark, this paper analyses differences and similarities between these countries in relation to the current electricity system, smart grid policy plans and smart grid research and demonstration activities. The aim of this is to explore how country-specific factors influence the conceptualization of households' role in the future smart grid and the development of household smart grid solutions. Furthermore, the paper discusses main challenges and limitations of the present approach to the integration of households in a future smart grid. Particular the importance of understanding everyday practices and the interaction between smart grid technologies and everyday practices are in focus in this part of the paper, which draws on practice theory and previous studies of household smart grid solutions.

Changing energy consumption practices through electric car use. *Marianne Ryghaug, Norwegian University of Science and Technology*

Non-stationary energy consumption, i.e. transport, constitutes a large part of the total energy consumption of the household and electrification of road transport is of decisive importance in order to be able to curb CO2 emissions. This paper looks at the practical, cognitive and symbolic dimensions of electric car use drawing upon social practice theory (Schatzki et al 2001) and the analysis of 'domestication' processes (Sørensen 1996). We look deeper into the question of how electrical car use is understood culturally, in relation to conventional car use and how the technology is negotiated and given different interpretations of use and of meaning in everyday life. We assess how user patterns are generated, how new knowledge is appropriated and how meaning related to driving EVs is constructed. The study is based on individual and focus group interviews with EV users in Norway and data from a comparative study of EV user patterns and policies in Europe. Theoretically, our ambition is to develop domestication theory further by using insight from practice

theory, and vice versa.

317. (70) Science and the impact of organizational practices - IV

4:00 to 5:30 pm
Solbjerg Plads: SPs03
Chair:

Finn Hansson, Copenhagen Business School, Dept. of MPP
Participants:

The influence of stakeholder involvement on research practices in climate science. *Tjerk Wardenaar, Rathenau Instituut*

Climate change poses large challenges for policy-makers around the world. Scientific information can help policy-makers in facing these challenges. It has been argued, however, that the common way of organizing scientific climate research is not meeting the current needs of decision makers. New modes for organising climate science are subsequently called for. A central notion in these new modes of knowledge production is stakeholder involvement. Societal stakeholders who are potential users of scientific knowledge should become involved in the process of knowledge production to increase the societal relevance and usability of scientific climate knowledge. This involvement of societal stakeholders in the process of scientific knowledge production has potentially a large influence on the research practices of scientists. However, the notion of stakeholder involvement has been used to describe a diverse set of processes ranging from limited stakeholder consultations to extensive knowledge co-production projects. In this way, it is not always clear what stakeholder involvement consists of and how it actually influences scientists' research practices. To address these questions we studied the organisation of stakeholder involvement in large-scale climate programmes. We surveyed programme directors of 14 climate programmes (in 10 countries) on the organisation and importance of stakeholder involvement in their programme. To assess the influence of stakeholder involvement on research practices we conducted around 60 interviews with participants of three of these programmes, i.e. NOAA RISA (USA), KLIMZUG (Germany), and Knowledge for Climate (the Netherlands).

Design as Process and Bricolage: Construction of a Research Field. *Peter Biniok, University of Lucerne*

This paper addresses the question how the design of research activities will lead to organizational changes and the development of a new research field. Organizational design is understood and analyzed as a continuous and context-specific process. This notion shifts the focus of analysis from singular determinations and proposed executions of design plans to situated negotiations and contingent trajectories of design practices. In this way the study reveals purposeful decisions and their unintended consequences. I will argue that creative actors shape locally encountered structures (Strauss 1993) through various, yet specific modes of improvisation (Weick 1998) and bricolage (Biniok 2012). In particular, the outlined understanding of design appears adapted to organizational analysis of the local construction of a research area, consisting of heterogeneous actors, institutes, organizations, and technologies. It is shown how, starting from an academic research group concerned with metallic glasses, and through incremental and opportunistic management of activities, a nanoscientific research institute with an interdisciplinary and interinstitutional network had come into existence. This paper is a contribution to the analysis of the multiple dynamics of science. Interactions and negotiations in a contingent structuration process characterized by bricolage are shown to lead to an intricate ensemble of organizational changes, some of which potentiate the development of a new research field. The paper is based on a current research project conducted in the field of public funded nanoscale research in Switzerland.

The project employs qualitative research methods, combining participant observation with interviews and document analysis.

Federal funding and the transformation of academic labs in the biomedical sciences since the 1960s. *Annalisa Salonius, University of Pennsylvania*

There is much debate among social scientists about how or whether the organization of academic life sciences is changing with increased commercialization of research. Underlying this debate is an assumption that there has otherwise been little change in the organization of academic labs over the last few decades. However, there has been considerable change in the structure of academic labs in the life sciences. In the 1960s, in Canada as in the U.S., a typical academic research was small; a professor, perhaps a technician, and sometimes a graduate student or two. Today, many labs include 20 or more people, most of whom are graduate students and postdocs. In other words, the current situation, where academic labs in this field often have many members, most of which are graduate students and/or post-doctoral researchers, is relatively new. How and why did these changes occur? How is research organized in current labs? Although lab studies in the 1970s and 1980s were foundational in science and technology studies, changes in the organization of labs have not been systematically studied. Based on work history interviews done with older and retired professors during an ethnographic study of labs in the biomedical sciences in Canada, this paper shows how key changes associated with federal research grants in this field since the 1960s created constraints that led professors to change their practices, transforming their work, and as a result, the conduct of research in their labs. The main argument is that dependence of professors in this field on federal grants which became increasingly competitive in the 1980s necessitated a division of labor in academic research between professors and their trainees.

Academic ambitions: exploring the challenges of today's young scholars. *Pauline Mattsson, karolinska institutet and nobel museum; Niki Vermeulen, University of Manchester*

While there is much literature and debate on the future of European academic institutions the implication of these transformations for the new generation of academics is often overlooked. The conditions of academic labour in Europe have shifted significantly; while in many countries an academic career path was formerly often promising long-term employment and job security, flexible short term employment and international mobility are characteristic of ever larger parts of today's academic employment. In practical terms this often means competing for scarce research grants, while having short-term project contracts and filling the gaps in teaching schedules, while switching universities and countries at the same time. This results in talented young researchers leaving academia. Based on a survey with more than 30 000 young researchers, follow-up interviews and a session on scientific careers at ESOF 2012, this paper presents an account of young academics across Europe. We explore the motivations and challenges of young researchers and the ways in which they find their way moving between scientific fields, universities and countries, and different sectors. Thereby we do not only aim to shed light on a new generation of academics, but also give feedback and input to policymakers and other stakeholders working on issues related to the future of science and support mechanisms for young researchers.

318. (94) Emotions and affects in science: communities, spaces, and bodies - III

4:00 to 5:30 pm
Solbjerg Plads: SPs05
Chairs:

Staffan Bergwik, Dept. for History of Science and Ideas Uppsala University

Helena Pettersson, Umeå University

Participants:

Choreographies of Togetherness – Emotional Identity Work in Transdisciplinary Sustainability Research. *Andrea Schikowitz, University of Vienna*

In the light of contemporary challenges like sustainability there has been a growing debate considering 'traditional' ways of knowledge production not suitable any more. An alternative organisation of research alongside matters of concern rather than disciplines is called for. 'Transdisciplinarity' is one such approach explicitly asking for integrating societal problems and actors that has been implemented into a number of research programs during the last years. Researchers face the call for engaging in changing forms of togetherness which also means that they need to renegotiate their professional identities and enact emotions and affects in specific ways. Yet such attempts are located within research systems that still function according to contradicting logics and values. Applying a person-centred perspective I ask how researchers in transdisciplinary projects practice these claims to develop care and concern for their research objects while simultaneously maintaining their relations to a research system where emotions are basically regarded as delegitimizing knowledge. In which ways do they discursively build and maintain a coherent identity? As social and epistemic elements are inseparably intertwined this question also concerns the very core of knowledge production. For approaching this, I introduce the notion of 'choreographies of togetherness', which is capable to capture the dynamic and interactive ways in which researchers try to adjust diverging forms of togetherness. The empirical material is drawn from a mayor Austrian research program on transdisciplinary sustainability research and its projects. I analyse program documents, interviews with various project participants and observations of project meetings.

Ethics and Emotion: Knowledge Production in Mental Health and Neuroscience. *Martyn Pickersgill, University of Edinburgh*

The idea of 'ethical practice' holds considerable sway over the ways in which biomedicine and the health professions produce and implement knowledge. Some commentators have viewed this 'new' means of governance positively; others, however, have been resoundingly critical, regarding it as restrictive and ethics bodies and regulations unfit for the task they have been set (or have set themselves). Less discussed, however, is that affective dimension of clinical and research ethics. In this paper, I draw on two studies concerned with the social dimensions of knowledge in order to discuss some of the ways in which scientific investigations, the design of health services, and practices of care embed moral and ethical discourse, and how this in turn articulates with emotion. The research in question comprises an ESRC-funded project on neuroscience and society employing focus group methods, and a Wellcome Trust Fellowship on the sociology of clinical psychology which entails participant observation and documentary analysis. I argue that affects (excitement, hope, fear, concern) are important features of the human sciences and the psy-professions; these are activated through work, carefully managed, and potentially transformative of the knowledge produced by and circulated within biomedical assemblages. Furthermore, ethics and emotion are central to the on-going displacement of psychological knowledge production to sites that lie beyond those traditionally understood as central. Accordingly, I suggest that STS analyses of ethics are attentive to the affective dimensions of normativity.

Tracing emotion in Palliative Care. *Tania Pastrana, Lancaster University*

Palliative medicine emerged as a new field of medicine in the late 80s and presents itself as "dissentingly different from the biomedical model". Still, however, there is little consensus about its definitions, task or goals and the field is in constant negotiations with other disciplines. In order to study how palliative medicine works, I conducted 184 hours detailed participant observation in a specialist palliative medicine unit in Germany as a 'visitor' (medical doctor). This was my first immersion in the field. I am taking a practice-based perspective drawing on medical sociology, medical anthropology and Science and Technology Studies (STS). Suffering, pain, death and loss are the constants in Palliative Care which make it a highly emotional field of practice. In this paper I want to draft my argument that 'emotion' is ubiquitous and an important issue for everybody in the everyday work at the palliative care unit, although it has an ambiguous role. Acceptable ways of expressing emotion are quite tightly constrained (at least for staff), some are endorsed as caring, others as being unprofessional. The organisation of work in the unit acts to relieve individuals' of emotional concerns by constructing a team identity and creating ties between team members. In my paper I will illustrate the 'permeability' of emotion, in which emotion is conceptualised as fluid actant which impregnates people, practices and technologies. I will discuss its implications for knowing in a palliative care setting.

319. Rethinking radioactive waste management programmes as 'socio-technical combinations' and 'trading zones'

4:00 to 5:30 pm
Solbjerg Plads: SPs07

This session wishes to explore the recent upsurge of interest in problematizing anew radioactive waste management (RWM) through the use of concepts and perspectives deriving from science and technology studies. This new attention to RWM among STS practitioners connects with events such as the Fukushima Daiichi nuclear disaster and the cancellation of the Yucca Mountain repository project as well as, the contrasting 'successes' of RWM in countries like Sweden and Finland. But looking beyond the immediate circumstances that have provoked new research, we wish to ask what difference can new STS-inspired studies hope to make to RWM futures by, for example, re-envisioning particular approaches to the geological disposal of radioactive waste as 'socio-technical combinations' or 'hybrid collectives', or national waste programmes as 'trading zones'? Something that is quickly apparent is that STS perspectives can help to heighten our appreciation of the significance of differences that already exist within RWM setting apart different programmes of waste management. Greater recognition can be granted, for example, to the fluidity of the nuclear waste/nuclear resource divide over time and space, and the contingent levels of commitment shown by different RWM programmes to guiding principles and techno-political rationalities such as 'passive safety', 'reversibility' and 'local stakeholder involvement'. Recognizing meaningful differences within RWM, a key issue for future research becomes the question of the mobility of nuclear waste management technologies and the ability of different waste management programmes to influence and 'learn' from each other.

Chairs:

Yannick Barthe, Centre de sociologie de l'innovation-Ecole des mines de Paris
Morgan Meyer, Ecole des Mines de Paris - ParisTech
Goran Sundqvist, University of Oslo
Mark Elam, University of Gothenburg

Participants:

Towards a Divisible or Indivisible European Platform. *Yannick Barthe, Centre de sociologie de l'innovation-Ecole des mines de Paris*; *Goran Sundqvist, University of Oslo*; *Mark Elam, University of Gothenburg*

In 2009 a European Technology Platform was launched dedicated to Implementing Geological Disposal of Radioactive Waste (IGD-TP). It is hoped that this Swedish and Finnish led platform will 'underpin the development of a common European

view on the main issues related to the management and disposal of waste'. In this paper, the IGD-TP initiative will be discussed with reference to the significantly contrasting socio-technical combinations we find dedicated to enacting geological disposal in Europe today. Concentrating on the French and Swedish disposal programmes we shall discuss how they define radioactive waste differently; focus on different host geologies; rely on different engineered barriers; adopt a different attitude to co-location with other nuclear activities; as well as privilege contra neglect the question of the reversibility of geological disposal and the retrievability of waste. Inspired by Albert Hirschman's notion of 'divisible' versus 'indivisible conflicts', the French and Swedish geological disposal programmes shall be conceptualised as examples of 'divisible' and 'indivisible' programmes. Due to the privileging of reversibility in the French case, disposal plans remain provisional and potentially re-negotiable as they are recognized as always wedded to contingent circumstance. The Swedish programme, on the other hand, remains synonymous with an indivisible, once and for all solution. Although Swedish plans for geological disposal have been obliged to be flexible over time, they still continue to be strongly associated with an optimal and definitive/non-negotiable disposal concept. So we wish to ask whither the IGD-TP as a divisible or indivisible TP?

Canada's Radwaste Trading Zone. *Darrin Durant, York University*

Peter Galison's notion of "trading zones" captures an important element of the science and engineering dimensions of radioactive waste management programs. Yes, they are interdisciplinary endeavours. Yes, local communication can take place even if global meanings are not shared. And yes, the radioactive waste management trading zone is very much like what Gorman calls an equal trading zone structured around a boundary object. This is so because Canada's disposal concept is, like the boundary objects discussed by Susan Leigh Star and James R. Griesemer, plastic enough to serve different communities' needs but robust enough to sustain a kind of common identity. Or so it seems. That is, or so it seems there exists a common identity; something to speak about via a creole or a pidgin of talk and practices. But of course trading zones do not exist in vacuums. They exist within cultural, economic and political contexts, indeed contexts fractured by differing commitments that must nevertheless acknowledge each other and work with each other. So what does Canada's radioactive waste management political trading zone look like? Here we find interdisciplinary science and engineering existing mostly in the grey literature, and what does that mean for a political-economic understanding of trading zones, nuclear or otherwise? Similarly, we find a concept eternally becoming rather than materially emergent, and what does that mean for what is being learned in a trading zone, nuclear or otherwise?

Copper Corrosion as a Trading Zone: Searching for a Safe RWM Repository. *Ann-Sofie Kall, Centre for Technology, Innovation and Culture, Oslo University*

The aim of a nuclear waste repository is to isolate the waste for hundred of thousands of years. The proposed solution to this great challenge is to use natural (geological) and engineered (canisters and buffer material) barriers. Most nuclear waste programmes are using metal canisters as one of the engineered barriers, in which the waste is encapsulated. One metal used is copper, for instance in the Swedish and Finnish programmes. However, a worry in connection with different metals is corrosion and in the Swedish waste programme copper corrosion, as a threat to the integrity of the repository, is an established and recurring issue that has recently grown into a major problem for SKB, the agency in charge of the waste programme. In this paper I understand the copper corrosion controversy as a trading zone, and investigate the public debate on copper corrosion in connection with the ongoing review process following SKB's submission of an licensing application for a final repository for

spent nuclear fuel. The copper controversy offers an opportunity to study the repository as a socio-technical combination, beyond a strong divide between technology and society. A copper canister is not fixed or immutable entity, but means different things to different actors. In this paper I analyse how the safety of copper is being constructed in the review process. I understand this process as a trading zone where the identity of copper as a safe or risky isolator of waste is being shaped and reshaped.

Making the Nuclear Waste Repository Locally Acceptable… or Real? Site Selection as a Socio-Technical Process. *Zdenek Konopasek, Charles University in Prague/The Academy of Science of the Czech Republic*; *Karel Svačina, Charles University in Prague & The Academy of Sciences of the Czech Republic*

We are studying the site selection process for the deep geological disposal of nuclear waste in the Czech Republic. We understand this as a socio-technical controversy. Talking about the "socio-technical" does not simply mean that social aspects are considered alongside technical ones. Rather, it means focusing on how they are managed as elements that cannot easily (and without costs) be separated. The current siting phase in the Czech Republic highlights public negotiations and political decision-making. Underneath this "political" surface, however, technical developments are also understood to be taking place. For instance, municipalities sometimes realize rather well that when preliminary research is being proposed on their territories, "just for the sake of later qualified decision", it also implies bringing the reality of geological disposal in the locality a step closer. They sense that better knowledge elaborating on the safety case for a repository will not be feasible without constructing a "rock laboratory" on site. And this knowledge-production site not only (by definition) resembles the future disposal facility, but can easily be transformed into one. Making the technology socially acceptable implies making it simultaneously more real. On other occasions, nonetheless, the same people strictly separate the technical from the social, insisting upon the purely political nature of the current phase in the site selection process. By making the intricacies of such boundary work more visible and graspable, we hope to contribute to a better understanding of nuclear waste management as a delicate contemporary challenge.

Nuclear Waste as a Transnational Problem: Socio-Technical Challenges of Joint Repositories. *Behnam Taebi, Delft University of Technology*

The safe disposal of nuclear waste is a global challenge that faces humanity. There is international consensus that the producing country remains responsible for geological disposal of its own waste, but there is also a growing urge to consider regional or multinational repositories, particularly in Europe where ten EU countries are currently exploring their feasibility (please see http://www.erdo-wg.eu). My hypothesis is that joint disposal facilities are favored from the perspective of justice to posterity, while they are disfavored from the viewpoint of justice among contemporaries. In this presentation, I will first support this hypothesis by exploring how the issue of long-term protection against radiological risk has been approached in various publications of the ICRP, IAEA and the NEA. I will then discuss several socio-technical challenges of these joint repositories, if they would be implemented. 'We should avoid undue burdens on future generations', is the mantra of various nuclear organizations, but what exactly constitutes "undue" burden remains the subject of ongoing discussions. I will show that in nuclear waste policy-making there is a tendency of making a distinction between the protections for different future generations. This is due to the (technical) uncertainties about the long-term performance of waste packages and disposal facilities; natural leakage of radiation into the biosphere could occur. Furthermore, future generations could be exposed to radiation risk as a result of (unintentional) intrusion into these repositories.

I argue that multinational repositories could help reduce the risk of natural leakage, since we can choose a host site that best guarantees long-term protection. They will further help reduce the number of facilities, which is presumably more beneficial for the protection of posterity. Joint waste disposal facilities, however, give rise to intragenerational injustice, since one nation is supposed to accept other nations' waste. This gives rise to the more fundamental question of how to make the two notions of intergenerational and intragenerational justice compatible. In the remainder of the presentation, I will address three socio-technical challenges of these joint repositories, if they would be implemented. Firstly, which criteria should be relevant in choosing a host site? Criteria could vary from technical specifications of the site (i.e. which site guarantees best long-term protection), to political willingness of the national state and the acceptance of local communities. Secondly, which compensation mechanism should be chosen? Compensation has an important spatial dimension: i.e. who should be compensated (state or local community), how should the compensation be offered (economic benefits or otherwise), and when compensation is ethically acceptable (moral limits for the issues we can compensate for)? I will draw parallels with the export of (Western countries') chemical waste to Africa, seeking for lessons we can learn from those mistakes. Compensation has also an even more complex temporal aspect: i.e. how to compensate for the perpetual burdens future generations in the host communities would be exposed to. The third socio-technical issue I will briefly address is the relevance of national borders in policy-making with very long-term time horizons.

Discussant:

Anne Bergmans, University of Antwerp

320. (23) + (31) Configuring Climates - IV

4:00 to 5:30 pm
Solbjerg Plads: SPs08

Chairs:

Lea Schick, IT University
Arno Simons, Technische Universität Berlin
Aleksandra Lis, Central European University in Budapest
Ingmar Lippert, Augsburg University

Participants:

Explosive News: Sea-Level Rise in the Pacific and the Trouble of Communicating Science. *Kristoffer Albris, University of Copenhagen*

This paper explores the issue of sea-level rise and the public understanding of science by analyzing a particular interesting case of two geo-morphologists, who in 2010 published an article in which they argued that most small pacific island atolls have actually grown and not shrunk in size in recent decades. The findings were published in a scientific journal, but rapidly spread through various media sites on the internet, and spurred a great deal of sensationalism among journalists and bloggers. The story was received with a high degree of debate and controversy, which led to the accusation that the authors were climate skeptics. The debate triggered a response in the form of a press statement which clarified their findings. In this paper I trace the story and map the controversy it caused on the internet, while complementing this method with ethnographic interviews with two of the involved individuals. I argue that information published by scientists in the highly explosive field of climate change could lead to the disturbing scenario that scientists would be more hesitant or reluctant to publish their research in the future. This poses a challenge which resonates with Evelyn Fox Keller's question "what are climate scientists to do?" By seeking to understand the often troublesome relationship between scientists and the media, this paper furthermore also discusses the role of STS scholars in the climate change debate.

Reluctant Public Scientists in Climate Change Debates.
Bernhard Isopp, York University

This paper addresses several intersecting elements of the public debates about climate change. First, it presents a critical discourse analysis of the presentation of climate change in Canada's three most widely-read newspapers from 1995-2010. Canada is a leading industrial nation, has one of the highest per-capita carbon emissions in the world, and has a geography that may lead to economic benefits from possible climate change. Such factors can be expected to generate a unique and politically powerful public discourse about climate change. However, this paper does not simply replicate existing media analyses which examine the role of various ideologies or interests on the presentation of scientific issues in the media. It considers a heretofore under-explored element of the public discourse surrounding climate change (and of science in general): the role of public scientists. Certainly, the topic of public scientists has been widely examined, but primarily with regards to conspicuous science popularization or science statespersons. However, many scientists are drawn into public controversies reluctantly or unwillingly. In conjunction with a broader media analysis, this paper focuses on the media presentation of climate scientists who are called upon as expert sources. It also reports on the findings of in-depth interviews with such scientists about their often unexpected public roles. As such, this study promises to illuminate public attitudes of science and scientists, as well as a neglected aspect of scientific practice.

Fragmented discourse, marginalizing the public? Media framing of climate change in Japan. *Shinichiro Asayama, Tohoku University*; *Atsushi Ishii, Tohoku University*

Climate change is one of the most pressing environmental issues that modern democracies face with. It requires the fundamental transformation of industrial and energy system and governance in global scale (e.g. Risbey, 2008). It is also imperative to encompass individual behavior changes in society. Political responses to climate change entail various activities such as scientific assessment, political negotiations, economic measures and technological development. Such activities should also be done in a democratic way to ensure "public engagement" (Nisbet, 2009). Given this situation, media reporting is crucial to understand how climate change is communicated and embedded in society. In this paper, we will analyze how the media socially constructed climate change in the Japanese context from the STS perspective. As the main methodology, discourse analysis of Japanese newspaper coverage is applied on different issues of climate change, i.e. IPCC's assessment, UNFCCC's COP negotiations, cap-and-trade and CCS. One of the main arguments is that media discourses are fragmented in terms of interplay between science, policy and society. Climate science and the IPCC's scientific assessment are represented as discursively separated from politics and policymaking while international debate has been always represented as a conflict of interests instead of consensus building. The boundary of science, policy and society is constructed leading to avoid showing an integrated picture of climate change. We will also discuss media reporting gave the only limited space for citizens and NGOs so that marginalized the role of public, by contrast, put the bureaucrats and scientific experts in dominance.

321. (84) Aesthetics in technological practices - III

4:00 to 5:30 pm
Solbjerg Plads: SPs10

Chairs:

Dick Willems, University of Amsterdam
Jeannette Pols, Amsterdam Medical Centre

Participants:

The aesthetics of improvisation. *Cornelius Schubert, TU Berlin*

Improvisation is an essential way of dealing with technology. In contrast to improvisation in music, however, improvisation in technological settings is seldom considered an appropriate mode of operation. In my paper, I outline the notion of improvisation as an expert mode of dealing with indeterminate situations, which often arise in highly technisized courses of work. Improvisation does not denote an absence of structure, but the skilled modification of routines based on experience. Only the expert is able to vary his or her actions and adjust them to individual situations. This way, I draw on the notion used for instance in jazz music to point out the highly situational modifications of actions in real time. Based on an ethnography of anaesthetic work, I will sketch out the interplay of routine and creativity in everyday medical improvisations. I will extend this line of thought to the general aesthetic components found in medical work, e.g. the elegance or beauty of graphs displayed on the anaesthetic monitoring or the "art of anaesthesia" as it is practiced by experienced doctors and thought to novices. The concept of improvisation might be a fruitful link between such diverse material practices as making music or delivering medical care. As a skilled and embodied mode of situational adjustments, it offers insights into those aspects of technological practice, which lay hidden beside the obvious technical and rational elements of work.

„Beautiful portraits of the mind." The significance of aesthetic strategies in scientific practice in neuroscience. *Valerie Kummer, Danube-University*

One of the main challenges science faces today is to keep up with the massive amounts of data. Especially in neuroscience, it would be impossible to grasp the vast array of data from imaging technologies without software tools and intelligent interfaces. They form a bridge between generating and understanding by revealing patterns, comparing scales, showing correlations, making diagnoses and communicating the results to the scientific community or broader public. Although essential, yet little attention has been paid to the aesthetic and formal strategies that underlie the creation of these images and focus on design issues and their epistemic implications. Neuroscientist´s as well as the public are often using the word „beauty" when talking about neuroimages. Till the midst of the 19th century the view of the artist that characterized the encountered to the essential was the guarantee of objectivity in science. The current „non-stil", which seems to avoid stil with its clear appearance, is in contradiction to the real options of the subject to interfere by the image production. The design and the chosen aesthetic and formal strategies, based on culturally patterned viewing habits, are significant for their high visual appeal and certain evocative force. In the lecture I´ll make an analysis, based on the methodology of image science, about the interferences between technique, interface design, pictorial characteristics, evaluation and interpretation strategies in daily lab work. What are the impacts and implications by the translation of the data via imaging techniques into visual representations by selecting, sculpturing, highlighting and colouring?

The laptop computer and the aesthetics of performance technologies. *Michael Liegl, Johannes Gutenberg University Mainz*

The paper argues that the performative qualities of an instrument configures the thingness of the produced object, and the way, recipients are supposed to hold themselves vis-à-vis that object. The now ubiquitous presence and use of laptop computers in the production of music has tremendously changed not only the production routines, logics, and manouvers, but also the performance aesthetics of these practices. The gesture of manipulating sound on a laptop considerably differs from say, working a guitar or pounding a bass drum. Hence, a perceived lack of expressivity has been widely problematized among performers of computer music, prompting a quest for the development of controllers to bring back expressivity into music.

This problematization underlines the embodied awareness that the materiality and design of the performance medium has a vital role in shaping what music is, or else, how the performance of the medium influences the thingness of music and configures the instructions to the listeners of how they should hold themselves in relation to it. Beside the aesthetic-performative issue, the laptop also introduces ethical problems concerning the accountability of "voices" in the music. As a digital tool the laptop can emulate all kinds of voices (instruments), hence it cannot easily be indentified and pointed to in the mix. The paper is a contribution to STS in that it tackles the ethical and aesthetic issues that arise with an "instrument" that rejects identity, drawing on ethnographic data from a study on a New York based weekly "open electro-acoustic jam session".

The Sound of Information Theory. *Nicholas A Knouf, Cornell University*

This paper investigates the histories and prehistories of information theory and its manifestation within sonic practice. Noting that Claude Shannon's formulation is dependent on research into sound at Bell Laboratories and AT&T from the early twentieth-century, I examine the debates over "noise", including what types of noises to send over telephone lines. The early years of information theory were themselves noisy, as competing definitions---hitherto ignored in most critical histories of the period---proliferated, yet were soon to dominated by Shannon's equations. My paper focuses specifically on the intertwining of information theory and music in the 1950s, as all of the major strands of avant-garde music at the time (musique concrete, elektronishe musik, tape music, and algorithmic composition) involved researchers attuned to the latest developments in information theory. Through a comprehensive examination of publications and technical reports of this period, I pull out two strands: one that used information theory to reify existing musical categories, and the other which used information theory to broaden the potentials for new forms of composition. Through the work of Abraham Moles and Milton Babbitt in particular, the paper argues for the need for historiographic attention to the imbrication of information theory and the arts in order to augment our understanding of this period. This offers a counter to recent attention to the role of first-order cybernetics in the period, as importantly these musical works leave out feedback connections between the transmitter and the receiver.

322. Speculative objects, stories and boundary work

4:00 to 5:30 pm
Solbjerg Plads: SPs12

If we look at current social studies of scientific futures and future technologies, much effort has been put to imagine societal actors, practices and scenarios in order to ad-dress various models of upstream engagement and public participation with scientific work. Nanoscience and Nanotechnologies are a vivid example of how social sciences are apt to address the 'co-production' and 'co-emergence ' of science and society. In-terestingly, these studies draw heavily on the politics and governance set up by soci-etal actors but are not very much concerned with the political agency of the objects themselves and the different ways of how scientific objects enact and propose societal futures. The session draws attention to the politics of imagination as enacted by the different processes of designing speculative objects. The contributions consider a speculative version of Science Studies to locate, account for, conceptualize and inter-cede for situations where the production of such speculative objects and their experi-mentations in practice take place. The contributions include the controversies of nano-objets, animal productions sytems, sheep and the Turin Shrout.

Chair:

Michael Schillmeier, Ludwig Maximilian University of Munich

Participants:

Nano-Futures – Nanomedical research between future-

absorbent fictions and specu-lative in(ter)ventions. *Michael Schillmeier, Ludwig Maximilian University of Munich*; *Anton Schröpfer, Department of Sociology*

Since its exploration, western human diseases such as cancer, atherosclerosis or arthri-tis remain widely unresolved for medical research and name highly complex sets of multi-modal problems. Following the rhetoric of policy and research policy, though, current nanomedical innovations are thought to 'revolutionize' the understanding and treatment of such diseases. The spectrum of associated nano-visions is large and cir-cumscribe to being a 'risk-sensitive' and sustainable contribution to the future of 'personalized medicine', up to the possibility of 'healing' and even 'eradicating' current life-threatening diseases. Despite such a general vision about nanomedicine, the presentation will offer a closer look at the specific nanomedical laboratory research and it will argue that such 'nano-visions' are more or less hasty and rather simplistic fictions of current future-rhetoric of nanomedicical discourse. Drawing on multi-sited ethnographic work we will show how nano-laboratory work encounters controversial and protracted nano-objects which constantly 'object to' the laboratory setting and related practices, devices and forms of knowledge. In effect, such highly unknown agency of nano-objects provoke processes of speculative in(ter)ventions of nanomedical research. Following I. Sten-gers, these processes articulate and demand a complex 'ecology of practice' of emerg-ing subjects, objects and concepts, who/which to be innovative, require a deceleration of laboratory work in order to successfully experiment with the requirements of de-signing complex nano-medical speculative objects. The presentation outlines how speculative in(ter)ventions emerge in the laboratory and how they become ambivalent mediators of different and multiple nano-futures that controversially relate to the vi-sions and futures as imagined by the rhetoric of research policy.

Stories that Matter: Making facts and fiction at an archeology site. *Masae Kato, University of Amsterdam*; *Amade M'charek, Universiteit van Amsterdam*

Science and Technologies Studies have paid considerable attention to facts, how they get made and what efforts it takes to stabilize them. Little attention has been paid to fiction and the relevance of fiction for fact making. Obviously, fiction has lost its connotation with falsehood. Following James Clifford (1986) it is best seen it as 'partial truth', as 'something made and made-up'. In that sense facts and fictions can be treated in a symmetrical way. Fiction we suggest is best understood as a collection of situated devices that help to understand, rebut or communicate the facts. In this paper we examine cases from archaeology and focus on human remains to view how facts and fictions are produced together in a process of making sense of archaeological finds. As we will show this process of sense making is a simultaneous process of story making. In the cases we study such stories are publicized and function as emblems of the archaeological sites that are often in the middle of modern cities. Stories thus draw-in the public and provide a profile of the place, and in so doing they contribute to a sense of belonging between the remains from ancient times and the local people in the here and now. In this paper we examine the stuff that facts and fictions are made of and how these are narrated in a story. What stories become effective in producing a sense of belonging? And how are such stories made effective? How are they mediated? To what others objects, figures, localities are they attached?

Negotiation of Knowledge and Practice – Boundary Work on Reiki, Osteopathy and Naprapathy in Sweden. *Jenny-Ann Brodin Danell, Department of Sociology, Umeå university*

Recent research shows that alternative, complementary and integrative medicines (ACIM) are increasingly popular and frequently used by the general population in Western societies. ACIM is also a field characterized by rapid transformation,

where traditions such as acupuncture and chiropractic have gone from being considered as "alternative" to become more or less accepted and integrated in biomedical contexts. However, this is a process characterized by conflicts, negotiations, and compromises. A crucial aspect is that most ACIM traditions, at least to some extent, rely on knowledge in conflict with biomedical norms. Some – both individual practitioners and ACIM associations – strive for acceptance and collaboration in relation to biomedical establishment, while others prefer separation and protect different forms of "alternative rationality", i.e. tools of diagnosis and methods of treatments outside biomedical knowledge. In this paper, I will analyze how three ACIM traditions (Reiki, Osteopathy, and Naprapathy) frame, translate, and negotiate their knowledge and practice to achieve legitimacy and credibility. Empirically, the paper is based on written documents and interviews with representatives of Reiki, Osteopathy, and Naprapathy associations in Sweden. These associations represent different strategies and counterparts, from internal work to establish common ethical guidelines and minimum content in education – to governmental lobby work to achieve state controlled education and licenses, collaboration with biomedical researchers, and production of knowledge in order to become legitimate actors in public health care. They also represent different views on the boundaries of biomedical knowledge, what is reasonable to negotiate – and how it can be done.

323. Technologies of acceptance, ecologies of transformation

4:00 to 5:30 pm
Solbjerg Plads: SPs14

This session explores the necessity of negative and positive spaces (both physical and metaphysical) within ecology and technology, entangling ideas of good and evil, right and wrong, and other such dichotomies of morality. As we transition from a (possibly never-)modern/post-modern condition to a potentially posthuman world, how might ecological thinking be useful in shaping our understanding of differences and the grey spaces and complex paradoxes in between? Using theories of difference, relation and inter(intra-)action, we dig deeper into the rhizomatic spaces between the more frequently discussed dichotomies of modernity. While interrogation of the material-discursive, nature-culture, natural-artificial and human-nonhuman are now common topics within STS theory and practice, questions of morality are still deeply implicated within these dichotomies. In a time of increasingly apocalyptic discourse, judgments of right and wrong underlie many environmental and technological discourses. For instance, in encountering environmental issues, how and who decides which ecological state is the "correct" one, what to preserve or return to? How might technologies that transform waste and wastelands into usable resources and spaces be understood, not only in their material implications but also in how they impact imaginaries surrounding human-nonhuman relations? In what ways can the ethics of technological approaches or solutions to human-defined anthropogenic problems be unpacked and understood? Uniting the papers in this session is a common desire to question assumptions of how things are, how they should be, and how they might yet be.

Chair:

Lisa M Cockburn, York University

Participants:

Locating Abundant Futures: Technology as Philanthropy in Silicon Valley. *Brittney Fosbrook, York University*

"Imagine a world of nine billion people with clean water, nutritious food, affordable housing, personalized education, top-tier medical care and nonpolluting, ubiquitous energy," write Silicon Valley entrepreneurs Peter Diamandis and Steven Kotler in their 2012 book, Abundance: The Future is Better Than You Think. For Diamandis and Kotler, technological scarcity is contextually bound to 'unproductive' critical thinking. By their estimation, innovation, in the form of exponential technologies,

is the key that will turn scarcity into abundance. Exponential technologies, encompassed under the term 'breakthrough philanthropy,' include engineering 'smarter than human' intelligence, 'curing' death, and commercializing space. Taking Abundance as a case study, this paper aims to trace the technopolitical constitutions gathering as entrepreneurial technologists are imagining and engineering disruptive technologies aimed at addressing humanity's greatest challenges. I first ask, what are exponential technologies, and then I ask, in what ways do these entrepreneurs articulate how this movement differs from previously failed techno-utopian movements? This will allow me to speculatively describe how exponential technologies have emerged at the beginning of the twenty-first century in Silicon Valley as 'self-evident' humanitarian solutions. As STS scholars have taken a turn from the critical to the constructive, how are we to trouble these seemingly hopeful, technologically mediated 'solutions' without being subsumed into critique? In locating this imagined abundant future, I pay close attention to the specific historical priorities, capital strategies, and geographies united under breakthrough philanthropy, staying close to what this constitution erases.

Objective Lenses? Planet Earth's HD Cameras as Political and Situated. *Eleanor Louson, York University*

I explore the politics inhabiting the high-definition cameras employed in the BBC Natural History Unit's documentary series Planet Earth (2006), as well as the contribution of these cameras to the program's purported objectivity. Filmmakers call on the technological sophistication of Planet Earth's HD cameras, as well as the use of novel filming techniques, to promote the documentary providing an unmediated and nondisruptive view of nature. However, as in most "blue-chip" wildlife programming, Planet Earth provides only one view of nature among many possible views, in this case one bereft of human beings and traces of civilization, devoid of animal behavior with no easy sociobiological explanation, and lacking any departure from heteronormative sexual behavior in the animal kingdom. I argue that Planet Earth's cameras offer a spectacular helicopter's-(and even satellite's-)eye view of nature, which is easily conflated with an objective view from nowhere; their hidden politics are reactionary, and promote an essentially conservative reading of nature and a naturalized account of human beings. These cameras can only offer partial perspectives, both literally and in terms of the stories about nature they have been enlisted to tell. As such, these documentary cameras can be fruitfully described within Haraway's account of situated knowledges. Our access to the natural world is mediated by these cameras, and their imperceptibility is part of that mediation.

"Death is Not the Opposite of Life": Ecological and Ethical Reckoning in a Posthuman World. *Lisa M Cockburn, York University*

Hauntingly absent from many onto-epistemological discussions within STS is a discussion of the concept and reality of death, the shadow side of emergence through which transformation, forgiveness and acceptance of difference become possible. Building on current lines of thinking within both anthropological theory and environmental philosophy, I explore how fear of death marks modern dichotomies, and I argue that facing and accepting death is key to diffusing dichotomies of black and white to shades of grey. In death lies the key to ethically engaging with the stuff that inhabits the grey spaces between abstraction and particularity. How is technology understood in terms of its relationship with death? Paying particular attention to the ecological sciences as a potential inspiration for alternative relationships with death than those emerging from laboratory sciences, I will trace various ways in which death is encountered or elided within modern scientific discourses and practices. I explore the concept of waste in ecology and the idea that waste is a material embodiment of death in modern human-nonhuman assemblages. Waste-to-energy technologies may signify a

material reimagining of the substance of waste, and through it our relationship with death. When there are no absolutes, only relations, what we are called to is a neo-animistic ethics that explicitly deals not only with creation, but also with the intricate web of death, acceptance and forgiveness.

Distinctions & Networks: The Mechanism of Frustration. *Adi Rivka Inbar, Ben Gurion University of the Negev*

During four years (2008-2012) a detailed ethnographic field work was conducted in an Israeli academic research setting, paying particular attention to relationships between scientists and members of the local community during technoscientific knowledge production processes. The goal was to explore the feasibility of the post-colonial demand to turn these processes open, participatory & democratic. Analysis of the data suggested the following results: (1) heterogeneous ANT-like networks were detected; (2) within those networks, a clear distinction emerged between those who are 'scientists' and those who are 'not', and what is 'scientific' and what is 'not'; (3) these categories were actively maintained by all members of the network; (4) Moreover, network and distinctions seem to not only reside one next to the other, but actually support each other: the distinctions were the catalyst for the different members of the network to enter the relationships, as well as the marker predicting the value of the knowledge produced. When considered in the context of 'applied science', or the post-colonial demand of democratization, these results suggest the existence of a 'Mechanism of Frustration', by which technoscience can never truly fulfill the great expectation of development – it is constructed by social distinctions that are valuable to all members of the network, and thus is not compliant with notions such as 'democratization'. By presenting empirical evidence which points at a possible adjoining social mechanism between 'network' and 'distinction', this project might be a stable basis to build upon a larger unison social theory.

Discussant:

Maria Puig de la Bellacasa, University of Leicester

324. (92) Connecting and comparing concepts of practice - III

4:00 to 5:30 pm
Solbjerg Plads: SPs16
Chairs:

Elizabeth Shove, Lancaster University
Nicola Jane Spurling, Manchester University
Gordon Walker, Lancaster University

Participants:

Aligning (or not?) images, things and competences. *Ralf Brand, The University of Manchester*

Attempts to capture social practices analytically often revolve around three key parameters: images / meanings; things / artefacts; competences / skills. But in what relationship do these parameters stand to each other? What happens, for example, when these parameters are not perfectly aligned? When they are not – like in a vector field – all pulling in the same direction towards facilitating a certain social practice? For example, is cycling likely to occur if someone thinks cycling is good, is able to cycle but does not have access to a good cycle lane? Can the positively facilitative quality of the image and skills 'override' the less than optimal material situation? Is the answer specific to each particular social practice or is there a general pattern of relationships between these parameters? This paper pursues such questions by focussing on one particular and somewhat special social practice: "Practising faith away from one's own community", empirically studied in so-called "Multi-Faith Spaces" (MFS) during a large, three year project. These spaces offer the opportunity to test the role of artefacts and competences in contrast to what seems to be rather strong images and

meanings, that is, beliefs and theological positions which are often portrayed as purely mental and non-negotiable. An extra methodological advantage of MFS is their 'disruptive' quality (compared to someone's 'home' church, mosque etc.) which requires a reassessment of routines, which can be interpreted as a reflection – albeit subconscious – of the priorities across the parameters of the social practice.

Modern Craft: Locating the Material in a Digital World.
Daniela K Rosner, UC Berkeley, School of Information

Through a close examination of craft practice in San Francisco, US and Cambridge, UK, this paper draws attention to the form, character, and variety of material practices by which cultural value is reproduced. It takes as its particular focus the site of a knitting guild in San Francisco, CA, and a bookbinding workshop in Cambridge, UK. Framed through the lens of embodied knowledge and skilled labor, this work is meant as a multi-site investigation into the subjectivity of making that comes, in part, from a desire to seek refuge from the incessant demands of information technology (IT). However, this analysis finds that even traditional crafts are (perhaps paradoxically) maintained through digital engagements. The fact that IT contributes to the longevity of cultural material challenges mainstream notions of digital media as ephemeral and separate from matter. It further highlights the materiality of technology in contemporary Western contexts to argue that handcraft ought to be viewed as an instance of how techniques and meaning are mutually enacted rather than confirmation of what the materials represent.

The Social Practice of Flow: Design from a practice lens.
Graham Dean, Lancaster University

'Flow' (Csikszentmihalyi 1991) has traditionally been conceived of as a psychological phenomenon or experiential state related to an individual. It has been described as "the state in which people are so involved in an activity that nothing else seems to matter". The relationship between skill and the perceived difficulty level of a task has been identified as a 'condition' for flow, but this account fails to consider both the trajectory of achieving flow or its social nature. How might we achieve a social understanding of the conditions around this phenomenon, understand how people move into flow, and how might we then use this understanding to support the achievement of flow in a particular class of socio-technical system? The approach taken in this work is to use practice theory (Schatzki 1996, Reckwitz 2002, Gherardi 2009) as an analytical lens to study the emerging area of digital craft, and digital maker culture more generally (Kuznetsov & Paulos 2010, Wang & Kaye 2011). The work makes use of Reckwitz's conception of practice as an 'interconnection of bodily activities, mental activities, 'things' and their uses and background knowledge', which aligns with the embodied nature of craft practice, and centralizes the background knowledge elements of this model in understanding two key digital craft practices, 'tinkering' and 'collaboration', and their relationship with flow. There are two contributions from this research: (i) insights into the importance of flow in digital craft and digital maker culture, and (ii) methodological choices for the study of a particular class of socio-technical systems.

Scientific writing, in mexican PhD apprenticeships: bridging theories. *Alma Carrasco Altamirano, Benemérita Universidad Autónoma de Puebla*; *Rollin Kent, Benemerita Universidad Autonoma de Puebla*

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This paper suggests that PhD apprenticeships in English scientific writing as a complex social practice may be fruitfully analyzed by combining two relatively separate fields: the sociocultural theory of writing and the socio-anthropological study of scientific practice and organization. One crucial set of practices in PhD who publishing a journal article, a decisive step in gaining recognition as a scientist. Learning to write is a complex experience for PhD apprentices (Starke-Meyerring, 2011). Move from a position of "peripheral participation with legitimate access to the arena of mature practice" (Lave, 2011: 68) in order to become experts (Laudel and Gläser 2008, Delamont & Atkinson 2001). This implies learning to develop arguments, a social practice that "builds relationships and connections to social institutions based on adopting certain cultural ideologies or discourses held not only in the minds of a group of people but are also in the material structure, space, and organization of a particular literacy event" (Newell, et al., 2011: 288). Building this habitus is predicated on gaining recognition for scientific authorship in a discipline. This exploratory study presents initial results from fieldwork in seven different disciplines in Mexican research centers. Using Atlas.ti, interviews in each discipline were explored for commonalities and differences in PhD students' writing experiences. Implications are drawn for combining the socio-cultural theory of writing and the social study of science.