

# In-Action Ethics

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The emergence of ‘third paradigm’ Human–Computer Interaction (HCI) was driven by the shortcomings of existing approaches to adequately describe and understand the ways people interact with a new breed of pervasive digital technologies in everyday life. In response, new approaches became situated, value-driven and participatory with a shift towards studying HCI in the wild. With technology reaching into every aspect of our lives, the ethical and moral responsibilities of designers and researchers have increased. However, while HCI’s design and research methodology have become fluid and responsive to reflect the paradigm shift, ethics is still widely interpreted as a static, anticipatory and formalised process. In this article, we address this gap and propose In-Action Ethics as a novel framework that links anticipatory ethics with the practice of HCI research. We start by laying out the foundations for In-Action Ethics by reviewing relevant work in ethics and moral philosophy, and discuss the current state of ethical perspectives in HCI, Action Research and Responsible Science and Innovation. We provide two examples from our own work to show how situated, explorative and design-oriented HCI projects raise issues of ethical importance that formal ethics is struggling to manage. On the basis of our experiences and those of others, we start developing key qualities for an In-Action Ethics framework and show how those qualities can be operationalised in relation to the realities of existing structures by introducing the concept of ethos building and care.

## RESEARCH HIGHLIGHTS

- Commonly used anticipatory and formalised ethics processes are insufficient to respond to third paradigm HCI ethical dilemmas.
- Based on related literature and experiences from our own work, we develop qualities for a new ethics framework to fill this gap.
- In-Action Ethics is situated and responsive, extending existing ethics structures that continue to provide important safeguards.
- The concept of ethos building is introduced as a way to operationalise In-Action Ethics.

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## 1. INTRODUCTION

The pervasiveness of technology in our lives demonstrates just how intertwined its role is with many different aspects of our lived experience. Consequently, the ethical and moral responsibilities of designers and researchers in the field have increased sharply as their technologies are not isolated phenomena, but shape societies and being human are (cf., Sellen *et al.*, 2009). However, while our research and design approaches have adjusted, shifted and evolved to respond to the new challenges

arising from these new application areas and opportunity spaces, we argue that ethical concerns are still managed in the mindset of past paradigms where pre-defined requirements determined methods and outcomes. While technology design has become explorative, situated and responsive, the accompanying ethics processes largely remain static and anticipatory (see also the discussion in Munteanu *et al.*, 2015). This article is precisely about this gap and possible ways to complement existing ethics structures and processes to close it.

The field of human–computer interaction (HCI) has undergone a number of fundamental paradigm shifts, each rooted in the diversification of possible applications of increasingly powerful computing technology and the resulting necessity of being able to describe, understand and design for these new application areas. Harrison *et al.* (2007) have used the seminal work on scientific revolutions by Kuhn (1970) to critically reflect on HCI research and have identified three major paradigms: the engineering and human factors paradigm, the cognitive revolution paradigm and finally the emerging situated perspectives paradigm. This last paradigm sees ‘interaction as phenomenologically situated’ (Harrison *et al.*, 2007), which accounts for the wide range of real-world situations and contexts in which people use technology driven by a multitude of motivations. This shift destabilised the epistemological foundations of HCI and consequently had significant impacts on the methodology used. Various strands in the philosophy of science have influenced our understanding of HCI research and informed our efforts to underpin this shift, e.g. constructivism in that knowledge is socially constructed; phenomenology in the way we interact with our environment; pragmatism in terms of real-world relevance; feminist thinking in that nothing ever is free of ideology; or critical realism in that knowledge is stratified (e.g. Bardzell and Bardzell, 2011; Dourish, 2001; Frauenberger, 2016; Harrison *et al.*, 2011).

Third paradigm HCI consequently recognises designers and researchers as active, human stakeholders, rather than invisible, rational facilitators. It acknowledges the provisionality of the knowledge that it generates and the centrality of values as motivational drivers for designers, researchers and users. It borrows methods from ethnography, action research and sociology more generally, and has developed its own, mainly mixed methods approaches to understand the new roles of technology. Design thinking, as a way of creating things in context, has sought to broaden the narrow focus on function and performance and the participation of users and other stakeholders in the design process increasingly is given room for pragmatic and ideological reasons. As a consequence the process and its outcome are becoming inseparably entangled: research through (participatory) design makes it impossible to consider the ethics of engaging users without also addressing the ethics of the emerging outcome.

The shift in HCI has been fundamental and many of the new perspectives provide scope for an ethical discourse about what impacts technologies have on individuals or society at large, and consequently what responsibilities the creators have. Value-sensitive design, for example, explicitly draws attention to the values all stakeholders bring to the table when designing technology and calls for a reflective practice that make these values transparently available in the process (Friedman *et al.*, 2008). Most interpretations of participatory design (PD) too have strong moral agendas, promoting democratisation, empowerment and co-determination (Ehn, 1989).

As Steen (2014) rightly remarks ‘When we open the ‘black boxes’ of design practices, we find them filled with ethics’. However, many of these qualities remain implicit and unconnected to the formal ethics processes that typically accompany projects. We argue that, while formal ethics procedures are important safeguards and support researchers in planning their work, they are not sufficient on their own to manage the ethical dimensions that emerge from a situated understanding of HCI with all its epistemological and methodological consequences. Work in HCI has become dynamic, unpredictable and participatory so that we need to extend our approach to ethics to reach into these processes and practices. We have called the approach we propose to address this **In-Action Ethics**, referring in part to Schön (1983) and his notion of how knowledge is tacit in action. Munteanu *et al.* (2015) have recently called for the future development of a ‘situational ethics’ framework, motivated by observing the same gap between formal ethics and practical HCI work. Building on the same argument, we aim to make progress in developing such a new framework for HCI, but suggest that In-Action Ethics is a more appropriate term. It emphasises the inseparability of ethics and design as an activity and is broader in scope as it shifts the focus from the situated subject to a deeply interwoven and participatory practice. We start constructing In-Action Ethics by defining its essential qualities which we derive from archetypal ethical concerns in modern HCI projects. Subsequently, we go on to discuss how In-action Ethics can be operationalised within the reality of existing ethics structures through the concept of ethos. While this discussion focuses on an academic research context, we argue that more applied HCI work in industrial contexts would benefit from a discussion along similar lines.

We start by providing a synopsis of relevant ethics research. Subsequently, we examine the ethical dimensions in current, third paradigm HCI work and highlight the parallels to the debate around ethics in Action Research. We continue by grounding the discussion by providing examples from our own work which highlights ethical dilemmas that are difficult to manage within a purely anticipatory ethics regime. Responding to these challenges, and those identified by others, we develop the In-action Ethics framework and discuss how it can be operationalised and its possible limitations. We close by summarising our contribution and laying out future work.

## 2. BACKGROUND

While ‘ethics’ as a term is broadly used, its interpretation and conceptualisation differs widely. To embed our argument in relevant work, we start by offering a working definition of ethics and discuss its use in science and research. Subsequently, we provide a semi-historical account of the major ethics frameworks, their developments and critiques.

By this, we are able to highlight how similar meta-physical arguments have driven HCI and the field of ethics towards more situated understandings in their respective contexts. We then investigate the implicit roles of ethics in contemporary HCI and show how ethical concerns are ingrained in some of the major approaches in the field, such as PD, value-based design or feminism. We also discuss how related professional bodies have responded to the need for appropriate ethical conduct and refer to recent HCI literature that demonstrate the field's raising awareness of the existing need to evolve our approach to ethics.

Action Research (AR) shares some of the intentions, methods and underlying philosophical positions with modern HCI work. Thus, we continue by reviewing the ethics discourse in AR and show how it links in with the argument we are making here. Policy makers and funding agencies have recently engaged in discussing ethics as an integrative part of a more holistic perspective which has led to the development of the Responsible Research and Innovation (RRI) framework, discussed in Section 2.5. RRI too puts forth similar arguments around flexibility and responsiveness, albeit on a higher level. Finally, we briefly review the current standard approach to research ethics in HCI. We discuss its historical origins and its focus on 'doing-no-harm', before exemplifying its contemporary implementation in the European Union's research programme Horizon 2020.

We close this background section by providing a critical synopsis that opens the gap and establishes the need for an evolved approach to ethics in HCI. Together with the examples from our own work that follow in Section 3, this synopsis provides the starting point for developing In-action Ethics.

### 2.1. What is ethics?

Ethics as a discipline is the philosophical and systematic study of morality which is expressed in enquiries into the nature of the good life, how we should live, what kind of society we want to live in, and how we should treat others (Frankena, 1973; Williams and Moore, 2006). This kind of ethics is expressed in normative ethical theories which can provide frameworks for assessing how people should act in particular situations. In a research context, ethics is broadly used to refer to the normative and regulatory tool kits that provide guidance to constructing good research practices and to the processes related to obtaining research clearance. Research ethics comprises a rule-centred activity which leaves little room for reflection. In practice, this kind of ethics mixes both ethical and legal considerations and its focus is on protecting human participants in research as well as the researchers themselves and their institutions. This is the type of formal ethics that characterises the work performed by research ethics committees, or, institutional review boards, which we call formal and anticipatory in this paper. Finally,

on the level of practice, such as in PD, the meaning of ethics seems to be closer to that of *ethos*, a moral commitment or stance, or a moral attitude that underlies a particular practice. Such a stance is ingrained in the practice, it guides it from within, but it is not necessarily sufficient in providing ethics guidance on its own, as other practices and restraints (such as those of the scientific community, academic institutions, requirements of funding bodies, legal frameworks, etc.) might impose their rules and requirements on the practice. Moreover, an *ethos* might be misguided and in need of correction.

### 2.2. Frameworks and developments in ethics

Approaches to studying ethics can be classified in various ways. In academic ethics a division is sometimes made between theoretical and applied ethics (Singer, 1986) to distinguish between the various kinds of foci that ethical investigations can have. In this distinction, theoretical ethics refers to the analysis of moral concepts such as 'good', 'bad' and 'right', 'wrong', 'responsibility', etc. Theoretical ethics, referred to also as meta-ethics, also concerns itself with the fundamental question whether morality can be said to exist in the first place or whether moral judgements can be justified in any objective way similar to those in which our factual judgements can be justified (see, for example, Frankena, 1973). Often, as Almond writes, 'ethical theory is limited to a kind of moral ontology or epistemology: a theory of moral knowledge which concerns itself with ethical language and its uses and conventions, while applied ethics is confined to the particular and concrete' (Almond, 1995, p2). Somewhere in-between theoretical ethics and applied ethics lie the main theories of normative ethics which attempt to 'discover, formulate and defend the most fundamental principles about morally right action' (Feldman, 1978, p. 10) and have as their goal to answer in a rational, coherent, anti-dogmatic and argumentative way what people should do (Almond, 1995; Borry *et al.*, 2007).

We identify three developments in the history of philosophy that characterise ethical theorising in the last four decades. The first of these developments deals with the increased interest in practical ethical problems, where the focus of the attention shifted in the early 1970s to ethical issues that arise in life's various contexts, such as medicine, the professions, family life and engineering (see, for example, Held, 1989; Singer, 1986). The second development is the emergence of feminist critique to normative ethical theories which gave rise to the body of ethical debate known today as ethics of care (see, for example, Gilligan, 1982; Held, 1993). The third development relates to the first two and it deals with the role and relationship of formal principles and empirical knowledge in moral philosophy and applied ethics in particular and it has come to be known as the empirical turn in ethics (see, for

example, [Willems and Pols, 2010](#)). Below, we will discuss these three developments in more detail.

### 2.2.1. *Applied ethics*

The attention on practical ethics, or applied ethics, is by no means new as such to ethical investigation (see, for example, [Almond, 1995](#); [Held, 1989](#); [Singer, 1986](#)). It had only faded into the background of academic philosophical ethics for the best part of the twentieth century when academic ethics was preoccupied with meta-ethical theorising (e.g. [Moore, 1903](#)), particularly debating the meaning of terms used in the language of ethics and whether statements in ethics would be truth-apt<sup>1</sup> or not. Throughout its history, beginning with the ancient Greeks, moral philosophy has always (also) been interested in practical matters such as the foundations of a good society. What have contributed to the attention to applied ethics as Almond wrote in 1995 are ‘new technologies, revolutions in communication, new weapons of indiscriminate destruction, and unprecedented increase in the impact of humans on their environment and support systems.’ In particular, the rapid development in the field of medicine, including the methods and technologies surrounding reproduction and those affecting the end of life gave rise to an increased interest in applied ethics, not only theoretically, but also as a source of guidance in countering genuine real-life ethical problems.

The new attention to practical ethics brought about vast literature addressing applied ethics and real-life issues. In the field of medicine, in particular, the four-principles-approach introduced by [Beauchamp and Childress \(2001\)](#) (the first edition appeared in 1979) gained in popularity as it promised to provide a tool for everyone interested in ethics and ethical controversies in the field of medicine to discuss ethics and solve real and pressing problems in a systematic way. The four principles of autonomy, benevolence, non-maleficence and justice were quickly established as aids in moral decision making in the context of medical care. However, by the turn of the millennium the principle-based framework had experienced what one of its advocates [Gillon \(2003\)](#) termed ‘a backlash by some bio-ethicists against this approach, with among others, adherents of feminist ethics, narrative ethics, virtue ethics, and various varieties of regional ethics claiming to offer better approaches to medical ethics.’

Both the ethical theorising in applied ethics and the attention given to particular kinds of issues were called into question by the critique. There appears to be a discrepancy between what people perceive as ethical issues in their everyday lives and work and those that presented in the media. Typically, the popular media attention to ethics centres on the catastrophic and extreme, life-and-death issues. This helps

cloud the fact that there are important, although less extreme issues that prevail in contexts of work and everyday life that nevertheless deserve to be identified as ‘ethical’. These are the very questions that concern people’s private and professionals lives that are at risk of becoming invisible if we rely on a focus on the extreme in addressing both medical and engineering ethics issues. Arguing from the perspective of nursing home care, [Powers \(2000\)](#) points out that attention to commonplace ethical issues remains limited due to formalised ethical decision making in clinical (nursing home) ethics committees turning to difficult life-and-death issues. [Powers \(2000\)](#) called for a greater scope for what counts as an ethical matter in nursing home settings; however, this can be interpreted as a general plea for more situated and contextual approaches to recognise the significance of ethical dimensions in all human interaction.

### 2.2.2. *The feminist/constructivist critique*

As a second recent major development in moral philosophy we identify the feminist critique on established and traditional moral theory. Dating back to the early 1980s, this perspective evolved from the pioneering work of Carol Gilligan and her now classic text *In a Different Voice* ([Gilligan, 1982](#)). Gilligan based her work on interviews with women and discovered a way of addressing ethics and a moral imperative which was different from the conception of morality that centres on competing rights, something compatible with the dominant view of normative theories and often attributed to a male perspective to ethics. Gilligan writes: ‘In this conception, the moral problem arises from conflicting responsibilities rather than from competing rights and requires for its resolution a mode of thinking that is contextual and narrative rather than formal and abstract. This conception of morality, as concerned with the activity of care, centres moral development around the understanding of responsibility and relationships, just as the conception of morality as fairness ties moral development to the understanding of rights and rules’ (*ibid*, p. 19). Following Gilligan, [Tronto \(1993\)](#), [Held \(1993\)](#) and many other influential authors, the perspective of care came to draw attention to the place of context, relationships, narratives, responsibility, and particularity in moral thinking. In sum, the various versions of ethics of care, as observed by [Verkerk \(2007\)](#), ‘contain at least the two following assumptions: (1) the main characteristic of human existence is relationality and is valued as such and (2) moral reasoning is characterised by moral sensitivity, attentiveness and connectedness’ (*ibid*, p. 67).

### 2.2.3. *Empirical ethics*

The third and most recent development in ethical theorising that we introduce can be seen as building on the first two. Although applied ethics was meant to be more focused on those contexts in which ethical issues arise, these contexts were typically constructed by social science research. The

<sup>1</sup>‘A sentence is truth apt if there is some context in which it could be uttered (with its present meaning) and express a true or false proposition.’ - [Truth-Apt \(2016\)](#).

primacy of normative ethical theory over practice and authoritative knowledge of theoretical ethics prevailed in early applied ethics. The feminist critique and ethics of care called for more attention to the context and ethicists, who closely cooperate with participants in particular settings where ethical issues arise. Parker (2009) summarises the common critique of ethics theory prevailing over practice: ‘Too little empirical knowledge is utilised in ethical deliberation and in formulating policy in the areas of bio-ethical concern’ (p. 202).

An increased focus on the role of empirical knowledge in ethics has been termed empirical ethics (Musschenga, 2005). In particular, the area of health care ethics has been shaped by an ‘empirical turn’ over the last two decades characterised by the increasing role of empirical research in ethical deliberation. Another shift in the focus of topics can be seen. Whereas in the early days of applied ethics, the typical health care ethics concerns centred around life and death issues, the empirical turn has contributed to the fact that less spectacular everyday topics have become of interest for empirical ethical studies (Willems and Pols, 2010). In this way, for example, nurses’ reasoning on the relationship of the empirical and the normative, however, a definitive method for combining the two is yet to be developed (Leget *et al.*, 2009).

### 2.3. Ethics in HCI

Being literally on the interface between humans and computers, HCI inherently has ethical dimensions. What designers do impacts on people—individuals as well as society. There are different views on how values and morality impact on the use of technology (Friedman and Kahn, 2003): either through the intent of the designer, i.e. the designers’ values, embedded in the technology make people use it in a certain way (*technological determinism*). Or that societal factors determine the use of technology (*exogenous position*) or that it is a dialectic process in which designers’ intent and societal context interact to determine technology use, which seems to be the preferred reading now. In any case, HCI has no longer any excuse to not be concerned about the values that are embedded in its processes and artefacts, and how they interact with society. What used to be good enough in the human factors paradigm, namely how to optimise usability, is not sufficient anymore as we become aware that usability can also work against fundamental human interests. The tension between the human rights to privacy and tailored Internet search results provides a timely example.

In response, most professional bodies as well as related funding bodies have developed regulatory ethics guidelines, the ACM Code of Ethics (ACM, 2015), for example, or the ESRC<sup>2</sup> Framework for research ethics (ESRC, 2015). These

guidelines set out some fundamental moral positions, like to ‘*protect fundamental human rights and to respect the diversity of all cultures*’ (Section 1.1. ACM, 2015) or very specific guidance for research procedures, like seeking informed consent from participants including regulatory oversight by research ethics committees (cf. ESRC, 2015). What is striking, however, is that the focus in these guidelines lies either on fundamental moral positions which can only be operationalised in the spirit of virtue ethics, or on formalised, anticipatory ethics procedures which leave little room for the ethical dilemmas that arise in design-based explorations of technology, as argued above. Dearden (2013), for example states: ‘None of these professional codes discuss harms that might arise in exploratory research.’ (p. 4) discussing the shortcomings of professional codes in guiding researchers in the context of Information and Communication Technology and dealing with daily ethical nursing dilemmas has been studied relying on quantitative methods of social research (Casterlé *et al.*, 2004), allowing their decision making processes to become visible and available for developing ethics in nursing. Much research interest currently focuses for Development (ICT4D). Within the same context of ICT4D, Sterling and Rangaswamy (2010) provide an example for the limitations of formalised conceptions of informed consent, arguing that a more dialectic approach is needed.

Like most ethics in (former) engineering fields, professional codes tend to see creating technology as a form of social experimentation (Martin and Schinzingler, 2010, p. 77), i.e. technology is created by ‘good’ designers and then introduced to society in good faith, but with some uncertainty regarding the effect ‘in the wild’. We think it is fair to say that much HCI research operates on this ethical basis. In contrast, Devon and van de Poel (2004) see design as a social activity and consequently propose a social ethics approach that focuses on processes and social arrangements in design as the basis for decisions which shape the outcomes. They do not deny that individual ethics has its merits, but that it is powerless if it is not complemented by a social ethics approach. Bratteteig and Wagner (2012) provide a compelling example for the significance of social arrangements as they have investigated the power-relationships between stakeholders in a PD process and their tacit impacts on design decisions.

While taking a more individual perspective as a starting point, value-sensitive design (VSD) became an important influence in the third paradigm HCI (Friedman *et al.*, 2008). VSD postulates that each of the stakeholders, but most importantly designers themselves, bring a certain set of values to the table and that processes need to allow for them to express and negotiate these values to transparently inform design (cf. Halloran *et al.*, 2009). ‘*Folding human values into the research and design cycle.*’, as Sellen *et al.* (2009) put it.

<sup>2</sup>While the UK Economic and Social Research Council’s main focus does not lie on technology or design, its social research standards are the guiding

principles by which related funding bodies assess ethics in proposed research projects that involve human participants, such as HCI.

Closely related is reflective design (Sengers *et al.*, 2005), which builds on critical theory and seeks to draw out values of designers and users by making technology itself a vehicle for reflection.

While VSD is in principle open for all kind of moral positions and is concerned about values of ethical import, PD, at least in the stricter Scandinavian interpretation, in itself represents a moral standpoint or ethos. Originating in the Scandinavian labour movement, values such as democratisation, empowerment and self-determination are deeply interwoven with, or in fact the drivers for, the practice, methodology and epistemology that the field has developed (Bødker *et al.*, 1987; Ehn, 1989). In more recent years, PD has increasingly been interpreted in a more pragmatic sense, seemingly detaching it from its ideological heritage (see Kensing, 2003, for a discussion). However, some argue that values are at the very heart of the practice: Iversen *et al.* (2012), for example, see values as the central pillar around which collaboration is organised. Values emerge from a dialectic process with stakeholders, are further developed in co-design activities, grounded in the practice and ultimately realised.

PD's own ethos, moral commitment and moral attitude, is ingrained in its practice and, thus guides it from within. Steen (2014, p. 9) sees 'promoting cooperation, collaborative curiosity, collaborative creativity and empowerment' as the key virtues needed in PD. The fundamental principles that underlie PD have been usefully elaborated by Robertson and Wagner (2012). These principles—which can also be called the moral basis of PD—include: (1) recognising that those who do a particular activity know most about how it gets done; (2) the importance of mutual learning and the development of shared understandings between designers and other participants; (3) the need to involve multiple voices and equalise their expression, of ensuring active and emancipatory participation, of taking a stand; (4) working with participants to represent their own actions—both current and desired future actions; (5) recognising that design will always be completed in use.

From a PD perspective, regulation-driven and formal approaches to research ethics often fail to offer appropriate guidance, because they miss an important point about the underlying ethos of the approach. This rather fundamental dichotomy between PD and the more formal, regulatory approaches to ethics can be described as the tension between the notions of human subjects and human participants. Addressing ethical decision-making and Internet research, Markham and Buchanan (2012) state that '[T]he concept of 'human subjects' is a persistent and contentious example of a dialectical tension between disciplinary/regulatory models and context-specific sensibilities'. The regulatory framework focusing on human subjects implies the need for protection from harm, while participatory approaches emphasise empowerment. Or over-simplifying it, while regulative ethics anonymises human participants for their protection, PD is all about giving them a face and a voice to empower them.

Equally, feminism has brought into HCI not only a philosophical debate around knowledge and 'science', but also a strong moral position in and by itself. Bardzell and Bardzell (2011) sketch a feminist methodology for HCI in which they reject moral objectivity with its claims to perspective-independent truth claims in the same way as constructivists argue for scientific knowledge. While fundamentally dialectically constructed, rather than transcending from an unaccountable distance (compare Haraway, 1988, who called this the 'god-trick'), feminist HCI defends fundamental moral values which are, much like those in PD, concerned about notions of justice and fairness.

The field of HCI and its relationship to formal ethics procedures is currently hotly debated (e.g. Davis and Waycott, 2015, as the latest of a series of workshops on the topic). Munteanu *et al.* (2015) seek to show through a number of case studies that 'contemporary HCI research often does not fit traditional or static ethical templates'. Arguing along the same lines as this article, they show the inadequacy of current ethics procedures and formalise some recommendations and call for the future development of a 'situational ethics' framework. Central to those recommendations is the ability to stay open and flexible about ethics, e.g. recognising 'ethical triggers' which indicate potential challenges in the implementation of the research or incorporating the possibility of assessing ethical risks in the field and adapting protocols accordingly. We fully agree with Munteanu *et al.* (2015) and build on their initial recommendations in making our own contribution to developing a new ethics framework for HCI. Using a similar approach, the examples below are intended to reveal some limitations of anticipatory ethics in the context of third paradigm HCI. We subsequently use these issues to develop central qualities of In-Action Ethics along with methods to operationalise them in design practice. As discussed above, we see In-Action Ethics as inclusive of what Munteanu *et al.* (2015) have called situational ethics as it adds a number of additional aspects to situatedness, most importantly an orientation towards reflection in action.

#### 2.4. Ethics in action research

Action Research (AR) is an established field in the social sciences that aims to involve stakeholders to bring about change within a group, generating valid, situated knowledge in the process (Greenwood and Levin, 2007). A more precise definition is offered by Waterman *et al.* (2001):

Action research is a period of inquiry that describes, interprets and explains social situations while executing a change intervention aimed at improvement and involvement. (p. 11)

The fundamental approach of AR consists of iterative loops of planning, acting, observing and reflecting. Like the third paradigm HCI, AR has rejected the traditional empiricist

perspective in favour of highly situated and participatory science paradigm. Action researchers are typically getting deeply involved in a social situation, collaboratively negotiate change and co-construct situated knowledge with stakeholders. Consequently, the epistemological foundation is context bound and constructivistic, aiming at transferability rather than generalisability (see Greenwood and Levin, 2007, p. 55ff).

Williamson and Prosser (2002), who review the political and ethical aspects of AR within a nursing and health care context, argue that it is the close relationships between researchers and participants and the explicit objective to bring about change that give rise to particular ethical dilemmas. Firstly, they ask ‘If researcher and participants collaborate closely, how can confidentiality and anonymity be guaranteed?’ which points to the problem that maintaining the process and the integrity of the data gathered, and fully protecting participants’ privacy might become impossible. Saunders *et al.* (2014) discuss at length how anonymising interview data in sensitive contexts is not trivial and requires carefully individualised approaches. The second question is: ‘If an AR study is a ‘journey’ and ‘evolves’, how can informed consent be meaningful?’ which directly speaks to the limitations of anticipatory ethics. Meyer (1993) notes that the participants’ willingness to take part indirectly endorses the researchers’ initial ideas for change. What that change becomes, emerges from within the groups of participants and is consequently a ‘step into the unknown for individual players’. Thirdly, Williamson and Prosser (2002) ask ‘As AR can have political consequences, how can the researcher avoid doing harm to the participants?’ which resonates with the argument made by Markham and Buchanan (2012) about the challenge to *protect* and *empower* at the same time in PD. Change and the questioning of power can be perceived as threatening for existing structures and unduly exposes participants, for example to lose their job as a consequence.

Morton (1999) highlights another ethical challenge that is specific to AR, coming from a Management Science perspective, which relates to the question of success. If an AR effort fails in terms of bringing about the change that was hoped for, it might still be very illuminating in terms of research and knowledge. What constitutes success might be very different for researchers and participants, an issue that was also highlighted in participatory approaches to HCI (e.g. Garde and van der Voort, 2012; Sanders and Westerlund, 2011), which leads to the ethical responsibility of managing expectations in participants.

There are obvious parallels between AR and the emerging approaches in HCI (Foth and Axup, 2006) like its emphasis on situatedness and recognition of values as central drivers of change-processes. Owing to its longer history, however, AR has had a more elaborate debate about the ethical implications of its practices, which have the potential to meaningfully inform our discussion. Applying AR as a lens on her own

work in HCI, Hayes (2011) identifies a number of similar ethical dilemmas, such as closeness to participants, sustainability of change or informed consent. While a difference exists, namely the goal of facilitating change versus creating technology, the closing statement of Hayes (2011) shows how interwoven these strands of research can be: ‘AR provides a platform by which researchers can make impact measured not by publication and citation counts alone but also through substantial sustainable change.’ (p. 15:17).

## 2.5. Responsible research and innovation

Responsible Research and Innovation (RRI) has emerged relatively recent in the context of policy makers as a guiding principle for governing bodies such as funding agencies (Von Schomberg, 2013). A succinct definition is offered by Stilgoe *et al.* (2013):

‘Responsible innovation means taking care of the future through collective stewardship of science and innovation in the present.’

While RRI is wider in scope than research ethics, it provides a useful policy perspective in our context, as it highlights the difficulties of defining the central normative anchor points for what society wants research and innovation to do. Stilgoe *et al.* (2013) identify four central dimensions to RRI: (1) anticipation—active engagement with possible futures and their implications; (2) reflexivity—the capacity of actors and institutions to critically reflect; (3) inclusion—the involvement of stakeholders or the public; and (4) responsiveness—the ability to adapt in response to changing circumstances or new insights. Grimpe *et al.* (2014) have investigated the relationship between RRI and HCI through these same dimensions, pointing to many existing HCI methods like VSD, PD or critical design that embed many of the same qualities (see also above). They critically compare the RRI agenda with virtues of HCI methods and advocate ‘a pragmatic, ‘unromantic’ understanding of responsible design in HCI as an ongoing distributed effort of many parties at many levels, i.e. a continuous strive for shared responsibility’

## 2.6. Current research ethics and governance

Current research ethics is focused on protecting human participants from harm while they are making their time, ideas, bodies and biological materials available to researchers. The notion of harm is broadly understood as physical, psychological, and social. Historical reasons, in particular the large-scale abuse and cruel treatment of prisoners as subjects of experimentation in concentration camps during the Nazi regime, have contributed to concentration on the protection of people from harm, avoiding all unnecessary physical and mental suffering and injury. The Nuremberg Code laid down the main principles according to which research on humans

must take place (HHS Archive, 2016) and remains the foundation of the prevailing discourse in research ethics which centres on protecting participants from risk and harm (also compare Sterling and Rangaswamy, 2010). This is what we, in this article, consider standard approaches to addressing ethics in research contexts. Such standard approaches were developed to fit clinical research protocols which allow researchers to lay down and anticipate the course of their research as well as the possible ethical issues involved, leading to the creation of research ethics committees that grant approval upon review, but do not necessarily get involved in on-going projects.

In seeking to establish procedures for ensuring ethically, socially and politically acceptable research, many funding bodies have adopted ethical review procedures for all research endeavours that are granted funding. For example, all activities carried out under Horizon 2020, the European Union's largest research and innovation programme, must comply with ethical principles and relevant national, EU and international legislation, for example, the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights (EU Parliament and Commission, 2013). For applicants the ethics procedure consists of a check-box template to identify initial and anticipated ethical issues, followed up by an elaborated self-assessment section in the proposal. The self-assessment section is to describe how the proposal complies with the relevant national legal and ethical requirements. Moreover, the applicants are required to explain in detail how they intend to address the identified ethical issues with regard to research objectives, research methodology, and the potential impact of the research (EU Commission, 2016, p27). The self-assessment becomes part of the contractual agreement of the research project and may lead to legally binding obligations which are checked in the subsequent review process. In such a review process independent ethics experts scrutinise the proposal, the ethical concerns it raises and the approach taken to address them in a panel not unlike institutional ethics committees. The H2020 ethics procedure displays an underlying logic of anticipatory ethics and it leans on a clinical standard model of ethics review within the discourse of protection from risk and harm (compare EU Commission, 2014). The implemented review system does allow for monitoring and follow-ups for research projects with particularly serious ethical concerns making continuous ethics guidance possible, albeit in a highly formalised and heavy handed way.

Standard approaches to ethics, like in the European Union's Horizon 2020 programme briefly introduced above, are largely motivated by avoiding risks and harm and are historically rooted in post-war conceptions of ethics. They provide little room for dealing with situated ethics issues to emerge from exploratory research or for discussions around appropriate value-bases. Thus, they limit research ethics to a discourse of liability and accountability.

## 2.7. Critical synopsis

There are striking, underlying parallels in the ways HCI and moral philosophy have evolved. Both fields have shifted towards a situated understanding, responding to the need for a more holistic, but nuanced and pragmatic approach. However, while in HCI the focus has been on epistemology and methodology, the ethical implications of this shift are only beginning to emerge. Similarly, while the empirical turn in ethics has led to a new relationship between ethical theory and empirical knowledge, it has not made much impact on a practical level, e.g. mainstream regulatory research ethics committees. Thus, we argue that there is a gap between the shifting needs of an ethical HCI practice and the theoretical developments in moral philosophy.

Responsible Research and Innovation (RRI) is a very recent development that addresses this gap on a policy level. However, while sketching a broad, overarching frame for ethical research, it is yet to develop mechanisms by which it gets into the daily practice of researchers. Action Research on the other hand has powerfully demonstrated what kind of ethical dilemmas develop in practice, but there is no wider discussion about how to address these systematically and within the context of existing ethics procedures and protocols.

## 3. EXAMPLES OF ETHICAL CHALLENGES IN THE THIRD PARADIGM HCI

Against this theoretical backdrop, we present two examples from our own work in which the inadequacy of a purely anticipatory ethics approach became apparent and led the researchers to actively engage with these tensions. The examples originate from the sort of work that we argue are archetypal for the third-paradigm HCI research. The descriptions here are meant to be illustrative and we intentionally limit the level of detail to what is needed to exemplify the challenges regarding ethics, while referring to other publications for fuller descriptions of the related research projects.

### 3.1. Give & Take

Give & Take is an international cooperation project with EU funding to co-design an innovative ICT platform that will enable senior citizens to reciprocally exchange services. The overall goal is to create new opportunities for older people to contribute to society as volunteers and caregivers in their local communities. The project partners include three universities, two small-to-medium-sized enterprises (SMEs), and a local municipality. The project is committed to a PD approach, where the partners and end-users from primary, secondary and tertiary segments in two European countries are engaged in intense co-design activities throughout the project's lifetime. The planned methods included ethnography,

dialogue meetings, cultural probes, co-design workshops, living laboratories and open community laboratories.

As expected from all projects funded by the European funding agency, the project proposal included a section on ethics (2/3 of a page). This was written by one of the proposal-writing support teams (i.e. not one of the researchers), drawing on past proposals, and commented on by an ethics expert at a partner university. The final version outlined the key ethical issues to be addressed, noted under sub-headings: anonymity/pseudonymity; minimal risk; beneficence and benefit; justice and fairness; safety; dignity, independence and privacy; voluntary and informed consent; objectivity; personal data handling; respect for autonomy and self-determination; post-trial management; transparency in reporting; national frameworks relevant EU and national legislation. Much of this text was as would be written for most projects, for example: 'Beneficence and benefit: The partners in charge of user participation will strive to construct the engagement of the users so that it will be an enjoyable and informative experience for them. Justice and fairness: Inclusion and exclusion criteria will be formulated and transparently communicated in the process of recruitment. Participation possibilities are foreseen equally for men and women. Burden of participation will be kept as low as possible. There will be no costs involved to the participants.'

The workplan included a specific task in a work package for drafting a guidance document for the team to follow. A designated ethics manager was employed for some limited person-months to draft a document covering the relevant ethical and legal issues which were required by the funding body. The deliverable was to be an Ethics Handbook, scheduled to be completed early in the project with the expectation that it would set up the appropriate approaches to informed consent, etc., for all engagements with participants. As input to the document, the ethics manager led a discussion at the first project consortium meeting where the participants brainstormed what were being informally called 'Give & Take Commitments'. These were collated in a mind-map under broad headings: research activities (user relationships, documentation), design/implementation (data, approach, responsibility) and annotated with notes such as 'fix ethics if broken on the go', 'we invite ourselves to their *space*' and so on. This is also where some of the tensions started to emerge between what was stated in the proposal document and the philosophical commitments entailed in the PD/citizen engagement approach (compare section 2.3).

The first draft of the document was sent out to the project team for comment. The ethics manager had put considerable thought into this document, as indicated by an excerpt from the accompanying email: 'I have tried to keep a practical, informative, and hands-on tone, not too much theoretical stuff, but enough to set a background and context for the guidelines.' The draft did try to accommodate

some of the points raised by the team members at the previous meeting, e.g. by noting that 'The Give & Take partners have opted for a proactive approach to research ethics and address any ethics issues in a transparent and active way. This means more responsibility for the researchers in the project to identify and address ethics issues as they emerge.' There was also a section included on the 'Wider Societal and Ethical issues' from an infrastructural perspective that reflected previous discussions. And there was an attempt to acknowledge the different requirements that the two countries running the participant engagements had with respect to informed consent. What complicated this process too was that the national funding body of one of the participating countries required a copy of the informed consent forms that would be used in the project and these had to be sent in before the drafts ethics handbook was completed and while these internal discussions were still being worked out.

However, while the team appreciated the considerable effort, the draft document nonetheless generated considerable feedback and discussion. Most of the feedback suggested that the researchers felt the document overall was not suited for their work because the guidance document still seemed too formal, too much based on language and processes arising from medical/clinical research concerns and demanding attention to aspects such as informed consent procedures and pseudonymisation that did not fit into a participatory way of working with people and that did not reflect the discussions that had started at the earlier Consortium Meeting.

As a specific example, the early sections sought to set up a broader ethical context, based on what the ethics manager named as 'medical/clinical and biobehavioural' research traditions. The definition of risk was one such case: 'The term minimal risk originates in medical research and the principle of minimal risk is used in describing research to which volunteers may be recruited.' and proceeded to give its definition, leading project members to comment: 'I suggest we leave out *risk* as it originates from medical research' and 'I don't think we should use terminology that originates from medical research'. The document also included 'standard' sections on collecting and handling data, e.g. 'In both sites, the importance of obtaining explicit consent for the data collection is important. This includes information about how the data are handled, processed, stored and who has access to it. In principle, only those data that are really needed for the project should be collected. [...]'. However, one member commented: 'We do not *collect* data. We have dialogues and mutual activities.' In the end the members felt that the document would hinder them from collaborating with participants as 'citizen design collaborators' and instead inadvertently treat them as 'subjects', reflected in the continued use of the term 'user'.

Responding to the critique the ethics manager redrafted the document. The most significant and important change was

replacing the general ethics discussion with a section called ‘Ethics and Participatory Design’ which sets out the underlying ethical stance, or ethos, of PD that the team was committed to. This then became reflected throughout the document. For example, the section previously titled ‘Data Protection Policy: Processing, protection and confidentiality of personal data’ was re-named ‘Hands-on data protection in the Give & Take context’ and started with the statement: ‘Give & Take project relies on a participatory design approach’. In this setting, the participants are treated as co-designers of the emerging system. Anonymising persons who actively contribute to design would mean placing these persons in the background and also removing credit from their input. Therefore, the PD approach itself is such that it requires some acknowledgement of the identity of the participants and their ownership in the project.’

This example shows how formal ethics procedures can tend to be disconnected from the rest of the work. The first instance is the *outsourcing* of the writing of the ethics section in the proposal to someone able to produce the right words that they know the review panel will want to see. The researchers also did not pay enough attention to the specific content of the ethics section in the proposal, since the research part was deemed the most critical for getting the project funded or not in the end. The second instance is the employment of an ethics specialist to take care of producing the ethics handbook *deliverable*. While there was a plan for this person to be available to the project for the duration, budget constraints meant she could not be employed past the deliverable. The idea of the team discussions at the Consortium Meeting and the Handbook was that they would serve as a way of bringing ethical issues to the fore and making them part of the project ethos. The project is still ongoing and the extent to which this has been achieved is yet to be determined. The third instance is the disconnect between the *formal requirements* of one national agency for delivery of the informed consent for their approval against standard ethics expectations, which had to be submitted before the discussions around the relation between the researchers and the citizens being clarified and agreed within the project; these informed consent sheets necessarily had to reflect standard assumptions around ‘users’ and ‘data’ that in the end were engaged with in quite a different way in the ethics handbook.

In sum, ethics can tend to be inadvertently treated as something that can be time- and resource-boxed into a task, leading to a ‘deliverable delivered, ethics done’ approach and to an ethics document being seen as more relevant for the funding agency (or ethics committee) than for the project team. However, in Give & Take, the tensions between these standard approaches and the deeply held participatory commitments of the team resulted in productive internal discussions that helped shape a shared ethos and ended up in a document that was praised by external project reviewers.

### 3.2. OutsideTheBox

‘OutsideTheBox - Rethinking Assistive Technologies with Children with Autism’<sup>3</sup> is a three-year research project that explores new meaningful roles of ubiquitous computing (UbiComp) technologies in the lives of children with autism. The underlying argument is that much of the technology that is being designed for this group, pragmatically focuses on mitigating functional deficits and that this ignores rich and complex life-worlds of children with autism as a context for design. To break into this design space, the project interprets a number of PD approaches to creatively engage children with autism to let them lead the design process as experts in their own life. The design brief is deliberately under-specified: resulting artefacts should realise the potential of UbiComp technologies to afford positive experiences, and support children with autism in sharing those experiences—something notoriously difficult for them. By realising a series of case studies the project seeks to demonstrate that such open participatory processes are possible and lead to designs that would have been unimaginable for adult, neuro-typical researchers. Grounded in these case studies, the project populates a conceptual space with evaluated design methods that aims to provide transferable design knowledge for others to build on [Frauenberger et al. \(2016\)](#).

The sensitive nature of the context in which the project operates makes ethical considerations a high priority. Working with vulnerable groups such as children with disabilities in a highly formal and regulated environment such as schools means that a rigorous ethics procedure has to be put in place. Although neither the funding body, nor the research institution at which this project is carried out requires any formal procedure or checking by an ethics committee, the project decided to implement an internal process that would safeguard ethical conduct. An advisory panel was formed, consisting of senior colleagues and an ethicist. Guided by the UK ESRC framework for research ethics ([ESRC, 2015](#)), a document was drafted that laid out the fundamental moral and ethical positions in the project and the specific measures and processes to implement these. This included the details on recruitment, informed consent, a risk assessment for participants and researchers, and a strategy for data collection and privacy. The document was then forwarded to the panel and subsequently discussed in detail resulting in minor adjustments to the planned implementation of ethics procedures.

While this could be seen as the standard way (compare Section 2.6) in which ethics in a project like OutsideTheBox is handled, it was clear to the project team and the panel that this would not be sufficient. OutsideTheBox has two particular features that highlight the ethical dilemmas related to the third paradigm HCI work: firstly, the research is exploratory and thus unpredictable and secondly, it involves very

<sup>3</sup><http://outsidethebox.at>.

different stakeholders with different ethical concerns that are driven by their own values and moral positions.

Involving very *different stakeholders*, like children, parents, teachers, school administration, special needs pedagogues and policy makers throughout the project raises the question about whether moral positions, values and consequently responses to ethical issues are consistent across all people involved. An ethics process that is designed before these stakeholders are involved is, thus, systematically skewed towards the perspective of the researchers. In *OutsideTheBox* the researchers felt strongly about ‘liberating’ autistic children from being reduced to their functional limitations in the design of technology and this was the underlying position that shaped the planning of methods and processes. However, after engaging with other stakeholders, a more nuanced and diverse picture emerged. Educational policy makers, for example, subscribed to the fundamental position, but also interpreted inclusive education as enabling autistic children to better participate in class and improve their learning. Consequently, they were very much interested in anything that would functionally support autistic children and would support their teachers. In the same way parents often asked about gains their children would make through participating in the project. Children sometimes expressed that they just wanted to be ‘normal’, while the researchers promoted their neuro-diversity agenda. The reflective practice exercised in *OutsideTheBox* allowed these dilemmas to emerge and they continue to be continuously negotiated and checked upon.

The *explorative* nature of *OutsideTheBox* is inherent in the radically participatory approach. Co-design methods are developed iteratively, during the collaboration with a child and are based on a continuously deepening understanding of the context and the target. An open design brief like the one above makes it impossible to know about the outcome, after all, it is an explicit goal to enable children to lead the process. So, we cannot possibly know in advance which methods will be used to develop which technology. Consequently, we also cannot foresee the kind of ethical dilemmas this work will possibly unearth. In *OutsideTheBox*, for example, disposable cameras were provided to children as a cultural probe to enquire into the world of objects they are surrounded by at home. The team then discussed the pictures in the workshop with the children what these objects can do, what they sound like and how they could become smarter. This was part of a technology immersion phase, re-interpreting the Co-operative Inquiry approach [Druin \(1999\)](#). It soon became apparent that children could easily capture sensitive information that would constitute an inappropriate intrusion into the private life of their families. A process was required through which children were made aware of the issue and received more explicit instructions as well as installing a safe-guard by which parents could see the pictures before the research team does. In making technology meaningfully situated in the lives of our

children, we continually need to re-negotiate our ethical stance towards the privacy of our participants and their immediate social environment.

#### 4. IN-ACTION ETHICS

The above examples have highlighted a small number of exemplary issues that we believe are typical for the kind of prevailing third-paradigm HCI research and they demonstrated the limitations of anticipatory ethics in dealing with them. In defining starting points for developing an alternative ethics framework in response, we want to weave together the issues we identified through these examples, with those that were elicited in a similar fashion by [Munteanu et al. \(2015\)](#) and [Benford et al. \(2015\)](#) along with challenges identified in Action Research (Section 2.4), HCI (Section 2.3) and Responsible Science and Innovation (Section 2.5). Table 1 summarises this synopsis as a collection of challenges to current ethics with references to their sources.

We do not claim that this is an exhaustive set of challenges, however they reflect that much of what is at the heart of third paradigm HCI—situatedness, values, embodiment, participation—creates novel kinds of dilemmas for ethics. In what follows, we develop the qualities for an ethical framework that aims to respond to these challenges. We have called this framework *In-Action Ethics* and we see it as complementing existing, anticipatory structures.

Re-framing [Schön \(1983\)](#), we argue that in performing design and research, ‘we show ourselves to be ethical [orig: knowledgeable] in a special way’ (p. 49) —our ethics is tacitly *in action*, deeply folded into ‘recognitions, judgements and skillfull performances’ (ibid, p. 50). Taking this analogy to Schön’s argument about design knowledge further, we argue that *reflection-in-action* therefore needs to become recognised as central to the way researchers can deal with the ‘uncertainty, instability and uniqueness’ (ibid, p. 50) of the ethical dilemmas of the kind that much third-paradigm HCI work brings with it. It responds to all challenges from the above that carry a notion of fluidity and unpredictability. Embedded reflection-in-action enables researchers to have a critical dialogue about the framing, the judgements, the context and one’s own ethical standpoint, while responding to ethical dilemmas as they arise. To use Schön’s words, the reflective practitioner lets the (ethical) situation talk back to her. Our own examples and other sources have demonstrated how many of those dilemmas only can materialise while the work is underway. We argue that the flexibility that is needed to manage them is necessarily grounded in reflective practice, rather than in anticipatory planning.

In another parallel to the epistemological shift towards constructivism, we argue that ethics is necessarily *co-constructed*. Many of the challenges above reflect the opening of the design processes to stakeholders and a critical discourse

**Table 1.** Synopsis of ethical challenges identified in archetypal third-paradigm HCI research.

Explorative research	Processes are unpredictable and outcomes, even methods potentially, unknown in advance. Ethical dilemmas emerge from the work, requiring a responses that go beyond the protocols developed (OutsideTheBox, Benford <i>et al.</i> , 2015; Munteanu <i>et al.</i> , 2015; Williamson and Prosser, 2002)
Context	The context in which research is conducted (e.g. funding bodies, research cultures, socio-historical background, participants etc.) fundamentally shapes the ethical approach needed and requires situated judgements (Give & Take, Benford <i>et al.</i> , 2015; Munteanu <i>et al.</i> , 2015; Williamson and Prosser, 2002)
Packaging	Ethics is confined to a designated workpackage which fosters the notion that it is something that the majority of the project does not need to concern themselves with and can safely be left to the ‘expert’ (Give & Take).
Protecting Participants	Protecting participants cannot always be fully guaranteed. Informed consent clearly has limitations when the directions the process may take and the outcomes are partially unknown (Benford <i>et al.</i> , 2015; Munteanu <i>et al.</i> , 2015; Williamson and Prosser, 2002)
Methodology and Ethos	Approaches and methods carry their own ethos, but many formal ethics processes are ignorant of which methodology they are applied to (Robertson and Wagner, 2012).
Values and provocation	As critical design (Bardzell and Bardzell, 2013) and HCI’s intersection with art (Benford <i>et al.</i> , 2015) shows, projects may not necessarily embrace ‘good’ values, but provoke and offer critique (see also Grimpe <i>et al.</i> , 2014, ‘the positive disruptive potential of critical design’ )
Stakeholder ethics	Involving stakeholders into a design process may require to deal with radically different ethical positions, unknown in advance (OutsideTheBox, Benford <i>et al.</i> , 2015, discusses ongoing negotiation of ethics).
Outcomes and Expectations	Success is defined differently by different stakeholders (Morton, 1999; Sanders and Westerlund, 2011) and a basic understanding of these differences is required to ethically manage expectations (OutsideTheBox, Munteanu <i>et al.</i> , 2015).
Closeness	The notion of researchers being objective and removed entities is increasingly rejected (Sengers <i>et al.</i> , 2005). Their increasing involvement as individuals, however, also raises ethical issues around confidentiality (Williamson and Prosser, 2002) and power structures (Bratteteig and Wagner, 2012).
Risks to researchers	A consequence of the ever deeper entanglement of researchers and participants is that they too are at risk and managing this risk is an ethical responsibility (Munteanu <i>et al.</i> , 2015).
Exits	The rapport researchers and designers build with participants in becoming deeper involved, also may evolve into ethical dilemmas when exiting the scene after a project has finished (compare Gary Mardsen quoted in Vines <i>et al.</i> , 2013).
Shared Power	Sharing power and scope for decisions with participants (Robertson and Wagner, 2012), also means sharing responsibility. When participants ‘(co)-own’ outcomes (compare Bødker <i>et al.</i> , 1987), the boundaries of ethical accountability are blurred and fluid.
Voluntary involvement or withdrawal	HCI’s turn to the wild also means that involvement is not always voluntary (e.g. bystanders Benford <i>et al.</i> , 2015) or as part of a school study (OutsideTheBox, Munteanu <i>et al.</i> , 2015). Benford <i>et al.</i> (2015) makes a similar point about withdrawal, which is not always possible in the middle of participatory processes.
Unplanned data collection	Often data are collected in unintended ways (Munteanu <i>et al.</i> , 2015) or information is obtained that requires immediate deviation of the protocol (as in the Ivy4Evr project in Benford <i>et al.</i> , 2015). Formal ethics sometimes draws attention to this, but the unpredictable nature of the kind of data collected makes anticipating responses difficult.

needs to be facilitated to negotiate the diverse ethical and moral positions that come with that. Here, we align ourselves with the social ethics approach as we acknowledge the centrality of processes and the importance of social arrangements in making decisions (Devon and van de Poel, 2004). We also argue that this goes beyond value-led PD (Iversen *et al.*, 2012) or value-sensitive design (Friedman *et al.*, 2008) as its scope is more fundamental with the intention to establish a valid moral standpoint, to negotiate what ‘is the right thing to do’. If we accept that ethics is a moving target, we require processes that leave room for adjustment. Equally important,

In-action ethics requires a new quality of *openness* that offers transparency for co-constructing ethics. Our experiences show that anticipatory ethics has effectively concealed ethics positions on the ground as it has blanked out their re-negotiation in action.

Negotiation and co-construction of ethics requires a *working culture* in which diverging standpoints and conflicts can be debated. Somewhat breaking the analogy with knowledge, we believe that there is a particular benefit in open disagreement. In-action Ethics recognises the limitations of the normative and opens up the possibility for collaborative projects

to operate on diverging ethical perspectives if balanced with shared aspects of ethos. Many of the art projects described in Benford *et al.* (2015) exhibit this notion by actively provoking critical discourse by putting an alternative ethical standpoint to participants while largely operating on a common ethos of ‘do no harm’. Crucially, the working culture created by the designers allows for participants to argue back and the ensuing debate becomes a central outcome.

The active involvement of participants means researchers and designers share some of the power they traditionally would hold. With shared power and co-constructed ethics, a critical shift in responsibility is an inevitable consequence. As designers have no longer full control over process or outcome, they cannot be held fully accountable either and boundaries between spheres of authority get blurred. *Shared responsibility* between all stakeholders, including researchers and designers, becomes an ethical dilemma that needs continuous reflection and re-negotiation. We argue that the question about how much responsibility participants should take for their own involvement is also what significantly limits the scope of a priori informed consent.

It becomes clear that none of the above qualities could possibly be realised if ethics gets packaged or out-sourced. With In-action Ethics we also argue that ethics needs to become an underpinning mindset and that it is the responsibility all researchers to make it the foundation on which interactions with stakeholders are initiated. We argue that ethics awareness needs to be pervasive throughout processes and within all actors. Ethics experts become the *midwives of ethics*, scaffolding and facilitating processes to form and negotiate ethos, rather than ‘doing the ethics’ on behalf of others. Just like values shape every aspects of the design process, ethical and moral considerations cannot be separated from design decisions.

Related to the argument of mindset is the role of empathy in In-action Ethics. Wright and McCarthy (2008) offer a pragmatic-dialectical conceptualisation of empathy in their discussion of empathy and experience in HCI. Central to this concept is the notion that people engage in empathic ways when they appreciate other’s perspectives from within their own perspective, i.e. empathy is an affective response that relies on learning about other’s needs and desires, drawing on one’s own resources. It becomes clear that such a dialectically conceived empathy is central to bring about the kind of ethics processes we have sketched above. It is central to co-constructing ethics and negotiating project ethos. Empathy is a resource that allows us to recognise, understand and respond to ethical dilemmas, but critically it is also a resource that develops *in-action* and is consequently not available a priori. Wright and McCarthy (2008) say ‘empathy evolves in the context of ongoing relationships wherein one person learns about the needs of the other by responding empathically..’, and continue ‘...sometimes getting it right, sometimes not’. In the context of ethics, this latter point is crucial,

as it points to the limits empathic judgements have. Basing ethical decisions on assuming on what it is like for others is particularly dangerous when life-worlds substantially differ.

#### 4.1. Operationalising In-Action Ethics

As mentioned above, we have derived required qualities for a novel ethics framework from the challenges that we identified in our own work and that of others. The next step is to find ways to operationalise these qualities within the realities of existing structures and practices. To this end we propose complementing institutionalised, anticipatory ethics with an additional layer that interacts with formal structures, but bridges deep into the practical design work, i.e. works in-action. This complementary layer is centred around the concept of *ethos* and in what follows we describe how it embodies the qualities we have developed and is actionable within structures and practices.

We define *ethos*, as discussed above, as a moral commitment or stance, a moral attitude that underlies a particular practice. In contrast to formal ethics and related guidelines, we understand ethos as something that is intrinsic and embodied. It exists because people enact it and it tacitly informs their actions in precisely the same way as tacit knowledge does in Schön (1983). Being reflective about one’s ethos means to acknowledge how it shapes actions and that all actions also shape it in return. Enacting ethos means ‘doing the right thing’ and is a guiding principle that is built and maintained by using and reflecting on it. It intimately informs decisions and judgements while it evolves and grows with each new challenge.

The concept of ethos works across different entities and scales. While the above roots it within the individual, we argue that ethos is equally powerful in groups or institutions. The concept of a shared *project ethos* is centred around the negotiation of and agreement on moral statements for which a project stands. It exists by virtue of people buying into a set of shared commitments that define their collaboration. In the same way as described above the project ethos becomes an intrinsic guiding principle that informs both individual actions and decisions on a project level. In contrast to the typical results of formal ethics processes (e.g. ethics statement, guidelines, procedures, etc.), the building and maintenance of a project ethos is an ongoing process and its result is always tentative. While a project ethos might be first formulated when a project is planned, it necessarily evolves throughout the project, for example when researchers join the team, new participants are involved, contexts change or by reflecting on how well the ethos informed decisions or responded to challenges to date.

As such, we argue that a project ethos becomes the glue that connects anticipatory ethics with research practice, providing the basis for ethics in-action. Formalised, anticipatory

ethics sets the outer boundaries that ensure that appropriate legislation and best practice is followed. A project ethos operates within this frame, but goes qualitatively beyond ethical guidelines. In contrast to the notion of ‘following the rules’, a project ethos is generative and can only emerge from people within a project. It is self-regulatory, because it binds the individual ethos to a shared commitment in the project. However, this commitment might be challenged in unforeseen situations which require a working culture that allows the continuous (re-)negotiation of the project ethos. If such an open process is transparent and thoroughly documented, it leads to a fundamentally new form of ethical accountability within projects. Decisions and procedures are characterised and defended by the shared moral commitment. Asking ‘Was this the right thing to do at the time?’ has a distinctly different quality from asking whether ethical guidelines have been followed.

Such moral accountability is a powerful tool to steer and direct projects, and lay open values as fundamental drivers in the research. Practically, it is important to support a working culture that provides room and structures for ethos building and care. For example, an ethos building workshop could be part of the kick-off meeting, the ethos could be revisited at each project milestone or an online ethics ‘bugtracker’ could help document ethical issues that arise in the work that challenge the project ethos. It might also be important to designate a person within the project who is responsible for facilitating the process of ethos building. The role of this person is, however, different from the traditional role of ethicists. We have argued above that ethical processes cannot be boxed into a workpackage or left to be worked through by the ethics expert on the team. Consequently, we see the new role in similar ways to a coach or facilitator in the spirit of a practice of ethics midwifery.

Funding bodies, universities, ethics committees or other relevant institutions can also play an important part in supporting ethos building in projects. Firstly, they can require projects to formulate their ethos as part of the application process. Secondly, in the governance of the project, they can ensure that continuous ethos building and care become an integrative part of the working culture. For example, by requiring that structures are put in place that serve as a democratic forum for all people involved, including participants, to contribute to ethos building. Some funding schemes also involve regular reviews of progress. These could be opportunities to hold projects accountable on a moral level using the project ethos as a lens to reflect on decisions. If the project ethos has evolved, the project has the opportunity to argue for the changes and its consequences. Thirdly, institutions can support projects by offering training opportunities. Not all projects have designated ethicists in their team, nevertheless we argue that ethos building requires support and benefits from a designated coaching role. Continuous training for these facilitators of ethos building could be offered to projects by their hosting institutions or by the funding body.

Many institutions also have their own ethos, although it is rarely made explicit or labelled in this way. Ethos is often expressed in value statements, such as a commitment to gender equality or open access, which are shaping the kind of research that is being proposed to or is being conducted at such institutions. As research is planned, applied for or conducted the ethos of institutions and a project ethos influence each other and provide an opportunity for both to reflect and evolve.

Summarising, we argue here that ethos as a concept has the potential to provide the glue between the existing formal ethics structures and the unpredictable, participatory, situated and value-driven processes that are archetypal for the kind of work that is associated with contemporary HCI. It is powerful in guiding and informing decisions, while providing an open and transparent arena for negotiating the moral standpoint individuals, projects and institutions take. It works across entities and across time, linking bottom-up morality with top-down guidelines and formal requirements with a fluid research practice.

#### 4.2. Limitations, risks and future challenges

Implementing the concept of ethos in research practice and governance in itself is no guarantee that HCI work becomes more ethically mindful. If the ethos is not lived and embodied by the involved actors, In-action Ethics is vulnerable to become pure tokenism. An ethos statement might turn out to be another high-level, generic document that provides little ethical guidance in practice, representing a shallow compromise that seeks to not challenge any of the stakeholders. Just like standard ethics procedures, ethos statements then become another formal requirement, a tick in a box. Nevertheless, we argue that if the perceived benefit is large enough, the motivation to invest and buy into the concept of ethos will suffice to make researchers engage. Embedded in targeted training and supporting structures, the key benefit promised is to enable researchers to transparently and systematically respond to the ethical dilemmas that they face during their work.

Practical support of ethos building is another challenge that requires future work. We are currently experimenting with different formats, mechanisms and techniques that target all three levels on which ethos building can occur. At an individual level, we look into ways of training and education of students with the aim to provide them with the intellectual tools to become aware of and reflect on their own moral positions and where they come from. At a project level, we develop ethics workshop formats that support teams to identify, negotiate and articulate sets of shared commitments that together constitute the project ethos. Furthermore we currently develop tools such as the *ethics bug-tracker* that support ethics in-action. At the governance level, we are in the process of designing ethics structures within our current institution that

weave together established and proven ethics frameworks with new processes that scaffold in-action ethics.

However, the challenges are many for those tools and supports to work effectively. From our experiences in recent workshops, we already see that reflection on implicit assumptions and one's own value base does not come easy to many. Differences in research cultures across disciplines often cause participants to hesitate to openly discuss values or engage in negotiating a shared ethos. Careful moderation, motivating activities and sufficient time is required to make meaningful progress with any given group of people.

The In-action Ethics framework aims to respond to the paradigm shift in HCI that inherently foregrounded constructivist positions. The philosophical implications of this shift have so far mainly played out in terms of epistemological stances (Harrison *et al.*, 2011). Within this context, Frauenberger (2016) critically reviews the construction of knowledge in the field and draws attention to the possible consequences of relativism, i.e. the notion that anything can be justified if it is reduced to a social construct. Applied to ethics, this is equally troublesome. Co-constructing ethics runs the risk of slipping into a moral relativism in which any position or any decision can be justified, undermining the necessary accountability of researchers. We argue that this can be countered by ensuring that In-Action ethics operates within the safeguards and boundaries that are given by traditional ethics processes. For example, there are legal and moral boundaries, determined through a consensus within society and implemented in formal requirements and laws, within which we expect researchers to deal with privacy. However, there are still many stances a project could take within these boundaries, which are reflected in its co-constructed ethos.

Relatedly, while we argued that the increasing significance of social constructivist positions has made the need for new approaches to ethics in HCI more pressing, there are other, equally valid positions in HCI for which we argue In-action Ethics is equally applicable and useful. Our framework does not intend to prescribe a particular ontological stance, but aims to add to the tools available to deal with ethical dilemmas as research unfolds. As such, we argue its compatible with other ontological positions, e.g. critical realism (Frauenberger, 2016). Even work that would be set up in highly controlled contexts and that would classify itself as operating within a positivistic science paradigm can benefit from ethics guidance that is available in-action.

## 5. CONCLUSION

With this article, we have made the argument that a gap exists between the way HCI has evolved into a situated, participatory and design oriented discipline, and the ethical procedures that typically accompany such a work which largely remained static, anticipatory and formalised. In response, we have

developed the central qualities for a novel ethical framework that addresses this gap. *In-Action Ethics*, as we have called this framework, calls for ethical processes to be responsive to issues as they arise in design, inclusive of stakeholders and reflective as an activity. It is deeply embedded in the practice and transparent about its decisions, positions and dilemmas.

To operationalise In-Action Ethics, we propose the concept of *ethos building*. Ethos as defined here refers to an embodied and intrinsic set of moral positions that tacitly guides actions and decisions. We argue that its ability to work across entities (institutions, projects, individuals) and to reach into the practice of designers and researchers makes it the glue that facilitates ethics in action. A project ethos, as a set of shared moral commitments, can provide powerful guidance for decisions in the project, not only in terms of solving ethical dilemmas. It provides an arena for individuals to negotiate shared commitments as well as for funding bodies to hold projects accountable for their course of action on a non-task oriented, moral level.

What we have developed here is, so we hope, the beginning of a transformation of structures and processes that acknowledges the paradigm shifts in HCI research, possibly beyond. While others also have identified the gap, we see our main contribution in sketching out a novel framework that responds to these new challenges and builds on existing structures.

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## REFERENCES

- ACM. (2015) Code of Ethics—Association for Computing Machinery. <http://www.acm.org/about/code-of-ethics> (accessed March, 2016).
- Almond, B. (1995) *Introducing Applied Ethics*. Wiley-Blackwell, Oxford, UK.
- Bardzell, J. and Bardzell, S. (2013) What is 'Critical' About Critical Design? In Proc. SIGCHI Conf. Human Factors in Computing Systems, CHI '13, pp. 3297–3306. ACM, New York, NY, USA.
- Bardzell, S. and Bardzell, J. (2011) Towards a feminist HCI methodology: social science, feminism, and HCI. In Proc. SIGCHI Conf. Human Factors in Computing Systems, pp. 675–684. ACM Press, New York, NY, USA.

- Beauchamp, T.L. and Childress, J.F. (2001) *Principles of Biomedical Ethics*. Oxford University Press, Oxford, UK.
- Benford, S. *et al.* (2015) The ethical implications of HCI's turn to the cultural. *ACM Trans. Comput.-Hum. Interact.*, 22, 24:1–24:37.
- Bødker, S., Ehn, P., Kammersgaard, J., Kyng, M. and Sundblad, Y. (1987) A UTOPIAN experience: on design of powerful computer-based tools for skilled graphical workers. In Bjerknes, G., Ehn, P. and Kyng, M. (eds.), *Computers and Democracy: A Scandinavian Challenge*, pp. 251–278. Aldershot, Avebury, UK.
- Borry, P., Schotsmans, P. and Dierickx, K. (2007) *Bioethics and Its Methodology: The Rise of Empirical Contributions*. Intersentia, Cambridge, UK.
- Bratteteig, T. and Wagner, I. (2012) Disentangling power and decision-making in participatory design. In *Proc. 12th Participatory Design Conf.: Research Papers—Volume 1, PDC '12*, pp. 41–50. ACM, Roskilde, Denmark.
- Casterlé, B.D.d., Grypdonck, M., Cannaerts, N. and Steeman, E. (2004) Empirical ethics in action: lessons from two empirical studies in nursing ethics. *Med. Health. Care. Philos.*, 7, 31–39.
- Davis, H. and Waycott, J. (2015) *Ethical Encounters: HCI Research in Sensitive and Complex Settings*. pp. 667–669. ACM Press, New York, NY, USA.
- Dearden, A. (2013) See no evil? Ethics in an interventionist ICTD. *Inf. Technol. Int. Dev.*, 9, 1–17.
- Devon, R. and van de Poel, I. (2004) Design ethics: the social ethics paradigm. *Int. J. Eng. Educ.*, 20.
- Dourish, P. (2001) *Where the Action is: The Foundations of Embodied Interaction*. MIT Press, Cambridge, MA, USA.
- Druin, A. (1999) Cooperative inquiry: developing new technologies for children with children. In *Proc. SIGCHI Conf. Human Factors in Computing Systems, CHI '99*, pp. 592–599. ACM, New York, NY, USA.
- Ehn, P. (1989) *Work-oriented Design of Computer Artifacts* (2nd edn). Arbetslivscentrum, Stockholm, Sweden.
- ESRC – Economic and Social Research Council. (2015) Research ethics. <http://www.esrc.ac.uk/funding/guidance-for-applicants/research-ethics/> (accessed March, 2016).
- Feldman, F. (1978) *Introductory Ethics* (1st edition). Prentice-Hall, Inc., Englewood Cliffs, NJ.
- Foth, M. and Axup, J. (2006) Participatory Design and Action Research: Identical Twins or Synergetic Pair? In Jacucci, G., Kensing, F., Wagner, I. and Blomberg, J. (eds) *Proceedings Participatory Design Conference 2006: Expanding Boundaries in Design*, pp. 93–96. Trento, Italy.
- Frankena, W.K. (1973) *Ethics* (2nd edn). Prentice-Hall, Englewood Cliffs, NJ.
- Frauenberger, C. (2016) Critical realist HCI. In *CHI '16 Extended Abstracts on Human Factors in Computing Systems*. ACM Press, San Jose, CA, USA.
- Frauenberger, C., Makhaeva, J. and Spiel, K. (2016) Designing smart objects with autistic children: four design exposés. In *Proc. 2016 CHI Conf. Human Factors in Computing Systems*. ACM Press, San Jose, CA, USA.
- Friedman, B. and Kahn, P.H., Jr. (2003) *The Human-computer Interaction Handbook*, pp. 1177–1201. Lawrence Erlbaum Associates Inc., Hillsdale, NJ, USA.
- Friedman, B., Kahn, P.H. and Borning, A. (2008) Value Sensitive Design and Information Systems. In Associateessor, JD, Himma, K.E. and scholar/ethicist, Tavani, H.T. (eds.), *The Handbook of Information and Computer Ethics*, pp. 69–101. John Wiley & Sons, Inc.
- Garde, J.A. and van der Voort, M.C. (2012) Participants' interpretations of PD workshop results. In *Proc. 12th Participatory Design Conf.: Exploratory Papers, Workshop Descriptions, Industry Cases—Volume 2, PDC '12*, pp. 5–8. ACM, Roskilde, Denmark.
- Gilligan, C. (1982) *In a Different Voice*. Harvard University Press, Massachusetts, USA.
- Gillon, R. (2003) Ethics needs principles—four can encompass the rest—and respect for autonomy should be 'first among equals'. *J. Med. Ethics.*, 29, 307–312.
- Greenwood, D.J. and Levin, M. (2007) *Introduction to Action Research: Social Research for Social Change* (2nd edn). Sage Publications, Inc., London, UK.
- Grimpe, B., Hartswood, M. and Jirotko, M. (2014) Towards a Closer Dialogue Between Policy and Practice: Responsible Design in HCI, pp. 2965–2974. ACM Press, New York, NY, USA.
- Halloran, J., Hornecker, E., Stringer, M., Harris, E. and Fitzpatrick, G. (2009) The value of values: resourcing co- design of ubiquitous computing. *CoDesign*, 5, 245–273.
- Haraway, D. (1988) Situated knowledges: the science question in feminism and the privilege of partial perspective. *Fem. Stud.*, 14, 575–599.
- Harrison, S., Sengers, P. and Tatar, D. (2011) Making epistemological trouble: third-paradigm HCI as successor science. *Interact. Comput.*, 23, 385–392.
- Harrison, S., Tatar, D. and Sengers, P. (2007) The three paradigms of HCI. In *Proc. alt.chi*. ACM SIGCHI.
- Hayes, G.R. (2011) The relationship of action research to human-computer interaction. *ACM Trans. Comput.-Hum. Interact.*, 18, 15:1–15:20.
- Held, V. (1989) *Rights and Goods: Justifying Social Action*. University of Chicago Press, Illinois, USA.
- Held, V. (1993) *Feminist Morality: Transforming Culture, Society, and Politics*. University of Chicago Press, Illinois, USA.
- Iversen, O.S., Halskov, K. and Leong, T.W. (2012) Values-led participatory design. *CoDesign*, 8, 87–103.
- Kensing, F. (2003) *Methods and Practices in Participatory Design*. PhD Thesis, The ITU University of Copenhagen.
- Kuhn, T.S. (1970) *The Structure of Scientific Revolutions* (2nd edn). University of Chicago Press, Illinois, USA.
- Leget, C., Borry, P. and De Vries, R. (2009) 'Nobody Tosses a Dwarf!' the relation between the empirical and the normative reexamined. *Bioethics*, 23, 226–235.

- Markham, A. and Buchanan, E. (2012) Ethical decision-making and internet research. Technical report.
- Martin, M.W. and Schinzinger, R. (2010) *Introduction to Engineering Ethics* (2nd edn). McGraw-Hill, New York, NY, USA.
- Meyer, J.E. (1993) New paradigm research in practice: the trials and tribulations of action research. *J. Adv. Nurs.*, 18, 1066–1072.
- Moore, G.E. (1903) *Principia Ethica* (revised edn). Cambridge University Press, Cambridge, UK.
- Morton, A. (1999) Ethics in action research. *Syst. Pract. Act. Res.*, 12, 219–222.
- Munteanu, C., Molyneaux, H., Moncur, W., Romero, M., O'Donnell, S. and Vines, J. (2015) *Situational Ethics: Re-thinking Approaches to Formal Ethics Requirements for Human-Computer Interaction*, pp. 105–114. ACM Press.
- Musschenga, A.W. (2005) Empirical ethics, context-sensitivity, and contextualism. *J. Med. Philos.*, 30, 467–490.
- Parker, M. (2009) Two concepts of empirical ethics. *Bioethics*, 23, 202–213.
- Powers, B.A. (2000) Everyday ethics of dementia care in nursing homes: a definition and taxonomy. *Am. J. Alzheimer's Dis. Other Dement.*, 15, 143–151.
- Robertson, T. and Wagner, I. (2012) Ethics: Engagement, representation and politics-in-action. In Simonsen, J. and Robertson, T. (eds.), *Handbook of Participatory Design*, pp. 64–85. Routledge, New York, NY, USA.
- Sanders, E. and Westerlund, B. (2011) Experiencing, exploring and experimenting in and with co-design spaces. In *Proc. Nordic Design Research Conference*.
- Saunders, B., Kitzinger, J. and Kitzinger, C. (2014) Anonymising interview data: challenges and compromise in practice. *Qual. Res.*, 15, 616–632.
- Schön, D.A. (1983) *The Reflective Practitioner: How Professionals Think in Action*. Basic Books, New York.
- Sellen, A., Rogers, Y., Harper, R. and Rodden, T. (2009) Reflecting human values in the digital age. *Commun. ACM.*, 52, 58–66.
- Sengers, P., Boehner, K., David, S. and Kaye, J. j. (2005) Reflective design. In *Proc. 4th Decennial Conf. Critical Computing: between Sense and Sensibility*, pp. 49–58. ACM Press, New York, NY, USA.
- Singer, P. (1986) *Applied Ethics*. Oxford University Press, Oxford, UK.
- Steen, M. (2014) Upon opening the black box and finding it full exploring the ethics in design practices. *Sci. Technol. Hum. Values*, 40, 389–420.
- Sterling, S. and Rangaswamy, N. (2010) Constructing informed consent in ICT4d research. In *Proc. 4th ACM/IEEE International Conf. Information and Communication Technologies and Development*, p. 46. ACM Press, New York, NY, USA.
- Stilgoe, J., Owen, R. and Macnaghten, P. (2013) Developing a framework for responsible innovation. *Res. Policy*, 42, 1568–1580.
- The European Commission. (2014) How to complete your ethics Self-Assessment, Version 1.0. [http://ec.europa.eu/research/participants/portal/doc/call/h2020/h2020-msca-itn-2015/1620147-h2020\\_-\\_guidance\\_ethics\\_self\\_assess\\_en.pdf](http://ec.europa.eu/research/participants/portal/doc/call/h2020/h2020-msca-itn-2015/1620147-h2020_-_guidance_ethics_self_assess_en.pdf) (accessed March, 2016).
- The European Commission. (2016) Guidance for prospective Applicants, Horizon 2020. [http://ec.europa.eu/research/participants/data/ref/h2020/call\\_ptef/pt/h2020-call-pt-ria-ia\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/call_ptef/pt/h2020-call-pt-ria-ia_en.pdf) (accessed March, 2016).
- The European Parliament and the Commission. (2013) Regulation No 1291/2013. [http://ec.europa.eu/research/participants/data/ref/h2020/legal\\_basis/fp/h2020-eu-establact\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/legal_basis/fp/h2020-eu-establact_en.pdf) (accessed March, 2016).
- Tronto, J.C. (1993) *Moral boundaries: A political argument for an ethic of care*. Psychology Press.
- Truth-Apt. (2016) In Oxford Reference Online, Retrieved March 2016, <http://www.oxfordreference.com/view/10.1093/oi/authority.20110803105953845>.
- US. Department of Health and Human Services. (2016) The Nuremberg Code. <http://www.hhs.gov/ohrp/archive/nurcode.html> (accessed March, 2016).
- Verkerk, M. (2007) Care ethics as a feminist perspective on bioethics. In Gastmans, C., Dierickx, K., Nys, H. and Schotsmans, P. (eds.), *New Pathways for European Bioethics*. Intersentia, Antwerpen.
- Vines, J., Clarke, R., Wright, P., Iversen, O.S., Leong, T.W., McCarthy, J. and Olivier, P. (2013) Summary Report on CHI 2012 invited SIG: Participation and HCI: Why Involve People in Design?
- Von Schomberg, R. (2013) A vision of responsible research and innovation. In Owen, R., Heintz, M. and Bessant, J.R. (eds.), *Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society*, pp. 51–74.
- Waterman, H., Tillen, D., Dickson, R. and De Koning, K. (2001) Action research: a systematic review and guidance for assessment. *Health. Technol. Assess. (Rockv)*, 5, 166.
- Willems, D. and Pols, J. (2010) Goodness! The empirical turn in health care ethics. *Med. Antropol.*, 22, 161–170.
- Williams, B. and Moore, A.W. (2006) *Ethics and The Limits of Philosophy* (reprint edn). Routledge, London.
- Williamson, G.R. and Prosser, S. (2002) Action research: politics, ethics and participation. *J. Adv. Nurs.*, 40, 587–593.
- Wright, P. and McCarthy, J. (2008) Empathy and experience in HCI. In *Proc. Twenty-Sixth Annual SIGCHI Conf. Human Factors in Computing Systems, CHI '08*, pp. 637–646. ACM, Florence, Italy.