On Scale, Dialectics, and Affect:
Pathways for Proliferating Participatory Design

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ABSTRACT

The Participatory Design (PD) community is committed to continuously refine its technological, social, political, and scientific agenda, and as a result, PD has become more widely adopted, robust, and sophisticated. Yet, PD's advancement cannot end here. The gap between those who can contribute to the shaping of future technologies and those who are reduced to consumers, has – if anything – widened on a grand scale. In response, we argue through three lenses: scale, dialectics, and affect in PD, and suggest some pathways to build bridges, foster alliances, and evolve PD practice to proliferate the democratisation in technology design that has been a strong value driving PD. *Scale* asks about ways for PD to extend its reach without giving up on its core qualities. *Dialectics* is about creating and maintaining the spaces and fora for constructive conflict by networking and linking with other stakeholders, organisations, and domains. Finally, *affect* discusses how PD can put forward democratic visions of technological futures that connect to people's hearts, acknowledging that decisions are often made irrationally and unconsciously. Our review draws attention to opportunities for PD to travel between different contexts and proliferate through interconnected and intermediary knowledge and an embodied literacy that enables PD to reach further into industry, government, and community.

CCS CONCEPTS

• **Human-centered computing** → **Participatory design**;

KEYWORDS

participatory design, scale, agonism,agonistic design, adversarial design, dialectics, affect

1 INTRODUCTION

In their opening keynote to the last Participatory Design Conference (PDC) in Aarhus in 2016, Bødker and Kyng critically reflected on the current state of the field and the future of participation in shaping a socio-technical world [1]. Their critique was driven by the question of how participatory design (PD) can be transformative and how it can lead to "systems that matter," systems that change people's lives for the better. A recent special issue on *Reimagining Participatory Design* [2] is further proof of the field's commitment to be self-reflective and open to renewal. With this paper we contribute further to debates about current challenges in PD and its future. Although we acknowledge that there is always scope for improving methods and rigour of PD as a field of research, our main goal here is outward focused and explores new ways for PD to proliferate by building alliances, fora, and networks. At the point of departure for this paper, we ask ourselves how PD's transformative goals around community empowerment and sustained, democratic change could be further amplified, grown, and applied on a broader scale, and what obstacles we face. Our goal resonates with the 2018 conference theme, which encourages more sensitivity to politics and considers PD as both a political process and a political movement.

While established criteria for assessing the merits, success and rigour of PD exist in the academic and scientific realm, it is not entirely clear what it means for PD efforts to be successful as a political process or movement. Even when considered a success on the basis of benefits created for, and positive feedback received from, users, stakeholders, and community groups, the impact of PD often remains confined within a study's situated socio-material context, often struggling to travel, scale, or be sustained [3, 4].

In their keynote to the Aarhus Critical Alternatives Conference 2015, Gottlieb and Kleiner, from the activist group *The Telekommunisten* stated, "Don't mistake your shopping-choices for the revolution," reminding us that although PD can be successfully applied to both, it is the latter where PD can contribute towards a political movement. This in turn begs further questions. How can PD's positive impact and benefit proliferate and continue to widen its reach and impact? How do we identify and negotiate PD's social, cultural, and political agenda, and what are its barriers? And, following Monteiro's call for ethics not to be a "side hustle" in design [5], and DiSalvo's critique of design thinking for civics [6], how do we mitigate the risk of this agenda being conveniently divorced from practice as in more pragmatic interpretations of design that foreground design's capacity to elicit 'user requirements' and inspire designers with ideas, without asking any of the 'tough' ethical questions?

At the PDC'16 keynote, Bødker and Kyng identified a number of challenges, some of which we will pick up on in this paper. This though had not been the first moment of self-critical reflection. In fact, many colleagues have continuously contributed to advancing the field in past years. Already Kensing and Blomberg have noted that considerable effort in PD research is directed towards developing methods for engagement on the project level [7]. While attention on improving and refining methods in the field is important (see also [8]), we also see a need for a broader and more outward focused perspective that is concerned with making PD a worthwhile project within society. To some extent we echo this year's PDC call to think about the concept of *participation* in more holistic ways, thinking beyond methodologies for engaging people [9–11] and more about participation as a means for a political and social agenda of challenging patterns of dominance in shaping technological futures [12]. Thus, this paper is primarily **not** about possible ways of engaging stakeholders in the design of systems, processes or services, or questions about how to effectively configure such participation [13], but about providing a critical analysis of what PD has to offer as a whole – to people who participate, to science, and to society. And, we aim to contribute to an understanding of the levers and pathways for how these offerings can be realised and proliferate. This appears timely in a rapidly changing world in which new patterns of dominance are emerging, both politically and technologically.

Our motivation for wanting to contribute to these debates is twofold in that it is not limited to just concerns *within* the PD community itself as we just outlined. Additionally, there is a strong rationale *outside* of PD, that is, on a societal level, for engaging in these debates in light of new, and often very different types of challenges we are facing today. Unpacking recent technology trends that are fundamentally changing society, such as automation, robotics, autonomous vehicles, big data and algorithms, smart cities, blockchain, etc., critical scholars – both within PD and from other disciplines – have outlined the risks and dystopian futures within grasp of becoming reality if we do not intervene [14, 15].

We therefore argue that this debate is also motivated by an urgent need to consider new ways for the sensibilities, skills, and values that PD champions, to be applied earlier and more widely in order for society to better participate in shaping and influencing technological developments.

The starting point of our discussion is provided by three lenses of analysis that we argue reveal both highly critical aspects of our field and very promising levers for considering new ways for PD to proliferate: *scale*, *dialectics*, and *affect*.

As a first lens, we focus on matters of *scale*. Most PD efforts necessarily are strictly situated, embracing the complexity and detail of particular contexts – so much so that the rich insights and bespoke solutions may risk having little potential to extend their reach or to be transferred. In the words of *The Telekommunisten*, if PD becomes a narrowly conceived "shopping choice," albeit noble and beneficial to the people directly involved, where is the revolution? And, how can PD scale and travel without being pushed to pursuing a nomothetic agenda [16], objectifying its work in order to gain wider impact and applicability within a positivist interpretation of generalisability?

Secondly, we focus on *dialectics* and how spaces for constructive conflict are created in PD and work towards building agreement from disagreement. While much PD work, in particular in a historical context, has been driven by conflict that reflected power differences [8, 17], PD has tended to strive for constructive outcomes, e.g. by aiming to re-skill workers to use systems that they had helped to create [18]. In more pragmatic interpretations of PD, this tendency manifests itself in the notion of the elicited needs of the target group. Building on Björgvinsson et al. and their concept of Agonistic PD [19], we want to make the case that moving more radically towards critical design, in the sense of Dunne and Raby [20], could provide an opening for PD to lead the creation of dialectical and non-conformist spaces that welcome provocation, anticipation, and speculation (cf. [21]). They would invite many voices to come together and partake in challenging assumptions, values, preconceptions and givens about the role of technology in everyday life.

Thirdly, we focus on the role of *affect* in making decisions about one's future. Participation often implies that when stakeholders are given a seat at the table, are empowered, and have appropriate scope for decision making, they will likely act in their best interests. Yet, we know, for example from the general public discourse on democracy or from previous PD studies [22] that we are not rational decision makers and that unconsciously we are often easily persuaded to follow other drivers to arrive at positions, which in a more objective way would be clearly against our interests or values. The question arising, thus, is how PD can employ dialectic methods to create accessible fora where disparate views and even disagreement contribute to a diverse shared underlying axiology. Furthermore, technology's pervasiveness causes an entanglement with our lives in ways that are often tacit and un-knowable (cf. [23]). This complexity and unavailability means that even if we were in a position to make design decisions about alternative futures that we seemingly desire, it becomes un-knowable whether this indeed leads to what we would later judge to be a positive outcome.

The following starts by setting the scene for our review. We revisit some seminal PD literature highlighting the different scientific, social, political, and technological agendas inherent in the field. We also review critiques from within the field identifying challenges and issues, and how they have changed over time. In section 3 we use the three lenses outlined above to conduct our own analysis, highlighting references to both PD and other disciplines with similar struggles. We conclude with a discussion section that aims to synthesise our analysis and identify pathways for proliferating PD – not necessarily by resolving the tensions we identified, but by regarding them as a resource with a view to expand the epistemological base of PD research and practice in pursuit of expanding our reach and impact.

2 ORIGINS, AGENDAS, AND CRITIQUES

One can argue that PD has always been (part of) a political movement. While the first Participatory Design Conference did not take place until 1990, many projects before that could be seen as marking the beginnings of the field. Most commonly these are placed in Scandinavia and some in the UK where the political and social context in the 60s and 70s allowed progressive ideas to take shape.

In particular, the strong role of unions in these countries put labour rights onto the political agenda and empowered unions to actively get engaged in the shaping of the future of work. This also meant redefining the role of technology in the workplace, opposing the neo-liberal ideas that pushed for technology as a means to de-skill and replace human workforce, directly affecting the people the unions represented.

In their chapter on the heritage of PD, Kensing and Greenbaum call the first wave of union projects that addressed this challenge "knowledge strategy projects" [24]. For example, in the *Iron and Metal* project the union teamed up with Nygard and Bergo, a computer scientist and an economist, to have a say about how computers were introduced to the workplace. Here, first and foremost, the central goal was to build a knowledge base, that is, a competency about the possibilities of computing technology, for the workers and the union to negotiate with management [25]. In this engagement, the learning was not restricted to the workers, but also worked vice versa. Thus, mutual learning became a cornerstone feature of PD. Later projects took this one step further and asked if computing systems could be different if workers were directly involved in designing them. Most prominently, the *UTOPIA* project investigated how this might be done in the context of the newspaper and publishing industry [18]. While not immediately successful in the particular setting, *UTOPIA* nevertheless inspired a field and helped lay the theoretical foundations for PD [26]. In unique ways, the field started to bring together progressive ideas from workplace ethnography, in particular Suchman's situated plans and actions [27], reflective design [28], and from within computer science [29].

With the start of the PD Conference series in 1990, the practice diversified in contexts and in interpretation. In the *Handbook of Human-Computer Interaction* (HCI), Muller describes PD as an incredibly diverse field with the common denominator being the goal to actively include those affected by computing technology in its design [30]. The reasons for adopting a PD approach also broadened with the result that a spectrum of motivations for PD work emerged, ranging from more pragmatic needs to increase the user-system fit, all the way to being driven by a political stance about community empowerment, activism, and democratisation [7].

Examining the various agendas the different interpretations of PD put forward, Gärtner and Wagner propose a useful framework by distinguishing three arenas of participation: designing work and systems, designing organisational frameworks of action, and designing the industrial relations context [31]. While their work is focused on a workplace context, it is easy to expand the concept to reflect the range of works considered PD today:

In the first arena, then, the focus is on the design of systems, and the range of agendas is best described in terms of the spectrum of motivations mentioned above. On the one end, PD efforts emphasise a technological agenda of solving problems by participatory means with little ambition for political processes or societal change (e.g., contextual inquiry [32]). This interpretation has attracted some criticism, for example by arguing for the need to re-kindle values as a driving force of PD [5, 33]. On the other end, there is PD work that explicitly embraces the political stances of early projects and aims to empower people through design (e.g., [34]). While here the political and societal agenda is strong, critics recently voiced concern about the apparent lack of ambition in terms of building novel and innovative technological systems [35]. Within the second arena, participation is thought of in terms of organisations, institutions, or communities of practice. Gärtner and Wagner assert that participation here is commonly more indirect with issues around representation and generalisation. In this arena, agendas are predominantly political and concerned about negotiating organisational conditions [31]. The third arena is associated with society as a whole and policy making. We would argue that this is where technological, political, and societal agendas come together [36, 37]. While the slowest moving, it is also potentially the most influential of the arenas in terms of reach and impact over time.

Perhaps an arena of its own, academia has gained significance for people working in PD. Certainly with the start of the PD Conference and an associated journal, there has been an agenda to legitimise the work within the scientific playing field. The TOCHI journal's special issue on Re-imagining PD [2] shows that PD aspires to gain acceptance in relevant peer communities and perhaps do more, that is, help shaping them. As Kyng argues [38], PD should seek to become part of the future practices of ICT design, and looking at the increasing number of works in HCI which claim to use PD methods, it certainly looks as if this is in fact the case. However, as Kyng also asserts, there are several gaps that still need to be filled, for PD to reach its potential in academia and importantly, beyond. "We have to demonstrate that PD can deliver more than politics for the users and techniques for IT-professionals pursuing a management agenda" [38]. With this paper, we hope to develop questions and ideas to start filling some of these gaps and in turn, to help PD proliferate.

3 THREE LENSES

In this section, we commence building a threefold scaffold using the conceptual lenses of *scale*, *dialectics*, and *affect*. Our choice is guided by our review of the literature and from in-person discussions with delegates at PDC'16 that in turn were inspired by Bødker and Kyng's opening keynote. The scope of this paper limits us to only focus on these three lenses, and we hope others will suggest additional lenses, for example, a temporal lens [39]. However, we have identified these three as a particularly promising and productive starting point for our analysis.

The choice of these three lenses leaves our argument immediately open to criticism, and we welcome such responses. However, it is not our intention to be exhaustive and to thoroughly reproduce the entirety of prior thought that has been published on each of these lenses within the scope of this one paper. Instead, our selection of these three lenses serves the purpose of building a scaffold and starting block to connect with current debates in the field that are hoping not only for any one PD project to succeed but for the entire PD community as an academic discipline and field of practice to proliferate and widen its reach and impact. The notion of a 'discipline' suggests that rigour is inferred and upheld by being disciplined in conducting the research craft of the chosen field, that is, by being meticulous, diligent, and rigorous in the application of established theory, methods, and analysis (see also [40, 41]). The discipline's body of knowledge and the set of practices form a coherent culture that members of the community of PD researchers

and practitioners identify with. This is what holds the discipline together. We agree with the guest editors of TOCHI's 2018 special issue on Re-imagining PD [2] that it is not only welcome but also necessary to frequently question and critique the established cultural norms of practice in order to advance and renew the discipline and its mission (see also [42]). Yet, our critique in this paper is less directed at making PD a better science, and more concerned with finding new pathways for the qualities of PD to proliferate in order to help tackle society's big challenges and embrace political controversies. In the following, we will use each lens to review relevant prior studies and experiences both from within PD and from other disciplines.

3.1 Scale

Much PD research and practice is of an idiographic nature, and this has consequences and implications for generalisability and scale, as well as what it means to generalise and scale in PD specifically. Design research tends to be inherently situated, conducting exploratory, experimental, and prototypical work to discover innovative solutions in localised contexts – be they physical, socio-technical artefacts or conceptual systems and processes. Stolterman coined the term *the ultimate particular* to emphasise this intimate relationship between a design and its context [43]. Adding participation further exaggerates the idiographic nature of PD work as each set of stakeholders and their relationships provide unique social dynamics that fundamentally shape the work as it is conducted at that time. The challenge of PD's idiographic nature has been addressed and discussed by various PD scholars including Shapiro [44], Kyng [38], Beck [12], Balka [45], and others. While we acknowledge and value these PD internal insights, the issue of scale has not been resolved and continues to be debated (e.g., [3, 4]). Here, we want to compare and contrast some of PD's own contributions with examples from affiliated fields of study and practice.

The inherent idiographic qualities of PD have direct implications for the way knowledge is constructed, validated, and can be applied elsewhere. Like the designerly inclined parts within HCI, PD work is aligned with a constructivist science paradigm and a situated epistemology [27, 46, 47]. Such a paradigm fundamentally rejects positivist expectations and interpretations of generalisability, which is seen by more traditional sciences as the key to being able to transfer insights to other contexts and grow its impact. Instead, different definitions of generalisability as well as alternative notions of scale, such as transferability are invoked to emphasise that situated knowledge can only be re-used by "re-contextualising" it [48]. This leads to different outcomes in which knowledge is not boiled down to its bare essence, but comes embedded in a rich context that allows judgements about the applicability of insights in other contexts. Methodologically, this fault line becomes visible in the often cited qualitative vs. quantitative dichotomy [49]. While boundaries are evidently more blurred, there is a clear tendency for (participatory) design work to preference qualitative approaches, and the single case and the 'rich insights' are therefore inappropriate sources of data for generalised claims.

A question that can be asked then is whether PD can scale without necessarily becoming nomothetic or positivistic? Before delving into this, we need to reflect on why scale should be an aspiration in

the first place. Looking at the historical roots and emerging political agendas of PD, the political position of democratising technology is fundamentally underpinning PD practice. Democracy upholds the principle that people who are within the reach of a state's laws are allowed to vote in elections that determine those laws, and consequently, PD seeks to involve all people in the design of technology who are affected by it. This has led PD to be concerned about communities of practice like professions or youth groups [50]. However, similar to politics, interconnected and globalised processes in our modern information society have blurred the boundaries of who is affected versus who has a say. Just as the life of people in Greece these days is in part determined by the German government, everyone's life is shaped by technology that the majority has no easy way of influencing. In recent times, some of the unintended and implicit consequences of technology design have come to prominent light in debates around the use of big data and algorithms by technology corporations such as Google, Facebook, Twitter, and Amazon [14, 15, 51].

Even when the boundaries for PD work can be drawn more neatly, the need for scale is morally indispensable to not deny similar target groups similar alternative futures. Health care, education, or public infrastructures are prime examples where it is imperative that situated work effectively expands its reach and scales to make a difference. Thus, we take a moral stance at this point in that we argue that PD has to seriously engage with the challenge of scale if it wants to adhere to its own values and principles (cf. [3, 4]).

Untangling the challenge of scale leads us to two related, possibly constituent issues that remain unsolved in PD: firstly, how to sustain the impact of PD efforts and secondly, how PD knowledge can travel from one context to the next. In particular the former has been a focus of interest for some time. Clement and van den Besselaar were one of the first to provide a meta-review of early PD efforts [52], stating "long-term viability needs to be made a main ambition of PD research." More recently, the field has (re-)discovered its interest in *infrastructuring* as a useful concept to expand the scope of what PD needs to design to facilitate sustained change. Star started using the term infrastructure for socio-material settings that shape behaviours and practices around technology use [53]. Infrastructuring, then, is the work of designing not only the technologies, but elements of the socio-material setting that leads people to use the technology (e.g., [54–56]). Infrastructuring addresses the challenge of continuity and sustainability as it extends the object of design from the *thing*, as in the actual object, to the *Thing*, as in the object within its socio-material use context [57].

The second challenge of how PD work can travel between contexts is receiving less attention and remains the elephant in the room. The hermeneutic science paradigm in which PD often operates, makes positivist-style generalisations impossible. Yet, for contributing to political debates that we want to influence, positivism is often the main 'science' that is valued by policy makers and decision makers. As PD tends to be non-positivist, this suggests transferability as a viable approach to re-apply knowledge. However, as mentioned above, the extreme idiographic nature of PD work leads to the very real risk that the benefits of any knowledge constructed are eaten up by its contextual dependencies. Furthermore, the field does not reward replicating studies, which is seen

as a concept of past paradigms, but would provide insights into the stability and fittingness of situated knowledge (c.f. [58]). Fitzpatrick and Ellingsen highlight a similar discussion in the Computer Supported Cooperative Work (CSCW) community [59]. Reviewing 25 years of CSCW health IT work, they point to the need for large scale evaluations in designing health systems, which, however, challenge the situated work practices that CSCW has come to embrace. As a possible way forward, CSCW has started to engage in multi-site studies. By diversifying study sites and contexts, such studies have opportunities to identify themes and insights that would remain hidden in single settings. But is this still enough?

Other fields, mainly in the hermeneutic tradition, have similar struggles that may inspire ways forward, too. One close disciplinary relative of PD, and in fact one of the historical inspirations, is Action Research (AR). While sometimes the boundaries are blurry, the distinctive feature seems to be the intent to design. While AR focuses on local change through iterative planning-action-reflection cycles, PD emphasises alternative futures and change by design [60]. Otherwise, it is rather straightforward to see how the political (people having a say or stake in decisions that affect them) and epistemological (constructivism) dimensions of participation in AR are easily applicable to the notion of participation underpinning PD [11]. In 2002, Greenwood, a central figure in AR, published an article in angry rhetoric, lamenting the marginalised role of AR in the world of the social sciences, although many of the philosophical battles had been won [61]. He puts some of the blame on the doorstep of the field itself, e.g., referring to inadequate reporting and hence applicability of results, and some on the persistent hegemony of traditional positivists in institutions that determine funding and publication peer review. Greenwood's article started a lively debate that is relevant for our argument: Gustavson expanded on what he saw as the most pressing of the identified challenges: how to scale AR to have society level impact [62]. He advocates an approach that goes beyond the single case by creating social and political movements as a thematically connected stream of events. This requires re-thinking the project model of research towards programmes of work that persistently work on one theme through small and diverse efforts. He asserts that "While occupying the moral high-ground ... [AR] is still struggling with its legitimacy" and concludes that the only way to change this is by proving impact on the world.

Another field struggling with the tension between situatedness and scale is Implementation Science (IS), the study of methods that influence the integration of evidence-based interventions into practice settings. The prime context of research within IS is health-related and explores the barriers, levers, and pathways that allow health research outcomes to be implemented in the practice of health care. As such, the vast majority of work assumes that the starting point is 'hard' evidence, proven and validated knowledge in the positivistic sense. However, situated knowledge, mainly from qualitative studies, is on the rise, and it has become a central question to the field how to implement them across contexts. For example, *Realist Evaluation* [63, 64] is being used by some researchers to complement positivist evaluations applying qualitative methods to understand "what interventions works for whom under what circumstances" [63] and to identify mechanisms of change that can go towards transferable findings [65]. Taking transferability a step

further, and building on Firestone [66], Polit and Beck develop suggestions for how generalisation and transferability of knowledge from different data sources can be improved in a nursing study's context [67]. They argue the transferability of qualitative study results, too, can benefit from replication, meta-analysis, and meta-synthesis. Finfgeld-Connett advocates that meta-synthesis "is a way of putting together qualitative findings from disparate investigations so that they can more readily be used in clinical practice and policy formation," that is, making them potentially scaleable [68].

In HCI, the questions around the identity and nature of the discipline, its themes of study and the kinds of knowledge it produces have also attracted renewed interest [3, 41, 69] and are relevant to our argument: Höök et al. report on the outcomes of a workshop that explored knowledge production in the HCI community [70]. They argue that knowledge comes in various forms, ranging from universal laws to highly contextualised insights. In between, forms of *intermediary knowledge*, such as strong concepts [71] or annotated portfolios [72] have gained popularity and are increasingly used to communicate Research-through-Design outcomes. While we would be cautious about the undisputed validity of universal laws, we agree with the assessment that there is a continuum of knowledge types, with one end affording transfer and scaling to a higher degree than the other. It is noteworthy that such intermediary forms of knowledge build their external validity by drawing on multiple single design cases: in annotated portfolios Bowers and Gaver call them *family resemblances* [72], Höök and Löwgren abstract across particular instances to arrive at *strong concepts* [71].

Across these debates, we notice that the key for scaling idiographic work is related to iteratively building kinds of knowledge that stem from multiple instances. This suggests a need to re-frame replication in the context of PD. As a starting point, we present a short detour referring to feminist Juli Eflin [73] who picks up Nagel's phrase "the view from nowhere" to characterise and critique traditional epistemology:

> "Epistemologists in the traditional mould believe that the only way to achieve certainty is to strip away all but the bare reasoning needed to make inferences. Anyone can achieve a close approximation of this ideal state disregarding any context – socially, historically and economically – is irrelevant as are any individual goals or emotions. In traditional epistemology, the perspective of the idealised knower is a *view from nowhere*." [74]

Focusing on the relationship between knowledge and individual knowers, Elfin's argument critiques the claims of expert power to be universal and absolute. Considering women and minority groups, she is concerned with the effects of power exercised on them via the cognitive authority of the typical white male expert. She argues that white, well-educated men and their ideas about knowledge are neither the best views nor necessarily representative of the views held in the rest of society. Rather than assuming the objective, culturally inert, and liberating nature of knowledge, she understands knowledge as culturally constructed and in service to particular interests. In other words, "knowledge has cultural baggage" [75]. Eflin raises legitimate concerns about epistemologies that have their roots in masculine preferences for decontextualised

rationality. She rightly points to the narrow limits of this way of creating knowledge. Her call, however, is not one that seeks to simply position feminine and masculine epistemologies in competition with each other. Rather, it is a call to broaden our view of what constitutes legitimate ways to create knowledge and vouch for its justifiability.

PD appears very much compatible and in line with Eflin's critique of traditional epistemology and PD's epistemological stance is better characterised as the *view from somewhere* – accounting for its idiographic nature and what Haraway [47] calls "situated knowledges." What we posit here to consider in PD is an epistemological stance that builds scale into PD by transforming many views from somewhere to the *view from everywhere* [76]. Staying within Nagel's figuratively intended analogy, we allude to the multiplicity of insights that form a coherent body of knowledge and a systematic canon of theory, rigour, and strength similar to that taken for granted in other disciplines of academia. This highlights the need to emphasise the merit of case study research in PD, the distribution of knowledge beyond the immediate group of participants, the transferability of findings, and the resulting artefacts, systems, or interventions, as well as the re-appropriation of prior knowledge to new contexts. Inspired by Gustavsen and his ideas around new forms of knowledge production in social networks [77], we will return to these constituent elements of scale and possible concepts to support these, such as design patterns, in our discussion further below.

3.2 Dialectics

Our second lens looks at ways to facilitate the participation of diverse groups of people and stakeholders with different viewpoints in design and for them to make collective decisions in the design process. Greenbaum and Kyng have argued early on that, "The design process is a political one and includes conflicts at almost every step of the way" [78, p. 2]. It is an explicit aim of PD to facilitate democratic decision making. This often means taking sides and empowering the oppressed. Fairness in participation and the value of everyone having equal say in negotiating agendas stems perhaps from PD's Scandinavian historic roots in workers unions and the inherent and ongoing struggles for democratic processes, representation, agency, and voice. Since then, PD contributions have not just acknowledged but actively examined the role of assembling different stakeholder groups and their competing interests and conflicts, and how best to deal with them [17, 79–81]. The field seems to consider two main approaches. The first is based on agreement, unity, consensus, and compromise and usually seeks to produce a shared, commonly meaningful outcome. This is contrasted with the second – arguably more difficult – approach that is based on embracing agonism and adversarial design processes of change [19, 82]. The merit of agonistic PD lies in its ability to frame its outcomes as pronounced, even provocative positions, which do not immediately orient themselves towards consensus, but instead frame a critical discourse around alternative futures [83].

If one of PD's fundamental goals is democratising technology design and use, then we agree with Mouffe's central proposition, *radical democracy*, which posits that practising agonistic pluralism entails valuing and sustaining dissent and critical engagement with

existing forms of hegemony [84]. In the context of PD, the goal is a fairer, more democratic approach to designing technology that challenges the traditional engineering perspective in which experts of system design decide what is being built, steered by those who pay them to do so. This technocratic and neo-liberal position was what early PD projects like those by Nygaard and Bergo [25] opposed and instead put forward a vision for the role of workers that was inspired by Marxism [26]. The re-skilling of workers by involving them in a mutual learning process in which they had a stake in designing their future work environment, was one of the central concepts by which this was to be achieved.

Technologists often dismiss the benefit of involving workers, or users more generally, in the design process by casting doubt over their ability to produce significant shifts in innovation. Transformative design, the argument goes, requires the radical visions of inventors who exploit opportunity spaces, rather than listening to people. Norman, for example, controversially put this argument forward referring to how inventions like the aeroplane, the radio, and also work by Apple and PARC, have fundamentally changed our society without necessarily being driven by existing needs of their future users [85]. A similar sentiment is expressed in the popular quote, most likely never uttered by Henry Ford: "If I'd asked people what they wanted, they would have asked for a faster horse" [86].

PD as a field took issue with this perspective and sought to rebalance the drivers of innovation. To counter the criticism of not being suited to producing groundbreaking innovation, considerable methodological work was invested in finding ways to inspire participants and enable them to imagine solutions that go beyond what they already know, e.g., in future workshops [87] or exploratory design games [88]. PD's underlying epistemological stance also allows for seeing the designer as an active and subjective participant in research, not only facilitating PD activities, but consciously lending innovative or radical ideas to the process through their designerly skills [89]. However, this requires not only designerly skills but also communicative and deliberative skills to facilitate mediation and negotiation between different viewpoints and value scenarios [90]. If agreement is achieved too easily, or a diversity of viewpoints or alternative pathways are not explored thoroughly, consensual decision making may risk failing to subvert or challenge the culturally entrenched visions and narratives about technological futures, leading to bland compromises.

As a result, constructive conflict is regarded a resource for PD. Björgvinsson et al. have coined the term Agonistic PD, which is characterised by employing processes and creating spaces where groups of people can passionately engage in vigorous, but tolerant disputes [19]. Building on ideas by Mouffe [84], Björgvinsson et al. have worked with marginalised groups to co-create socio-technical interventions to transform antagonism, the conflict between enemies, into agonism, the constructive controversy among adversaries. It becomes clear that such aims extend the scope of design considerably, from the actual object or technology to the social practices and norms in which it is embedded, i.e. the infrastructured Thing as discussed above [57]. A similar perspective is taken by DiSalvo in his book *Adversarial Design* [82]. Placing his focus on the designerly ways by which we can engage in doing the work of agonism,

he discusses a wide range of works in which designers have not sought consensus, but constructive controversy.

DiSalvo's work builds on critical design, a term coined by Dunne and Raby in the mid-Nineties defining critical design as using "speculative design proposals to challenge narrow assumptions, preconceptions, and givens about the role products play in our everyday life" [91, p. 34]. They emphasise that good critical design offers visions of alternatives. While this might sound familiar, PD's activities and outcomes typically are of a very different nature. Critical design is often dark – as in design noir [20, 90] – sometimes apocalyptic, ironic, and disturbing by engaging in caricatures of reality. Many works are absurd and/or funny, but walk the fine line of not being perceived as purely art. They ask the *what-if* question that is too close to home to be disregarded. Bardzell and Bardzell have brought these ideas to the HCI community, not without critiquing the original conception of critical design, in particular regarding how Dunne and Raby set the concept up as significantly different to affirmative design and the arts [92].

Reflecting on the fact that these forms of design and PD have similar aspirations, but different approaches and outcomes, we are led to articulate a yet to be filled gap in agonistic PD, that is, what is the role of the designer in building agreement from disagreement [93]. In response to this challenge Dick [93] suggests dialectics as a discourse method. It employs an explicit articulation of viewpoints and values (cf. standpoint theory [94]), and a synthesis process of reasoned arguments. It requires participants to bring time, discipline, mutual respect, and a willingness to learn from each other and to be prepared to change their own original views, opinions, and even values. Relatedly in PD, both Dindler and Iversen [95] and Fritsch and Iversen [96] argued against the aim of universal consensus. Rather, they suggest engaging Stengers' notion of *symbiotic agreement*, "where symbiosis is understood as a state "in which every protagonist is interested in the success of the other for its own reasons" [97, p. 35]." [95, p. 45–46]

While power structures are already a topic of interest in PD [8], we argue that dialectics and dialectical inquiries in PD [98–100] are a useful lens for further exploration to complement and expand agonistic PD. Negotiating a path that meets all the diverse needs of participants is difficult. Therefore, we see a need to much more explicitly foreground and reflect on the processes by which different voices and dissent get brought together and how inherent tensions and incompatibilities are negotiated in final design recommendations and solutions. We will return to this point in our discussion and consider how to expand the repertoire of PD activities towards dialectical practices.

3.3 Affect

In our third lens, we explore the challenges and tensions when considering emotion and affect in the context of participation and the choices made available in design processes. While most PD processes focus on creating opportunities for often vulnerable or marginalised groups to be heard, the responses are driven by a complex interplay between internal emotional states and rational reasoning which may not necessarily translate into empowering participants to create "better" futures for themselves or others. In other words, participants are not navigating their choices purely

by rational criteria, but may even act against their own interests driven by complex emotional states. Such behaviours not only appear in the form of emotional language and gestures that are relatively easy to identify and recognise as such. More difficult is unconscious affect that influences responses and behaviour, yet may come across as reasonable and rational. As we continue to centre our review around PD's aspiration to democratise technology by creating desirable futures and empowering users and stakeholders, we argue that a critical engagement with affect theory [101, 102] may be a useful endeavour for the PD community. While an in-depth engagement with affect theory and all its variations is beyond the scope of this paper, here we aim to develop some initial avenues for future explorations on how affect theory may prove useful for advancing debates in PD. We also acknowledge that we are not the first to point out the merits of such avenues, as some colleagues have already embarked on this journey [96, 103].

In the following, we pragmatically pick up some leads from affect theory as inspiration. We argue that these are promising ways to think about matters of affect – in the broadest possible definition – and PD. Our hope is that this will stimulate interest and theoretical engagement in what is a dynamic and still contested field of debate. We see two main reasons why a more in-depth engagement of PD with affect theory is needed: (a) affect clearly plays an important role in how decisions are made and thus is critical for PD to develop an understanding of. Affect theory provides some concepts and language for PD to embark on this mission. (b) Our reading of affect theory [101, 102] rendered a picture of a field that is dynamic yet still incoherent and contested with different and often conflicting interpretations being proposed. This diversity partly stems from the multidisciplinary mix of scholars contributing, however, there is a notable shortage of contributions to affect theory from design research, design theory, and PD. We argue that there is an opening for PD to be joining the affect theory debate, and that such engagement will also yield in return useful insights and advancements for PD itself.

Affect theory not only pertains to building a taxonomy of subjectively experienced feelings and their physiological manifestations, it is also concerned with creating a better understanding of how affect is rooted within the body and mind and whether it is linked with [104] or separated from [105] consciousness and cognition. In addition to its placement, affect theory is also increasingly concerned with the role and impact of affect in the context of reason, ethics, judgement, and the political. This "turn to affect" has produced numerous (yet not necessarily unanimously agreed upon) contributions from history, human geography, urban studies, political theory, literary studies, art history and criticism, media and cultural studies, as well as some burgeoning contributions from design [103, 106].

Affect is certainly relevant to our concerns in this paper, as many studies in PD have confirmed that the practice of participation involves more than just rational decision making. Participation often entails desire, value judgements and affective pressures and sensitivities. While in principle a PD approach aims to give scope and power to participants so they can influence decisions in the design process and choose from multiple options, it cannot be assumed that the power of this agency is entirely executed in a purely deliberative and rational manner and that the design outcomes will

therefore have positive impacts on all those involved. Participation is more complex than that. We certainly second Reason's rationale for the merits of participation [11], and believe that the original core premise of PD – giving people affected by technology a voice in its design through participation – is a useful and valuable imperative. However, making voices heard may be necessary, but is not sufficient to materialise the goals of participatory processes. PD researchers and practitioners have recognised this, for example, by researching ways to elicit tacit knowledge from co-design processes[23]. Furthermore, participants may err [22], and they may genuinely believe the feedback they are giving is constructive and in their own best interest but inadvertently call for design solutions that are to their detriment [107]. This raises questions not just of affect and how best to negotiate and navigate it. It also raises questions of ethics and axiology: What are the participants' values that shape what they deem to be right and wrong? How are these values formed as part of the engagement with a design situation? How are values held and expressed (or not)? And how do they compare to the values, beliefs, and standpoint of the designer, researcher, and activist?

One line of thought within affect theory has tried to make sense of larger societal and political developments, which are also of interest to PD. Popular votes like Brexit or the 2016 US presidential election show that participating in shaping alternative and desirable futures is also not always governed by rational thought or by a carefully judged emotional response to a value proposition. Rather, these decisions are influenced and shifted by complex societal processes that are often unrelated to the immediate scope of action. Research into the UK's decision to leave the European Union, for example, revealed a multitude of correlated demographic features that point to a complex rationale by people to vote 'leave' that only partially centred around the actual question being posed in the referendum [108]. Political commentators routinely point to the paradox that large portions of the low-income electorate in various countries vote for tax policies that bluntly privilege the better off and wealthy in society. Others often blame technology design, e.g., social media. Yet, Kou et al. call on designers to "pay more attention to the diverse, concrete ways citizens with different ideas and beliefs construct public discourses" [109, p. 832] (cf. [36, 110]).

A starting point to explain what might be perceived as irrational behaviour on the surface might be behavioural economics, which has a long tradition showing that rational human behaviours are a neoliberal illusion. In his book "Predictably Irrational," Ariely shows how our decisions are consistently irrational, depending on seemingly unrelated circumstances [111]. In various experiments he demonstrates how thought processes that lead to decisions change when, for example, choices are made available in different ways or are framed within social loyalties. Sanfey et al., for example have shown how feelings and emotions of being treated fairly or unfairly changed decision making in the *Ultimate Game*, a classical study in economics [112]. However, one highly influential line of thought within affect theory particularly from cultural and social studies has sought to provide alternative interpretations and explanations of such irrational behaviour and unconscious thought mechanisms [105, 113, 114]. Here, we want to use this juncture to start unpacking affect theory for PD and problematise three aspects of affect in PD in increasing order of complexity.

First, while behavioural economics candidly demonstrates the irrationality of choices, it does not easily explain the aforementioned paradox of people on low income voting for options that eventually turn out to be to their detriment. Hillary Clinton's language calling Trump voters 'deplorables' as a significant piece of forensic evidence in 2016 US post-election analyses was picked up by one school of thought in affect theory. The ensuing backlash was not a rational rejection of what Fraser [115] calls Clinton's "progressive neo-liberalism." Rather, it was a disillusioned and arguably more affective than rational reaction to the lack of a positive, desirable response to the often precarious living situations of many people [116]. Rather than trying to appeal on strictly rational grounds, Trump was more attuned to the affect of voters. He connected at a more base emotional level and was perceived as offering a 'real' alternative that promised positive change to employment, job security, and a better quality of life, as well as rejecting the complex intertwinement of neoliberal economic policies disguised with some window dressing of progressive ideals [115]. This, and similar arguments seeking to untangle Brexit, illustrate two points: First, the mainstream view within affect theory seeks to separate affect from meaning and cognition. Yet, this view has received notable criticism relevant to PD [104, 117, 118]. Second, there is an urgent need for a more nuanced set of theoretical concepts and methodological approaches that allows PD – when regarded as a political process and movement – to (co-)develop narratives that connect with people on an affective level for them to have confidence in the rigour, value, and vision of the undertaking.

Second, the challenge for PD, then, goes well beyond facilitating a fair, democratic process in which every stakeholder has a voice and the scope for contributing to decisions in a rational way. PD also needs to continue to concern itself with the motivation of participants to take up a certain position and influence decisions accordingly. We argue that PD's focus on people's participation in design requires further attention on *why* they contribute *what*, and what values, beliefs, and affective motivations drive them to do so. We argue that a pivotal element for including this dimension in PD is making critical reflection on participant choices an explicit goal in PD collaborative activities, that is, it must become possible to question the motive for a participant's contribution. This requires a sensitivity to acknowledge that multiple rationalities, beliefs, and worldviews exist in every situation, and that participants' preferences and choices are situated and contingent. One key methodological challenge then becomes creating awareness and transparency of these assemblages and methods to identify, visualise, articulate, exchange, and question affect and value judgements in a structured dialogue with participants. This in turn links to our previous discussion on dialectics.

More examples for how strongly affect is influencing decisions are provided by Paul Bloom in his controversial book "Against Empathy: The Case for Rational Compassion" [119]. In a provocative line of argument, he shows how high levels of affect driving empathy risk influencing people's capacity for making decisions that are not just good for the few but for the majority. Taking inspiration from Kant's ethics, he argues that aspiring to feel like someone else can lead to misguided decisions. Instead, he advocates for *rational compassion*, that is, aspiring to understand others, rather than feel how others may feel. Yet, in the public discourse it seems empathy

is often cherished as something that one cannot have enough of. In design, Wright and McCarthy argue that empathy is the key enabler for designers to create meaningful experiences for users [120]. A similar argument is made frequently in PD, that empathy is an essential part of the mutual learning process that allows designers to make good decisions in the interest of their design participants [121, 122]. While we agree to some extent with this line of thought, there are limits to empathy [123]. Bloom's stance for rational compassion has also created lively debates among the design community. We are cautious about taking such an extreme position, however, in the context of affect in design, his argument expands the notion of empathy to a continuum or a plurality that also encompasses related notions such as compassion. Moreover, it raises questions around whether and how to prioritise multiple and oftentimes competing causes for empathy and compassion. Although we lament limitations and constraints in Bloom's argument around rationality similar to behavioural economics, as pointed out earlier, we believe there is merit in further work tailored to PD that collides affect theory with axiology and perspectives on materiality and embodiment [124–126].

This brings us to our third point. Not acting against one's own interest or belief system may be a necessary condition to participate in and contribute to subjectively positive outcomes and change, but again may not be sufficient. Technology's increasingly complex entanglement with our everyday lives, environments, and society as a whole has reached a degree at which consequences of desired alternative technological futures are un-knowable and speculative at best. Yet, rather than investing immense effort in trying to solve an unsolvable challenge, can we learn to accept and work better with the unknown, with gaps, with uncertainty, with the invisible? PD is uniquely positioned to negotiate unknown territory and can contribute such approaches and PD perspectives to the growing body of affect theory [101, 102]. Spinoza [127] argued that rationality is grounded on affect, and affect thus precedes rationality. However, he also argued that positive affect – joy, play, happiness, care – is a prerequisite for rationality. This leads us to recommend PD to not only engage with affect theory in the design of desirable outputs and interfaces, but also in methodology and further in the values underpinning PD [103, 106]. Moreover, as one possible avenue for further exploration around PD and affect, we recommend the focus on 'care' championed – among others – by a team surrounding Light and colleagues [128–131] who argue for what might be crudely summarised as 'designing with care:'

> "Here we argue that communities need tools that can support both the cultural and idiosyncratic aspects of care, wonder and fulfillment. It is now everyone's task to work out what that means in each community and with every design decision." [129]

4 DISCUSSION

With this paper, we want to encourage our community of researchers and practitioners to explore where and how we can collectively assist in proliferating PD and PD methods and impact at a time when advancements in technology are rapid, labelled disruptive, and are – more than ever – in need of the voices and values that PD can bring to bear in order to create the sort of society we all want to live in. In this paper, we have sought to review some of the underpinnings of PD research and practice using three lenses that guided our discussion: scale, dialectics, and affect.

The first lens, scale, led us to the tension between the inherently situated quality of PD work and the pragmatic need for insights and solutions to travel and scale. The central question we posed at the beginning was how PD could impact at scale without necessarily falling into a nomothetic or positivistic paradigm. Looking across to related discussions in different fields such as Action Research, Feminism, Implementation Sciences, CSCW, and HCI, we identify a need for an epistemological foundation and associated practices in the field that effectively build new forms of knowledge that stem from the diversity, multiplicity, and plurality of available insights.

Our second lens, dialectics, took us to reflect on the responsibility of designers to not only engage in design discourse but human discourse, and to show sensitivity and skill in negotiating agreement, consensus, compromise, and mediating agonistic and adversarial viewpoints. Encouraging dissent and challenging hegemony is worthwhile, yet opens new challenges beyond just embracing conflict as constructive. How can designers best be equipped to handle dissent, some of which might be fundamentally irreconcilable? Taking inspiration from the critical design movement and related literature, here we argued for expanding the repertoire of PD activities towards dialectical practices.

Lastly, with our third lens, affect, we focused on rationality and affect and how they create a tension in decision making with accompanying ethical and moral dilemmas. We reflected on the current political discourse and how people are often willing to act against their own best interests or beliefs. We posited a need for PD processes to better unpack the assemblage of multiple rationalities that exist in any given participation context, and what values and beliefs, often unconsciously and tacitly held, these connect to. Furthermore, we also need to consider that the attempt of such unpacking process could be entirely impossible and illusionary.

The above lenses have produced theoretical constructs that are inherently interwoven. In the following, we make a start on how these lines of argument could contribute towards re-framing and extending existing PD research and practice. Considering the myriad of ways that these constructs could be combined in order to provide direction, we are guided by this year's PDC'18 conference theme and focus on seeking to proliferate PD as a political movement.

Our analysis points to the need to evolve the epistemological foundation of PD in ways that is more inclusive of practices and more transferable between contexts. To this end, the discussion around appropriate forms of intermediary knowledge in HCI seems one of the most relevant and applicable [70] for us. It may also be fruitful to revisit Alexander's original concept of design patterns [132]. Alexander's vision, contrary to how software engineering interpreted his work, was that design patterns capture the architectural "quality without a name" about what makes spaces, buildings or cities work. He argues, that while we are good at recognising "what works," we struggle in articulating re-usable concepts. While using a consistent vocabulary – problem, discussion, and solution – and organised in a pattern language with grammar, no instantiation of a design pattern can lead to the same solution as before.

While appealing as a concept, we recognise the challenge of writing good patterns that capture such a "quality without a name"

in PD. Appropriate intermediary forms of knowledge need more than the identification of patterns in successful practice, however one might define success. The situated insights and the diversity of sources they emerge from in PD's world of single cases risks that identified patterns quickly become shallow and trivial. This issue relates to the discussion by Frauenberger [69] who explores the applicability of Critical Realism to problems of HCI. Critical Realism rejects constructivism, and its inherent relativism, by conceptualising scientific work as inquiring into the same, independent reality at different levels, or stratas. For example, a controlled lab study around Fitt's law and a cultural probe might enquire into the same reality of mobile phone use on public transport [69, p.347]. As a consequence, Critical Realism calls for efforts to link knowledge across stratas to complement insights, rather than generalising them within a strata. The goal is to gain a more holistic and nuanced, albeit imperfect knowledge of reality. Applied to PD, we argue that efforts are needed to not only replicate studies and identify patterns, but to meaningfully relate distant sources of knowledge to further our understanding of the realities we choose to inquire into. This resonates with the argument by Foth et al. [76], where *views from everywhere* are contributing to our understanding of a practice of plurality.

The concept of stratification allows us to integrate studies that may operate on very different levels of what traditionally would be considered PD. *Critical* PD activities, pursuing an agonistic agenda will produce very different types of knowledge, which nevertheless can be seen as complementing other knowledge produced by PD efforts that are oriented towards consensus. Equally, we argue that studies focusing on affect and participation can complement work that thematically engages the same reality, despite the fact that it is very likely that the knowledge production on this strata is of a different nature. Certain work may work across stratas and provide valuable links of how to relate seemingly distant insights. For example, DiSalvo describes how adversarial design tactics are geared towards mobilising strong emotions such as anger or dissent [82].

However, the main question remains: *how* can distant sources of knowledge be meaningfully related to each other to make the sum greater than its parts? We cannot claim here to have any definite answers to this challenge, but argue that seeing PD practice as a learning network of social actors may provide one possible way forward. Discussing new forms of knowledge production in relation to action research, Gustavsen argues for the need of new social relationships within the research community itself [77]. Relationships and networks of mutual understanding, trust and solidarity would dramatically increase the potential for seemingly distant insights to be related in meaningful ways [133]. In another paper, Gustavsen states "knowledge does not travel from event to event purely through research channels" [62]. Individuals – participants, designers, and researchers alike – carry their experiences of PD work with them as what we might call *embodied literacy*, that is, a combination of knowledge, skills, competences, and experiences. This embodied literacy can grow through training, through engaging in specific PD project instances, and through critically engaging in self and team reflective practices. This taught- and experience-based knowledge is then drawn on in-the-moment in PD work in the form of intuitive judgements, sub-conscious pattern recognition

that this situation is similar or different to another, and deciding on how best to apply the tools of PD in the given context. In many ways, the notion of embodied literacy resembles the kind of apprenticeship and transfer of knowledge that Schön describes as the *Reflective Practitioner* [28].

Focusing on embodied literacy of PD has significant impact on how we think about setting up PD efforts and how to relate them to each other. It leads us to think more systematically about how we can create programmes of projects [62] and how we might want to bring together a well balanced mix of people with different skills and experiences in different settings. We imagine a PD practice that actively sets out from the beginning to establish a learning community of study participants who develop and strengthen literacy and skills around participation. It is this literacy and those skills beyond the immediate PD project case that stays with the participants and designers, that *travels* with them as a legacy of the project itself beyond its immediate local change making goals. The PD researcher might re-imagine their role with an expanded remit and capacity more in the light of a socio-cultural animator [134] performing "human horticulture" [135] rather than that of a designer-facilitator.

Both of these ways of enabling PD to travel – through interconnected, intermediary knowledge forms, and embodied literacy – are fundamentally inductive in nature. They are developed and created by reflection and reification from specific, heterogeneous instances and multiple sources of knowledge. They lead to more intermediate versions of embodied literacy (accessible to the person) and of intermediary knowledge (shared, articulated concepts accessible to others). We argue, that these represent the constituent parts of the knowledge base that defines the discipline and also provide possible pathways for PD to proliferate beyond the realm of academic design research.

5 CONCLUSION

With this article we have sought to find new pathways for PD to proliferate. We have arrived at making suggestions towards evolving the epistemological foundation that PD rests on and a call to our community to nurture the embodied literacy of PD in ourselves, those we work with, and those we should work with. One might think it ironic that for all the knowledge we have gained about engaging participants, it seems we have been less successful in applying that same knowledge to reach beyond our community. In this spirit, we hope that this paper will contribute to building an increasingly networked PD that can reach beyond its current scope of influence.

6 ACKNOWLEDGEMENTS

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