



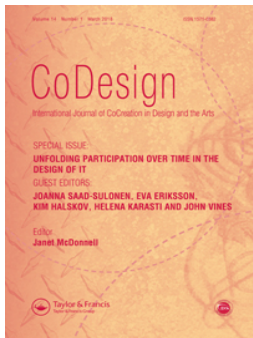
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Unfolding participation over time: temporal lenses in participatory design

Joanna Saad-Sulonen^a, Eva Eriksson^{b,c}, Kim Halskov^d, Helena Karasti^a and John Vines^e

^aINTERACT Research Unit, University of Oulu, Oulu, Finland; ^bCenter for Participatory IT, Aarhus University, Aarhus, Sweden; ^cDepartment of Computer Science and Engineering, Chalmers University of Technology, Gothenburg, Sweden; ^dDepartment of Aesthetics and Communication, Aarhus University, Aarhus, Denmark; ^eNorthumbria School of Design, Northumbria University, Newcastle upon Tyne, UK

ABSTRACT

Participatory design (PD) research has historically strongly focused on the reporting of design events (e.g. workshops and prototyping activities with participants), where issues such as ‘involving users’, including the users’ point of view, and participation as a matter of mutual learning have been in the foreground. The need to further problematise and critically examine participation is nonetheless apparent. This special issue aims to shed light on participation as it unfolds over time during, between and beyond participatory events such as these. Here, we build an overview of existing directions taken by researchers to address the unfolding of participation in IT design over time. We do this by examining existing PD literature and the four contributions to this special issue. We identify two common temporalities in PD, the *future-oriented* and the *project-based*, and propose five lenses that may aid researchers in exploring and understanding the temporal dimensions of participation in their projects: the *phasic*, *emergent*, *retrospective*, *prospective* and *long-term lenses*. We end with propositions and opportunities for future research directions in PD, highlighting the multi-faceted nature of the temporality of participation.

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1. Introduction

One of the main purposes of participatory design (PD) is to bring people who may be affected by the introduction of new technologies and systems together with researchers and designers to ensure their views, wants and concerns are accounted for in technology design. Historically, participation in PD has often taken place through exploratory design projects—often small-scale and stand-alone (Oostveen and van den Besselaar 2004; Simonsen and Hertzum 2008)—during which researchers and designers set-up and orchestrate design events. These ‘front stage design activities’, as Bødker, Dindler, and Iversen (2017) refer to them, include ‘workshops or cooperative prototyping, where designers,

CONTACT Joanna Saad-Sulonen  joanna.saad-sulonen@oulu.fi

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researchers, participants, and stakeholders come together to work on the object of design' (Bødker, Dindler, and Iversen 2017, 248). However, in contemporary PD, it is recognised that participation is not limited to such single encounters (Halskov and Hansen 2015), but develops over time, with interactions and designs influenced by context, prior experience, ongoing learning and changes to and of participants. Engagements with communities and organisations over the course of years (e.g. Carroll et al. 2000) or decades (e.g. Dalsgaard and Eriksson 2013) highlight how the nature and scale of participation in design activities can change dramatically over time, and how issues of researcher employment (Balka 2006) and research funding (Taylor et al. 2013) can impact the quality and long-term impact of participatory initiatives. Calls for greater engagement with PD in large-scale IT projects (Shapiro 2005) have triggered sustained approaches that introduce iterative design, implementation and evaluation activities that participants engage with over time (Simonsen and Hertzum 2012), and a shift from design events to a longer term view focused on infrastructuring (Karasti 2014). By challenging the separation between design and use, researchers in this space have brought forward concepts such as design-in-use and design-after-design, which extend PD beyond the traditional project time and phases of design (Ehn 2008; Henderson and Kyng 1991; Redström 2008), and problematise the notion of participation (Millerand and Baker 2010).

While the above examples all highlight recent shifts in PD towards a widened temporal horizon, there is still relatively little attention paid to the ways in which participation in the design of IT unfolds over time. This, we argue, is a challenge for the field, as through developing new practices and tools with which to explore participation with a temporal interest, we may be able to better understand how to configure and stage participatory activities that feed into one another, and articulate the more intangible benefits, gains and impacts of our work. Taking a temporal approach to participation also comes as a contribution to existing efforts in contemporary PD at developing more nuanced understandings of how participation should be conceptualised (e.g. Bratteteig and Wagner 2014).

In this article, we aim to shed some light on ways in which researchers have already, and might in the future, examine the relationships between participation and time in their research. We do this by building an overview of temporalities in PD based on already published PD literature and the contributions to this special issue. Our main contribution comes in the form of characterising five temporally oriented lenses for understanding and analysing the unfolding of participation in the design of IT. We then exemplify the temporal lenses by examining how they occur in the other contributions to this special issue. We conclude the article by reflecting on key challenges that exist in trying to understand the unfolding of participation over time, and highlight the role of the proposed lenses in raising awareness to the multifaceted nature of temporality in PD and the complexity of participation, thus offering new openings for future PD research.

2. Temporalities in PD

An interest in temporality exists in numerous fields surrounding PD, such as organisational studies (Ancona et al. 2001; Dawson 2014), anthropology and ethnographic studies (Dalsgaard and Nielsen 2013) and interaction design (e.g. Huang and Stolterman 2011; Basballe and Halskov 2012; Hallnäs and Redström 2001; Lundgren 2013). Within the PD community, however, we are still far from having an established time-sensitive discourse.

From surveying the literature, it is nonetheless possible to identify two main temporalities that are deeply entrenched in PD: (i) the *future-oriented* temporality, and (ii) the *project-based* temporality.

2.1. The future-oriented temporality

Ever since its beginnings, PD has been ‘defined by a perspective that always looks forward to the shaping of future situations’ together with the future users of a designed technology (Simonsen and Robertson 2012, 2). This future orientation of PD—as is common in fields of design in general—clearly demarcates two principal roles: designers and users—where designers engage with users to imagine and re-imagine the future based on the present. For example, the goal of common PD methods such as future workshops is to generate visions of the object(s) of design for the future, and to discuss their possible implementation with participants (Kensing and Madsen 1992). Additionally, to better ground this future-making, PD aims to gain a better understanding of existing practices, which can be achieved through ‘understanding practice’, using ethnography, for example (Suchman and Trigg 1992).

According to Storni (2013), the future orientation of PD, and its reliance on the modernist separation between design (before; expert-based) and use (after; lay), is sometimes problematic. Those engaging in PD without acknowledging that actual futures might be different from those envisioned, impose their worldview in a colonising fashion. Storni thus argues for sensitivity to the plurality of knowledge and its different forms; something that is simply not available at design time. Some decisions, as well as participation, need to be left for future users to make during use time, with all the (new) complexities that they are presented and live with. With this view of design as a future and ongoing activity conducted by users comes in alternative forms and qualities of participation, where users participate in design-in-use.

2.2. Project-based temporality

In addition to a deeply rooted future orientation, PD has emerged and developed through projects, most often externally funded research and development ones. The central position of the project in PD has led to what we will call project-based temporality, with the perception of time being strongly linked to before, during and after the design project (Vines et al. 2015). The time before the project (pre-project time) is not often explained in accounts of PD. Some reports mention details of preparatory work, such as the addition of learning goals to PD activities (Barendregt et al. 2016), or alliances that had to be put in place (e.g. Simonsen and Hertzum, 2012), but often ignore how users, stakeholders and collaborators may have participated already in the shaping of questions and project challenges in advance of its formal start. The time during the project (project time) is more often accounted for, as it is when the most common PD activities, such as workshops, prototyping and performances, take place. Focus is, however, often limited to reports on a single activity, and rarely on what happens between activities (Halskov and Hansen 2015). Finally, the time after the PD project formally ends (post-project time) has recently gained increased interest among PD researchers, with reports on PD outcomes (Bratteteig and Wagner 2016), evaluation (Bossen, Dindler, and Iversen 2016), and the longer term sustaining of the results of PD projects (Iversen and Dindler 2014). There have also been an increasing number of attempts

at articulating a new temporality related to continuity and sustainability of participation beyond the project (e.g. Kyng 2015). The seeds of this critical view on project-centeredness, and the limits set on the time when PD takes place, may be found already in the proposition that design also takes place through use, and that post-project ‘design-in-use’ should be allowed and made possible (Henderson and Kyng 1991).

More recently, time-related constructs, such as ‘use before use’ and ‘design after design’ (Ehn 2008; Redström 2008) have also found their way into PD vocabulary. PD is understood as being concerned with ‘design for use before use’, whereas meta design (Fischer and Giaccardi 2006) is about ‘design for design after design’, or design for enabling later adaptations (Binder, De Michelis, et al. 2011). These temporalities remain nonetheless project-based as they still take project time as their point of reference, even though they are representative of ongoing concerns regarding the nature of use, design, participation and the object of design ‘outside the boundaries of the safe design project’ (Ehn 2008, 93). In contrast, the notion of infrastructuring, which denotes a fundamentally relational and in-the-making perspective on designing infrastructures (Karasti, Pipek, and Bowker 2018), was introduced to PD through two case studies of long-term design communities and, in doing so, extends the temporality of design and participation (Karasti and Syrjänen 2004). Studies on infrastructuring have continued to explore the unfolding of participation and design, developing perspectives on PD as processual and extended over time (Karasti 2014).

3. Five temporal lenses for examining the unfolding of participation over time

We have so far described and brought forward some of the limitations of the two dominant temporalities that tend to be reported on and explicitly referred to in PD literature. In an attempt at increasing temporal sensitivity in understanding how participation unfolds over time, here we suggest five temporal lenses that have emerged through our own discussions and reading of existing PD literature: the phasic, momentary, retrospective, prospective and long-term lenses. For each lens, we define its focus in terms of the type of understanding of participation it helps draw attention to, and propose applications of the lens, sometimes in combination with other ones, based on existing studies of the unfolding of participation in PD literature.

3.1. The phasic lens

The phasic lens allows for the identification, description and reflection upon different phases or cycles of participatory activities as they unfold over time. This lens is inspired by fields surrounding PD, where iterative or cyclical approaches are also taken, such as design (IDEO 2017) or urban planning (Horelli 2002). Participatory activities are often repeated and iterated upon, with certain methods and techniques being a better fit for the earlier, middle or later phases of the design process (Muller, Wildman, and White 1993).

Whereas the phasic unfolding of activities takes place during a project, Botero and Hyysalo (2013) present a fuzzier continuum of activities, such as design access, seeding, and design-in-use that expand the iterative phases of participation to pre-project and post-project time. Iterative cycles of participation in design are also sometimes overlaid onto other participatory contexts. For example, in PD projects that are embedded in urban planning

processes (e.g. Nuojua et al. 2008; Saad-Sulonen, Botero, and Kuutti 2012), participation in the design of IT becomes entangled in institutional processes of planning and decision-making and their associated timelines and cycles (Saad-Sulonen 2014). The phasic lens can thus be used to direct attention to cycles of similar or different types of participatory activities in the different phases of a project, as well as before and after it.

3.2. The emergent lens

The emergent lens allows us to pay attention to participation as a continuous and unfolding phenomenon. It is based on the designer-researchers' engagement and reflexivity in the 'here and now', which feeds into the dynamic relations and processes of participation that unfold in the moment and over time in design.

The emergent lens is based on a kind of reflexive engagement that problematises and scrutinises participation during a project. In situated design activities such as those conducted in PD, designers' critical reflection is needed for engaging others with regard to moment-by-moment shifts in position, focus and delivery (Light and Akama 2012). Pihkala and Karasti (2016) note the ways reflexivity from designers reveals the ways participation can be understood as dynamic and plural. By accounting for the multiple relationships, participatory assemblies and their intersections and overlaps, participation in its plurality becomes seen as never taken-for-granted but always-in-negotiation (ibid.). To 'slow down' (Stengers 2011) and pay attention to participation as emergent and complexly relational, gestures an ontological shift towards participation as a matter of 'becoming' (Pihkala 2018). The emergent lens is applied in the moment-by-moment unfolding of ongoing activities. It can be used to deliberate, problematise and act on issues related to participation while engaged in conducting PD activities, processes or projects.

3.3. The retrospective lens

The retrospective lens allows for the understanding and interpretation of how participation changes and is altered over the time of a project, after the project has been ended or after it has been running for a while.

The retrospective lens is inspired by retrospective studies of participatory projects or activities (e.g. Balka 2006; Yndigegn 2016). In such cases, the researchers attempt to look back in depth at participation as it unfolded over time: sometimes combining this with a phasic lens—by looking back at the sequences of participatory activities (Botero and Hyysalo 2013; Saad-Sulonen, Botero, and Kuutti 2012; and in this special issue: Poderi et al. 2018); and sometimes a long-term lens—by also stretching the exploration of participation to the present and future, across several projects (e.g. Botero and Hyysalo 2013; and in this special issue: Righi et al. 2018). Using a retrospective lens might also include elements of evaluation (Bossen, Dindler, and Iversen 2012; Clement and Van den Besselaar 1993) to understand the various successes, gains and outcomes for participants and participation across a project.

Retrospection allows for an in-depth study of the unfolding of participation, whether in a single project or across several ones, with the aim of learning from what has been done to better inform future projects and the planning of participatory activities in them.

3.4. *The prospective lens*

The prospective lens takes PD's future-orientation beyond concerns of future use, by enabling the exploration of future participation, whether in terms of sustaining it after project time, or in terms of enabling it to emerge post-project.

Inspired by Shapiro's call for PD for large scale systems (Shapiro 2005), and as a response to PD's focus on often small scale iterative prototyping led by researchers, Simonsen and Herzum (2008, 2012) have argued for a 'sustained PD approach' that includes large-scale experiments and allows organisations to experiment and learn beyond the initial project and design phases. This proposition is not only concerned with the sustainability of PD results, but also the sustainability of iterative activities such as prototyping. A prospective lens inspired by this approach brings into focus the sustained unfolding of participation over time into the future.

Another variant of the prospective lens highlights setting the stage for post-project participation to take place. Techniques and approaches such as community scripting (see Huybrechts et al. [2018] in this special issue) or design and living labs (Binder, Brandt, et al. 2011) rehearse future action around new artefacts and systems. When combined with a sensitivity to existing networks and socio-material assemblies for infrastructuring (Björgvinsson, Ehn, and Hillgren 2012), these approaches permit a projection of participation into the post-project future. As such, while the prospective lens is entirely future-oriented, it is applied before or during the PD project, to prepare the ground for future, post-project participation.

3.5. *The long-term lens*

The long-term lens enables a stretched view of participation, as it includes the interest to look back, forward and to the present, taking into account both the past and the future, in the present.

The long-term lens further extends the temporal scope presented in the prospective lens to also include the past. Such a long-term perspective has become of particular interest in studies of infrastructuring (e.g. Karasti 2014). Infrastructuring with an extended temporal interest accounts for both existing socio-technical 'installed bases' (Star and Ruhleder 1996) and plans for the future by anticipating prospective changes, for instance in participation. The long-term view provides an understanding of design as processual, where the customary boundaries between design, use, implementation, maintenance, redesign, and repair become blurred (Karasti and Baker 2008; Pipek and Wulf 2009; Ribes and Finholt 2009); thus also blurring the boundaries between the accustomed designer and user roles (Millerand and Baker 2010).

Design with a long-term perspective makes room for different temporal scales in design endeavours. For example, in a study of collaborative infrastructuring the differing temporal views of the main participant groups are incorporated in 'infrastructure time' (Karasti, Baker, and Millerand 2010). The long-term lens is not something isolatable but rather a specific foundational design concern that is continuously attended to as a part and parcel of the ongoing, everyday work.

Thus, understanding participation with a long-term lens works with(in) an extended horizon of time. Design with such a long-term perspective takes into account the past and anticipates the future, in the here and now of continuing design activities.

4. Reading the Special Issue articles through the temporal lenses

In this section, we use the four papers that form this special issue to exemplify the five lenses suggested in the previous section. The lenses here act as analytical tools that highlight different facets of participation as it unfolds over time, as reported by the authors. In discussing the four papers, we are not suggesting that the authors have explicitly set out to view their works with reference to a specific lens. Instead, we wish to highlight how the manner in which each paper has tackled making sense of participation over time speaks, to different degrees, to these lenses. Indeed, as will become clear as we discuss each submission, all of the papers invoke aspects of more than one lens each, providing opportunities to illustrate the ways these lenses may be usefully combined and utilised as part of reflections upon participation.

In their paper, ‘Scripting: an exploration of designing for participation over time with communities’ Huybrechts et al. (2018) propose scripting as a design approach that allows for the articulation of multiple actors’ voices and timelines through the production of and collaborative work around scripts in community settings. Scripts come in three types: personal scripts (personal stories of individuals), community scripts (different personal scripts brought together around a shared issue), and scripts for action (e.g. physical prototypes and web platforms).

Huybrechts et al.’s work highlights aspects of the phasic, prospective, and emergent lenses. The phasic approach comes through articulating the different phases of the scripting process and how these relate to different forms of participation and levels of engagement from community members: from collecting personal stories, to making the potential of personal contributions visible to the community and transforming them into community scripts through, e.g. workshops or enacted performances, to then transforming the community scripts into scripts for action through designed physical or digital artefacts. The prospective lens is apparent in the way scripting enables, through concrete steps, designing for participation after a participatory project led by a research team ends. Particular attention is also given to enabling the passing on of the facilitator’s role, a role often endorsed by the PD designer, to other stakeholders after the designer has left, so that participation continues to be possible. Finally, the paper also exemplifies the emergent lens through the authors’ acknowledgement of participation as being continuously in the making, and allowing for changes to take shape according to fluctuations in the situation at hand and the multiplicity of actors that make their voices heard through the scripting process.

In the paper, ‘Co-designing with a community of older learners for over 10 years by moving user-driven participation from the margin to the centre’ Righi et al. (2018) set out to explore how different projects intersect with one-another and how benefits and gains from PD research may differ from a project’s original aims and goals. By looking back at a decade-long set of engagements with a community of older learners, they make a case for developing long-term commitments to communities, and stress the importance of extending the temporalities of reporting on PD work beyond formal project stages and the design activities that might typically be used in PD projects.

Righi et al.’s paper most clearly exemplifies a retrospective account of a set of engagements; however, unlike our other examples, they demonstrate the value of looking back over a series of ongoing engagements and interlinked projects that feed into and out of one-another. In doing so, they highlight aspects of participation and meaningful activity

conducted by the older learners that was initially missed by the research team at the time of conducting the work. As well as a retrospective, the paper is a strong example of applying a long-term lens, where reflection on past activities is entwined into a long-term view and continuous commitment to working with a community in an embedded manner. Finally, through looking both retrospectively and with this long-term view of their work, Righi et al. offer a critique of phasic views of PD research. While designing projects into clearly delineated phases of activity is valuable at the outset, this can lose sight of activities which might appear peripheral but are critical to maintaining good relations, trust and engagement in PD.

In the paper, ‘Disentangling participation through time and interaction spaces—The case of IT design for energy demand management’ Poderi et al. (2018) introduce the term ‘interaction space’, which they define as a conceptual arena of relatively stable participatory configurations. The authors demonstrate how the interaction space frame enabled their team to map out and reflect on how a three-year long PD project on smart energy unfolded over time. The project pursued the development of an IT platform intended to support improvement of energy behaviour. The paper reports on how this work involved multiple stakeholders, including research teams, municipalities, local associations and household communities.

Poderi et al.’s work speaks to both the retrospective and phasic lenses we have articulated. Mapping and visualising the temporal and spatial distribution of design activities across interaction spaces was a retrospective activity—reconstructing and carefully stepping through the participatory process and related configuration of stakeholders that led to the design of a smart energy app. The paper is a prominent example of the phasic lens by mapping a total of 55 activities, including teleconferences, workshops, and project plenary meetings, as they unfold within and across interaction space. Through retrospectively looking back and examining the different phases of activity and the activities embedded within them, they acknowledge the multiplicity of realities, agendas and needs of different stakeholders within and across these different interaction spaces over time.

In the contribution, ‘A tool for reflection—on participant diversity and changeability over time in participatory design’ Kraff (2018) contributes a tool for reflection on participant diversity and changeability over time. By creating a simple tool to reflect with, Kraff demonstrates how it is possible to understand how design researchers’ decisions and actions might affect the situations of people participating in the project. The work is brought alive through a project situated in a village in western Kenya, with at least 50 different groups of participants in the community. The tool illustrates how different groups of people may relate to each other and how a development of one group may affect another. The presented tool can be used during the conduct of the project, for instance before major decisions are taken, as well as for reflections in retrospect.

Kraff’s work exemplifies the emergent lens, as the suggested tool can be used by PD researchers for ongoing reflection and reflexivity in relation to the influence the design process can have for relations with and between different participating groups. However, it is perhaps an even stronger example of the prospective lens, in that the tool can be used to visualise future scenarios of how participants’ situations change over time in relation to each other based on the decisions taken in the project. As such, it offers a valuable means for imagining future situations post-project while a project is still actively ongoing, helping to shape its direction and avoid impacting certain community members over others.

5. Opportunities and challenges for future PD research

We have identified two temporalities commonly referred to in PD and put forward five temporal lenses through which PD researchers may examine and articulate the unfolding of participation over time. We have also used these lenses to read across the examples of participation from the papers in this special issue. Our propositions in this article are very much provisional, but they may nonetheless help open up new opportunities and related challenges for thinking about the future of PD research with respect to understanding participation and its unfolding over time.

One concern that comes through both in our proposed lenses and the contributions to the special issue is that there are differing understandings of participation. The notion of participation has become a heavily contested issue within PD in recent years. Halskov and Hansen (2015) have noted how many papers at venues like the Participatory Design Conference series assume that ‘participation’ is an agreed upon concept and thus very few contributors explicitly articulate what participation in design means for their work. However, when examining the projects reported in papers in more detail, they found a plurality of participations that are played out in practice (Halskov and Hansen 2015). Others have highlighted how the growing diversity of definitions of participation needs greater ‘policing’ (Vines et al. 2012) or perhaps presents an opportunity to engage with and draw on the learning from fields beyond PD (Vines et al. 2013). We have entered an era where participation is not and cannot be taken-for-granted, where we as designers and researchers need to problematise existing assumptions and notions of participation, explore participation(s) in practice, and share our experiences, interpretations, analyses and findings through reporting critically on our research. By proposing the five temporal lenses and by recognising these lenses in the other contributions to the special issue, we have attempted to highlight some starting points for looking back, forward or in-the-now to reveal the multifaceted nature of the participation as it relates to time. We have attempted to show the ways in which participation can be understood in relation to both clearly and ill-defined phases of activity during projects, how it can be viewed as emergent and dynamic, how it can be imagined and speculated upon for the future, and how it can come with new types of commitments to conducting and viewing research over the long-term. More pragmatically, the lenses may be used to plan, conduct, and reflect upon PD projects, as well as other settings where user, designer-researcher, stakeholder or citizen participation may occur. We have also tried to illustrate how these different lenses on participation and time can be combined, and that more such lenses are still to be defined.

Our reflections in this article also highlight ongoing challenges for the field. It is clear that reflection on and the reporting of ‘completed’ projects is perhaps simpler than reporting on how participation dynamically changes and shifts in the here and now; it is also clear that through looking back, qualities of participation missed at the time come to be highlighted and give new insight into what worked well and what has failed in projects. Echoing work in interaction design, this speaks to a need to find ways to document PD activities that fit with established project routines, that balance focus and detail (Bardzell et al. 2016), and aid reflection both at the end of a project but also during its planning and conduct, and throughout a complex set of relations and network of people and artefacts (Andersen et al. 2015).

With the temporally oriented analytic lenses presented, we also hope to have been able to illustrate how the temporalities involved with PD are not only *future-oriented* and *project-based*, and not only extended as in ‘unfolding over time’, but much more manifold. We encourage PD researchers to continue problematising the existing, taken-for-granted temporalities in our PD activities, studies and projects to become more aware of how they both enable and restrict our thinking, not only in relation to the topic of participation but also more widely in PD. Temporalities abound and learning which ones are useful in the contexts of PD can only be grasped through engaging with them in empirical, analytical and designerly ways.

Finally, and perhaps most critically, what we hope comes through in both our own reflections and speculations in this article, and those of our special issue contributors, is that there is not just a temporal interest in PD but an emerging discourse and set of perspectives around ‘processual’ views on participation. The work reported herein can be seen as a move towards an ontological shift from fixed categories and forms of participation to understandings of participation as emerging and ongoing, which is most notable in the characterisation of the ‘emergent’ and ‘long term’ lenses. ‘Unfolding participation over time’, thus, suggests a move from a fixed to a process ontology (Stengers 2011).

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References

- Ancona, Deborah, Paul S. Goodman, Barbara S. Lawrence, and Michael L. Tushman. 2001. “Time: A New Research Lens.” *The Academy of Management Review* 26 (4): 645–663.
- Andersen, Lars Bo, Peter Danholt, Kim Halskov, Nicolai B. Hansen, Peter Lauritsen. 2015. “Participation as a Matter of Concern in Participatory Design.” *CoDesign* 11 (3–4): 250–261.
- Balka, Ellen. 2006. “Inside the Belly of the Beast: The Challenges and Successes of a Reformist Participatory Agenda.” In *Proceedings of the Ninth Conference on Participatory Design: Expanding Boundaries in Design—Volume 1*, 134–143. New York: ACM.
- Bardzell, Jeffrey, Shaowen Bardzell, Peter Dalsgaard, Shad Gross, and Kim Halskov. 2016. “Documenting the Research Through Design Process.” In *Proceedings of the 2016 ACM Conference on Designing Interactive Systems (DIS ‘16)*, 96–107. New York, NY: ACM.
- Barendregt, Wolmet, Tilde M. Bekker, Peter Börjesson, Eva Eriksson, and Olof Torgersson. 2016. “Legitimate Participation in the Classroom Context: Adding Learning Goals to Participatory Design.” In *Proceedings of the 15th International Conference on Interaction Design and Children (IDC ‘16)*, 167–174. New York: ACM.
- Basballe, Ditte, and Kim Halskov. 2012. “Dynamics of Research Through Design.” In *Proceedings of the Designing Interactive Systems Conference (DIS ‘12)*, 58–67. New York: ACM.
- Binder, Thomas, Eva Brandt, Joachim Halse, Maria Foverskov, Sissel Olander, and Signe Yndigegn. 2011. “Living the (Codesign) Lab.” *Nordic Design Research Conference*, no. 4: 1–10.
- Binder, Thomas, Giorgio De Michelis, Pelle Ehn, Giulio Jacucci, Per Linde, and Ina Wagner. 2011. *Design Things*. Cambridge, MA: MIT Press.

- Bjögvinsson, Erling, Pelle Ehn, and Per-Anders Hillgren. 2012. "Design Things and Design Thinking: Contemporary Participatory Design Challenges." *Design Issues* 28 (3): 101–116.
- Bødker, Susanne, Christian Dindler, and Ole S. Iversen. 2017. "Tying Knots: Participatory Infrastructuring at Work." *Computer Supported Cooperative Work (CSCW)* 26 (1–2): 245–273.
- Bossen, Claus, Christian Dindler, and Ole S. Iversen. 2012. "Impediments to User Gains: Experiences from a Critical Participatory Design Project." In *Proceedings of the 12th Participatory Design Conference: Research Papers—Volume 1 (PDC '12)*, edited by Kim Halskov, Heike Winschiers-Theophilus, Yanki Lee, Jesper Simonsen, and Keld Bødker, Vol. 1, 31–40. New York: ACM.
- Bossen, Claus, Christian Dindler, and Ole S. Iversen. 2016. "Evaluation in Participatory Design: A Literature Survey." In *Proceedings of the 14th Participatory Design Conference*, Vol. 1, 151–160. New York: ACM.
- Botero, Andrea, and Sampsa Hyysalo. 2013. "Ageing Together: Steps Towards Evolutionary Co-design in Everyday Practices." *CoDesign* 9 (1): 37–54. doi:10.1080/15710882.2012.760608.
- Bratteteig, Tone, and Ina Wagner. 2014. *Disentangling Participation: Power and Decision-Making in Participatory Design*. Cham: Springer International.
- Bratteteig, Tone, and Ina Wagner. 2016. "What is a Participatory Design Result?" In *Proceedings of the 14th Participatory Design Conference*, Vol. 1, 141–150. New York: ACM.
- Carroll, John M., George Chin, Mary Beth Rosson, and Dennis C. Neale. 2000. "The Development of Cooperation: Five Years of Participatory Design in the Virtual School." In *Proceedings of the 3rd Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques*, 239–251. New York: ACM.
- Clement, Andrew, and Peter Van den Besselaar. 1993. "A Retrospective Look at PD Projects." *Communications of the ACM* 36 (6): 29–37. doi:10.1145/153571.163264.
- Dalsgaard, Peter, and Eva Eriksson. 2013. "Large-scale Participation: A Case Study of a Participatory Approach to Developing a New Public Library." In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)*, 399–408. New York: ACM. doi:10.1145/2470654.2470713.
- Dalsgaard, Steffen, and Morten Nielsen. 2013. "Time and the Field." *Social Analysis* 57 (1): 1–19.
- Dawson, Patrick. 2014. "Reflections: On Time, Temporality and Change in Organizations." *Journal of Change Management* 14 (3): 285–308.
- Ehn, Pelle. 2008. "Participation in Design Things." In *Proceedings of the Tenth Anniversary Conference on Participatory Design 2008*, 92–101. Indianapolis, IN: Indiana University.
- Fischer, Gerhard, and Elisa Giaccardi. 2006. "Meta-Design: A Framework for the Future of End-User Development." In *End User Development—Empowering People to Flexibly Employ Advanced Information and Communication Technology*, edited by H. Lieberman, F. Paternò and V. Wulf, 427–457. Dordrecht, The Netherlands: Kuwer Academic Publishers.
- Hallnäs, Lars, and Johan Redström. 2001. "Slow Technology; Designing for Reflection." *Personal and Ubiquitous Computing* 5 (3): 201–212. doi:10.1007/PL00000019.
- Halskov, Kim, and Nicolai B. Hansen. 2015. "The Diversity of Participatory Design Research Practice at PDC 2002–2012." *International Journal of Human-Computer Studies* 74 (2015): 81–92.
- Henderson, Austin, and Morten Kyng. 1991. "There is No Place Like Home—Continuing Design in Use." In *Design at Work: Cooperative Design of Computer Systems*, edited by Joan Greenbaum and Morten Kyng, 219–240. Hillsdale, NJ: Lawrence Erlbaum.
- Huang, Chung-Ching, and Erik Stolterman. 2011. "Temporality in Interaction Design." In *Proceedings of the 2011 Conference on Designing Pleasurable Products and Interfaces*, Article 62. New York: ACM. doi:10.1145/2347504.2347572.
- Horelli, Liisa. 2002. "A Methodology of Participatory Planning." In *Handbook of Environmental Psychology*, edited by R. Bechtel and A. Churchman, 607–628. New York: John Wiley.
- Huybrechts, Liesbeth, Niels Hendriks, Signe Yndigegn, and Lone Malmberg. 2018. "Scripting: An Exploration of Designing for Participation Over Time with Communities." *CoDesign* 14 (1): 17–31. doi:10.1080/15710882.2018.1424205.
- IDEO. 2017. "The Four Phases of Design Thinking." <https://www.ideo.com/pages/design-thinking>.
- Iversen, Ole S., and Christian Dindler. 2014. "Sustaining Participatory Design Initiatives." *CoDesign* 10 (3–4): 153–170.

- Karasti, Helena. 2014. "Infrastructuring in Participatory Design." In *PDC'14: Proceedings of the 13th Conference on Participatory Design*, 141–150. New York: ACM Press.
- Karasti, Helena, and Anna-Liisa Syrjänen. 2004. "Artful Infrastructuring in Two Cases of Community PD." In *Proceedings of the Eighth Conference on Participatory Design: Artful Integration: Interweaving Media, Materials and Practices*, Vol. 1, 20–30. New York: ACM.
- Karasti, Helena, and Karen S. Baker. 2008. "Community Design: Growing One's Own Information Infrastructure." In *Proceedings of the Participatory Design Conference (PDC '08)*, edited by J. Simonsen, T. Robertson, and D. Hakken, Vol. 2, 217–220. Palo Alto, CA: Computer Professionals for Social Responsibility.
- Karasti, Helena, Karen S. Baker, and Florence Millerand. 2010. "Infrastructure Time: Long-term Matters in Collaborative Development." *Computer Supported Cooperative Work (CSCW)* 19 (3–4): 377–415.
- Karasti, Helena, Volkmar Pipek and Geoffrey C. Bowker 2018. "An Afterword to 'Infrastructuring and Collaborative Design.'" *Computer Supported Cooperative Work (CSCW): The Journal of Collaborative Computing and Work Practices* 27 (2): 1–23. doi:10.1007/s10606-017-9305-x.
- Kensing, Finn, and Kim H. Madsen. 1992. "Design at Work." In *Generating Visions: Future Workshops and Metaphorical Design*, edited by J. Greenbaum and M. Kyng, 155–168. Hillsdale, NJ: L. Erlbaum Associates Inc.
- Kraff, Helena. (2018) "A Tool for Reflection—On Participant Diversity and Changeability Over Time in Participatory Design." *CoDesign* 14(1): 60–73. doi:10.1080/15710882.2018.1424204.
- Kyng, Morten. 2015. "On creating and Sustaining Alternatives: The Case of Danish Telehealth." *Aarhus Series on Human Centered Computing* 1 (1): 5–16.
- Light, Ann, and Yoko Akama. 2012. "The Human Touch: Participatory Practice and the Role of Facilitation in Designing with Communities." In *Proceedings of the 12th Participatory Design Conference*, Vol. 1, 61–70. New York: ACM.
- Lundgren, Sus. 2013. "Toying with time: considering temporal themes in interactive artifacts." In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)*, 1639–1648. New York: ACM. doi:10.1145/2470654.2466217.
- Millerand, Florence, and Karen S. Baker. 2010. "Who are the Users? Who are the developers? Webs of Users and Developers in the Development Process of a Technical Standard." *Information Systems Journal* 20 (2): 137–161.
- Muller, Michael, Daniel Wildman, and Ellen White. 1993. "Taxonomy of PD Practices: A Brief Practitioner's Guide." *Communications of ACM* 36 (6): 26–28.
- Nuojua, Johanna, Antti Juustila, Toni Räisänen, Kari Kuutti, and Leena Soudunsaari. 2008. "Exploring Web-based Participation Methods for Urban Planning." In *Proceedings of the 10th Participatory Design Conference*, 247–277. New York: ACM.
- Oostveen, Anne-Marie and Peter van den Besselaar. 2004. "From Small Scale to Large Scale User Participation: A Case Study of Participatory Design in E-Government Systems." In *Proceedings of the 8th Conference on Participatory Design: Artful Integration: Interweaving Media, Materials and Practices*, Vol. 1, 173–182. New York: ACM.
- Pihkala, Suvi. 2018. "Touchable Matters. Reconfiguring the Practices of Sustainable Change Through Response-able Engagements." Doctoral dissertation, Women's and Gender Studies, Faculty of Education, University of Oulu, Finland.
- Pihkala, Suvi, and Helena Karasti. 2016. "Reflexive Engagement: Enacting Reflexivity in Design and for "Participation in Plural." In *Proceedings of the 14th Participatory Design Conference*, Vol. 1, 21–30. New York: ACM. doi:10.1145/2940299.2940302.
- Pipek, Volkmar, and Volker Wulf. 2009. "Infrastructuring: Towards an Integrated Perspective on the Design and Use of Information Technology." *Journal of the Association for Information Systems* 10 (5): 447–473.
- Poderi, Giacomo, Mela Bettega, Andrea Cappaccioli, and Vincenzo D'Andrea. 2018. "Disentangling Participation Through Time and Interaction Spaces—The Case of IT Design for Energy Demand Management." *CoDesign* 14 (1): 45–59. doi:10.1080/15710882.2017.1416145.
- Redström, Johan. 2008. "RE: Definitions of Use." *Design Studies* 29 (4): 410–423. doi:10.1016/j.destud.2008.05.001.

- Ribes, David, and Thomas Finholt. 2009. "The Long Now of Technology Infrastructure: Articulating Tensions in Development." *Journal of the Association for Information Systems* 10 (5): 375–398.
- Righi, Valeria, Sergio Sayago, Susan M. Ferreira, Andrea Rosales, and Josep Blat. 2018. "Co-designing with a Community of Older Learners for Over 10 Years by Moving User-driven Participation from the Margin to the Centre." *CoDesign* 14 (1): 32–44. doi:10.1080/15710882.2018.1424206.
- Saad-Sulonen, Joanna. 2014. "Combining Participations. Expanding the Locus of Participatory E-Planning by Combining Participatory Approaches in the Design of Digital Technology and in Urban Planning." Doctoral dissertation, School of Arts, Design and Architecture. Aalto University, Finland.
- Saad-Sulonen, Joanna, Andrea Botero, and Kari Kuutti. 2012. "A Long-term Strategy for Designing (in) the Wild: Lessons from the Urban Mediator and Traffic Planning in Helsinki". In *Proceedings of DIS'12 Designing Interactive Systems*, 166–175. New York: ACM.
- Shapiro, Dan. 2005. "Participatory Design: The Will to Succeed." In *Proceedings of the 4th Decennial Conference on Critical Computing: Between Sense and Sensibility* (CC '05), edited by Olav W. Bertelsen, Niels Olof Bouvin, Peter G. Krogh, and Morten Kyng, 29–38. New York: ACM.
- Simonsen, Jesper, and Morten Hertzum. 2008. "Participative Design and the Challenges of Large-scale Systems: Extending the Iterative PD Approach." In *Proceedings of the Tenth Anniversary Conference on Participatory Design 2008*, 1–10. Indianapolis, IN: Indiana University.
- Simonsen, Jesper, and Morten Hertzum. 2012. "Sustained Participatory Design: Extending the Iterative Approach." *Design Issues* 28 (3): 10–21.
- Simonsen, Jesper, and Toni Robertson. 2012. *Routledge International Handbook of Participatory Design*. London: Routledge.
- Star, Susan L., and Karen Ruhleder. 1996. "Steps Toward an Ecology of Infrastructure: Design and Access for Large Information Spaces." *Information Systems Research* 7 (1): 111–134.
- Stengers, Isabelle. 2011. *Thinking with Whitehead: A Free and Wild Creation of Concepts*. Cambridge, MA: Harvard University Press.
- Storni, Cristiano. 2013. "Design for Future Uses: Pluralism, Fetishism and Ignorance." *Nordic Design Research Conference*, no. 5: 50–59.
- Suchman, Lucy A., and Randall H. Trigg. 1992. "Understanding Practice: Video as a Medium for Reflection and Design." In *Design at work*, Joan Greenbaum and Morten Kyng, edited by L. Erlbaum, 65–90. Hillsdale, NJ: Associates Inc.
- Taylor, Nick, Keith Cheverst, Peter Wright, and Patrick Olivier. 2013. "Leaving the Wild: Lessons from Community Technology Handovers." In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 1549–1558. New York: ACM. doi:10.1145/2470654.2466206
- Vines, John, Rachel Clarke, Peter Wright, Ole S. Iversen, Tuck Wah Leong, John McCarthy, and Patrick Olivier. 2012. "Summary Report on CHI 2012 Invited SIG: Participation and HCI: Why Involve People in Design?" Accessed December 2, 2017. <http://www.johnvines.eu/wp-content/uploads/2013/01/Summary-report-on-CHI-2012-Participation-and-HCI-SIG1.pdf>
- Vines, John, Rachel Clarke, Peter Wright, John McCarthy, and Patrick Olivier. 2013. "Configuring Participation: On How We Involve People in Design." In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 429–438. New York: ACM. doi:10.1145/2470654.2470716
- Vines, John, Rachel Clarke, Ann Light, and Peter Wright. 2015. "The Beginnings, Middles and Endings of Participatory Research in HCI: An Introduction to the Special Issue on 'Perspectives on Participation.'" *International Journal of Human-Computer Studies* 74 (Supplement C): 77–80. doi:10.1016/j.ijhcs.2014.11.002
- Yndigegn, Signe. 2016. "Managing Resistance and Negotiating Co-design: Reflections on Troublesome and Elusive Moments." Doctoral Dissertation, IT University of Copenhagen, Denmark.