

## Accessibility statement

This is an accessibility statement for the journal: STS Encounters.

### Conformance status

The Web Content Accessibility Guidelines (WCAG) defines requirements for designers and developers to improve accessibility for people with disabilities. It defines three levels of conformance: Level A, Level AA, and Level AAA. This statement is relevant for volume 15, number 1, 2023 and onwards. STS Encounters is partially conformant with WCAG 2.1 level AA. Partially conformant means that some parts of the content do not fully conform to the accessibility standard.

### Feedback

We welcome your feedback on the accessibility of the journal. Please let us know if you encounter accessibility barriers. You can reach us at:

E-mail: [imvko@cc.au.dk](mailto:imvko@cc.au.dk)

Address: Helsingforsgade 14, 8200 Aarhus N



STS  
Encounters

Research papers from DASTS

Volume 15 • Issue 2 • 2023

## Thinking Participatory Design workshops in the presence of cosmopolitics

Peter Danholt

Associate Professor at Dept. of Digital Design and Information  
Studies, Aarhus University

STS Encounters is published by the Danish Association for Science and Technology Studies (DASTS). The aim of the journal is to publish high quality STS research, support collaboration in the Danish STS community and contribute to the recognition of Danish STS nationally and internationally.



[www.dasts.dk](http://www.dasts.dk)

ISSN: 1904-4372

# Thinking Participatory Design workshops in the presence of cosmopolitics

Peter Danholt

## Abstract

*This paper is a written version of a presentation held at DASTS 2022 as part of a panel session organized by Mike Michael, Alex Wilkie, Michael Guggenheim and the author. The idea behind the panel, inspired by laboratory studies in STS, was to propose a focus on workshops as ‘worldbuilding’ events, which implies a close scrutiny of how workshops are constructed and carried out and to what effect. Along the lines of Annemarie Mol’s ontological politics and Isabelle Stengers’ cosmopolitics, workshops are not just spaces in which we explore and experiment with ideas and concepts that may or may not be realized at some point: they shape reality from the get-go. In the paper, I thus discuss Participatory Design (PD) workshops by way of Isabelle Stengers’ cosmopolitical and constructivist thinking. My discussion is based on a few but key publications from the field of PD such as the Handbook of Participatory Design (Simonsen & Robertson, 2012).*

## Keywords

Constructivist science studies, workshops, Participatory Design, Cosmopolitics, DASTS 2022.

## Introduction

Workshops are used in all sorts of settings and practices. They are widely used in organizations, businesses, and institutions for developing organizational practices, new concepts, and tools. Formerly, in the early industrial era, workshops were a place with specific tools for production

of specific goods, e.g. furniture. Nowadays, workshops can take many forms. A workshop can be what we attend if we are part of a choir or band for developing musical pieces or performances. Workshops are quite literally places or timeframes to ‘work’ on something. And the outcome of a workshop can be more or less unknown beforehand. What might come into existence can be unanticipated and unimagined. This is the marvel of such encounters.

The focus in this short paper is on design workshops in the Participatory Design (PD) tradition – a tradition neighboring Science and Technology Studies (STS). What is shared by PD and STS is, among other things, a concern with the relation between technology and the social, a non-determinist understanding of technology and the insistence on the democratization of technology design and implementation.

The “workshop” is an elusive and vaguely defined term, and as such, it can be very productive because many activities can take place in workshops and many activities can be called “workshops”. But my concern here is not to take issue with the concept as broad and elusive. I will not argue for or attempt to develop a definition of workshops that may guide us in a terrain of myriad and diverse forms. Nor is it my intention to criticize PD workshops for lacking a clear definition. My aim is rather to take seriously that workshops, perhaps precisely due to their elusiveness and vagueness, are events that have the capacity to produce new types of knowledge, new technologies and new practices: the capacity to build new world(s). This implies both an *appreciation* of that capacity, but also a *concern* with what is brought into existence and on what grounds. Especially in a time of climate crisis, it is pertinent to consider what is being *produced*, why and at what cost (Latour, 2018; Stengers, 2015). Based on the field of STS, I am interested in the ontological politics of PD workshops, drawing on the works of Donna Haraway, Annemarie Mol, John Law and Isabelle Stengers (Cadena & Blaser, 2018; de Castro, 2015; Gad & Bruun Jensen, 2009; Haraway, 2016; Latour, 2004a; Law & Hassard, 1999; Mol, 1999, 2002; Stengers, 2005).

We may consider workshops as places and activities that, as

Latour famously formulated in relation to laboratories, can “raise the world” (Latour, 1983). I want to take seriously that workshops offer a way to ‘raise worlds’, even if and when they are concerned with ‘playing around with ideas’. That said, it is important for many reasons not to consider PD workshops as similar to laboratories.

Workshops are interesting as events where things, ideas and concerns may emerge simply by bringing disparate actors and elements together. They may be regarded as *animistic*. They can make issues and concerns emerge that were previously hidden, or non- or partially existing. They are also animistic in another sense, namely as an event in which materiality becomes articulate, with the ability to “talk back” to the human agents, as argued in relation to prototyping and in Human Computer Interaction (Mogensen, 1992; Norman, 1990; Schön, 2013). Following this train of thought, we may consider workshops as being potentially as productive and performative as scientific practices following contributions to STS by, among others, Ludwig Fleck, Bruno Latour, Andy Pickering, and Hans Jörg Rheinberger. (Fleck, 1981; Latour, 1983; Pickering, 1995; Rheinberger, 1997).

In the next section, I present Isabelle Stengers’ constructivist cosmopolitical thinking and relate it to PD workshops.

## Constructivist science studies

Inspired by Isabelle Stengers, I aim to contribute to how we might think about workshops in the PD tradition. In the following, I present Isabelle Stengers’ constructivist account of science(s) and relate it to some prominent aspects of PD workshops. I hope to contribute to ways of thinking about and conducting workshops in a manner that matches their constructivist capacities. In short, my issue with PD workshops is not that they are animistic or constructivist, but, rather, whether they are constructivist *enough* in how they perceive and practice what they do.

Based on her constructivist cosmopolitics, Stengers holds that every scientific practice is – or *ought to be* – intimately tied to a set of

obligations and constraints that entails what she names a *reciprocal capture*: the discipline and its object are mutually formed – captured – by each other (Stengers, 2010). According to Stengers, and in contrast to some parts of philosophy of science, a scientific discipline should be formed by its object. Cosmopolitics entails that the social and the natural cannot be disentangled and, therefore, holds that the idea of neutral, disinterested, and objective sciences is a mistaken ideal, which, when attempted, can only lead to distant, feeble, and basically poor sciences. But sciences are not and cannot be reduced to a matter of ‘mere politics’ or ‘politics by other means’. Only practices closely engaged and concerned with their object of study can potentially produce a thorough understanding of their object (Stengers, 2000). Stengers also points out, however, that every scientific practice is one among many. It exists in a world of many worldly matters and is not an isolated island. Every practice needs to be – and indeed should be – obligated towards others and their interests. Scientific practices must be relevant and interesting to others, and, accordingly, it is legitimate to pose the question to any scientific practice of how and to what extent the topic of concern is relevant beyond the scientific discipline? (Stengers, 2000). In that sense, every practice is, albeit in different ways, doubly obligated: to their objects and others beyond itself. In this manner, Stengers challenges two ideas: firstly, the idea of a unitary science – one strong method and theory to rule all – which is a prominent ambition in some parts of the philosophy of science and also, regrettably, a rather widespread common sensical idea of what science *ought* to be; and, secondly, the ivory tower idea of science as a secluded practice that should not be disturbed and preferably left entirely to its own devices (Stengers, 2017).

Central to Stengers’ understanding of science(s) developed in close conversation with the work of Bruno Latour, among others, is that scientists work hard *together* with more-than-human actors such as instruments, materiality, concepts etc., to construct settings in which objects can become articulate: *mobilized* by the experimental setting but not *determined* or *produced* by it. In short, the experimental setting

is about “giving reality the power to make a difference in the way it is to be interpreted” (Stengers in Cadena & Blaser, 2018: 89 see also Latour, 1996). In the words of Stengers:

This was indeed the very point of my characterization of experimental practices – to thwart the way they are taken as a model to be blindly, that is, methodologically, extended. How indeed to extend a practice which demands that what is mobilized, actively framed in the terms of the question it should answer, be nevertheless able to reliably endorse its mobilization? From the fact that experimental achievements happen, it can only be concluded that some ingredients of “reality” lend themselves to this demand. But, even then, their “objective definition” is strictly relative to the experimental conditions that enabled them to reliably answer the experimenter’s questions. To take an example, the “objective definition” of genetically modified soybeans or cotton does not cover at all what they will be able to become part of “outside of the lab”, in the fields or in living bodies. More generally, as soon as it becomes an ingredient of matters of common concern, an experimental being is no longer liable to an “objective” definition. (Stengers in Cadena & Blaser, 2018: 89)

In this process, scientific controversy is crucial because it helps in (re-)formulating the questions and (re-)configuring the ‘instrumental set-up’ of the practices in such a way that the object of study can be provided ‘the power to make a difference’. This understanding stands in contrast to the common perception of controversy as being eradicated by the establishment of the ‘objective’ facts of a given phenomenon. Stengers’ point is the inverse, namely that it is *through* the controversy that a given science arrives at and stabilizes a fact because the controversy is essential for the process of human and non-human reciprocal capture. Consequently, when and if controversy is absent, scientific practices

(and other practices, i.e. democratic processes) become impoverished:

The production of knowledge, to the extent that it is reliable, and the challenge a truly democratic society encounters, are not in any way in opposition or tension, but tied together in a crucial way. Reliable scientific knowledge depends in the absolute upon that the propositions posed are put to the test, that is, that there is interest for what may falsify them (Stengers 1999: 69 My translation).

This is worth considering in relation to workshops and the room for, and facilitation of, controversy in them.

A last point about cosmopolitics is that the world is populated by a multiplicity of things and beings, each of which are in themselves unique products of multiple other things and processes. Therefore, there is no universal scientific method that can ‘capture’ and account for them all. There are huge differences between a rock, microbes, elephants and ‘the economy’ or ‘society’. But this in turn also means that objects such as rocks, and probably also microbes, are indifferent to what human beings ‘think of them’; they are unable to care about our conceptualization. For those reasons, they are good at being recalcitrant – they are good at resisting. However, with humans (and many animals), this is a different story. Human beings cannot help being concerned about what the scientist may want from them or think of them. Thus, Stengers argues, human beings are bad at being recalcitrant. Human beings often act as obedient docile beings when they are encountered by scientists, and, most likely, this is also the case when they are participating in design workshops.

## Workshops in the PD tradition

The PD tradition is based upon a break with the classical engineering tradition, which, as the story goes, was rationalist and instrumentalist

(Bjerknes et al., 1987; Greenbaum & Kyng, 1991). It is the depiction of white coated engineers in their laboratories that devised how best to design computer systems: an expert elitist approach to technological design. PD, in contrast, was inspired by ethnography and Wittgensteinian philosophy, approaching design of technology as a matter of coming close to the work practice and as a *collaborative* activity between workers and designers (Bjerknes et al., 1987; Greenbaum & Kyng, 1991). Equally so, it was about empowerment of workers and strengthening of workplace democracy concerning the introduction of technology and computerized tools. In that sense, PD has also become configured as a practice concerned with both pragmatic and democratic ideals. It is on this foundation that the workshop becomes a very central and obvious activity of design; it becomes the space in which workers and designers can engage in *mutual learning* processes, as stated as a central aim in PD (Simonsen & Robertson, 2012). However, this also establishes a contrast between PD practices and the engineer approach; a contrast in which PD is positioned as real-life settings and practice, whereas the engineering approach is idealistic and cognitivist. And while PD and the engineering systems design approach are indeed quite different, we should be cautious not to see the difference as one between real and artificial or between real and constructed. A PD workshop is also – like the laboratory – a constructed setting. A range of questions and pragmatics is related to the making and execution of a workshop: Who is to participate? Who are the disempowered in need of empowerment? What is the problem? What is to be designed for? Temporal and spatial framing, the resources etc. All these matters are the sociomaterial fabric of workshops. The workshop, just as the laboratory, or the rationalist engineering practice, for that matter, are all *constructed*. What differs between them is thus not that they are constructed, but their specific constructedness.

Clearly, when comparing the PD approach with the traditional engineer-based design approach, which the PD tradition distance itself from, PD stands out as cosmopolitical. PD workshops may be conceptualized as about interweaving various people, materials, and

ideas to form new ideas, concepts, and technologies – and, arguably, worlds. In the PD workshops, the different actors and elements are brought into relation and, thereby, potentially *mutually* constrained and obligated and reciprocally captured, to use Stengers' terminology. In the following, I discuss this further by exploring the PD workshop from a cosmopolitical perspective.

In the Handbook of Participatory Design (Simonsen & Robertson, 2012), “workshop” is mentioned many times. Workshops are described as obvious activities for design, and a lot of different activities and ways of conducting workshops are described. Much is explained about how to conduct workshops, but the main focus is on how workshops can be productive and generative for design. There are no cautionary reflections on whether workshops may have unanticipated or detrimental effects; there are no descriptions of workshops as ontological and performative or as potential production sites of ideas and concepts that may have unanticipated and negative consequences; nor are there concerns about how to relate what is made in the workshops to broader questions about the relevance of what is being made or to what degree it can or should be exported from the secluded workshop setting. One might argue that the workshop as such is a self-referential microcosmos. This is underscored by the central premise of PD: the inclusion of relevant others in collaborative processes of design. A workshop that does not include the relevant and implicated others does thus not live up to the standards of PD. This in turn implies that PD practitioners must hold that the identification and inclusion of the relevant others is perhaps not a simple task, but still a doable one. In contrast, Stengers' cosmopolitics takes as a premise that it is an open and difficult task to decide how many we are and who the relevant others might be.

To sum up briefly, PD workshops are mainly presented in the handbook as generative for design; there is little concern about workshops as ontological; and I suggest that they may be seen as self-referential microcosmoses.

An example of workshops as mainly generative and productive for design, and less with concerns about exportability and questions about

what is being made, is found in the description of future workshops:

The future workshop is a robust and relatively simple technique. At first a group of people, in a brainstorm-like format, list points of critique to their present-day situation. The list is produced collaboratively but without discussion or objections to critiques raised. In the next phase the critique is transformed to its positive opposite. In this part of the future workshop, more discussion takes place, and the participants are given the opportunity to develop a utopian perspective. The rule is still that criticism of the realism of the proposals is not allowed. In the last phase of the future workshop, the utopian vision forms the base for a plan for action, where participants discuss what can be done to move towards the vision, given the present-day circumstances (Bratteteig et al. in Robertson & Simonsen 2013: 152).

As is evident, in the future workshop format briefly described above, the present situation is used as a vehicle for critique. And as we probably all know, the present can rather easily be subject to critique. The next step of the future workshop, based on the critique, is to develop a vision for a future condition in which the problem of the present is remedied: a “utopian perspective” (op. cit.). However, subsequent critique of this future perspective is not allowed, from which position the point is how best to realize the utopian vision. So, there is an asymmetrical and strategic use of critique at play. First, it is endorsed and used to problematize the present; and second, it is suspended in order to further the “utopian perspective”. The future workshop thus seems to be about provision of the best conditions for producing concepts or ideas for design while quite explicitly avoiding critique and putting those ideas at risk. The future workshop concept thus fits well into the knowledge economy. It is a production site for concepts and technologies. Also, the future workshop concept clearly stands on

and continues a progressionist understanding, where the present is configured as lacking and subsequently as paving the way for imagining and presumably building a better future condition. Critique plays the role as ‘driver’ for new ideas and concepts, whereas the ‘utopias’ are not subject for critique and controversy. Obviously, this does not guarantee that critique and controversy may not emerge in future workshops. It would seem likely. Also, often objects such as prototypes, mock-ups, and scenarios etc. are very likely to act as recalcitrant non-human actors that may catalyze critique and controversy (Mogensen, 1992; Pickering, 1995). The point here is that, in the description of the Handbook, the asymmetry between how to treat the present and the future is quite clear. The former is to be critiqued, whereas the latter is not. This seems in contrast with Stengers’ emphasis on controversy and putting ‘accounts at risk’ in order to construct better ones. Stengers would most likely argue that controversy should be allowed to emerge and not be compartmentalized.

Another central feature of the PD tradition, which has also been mentioned above, is the concept of *mutual learning*; here, the workshop plays a key role of being the space in which mutual learning can take place. The editors of the Handbook Jesper Simonsen and Tony Robertson provide the following definition of Participatory Design:

A process of investigating, understanding, reflecting upon, establishing, developing, and supporting mutual learning between multiple participants in collective ‘reflection-in-action’. The participants typically undertake the two principal roles of users and designers where the designers strive to learn the realities of the users’ situation while the users strive to articulate their desired aims and learn appropriate technological means to obtain them (Robertson & Simonsen 2013: 2).

My aim is not to criticize the intentions behind this, but to take mutual learning literally, and unpack and question the underlying assumptions

implied by it. First, as evinced above, mutual learning implies egalitarianism, the importance of which is often explicated in PD. It is thus a goal of PD to engage in processes in which designers and users consider each other as equals and as equally interested in each other's practices. However, as also pointed out elsewhere (see for instance Finken, 2003; Markussen, 1996), while this is an admirable intention, it is also idealistic. As is well established in feminist theory, we are all differently positioned in relation to a given situation and each other; accordingly, to assume equality may, in effect, be a way to silence differences (Haraway, 1990). However, if we work from the premises that we are all differently situated, the articulation and exploration of those differences, which may indeed spawn conflictual positions and generate controversies, becomes central. In turn, we may at some point develop a common ground – or not. So common ground should not be assumed to exist beforehand, but rather potentially brought into existence through the process. This would be in line with Stengers' constructivist position, but in contrast to widespread PD assumptions in which users and designers are often articulated as being 'on the same side', and also in light of the Marxist heritage of PD and a presumed culture of consensus rather than an antagonistic culture.

Second, mutual learning when described as when "...the designers strive to learn the realities of the users' situation while the users strive to articulate their desired aims and learn appropriate technological means to obtain them." (op. cit.) might benefit from a cosmopolitical 'complication'. It is, arguably, adequate to consider these processes as *transformative* rather than as a matter of *transfer* of knowledge and skills, as the concept of mutual learning may be read. When thinking of mutual learning as transformative, the actors are engaged in 'processes of becoming'. In and through the workshop, they potentially become *different* actors than they were. Not only do they learn from each other, but through that process their worlds change. The problems and solutions they might have had at the outset have potentially – hopefully - become different. And if not, then little seems to have been learned. This way of understanding mutual learning *complicates* the

workshop space because, if we accept the workshop as a transformative space of becoming, then those taking part in workshops may during the process develop a common ground – or not. Their differences may grow, and conflicts might emerge and increase. But this is only a problem insofar as we subscribe to a solutionist and progressionist idea of workshops as productive in terms of technological concepts. If we broaden our scope and consider new ways of thinking and being, formation of new subject positions, as also criteria of success - if not the *main* criteria of success - then it is indeed a different matter. If PD workshops are considered spaces of partial connections in which worlds and positions may be more or less shared and/or at odds with each other, and the goals of workshops are not tied up with ideals of progress and technological development but rather seen as broader, more open-ended, and uncertain, they would probably better reflect the actual processes of PD workshop practices.

Lastly, a further complication of the PD workshops relates to the point regarding human docility and lack of recalcitrance raised by Isabelle Stengers (see also Despret, 2004a, 2004b; Latour, 2004b). A matter of concern for PD workshops raised by cosmopolitics would be to not only include relevant others but also actively think about how to maximize their ability to resist and disrupt the agendas and problems more or less defined by those who have arranged the workshop. Cosmopolitics challenges the tempting idea of the participants as 'reliable witnesses' per se because they are very likely to act and play along as good participants. PD workshop practitioners, being committed to giving a 'genuine' voice to others, might thus benefit from thinking cosmopolitically about how to 'work against' or mitigate the participants docility and create workshops that maximize the participants capacity to resist.

## Conclusion

In this brief analysis of different aspects related to workshops in PD, I have related PD workshops to cosmopolitics and considered PD

workshops with or in the presence of cosmopolitics. Based on the analysis of a few yet integral aspects of PD and PD workshops, I have shown both how PD workshops may indeed be considered cosmopolitical practices, but also how they in certain respects fall short of this. I have pointed out that in future workshops critique is employed in order to problematize the present, and thereby the necessity of design is established. However, the following ‘move’ is to ‘prohibit’ critical engagement with the utopias put forth. Consequently, ‘putting the utopias at risk’ is in effect, prevented. Such a strategic use of controversy is at odds with the cosmopolitical appreciation of controversy and putting accounts at risk, *whenever* the opportunity might arise. Also, in relation to mutual learning, there is the risk that differences are, from the outset and in the spirit of egalitarianism, assumed to be absent and, accordingly, potential controversies on which worlds may be shared or not are foreclosed. Last, cosmopolitics is concerned with how to make human beings recalcitrant objects and thus ‘reliable witnesses’ rather than simply making the assumption. This poses the challenge of how to both allow for, but also actively work to promote, the participants’ capacities to resist and thus act on the presumptions of those that have summoned them.

## References

- Bjerknes, G., Ehn, P., & Kyng, M. (1987). *Computers and democracy: A Scandinavian challenge*. Avebury.
- Cadena, M. de la, & Blaser, M. (Eds.). (2018). *A world of many worlds*. Duke University Press.
- de Castro, E. V. (2015). Who is Afraid of the Ontological Wolf? Some Comments on an Ongoing Anthropological Debate. *The Cambridge Journal of Anthropology*, 33(1). <https://doi.org/10.3167/ca.2015.330102>
- Despret, V. (2004a). *Our Emotional Makeup*. Other Press.
- Despret, V. (2004b). The Body We Care for: Figures of Anthropo-zoo-genesis. *Body & Society*, 10, 111–134. <https://doi.org/10.1177/1357034X04042938>
- Finken, S. (2003). Discursive conditions of knowledge production within cooperative design. *Scandinavian Journal of Information Systems*, 15(1), 57–72.
- Fleck, L. (1981). *Genesis and development of a scientific fact*. University of Chicago Press.
- Gad, C., & Bruun Jensen, C. (2009). On the Consequences of Post-ANT. *Science, Technology & Human Values*, 35(1), 55–80. <https://doi.org/10.1177/0162243908329567>
- Greenbaum, J., & Kyng, M. (1991). *Design at work: Cooperative design of computer systems*. L. Erlbaum Associates.
- Haraway, D. J. (1990). Situated Knowledges: The Science Question in Feminism and The Privilege of Partial Perspective. In *Simians, Cyborgs, and Women: The Reinvention of Nature* (1st ed., pp. 184–201). Routledge.
- Haraway, D. J. (2016). *Staying with the trouble: Making kin in the Chthulucene*. Duke University Press.
- Latour, B. (1983). Give Me a Laboratory and I will Raise the World. In K. Knorr-Cetina & M. Mulkay (Eds.), *Science Observed – Perspectives on the Social Study of Science*. SAGE.
- Latour, B. (2004a). Whose cosmos, which cosmopolitics? Comments on the peace terms of Ulrich Beck. *Common Knowledge*, 10(3), 450–462.
- Latour, B. (2004b). How to Talk About the Body? The Normative Dimension of Science Studies. *Body & Society*, 10(2–3), 205–229. <https://doi.org/10.1177/1357034X04042943>
- Latour, B. (2018). *Down to earth: Politics in the new climatic regime* (English edition). Polity.
- Law, J., & Hassard, J. (Eds.). (1999). *Actor network theory and after*. Blackwell/Sociological Review.
- Markussen, R. (1996). Politics of intervention in design: Feminist reflections on the Scandinavian tradition. *Ai & Society*, 10(2), 127–141.

- Mogensen, P. H. (1992). Towards a Prototyping Approach in Systems Development. *DAIMI Report Series, 412*, Article 412. <https://doi.org/10.7146/dpb.v21i412.6725>
- Mol, A. (1999). Ontological politics. A word and some questions. *The Sociological Review, 47*(1\_suppl), 74–89.
- Mol, A. (2002). *The body multiple: Ontology in medical practice*. Duke University Press.
- Norman, D. A. (1990). *The design of everyday things* (1st Doubleday/Currency ed). Doubleday.
- Pickering, A. (1995). *The mangle of practice: Time, agency, and science*. University of Chicago Press.
- Rheinberger, H.-J. (1997). *Toward a history of epistemic things: Synthesizing proteins in the test tube*. Stanford University Press.
- Schön, D. A. (2013). *The reflective practitioner: How professionals think in action*. Ashgate.
- Simonsen, J., & Robertson, T. (Eds.). (2012). *Routledge international handbook of participatory design*. Routledge.
- Stengers, I. (2000). *For en demokratisering av vitenskapene*. Spartacus.
- Stengers, I. (2005). The Cosmopolitical Proposal. In P. Weibel & B. Latour (Eds.), *Making things public* (pp. 994–1003). MIT Press ;;ZKM Center for Art and Media in Karlsruhe.
- Stengers, I. (2010). *Cosmopolitics I* (R. Bononno, Trans.). Univ Of Minnesota Press.
- Stengers, I. (2015). *In Catastrophic Times: Resisting the Coming Barbarism*. <http://www.oapen.org/search?identifier=588461>
- Stengers, I. (2017). *Another science is possible: A manifesto for slow science* (English edition). Polity.

## Author bio

Peter Danholt is Associate Professor at Dept. of Digital Design and Information Studies. His main research field is Science, Technology and Society studies (STS) with specific focus on IT and digitization. He is vice chairman of the Danish Association of Science and Technology Studies (DASTS) and chief editor of the STS journal STS Encounters. He is currently part of the research centre SHAPE – *Shaping Digital Citizenship* at Aarhus University. He has published research on healthcare It and selfcare practices; digitization and governance of organizations; data in healthcare and social work and design practices.