

This is the author's version of the following publication: Saad-Sulonen, J. and Horelli, L. (2017). Urban self-organising groups as users of digital artefacts – Nordic experiences. In *Yhdyskuntasuunnittelu lehti* (The Finnish Journal of Urban Studies), 3:55

The published version is found here: <http://www.yss.fi/journal/urban-self-organising-groups-as-users-of-digital-artefacts-nordic-experiences/>

Urban self-organising groups as users of digital artefacts – Nordic experiences

Joanna Saad-Sulonen (University of Oulu) and Liisa Horelli (Aalto University)

Abstract

The aim of the article is to present and discuss the results of a qualitative meta-analysis of a series of explorative case studies on the use of digital artefacts by self-organised communities in Aarhus, Denmark and Helsinki, Finland. Drawing on a conceptual framework on participation in the design of information and communication technologies as well as in urban planning, we ask and answer the following questions: What are the digital artefact ecologies of self-organised communities and movements? What are the challenges that self-organised communities and movements face in relation to their information technology needs? And, how can co-governance with public-private-people partnerships support the digital needs of self-organising groups?

Keywords: digital artefact ecology, expanded participatory design, expanded urban planning

Introduction

The 21st century digital transformation of business and banking, education and health care, as well as architecture, design and planning affect our public and private lives all over the world (Westera 2013). Cities are adopting e-planning (Silva 2010) and are turning towards big data and ubiquitous smart urban infrastructure with the aim of gaining more efficiency. However, the technology-pushed and corporate-driven top-down concept of Smart Cities is not the only way through which the digital turn in cities can be approached (Teli et al. 2015). Bottom-up and self-organising urban groups and movements, whose core activities are supported by a variety of everyday digital tools, are contributing to new types of citizen engagement in cities (Foth et al. 2011).

Even though participation in urban planning is rooted in legislation and considerable effort has been put to digitalise citizen participation in the Nordic countries, the planning systems remain formal and top-heavy (Mäntysalo et al. 2011). However, citizens are finding new ways to influence their urban life and environment. With a strong tradition in civic participation and membership in voluntary associations, Denmark is witnessing examples of what some commentators label Do-It-Yourself urbanism - an intersection of activism and urban design – with municipalities keen to implement changes initiated by activists (Fabian & Samson 2015). Finland, despite its much younger urban history, has also lately witnessed the emergence of a new kind of urban activism – different from the established association-based one – where self-organised activists are directly moving into action to change their lived spaces (Botero et al. 2012; Marttila & Botero 2016). Researchers have labelled this new phenomenon of non-registered local activism around urban commons - such as food circles, social p2p support, hacktivism and artivism – the fourth sector (Mäenpää & Faehnle 2017a).

As the context of urban planning has dramatically changed due to globalisation and digitalisation, there is more space for self-organisation (Uitermark 2015). The self-organisation of citizens around issues of common concern can be understood as a type of participation in urban planning that is not initiated, nor orchestrated by planners or officials, but by citizens (Boonstra & Boelens 2011; Saad-Sulonen 2014). Such participation takes place in everyday life situations and is increasingly mediated by mundane technologies. Urban self-organising groups rely on wider digital artefacts ecologies, which include social media, local websites, Google Drive applications, Wikis, and a variety of digital devices (Bødker et al. 2016a; Wallin et al. 2010).

Although many of the urban self-organised groups are driven by a commons ethos (Ostrom 1990), such as the nourishing and management of shared resources, little consideration is given to questions related to the shared ownership and control of digital tools and content. Therefore, our research problem is: how can the digital needs of self-organising groups be better supported? The aim of the article is to present and discuss the results of the meta-analysis of a series of explorative case studies on the use of digital artefacts by urban self-organised communities in Aarhus, Denmark and Helsinki, Finland. The research questions are: What are the digital artefact ecologies adopted by self-organised communities and movements? What are the challenges that self-organised communities and movements face in relation to their information technology needs? And, how can co-governance with public, private, people-partnerships support the digital needs of self-organising groups? We argue, based on our qualitative meta-analysis that although self-organisation is

increasingly acknowledged in urban planning and development, the digital challenges of self-organising groups around urban issues, should also be recognised and their needs supported.

Framework and methodology: expanded design and planning

The integrative framework comprises, first, concepts around the participatory design of information technologies as it expands to include design-in-use, and second, expanded urban planning, encompassing co-governance.

The history of participation in the design of information and communication technologies (ICTs) is shaped by the Scandinavian approach developed in the 1970's, when researchers in ICTs collaborated with trade unions and workers (Bjerknes et al. 1987). The Scandinavian participatory design (PD) became known worldwide for its set of participatory tools and techniques (Greenbaum & Kyng 1991). An expanded understanding of PD introduces the notion of participation as continuing through use (Saad-Sulonen 2014). Henderson and Kyng (1991) introduced the term “design-in-use” to refer to the kind of design work that users undertake, after the designed artefact has reached them. Thus, the design of technology expands into the realm of use, through users’ practices of “tinkering” or “bricolage” (Törpel et al. 2009). It includes activities of connecting the different devices, systems, and applications that make up the contemporary technological landscape we live in. Saad-Sulonen (2014) found that communities that engaged in self-organised activities concerning their urban environment engage in design-in-use: they choose, adapt, configure and connect various freely available tools to make, at little cost, a working digital artefact ecology to support their needs (Bødker et al. 2016b).

The notion of expanded urban planning (EP; Horelli 2013; Staffans & Horelli 2014) enables to explore ways to better embed the planning process in the material and socio-cultural context. EP is based on communicative and post-structural planning theories (Healey 1997; Forester 1999). It is a visionary concept in which planning expands from physical planning to community development and co-governance, supported by multiple participations, including self-organisation around urban issues. Simultaneously it seeks to connect the planning process with the content of the context. The expansion also covers the participation of different stakeholders in the different stages starting from strategic and statutory planning, to implementation, co-production, monitoring and evaluation.

As EP is intertwined with community development and local co-governance it is faced with new activities and partnerships. The new forms of urban co-governance range from the formal (city

boards and councils), to the semiformal (local fora or assemblies) and informal (cafe's, community house). Jarenko (2013) suggests that co-governance means linking the formal, semi-formal and informal networks and public spheres to form a deliberative system. The semi-formal deliberative spheres form a link between the formal and the informal ones, enabling a wider range of political activities to have an impact on decision-making. This enhances communication between the informal arenas of grass-roots level participation and the formal decision-making arenas enabling public (municipalities), private (business) and people-partnerships (Bresnihan & Byrne 2014; Horelli et al. 2015). Mäenpää and Faehnle (2017b) proposed that the future co-governance – “hybrid-governance” – will be based on an advanced use of social media comprising a variety of interactive processes and projects that can be situated on a ladder of eight steps. For example, the ladder for urban planning starts from non-anticipation of alternative plans (Level 1), via informing (L2), supporting (L3) and co-production (L4), to open collaborative projects around urban issues (L5).

Methodology

The design of the research (Figure 1) consisted of a qualitative meta-analysis of three explorative case studies on the use of digital artefacts by self-organising movements or communities; one in Aarhus, Denmark and two in Helsinki, Finland. We started our investigation on the potential supportive means for digital tools in Helsinki (Case 1). After studying in more detail the digital artefact ecology of one urban self-organised group in Aarhus (Case 2), we returned to Helsinki with an in-depth study on the artefact ecologies of four urban self-organised groups, and their relations with authorities (Case 3). The results of each case led to the design of the consequent one.

INSERT FIGURE 1 HERE

The qualitative meta-analysis (Timulak 2014) borrows its methodology from comparative qualitative studies. Its purpose is to provide a more comprehensive description of a phenomenon (e.g. the need for support to the digital needs) and its consequences. The steps in the analysis have been: 1) the definition of what is considered as data in context (the cases that are relevant to the research questions); 2) an analysis of data by assorting it into domains representing the conceptual framework (for example digital tools, levels of co-governance; Mäenpää & Faehnle 2017b); 3) delineating the data in domains into units which allow the categorization and comparison of different meaning units according to similarities (cf. constant comparative method by Strauss & Corbin 1990). The interpretation of the data in the content analysis was enhanced by the application

of the theoretical framework as part of the grounded theory. The individual cases applied a variety of data gathering techniques (contextual analyses, participatory observation, field-notes, focus groups, interviews as well as analyses of documents and websites), as well as methods of data analysis and interpretation. However, as the object of the study is emergent, the study is still at this stage exploratory.

Case studies

We will describe the consecutive three cases starting with the Citizen Toolkit in Helsinki, which is followed by the in-depth study of the artefact ecology of the Aarhus organic food community. We will end with selected examples of urban self-organised groups in Helsinki, focusing on their digital artefact ecologies and their links with authorities.

The Citizen Toolkit – an effort to support the digital ecologies for urban development

The Citizen Toolkit project (CT; 2012-2014) was a hands-on collaboration between Aalto University and the Helsinki Neighbourhood Association (Helka ry 1). Its aim was to consolidate a collection of tools that support active citizenship. The research question focused on how self-organising communities can be supported by commons thinking for digital tools.

At that time, the City of Helsinki already had a collection of ‘official’ digital tools for supporting citizen participation as consultation 2 (see Wallin et al. 2012 for details). The City did not acknowledge citizen self-organisation as a type of participation, which consequently was not supported. The CT was thus targeted to provide tools for citizen-initiated urban data collection or information sharing. With a modest funding the researchers created content for the CT together with managers from Helka ry and a planner from the Finnish Library Services. A working version of the CT at the beginning of 2013 was hosted on Helka ry’s website (<http://www.kaupunginosat.net>), which runs on the Open Source Joomla Content Management System.

The toolkit displayed a collection of four tools: CoMeUp: a media sharing platform and mobile application for communities; Urban Mediator: an online map-based tool for creating and sharing locative media, both developed at the Aalto University; Planning Window: a mobile-based augmented reality tool for urban planning; Wiki-design: a participatory design method developed by Peter Tattersall. A fifth section was dedicated to social media use in participatory urban

planning. The CT included descriptions of the use of the tools, links to URLs, and examples of usage in urban planning contexts.

As Helka ry's resources and ICT-knowledge did not allow for users to add new tools on Joomla we experimented with the ScoopIt online curation platform adding tools suggested by the participants of two workshops (c. 100 participants). We later also interviewed citizen activists (from the Artova culture and neighbourhood association 3, and the Prototype Helsinki project), a member of Helka ry, and an ICT project leader of the City of Helsinki.

The results disclosed that self-organising communities needed supporting structures for action, such as information where to find relevant tools, preferably categorized in terms of their purpose, and instructions to use them. It was not clear, for the workshop participants for example, if the CT was meant to list tools that support citizens' self-organisation, or that help collaborate with authorities, or both. Some activists also felt that the CT should cover a scale of different types and levels of citizen engagement, from civic disobedience to official procedures. Situating the CT on Helka ry's website was not the best solution, as it was not easy to find, nor did it enable design-in-use and tinkering. The ScoopIT platform also left people indifferent, as it was little known and required credentials to log in.

The collaboration with public authorities occurred at the "level 2 of the ladder" (Mäenpää & Faehnle 2017b). The CT experiment remained too much steered by the researchers and Helka ry, and thus limited in scope. Consequently, we needed more information concerning the ways the activists manage digital artefacts themselves.

The Aarhus local organic-food community – the use of an evolving ecology of digital tools

We conducted, in collaboration with researchers from the Aarhus University, in Denmark, a study on a self-organised group running a local organic food community in the City of Aarhus. The study, conducted between 2014 and 2016, focused on understanding the artefact ecology of the community asking what the digital ecology comprised, how it was shaped, and how it evolved over time. The methodology consisted of participant observations, interviews, and artefact ecology mapping with interviewees (Bødker et al. 2016a; 2016b).

The study identified three main stages in the shaping of the artefact ecology alongside the formation of the community, each stage pulling together a variety of digital tools (Table 1). The first stage was

the emergence of the community, the second one comprised everyday activities of the established community, and the third stage consisted of changes being undertaken and building new openings.

The Facebook page was crucial in Stage 1 as it enabled the community to emerge. Creating the page did not require much effort from the founding members, but it inspired a local organic food farmer to contact them and new members to join. The Aarhus Organic Food Community (AØFF) was soon founded and by January 2011, the community of 30 people registered as an association. The need to organise the work shifts (e.g. receiving and packing products from the farmers) meant that Facebook was no more enough. The attempt to use a Wikispace platform (like a similar community in Copenhagen had done), was unsuccessful because failing to secure members' privacy. By that time, one of the members, a professional web developer, volunteered to build and host a website for the community. The first AØFF website (version v.1) became a key digital artefact for the community, as it supported information sharing, but also had a members-only section area for planning the community work chores.

New features and maintenance of the website were needed for the website as well as its maintenance (version v.2) as the community grew (Stage 2). The website developer who hosted it on his own server, was no longer involved in the community, making updating challenging. Workarounds were created, such as the one made by a tech savvy member who created a hack to enable a calendar display. He was later hired by AØFF to create a new version of the website (version v. 3). During that time, a credit card terminal was also purchased and connected to the shared community laptop. Stage 3 in the AØFF community lifespan revolved around the building of the new website, which took several years of discussions and planning. The new website included the possibility for members to order their bags and pay for them on-line (Bødker et al. 2016b). Website maintenance is still an open issue, although addressed to some degree by volunteers.

INSERT TABLE 1 HERE

In sum, the AØFF artefact ecology has been shaped through the years by choices made by the founding members as well as the technical expertise found within the community. AØFF has chosen to make use of freely available social networking technologies but has also invested in the building of their own website, and relied on the expertise of their own members. In terms of hardware, they relied mainly on recycling and the members' own devices. Design-in-use thus unfolded through a mix of appropriating available tools and creating workarounds by hacking to address challenges related to access. Other than some contact in relation to hygiene regulations,

AØFF did not interact much with municipal authorities. Even though a new national project for developing a generic web-platform for organic food communities in Denmark started around 2014-2015, AØFF preferred to keep their own website, stressing their specific needs and autonomy.

The plethora of digital tools in Helsinki – emerging signs of hybrid governance

Inspired by the study carried out in Aarhus, we examined through purposeful sampling, during 2016-2017, the artefact ecologies of a set of self-organising groups in Helsinki. The criteria for the sample were the organisational type of the group and its relationship with authorities. Thus, the sample comprised potential partners for hybrid governance, such as two representatives from the third sector (registered NGOs and associations) and one from the fourth sector (non-registered movement). We also studied the provision of artefacts provided by a public partner (the City of Helsinki), and an intermediating agent and NGO, partly supported by public funds (Helka ry). The data gathering methods comprised a questionnaire, interviews and analyses of the digital ecologies (see Table 2) of the following parties:

Nappi Naapuri (Nifty Neighbour) is a project by Yhteismaa ry, a non-profit organisation and registered association active in Helsinki since 2012, which focuses on urban participatory culture. From the variety of Yhteismaa-projects we chose Nappi Naapuri, a neighbourhood-help platform, to understand the effort needed to develop an online platform from scratch that enabled a comparison with AØFF. The online platform is the whole concept.

Artova is the neighbourhood and cultural association of three neighbourhoods in Helsinki: Arabianranta, Toukola and Vanhakaupunki. As Artova has several activity groups covering topics, such as neighbourhood dogs, nature, events, and the history of the neighbourhood, it has created a systematic model to manage all the activities. The yearly Artova street festival gathered 30.000 people in 2017. Artova has worked closely with Helka ry and at times also with the City of Helsinki with specific projects.

National Urban Park to Helsinki (NUPH), was created in 2015 as a group of 50 members with common interests to found a National Park that will protect and maintain the cultural and ecological heritage of Helsinki. Currently, it is a self-organised movement comprising around 100 active individual members and 80 neighbourhood associations, in addition to the 7000 people who signed the petition for the park to be founded. The City council decided in 2017 to start a feasibility study-

process with the movement and it has put up an official website to support the initiative with a mapping survey tool that is also on the movement's own website.

INSERT TABLE 2 HERE

Table 2 shows the variety of digital artefacts that the above mentioned self-organised groups use. All groups mentioned use Facebook, either public Facebook pages (Artova's main Facebook page, Nappi Naapuri, NUPH) or closed Facebook groups (some Artova groups, NUPH). Facebook pages, such as websites, are used for online presence, advertising and discussion. Closed Facebook groups, as well as Intranets in the case of Artova, are used for organisational purposes.

All three groups have a website of their own. Nappi Naapuri ordered theirs from a software development firm not associated with the community. They resorted to crowdfunding, after receiving only 1000 Euros from the City of Helsinki, to collect the necessary sum to develop the website. As with AØFF, Nappi Naapuri's operations depend on specific functionalities that are not available e.g. on Facebook 3b.

Artova also invested time, effort, and a certain amount of money in having their own website. They chose to use the Joomla-based platform offered and hosted by Helka ry, but contributed to the re-design of their generic templates. In addition to the public website, Artova also chose to have their own Intranet, using the free PBWorks Wiki platform after it was recommended by a community member. Later, the members of Artova also developed the 'Artova model' as a tool for documenting and sharing the way six of their projects had been developed and implemented and the best practices that can be useful to others. They hired a student and a software developer for the 'Artova model' website, who chose to build it by using the Wordpress platform, because Joomla turned out to be too complicated for the specific features they had in mind.

NUPH also has a complex artefact ecology, which has been created by its tech-savvy members. As the City of Helsinki is co-producing the feasibility study with NUPH, it has enabled the use of the Maptionnaire survey-tool and allowed NUPH to publish on its video channel.

The examples we have chosen from Helsinki show a variety of design-in-use tactics and strategies by the different groups, e.g. with the choice of tools and the combination of sets of tools (whether globally available ones or tools provided by the City of Helsinki). When freely available tools are not enough, some of the groups, similarly to AØFF, try to find resources to create specifications for new tools and their visuals that are implemented by volunteers or paid professionals.

The relationship with authorities varies depending on the core activities of the groups and the related City department. When assessed with the ladder of hybrid governance, Nappi Naapuri represents the lowest level (no involvement), whereas Artova reaches Level 4 (sporadic interaction between the community and the City administration). NUPH has ascended to the 6th level, as it collaborates with the Department of Environment and Planning by co-producing shared documents for the development of the National Urban Park. NUPH was also the only example of a self-organising citizen group that used technology provided by the City of Helsinki.

A variety of digital practices, challenges and the need for support

Our qualitative meta-analysis of the case studies in Helsinki and Aarhus shows that establishing and maintaining digital artefact ecologies with minimal resources remains challenging for urban self-organising groups. Our findings deal with the varied practices of self-organised communities and movements related to setting up their digital artefact ecologies, the challenges they faced, and the potential support of co-governance to the digital needs.

The surveyed groups heavily rely on the use of freely available, familiar mundane technologies, such as Facebook, Google Drive, Dropbox, and Doodle (Tables 1 and 2). These tools do not necessitate specific technical skills. Nonetheless, many of the key members of the studied self-organised groups are advanced users of social media. Members of Artova and Nappi Naapuri, for example, use Google Analytics to understand the patterns of the effects of Facebook posting, to better target their members or the public. Advanced use practices were also apparent with more technologically demanding tools, such as Artova's Wiki-based Intra.

The main challenges concerning the use of digital artefacts were two-fold. The first type of challenges related to the freely available tools that offer only generic functionalities that do not support all the needs of urban self-organised groups. Many interviewees had difficulties to find information on the Facebook page or group. Facebook lacks archiving functionalities that could support this need. This, and other limitations, triggered the groups to set up their own websites, leading to the second type of challenges. Here, the lack of resources was a challenge for website customisation and maintenance. AØFF relied on coding by members with a background in software development, but as this was time-consuming, they had to pay the member a fee. Nappi Naapuri resorted to crowdfunding to find the necessary funds for a graphic designer and a software developer. Artova also paid part of the expenses needed to develop the new visual look of the neighbourhood platform provided by Helka ry. In all cases, the maintenance of the designed

platform remained challenging. The challenge of maintenance also remains with tools provided for free by universities (e.g. the Urban Mediator) or tools developed by students (e.g. Artova's City Paths mobile apps).

Furthermore, the ownership of the tools and its consequences are an intriguing issue. The studied communities are caught between commercial platforms (mainly Facebook and Google) and their own platforms that require a great deal of effort from members, ICT-expertise, as well as a certain amount of resources. Even if no explicit concerns were articulated about the privacy and security issues of the global social media tools, an Artova activist mentioned that it is important for him to know, where their servers are located, especially outside Europe. It seems that tools owned and operated by municipal authorities are seldom offered for citizens to use, except in cases of clear collaboration such as with NUPH. Even in this case, the citizen groups were not given control over them. The setting up of City of Helsinki video platform, and Maptionnaire, was handled by the authorities. The tools provided by NGOs, for example by Helka ry, also have their own challenges. They suffer from the NGO's own restricted resources and the slowness of maintenance and updating.

Looking back at the Citizen Toolkit, all the groups used many of the social media features, and Artova used even the Urban Mediator. In hindsight, to be truly useful, the CT should have provided detailed best practices concerning the use of social media and other tools, as well as information on how to set up different types of websites. In addition, our research on the development of the CT showed that the concept of co-governance with public-private-people partnerships remained unclear for many, including us researchers. It was especially unclear what the CT was meant to support: was the purpose to enhance community self-organisation or to liaise with authorities.

The Aarhus and Helsinki cases show that all the studied self-organised groups have had to be in contact, even remotely, with authorities at some point. Only one of them (NUPH) succeeded in co-creating a semi-formal digital space (Horelli et al., 2015) and reached a position with the municipality that can be labelled as hybrid or partial co-governance. The Artova-case has also shown the potential role of an 'in-between' broker that is neither an authority, nor a citizen group, such as Helka ry, as a provider and supporter of digital technology. However, Helka suffers from the lack of technological agility and resources, as only a fraction of its budget is covered by the City of Helsinki. Thus, the answer to the question concerning the support to the digital needs of self-organisation remains at this stage of development rather unclear.

Conclusions and Discussion

Our research showed that four types of tools shape the artefact ecologies of urban self-organised groups: a) tools provided for free by research institutions or NGOs, b) tools owned and used by authorities, for which citizen groups can be given a permission of use, if strong collaboration between them and authorities exist, c) tools provided usually for free by global service providers, such as Facebook or Google, and d) open source tools that enable building more customised platforms. Based on these results, we suggest three possible types of support to the digital needs of self-organising groups, who are not necessarily technologically savvy, to be upheld, whether from outside or inside the community, regarding issues related to the design-in-use of their artefact ecologies.

The first type of support is an intermediary agent, for example Helka ry in our cases, if it is well-resourced to provide technological assistance to urban self-organised communities in terms of platform provision and support to their application and design-in-use.

The second one is a well-developed hybrid or co-governance model with the City or some other public body. For example, the NUPH case showed that advanced collaboration between a movement and municipality is possible, if the latter is willing. However, municipal authorities in general have not yet provided much tangible (digital) support and stewardship. In the case of Helsinki, the City's own "coding companions" and ICT-developers, might be considered to start co-creation with activists in need. Moreover, newly publicly funded projects, for example Kira-Digi (The Finnish Ministry of the Environment), which enhances the digitalisation of the building, planning and development field, and Aarhus' emerging City Lab as a test site for digital urban development, might open new avenues for novel public-private-people partnerships around digital technologies.

The third type of support relates to alternative ways to the current platform capitalism. Platform co-operativism 4 seeks to give users control and ownership of the tools they use. It offers an interesting scenario for addressing the digital commons and deserves to be seriously considered in the context of cities.

As concrete future steps, it is important to provide an easy-to-understand model or schema of the different types of civic engagements with relevant tools. This might assist in viewing self-organisation, not as something antagonistic to the official citizen procedures, but as a different form of participation, which might eventually lead to co-governance with official procedures. This might

enhance collaboration between varying partners, self-organized groups and officials, as well as different actors in between, intermediaries, enterprises of ICT developers, coop platforms etc. Questions that can drive the future work are: What constitutes ICTs for civic engagement, and what are the actors at the local and global levels who might be involved with the support to the ICT-needs of self-organised groups in urban contexts? Answering these questions is seminal for the enhancement of innovative urban development and liveable communities beyond traditional understandings of e-planning and Smart Cities.

Acknowledgments

Joanna Saad-Sulonen's work has been funded by the Academy of Finland, funding decision number 308156.

References

Bjerknes, G., P. Ehn and M. Kyng (Eds.) (1987). *Computers and Democracy - a Scandinavian Challenge*, Avebury, Gower Publishing Company Ltd., Aldershot, England.

Boonstra, B. & Boelens, L. (2011). Self-organization in urban development: towards a new perspective on spatial planning. *Urban Research and Practice* 4:2, 99-122.

Botero, A., Paterson, A. & Saad-Sulonen, J. (Eds.) (2012). *Towards peer production in public service: Cases from Finland*. Aalto University, Helsinki.

Bresnihan, P. & Byrne, M. (2014). Escape into the City: Everyday Practices of Commoning and the Production of Urban Space in Dublin. *Antipode* 47:1, 36-54.

Bødker, S., Korsgaard, H., Lyle, P., & Saad-Sulonen, J. (2016a). Happenstance, Strategies and Tactics: Intrinsic Design in a Volunteer-based Community. In *Proceedings of the 9th Nordic Conference on Human-Computer Interaction* (pp. 10:1–10:10). ACM, New York, NY, USA.

Bødker, S., Korsgaard, H., & Saad-Sulonen, J. (2016b). A Farmer, a Place and at Least 20 Members: The Development of Artifact Ecologies in Volunteer-based Communities. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (pp. 1142–1156). ACM, New York, NY, USA.

- Fabian, L., & Samson, K. (2015). Claiming participation – a comparative analysis of DIY urbanism in Denmark. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability* 9:2, 166–184.
- Forester, J. (1999). *The Deliberative Practitioner. Encouraging Participatory Planning Processes*. The MIT Press, Cambridge, MA.
- Foth, M., Forlano, L., Satchell, C., & Gibbs, M. (Eds.) (2011). *From Social Butterfly to Engaged Citizen: Urban Informatics, Social Media, Ubiquitous Computing, and Mobile Technology to Support Citizen Engagement*. MIT Press, Cambridge, MA.
- Greenbaum, J. & Kyng, M. (Eds.) (1991). *Design at work: cooperative design of computer systems*. Lawrence Erlbaum, Hillsdale, New Jersey.
- Healey, P. (1997). *Collaborative planning. Shaping Places in Fragmented Societies*. McMillan , London.
- Horelli, L. (Ed.) (2013). *New approaches to urban planning: insights from participatory communities*. Aalto University, Helsinki.
- Horelli, L., Saad-Sulonen, J., Wallin, S. & Botero, A. (2015). When Self-Organization intersects with Urban Planning, Two Cases from Helsinki. *Planning Practice and Research* 30:3, 286-302.
- Jarenko, K. (2013). Local Co-Governance in Herttoniemi: A Deliberative System. In L. Horelli (Ed.) *New Approaches to Urban Planning, Insights from Participatory Communities* (pp. 45-64). Helsinki: Aalto University.
- Marttila, S., & Botero, A. (2016). Bees, drones and other Things in public space: Strategizing in the city. *Strategic Design Research Journal*, 9:2, 75–88.
- Ministry of the Environment (2017) *Kira-digi. Rakennetun ympäristön ja rakentamisen digitalisaatio* (Digitalisation of the built environment and building). Retrieved 1.11.2017, at <http://www.ym.fi/kiradigi>.
- Mäenpää, P. & Faehnle, M. (2017a). Civic activism as a resource for cities. *Kvartti*, Quarterly 1/2017, 68-81. <http://www.kvartti.fi/en/articles/civic-activism-resource-cities>

- Mäenpää, P., Faehnle, M. (2017b). Kaupunkiaktivismi – ratkaisuja itseorganisoituvan kaupunkiyhteisön hallintaan. *Kvartti* 2/2017.
- Mäntysalo, R., Saglie, I-L and Cars, G. (2011). Between input legitimacy and output efficiency: defensive routines and agonistic reflectivity in Nordic land-use planning. *European Planning Studies* 19:12, 2109-2126.
- Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, Cambridge.
- Saad-Sulonen, J. (2014). *Combining participations*. Aalto University, Helsinki.
- Scholz, T. & Schneider, N. (Eds.) (2017). *Ours to Hack and to Own, The Rise of Platform Cooperativism, A new vision for the future of work and a fairer internet*. OR Books, New York.
- Silva, C. N. (Ed.) (2010). *Handbook of Research on E-planning. ICTs for urban development and monitoring*. Hershey, PA: IGI Global.
- Staffans, A. & Horelli, L. (2014). Expanded Urban Planning as a Vehicle for Understanding and Shaping Smart, Livable Cities. *Journal of Community Informatics* 10:3.
- Strauss, A., & Corbin, J. (1990). *Basics of Qualitative Research. Grounded Theory Procedures and Techniques*. Sage, London.
- Teli, M., Bordin, S., Menéndez Blanco, M., Orabona, G. & De Angeli, A. (2015). Public design of digital commons in urban places: A case study. *Int. J. Human-Computer Studies* 81, 17-30.
- Timulak, L. (2014). Qualitative Meta-Analysis. In U. Flick (Ed.) *Handbook of Qualitative Data Analysis* (pp. 481-495). Sage, London.
- Törpel, B., Voss, A., Hartswood, M., & Procter, R. (2009). Participatory Design: Issues and Approaches in Dynamic Constellations of Use, Design, and Research. In M. Buscher, R. Slack, M. Rouncefield, R. Procter, M. Hartswood and A. Voss (Eds.), *Configuring User-Designer Relations: Interdisciplinary Perspectives*. Springer Verlag, London.
- Uitermark, J. (2015). Longing for Wikitopia: The study and politics of self-organisation. *Urban Studies* 52:13, 2301–2312.

Wallin, S., Horelli, L. & Saad-Sulonen, J. (Eds.) (2010). *Digital tools in participatory planning*. Centre for Urban and Regional Studies, Series C27. Aalto University, Espoo.

Wallin, S., Saad-Sulonen, J., Amati, M. & Horelli, L. (2012). Exploring participatory e-planning practices in different contexts: similarities and differences between Helsinki and Sydney. *International Journal of E-Planning Research (IJEPR)* 1:3, 17-39.

Westera, W. (2013). *The Digital Turn. How internet transforms our existence*. AuthorHouse.
<<http://www.thedigitalturn.co.uk/TheDigitalTurn.pdf>>