

Design Things and Design Thinking: Contemporary Participatory Design Challenges

Erling Björgvinsson, Pelle Ehn,
Per-Anders Hillgren

Introduction

Design thinking has become a central issue in contemporary design discourse and rhetoric, and for good reason. With the design thinking practice of world leading design and innovation firm IDEO, and with the application of these principles to successful design education at prestigious d.school, the Institute of Design at Stanford University, and not least with the publication of *Change by Design*, in which IDEO chief executive Tim Brown elaborates on the firm's ideas about design thinking,¹ the design community is challenged to think beyond both the omnipotent designer and the obsession with products, objects, and things. Instead, what is suggested is: (1) that designers should be more involved in the big picture of socially innovative design, beyond the economic bottom line; (2) that design is a collaborative effort where the design process is spread among diverse participating stakeholders and competences; and (3) that ideas have to be envisioned, "prototyped," and explored in a hands-on way, tried out early in the design process in ways characterized by human-centeredness, empathy, and optimism.

To us this perspective sounds like good old Participatory Design, although we have to admit it has a better articulated and more appealing rhetoric. As active researchers in the field of Participatory Design for many decades, we fully embrace this design thinking orientation. However, we also hold that, given design thinking's many similarities to Participatory Design today, some of the latter's challenges also might be relevant to contemporary design thinking. In this paper we put forth both some practical-political and some theoretical-conceptual challenges and dilemmas in engaging in design for change. We do so using the background of our own idiosyncratic encounters with the field and our view on how Participatory Design as a design practice and theoretical field has emerged and evolved since the early 1970s.²

- 1 Tim Brown, *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation* (New York: HarperCollins Press, 2009).
- 2 See, e.g., Erling Björgvinsson, *Socio-Material Mediations: Learning, Knowing, and Self-Produced Media Within Healthcare*, PhD Dissertation Series 2007-03 (Karlskrona: Blekinge Institute of Technology, 2007); Pelle Ehn, *Work-Oriented Design of Computer Artifacts: Arbetslivscentrum* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1988); and Per-Anders Hillgren, *Ready-Made-Media-Actions: Lokal Produktion och Användning av Audiovisuella Medier inom Hälso- och Sjukvården (Ready-Made-Media-Actions: Local Production and Use of Audiovisual Media within Healthcare)* (Karlskrona: Blekinge Institute of Technology, 2006).

In this paper, we argue that a fundamental challenge for designers and the design community is to move from designing “things” (objects) to designing Things (socio-material assemblies). We also argue that this movement involves not only the challenges of engaging stakeholders as designers in the design process, as in “traditional” Participatory Design (i.e., envisioning “use before actual use,” for example, through prototyping), but also the challenges of designing beyond the specific project and toward future stakeholders as designers (i.e., supporting ways to “design after design” in a specific project). We see this movement as one from “projecting” to one of “infrastructuring” design activities. As further reflections on these challenges, we discuss our ongoing “infrastructuring” engagement in Malmö Living Labs as one in which we design “Things” for social innovation. We conclude by returning to design thinking and exploring the further challenges to infrastructuring and to open “design Things.”

Designing: From “things” to Things

As background, we suggest the need to revisit, and partly reverse, the etymological history of “things,” as well as the political history and the value base of Participatory Design. The etymology of the English word “thing” reveals a journey from the meaning of a social and political assembly, taking place at a certain time and at a certain place, to a meaning of an object, an entity of matter. Originally, “Things” go back to the governing assemblies in ancient Nordic and Germanic societies. These pre-Christian Things were assemblies, rituals, and places where disputes were resolved and political decisions made. The prerequisite for understanding this journey from things as material object and back to Things as socio-material assemblies is that if we live in total agreement, we do not need to gather to resolve disputes—because none exist. Instead, the need for a common place where conflicts can be negotiated is motivated by a diversity of perspectives, concerns, and interests.

Our starting point in this paper is participation in Things—these kinds of socio-material assemblies that Bruno Latour so strikingly has characterized as collectives of humans and non-humans.³ We argue that this shift of meaning in the word “thing” is of interest when reflecting on how we as designers work, live, and act in a public space of design—a space that permits a heterogeneity of perspectives among actors who engage in attempts to align their conflicting objects of design. How can we gather and collaborate in and around *design Things*—Things that are modifying the space of interactions and performance and that may be explored as socio-material frames for controversies, opening up new ways of thinking and behaving, being ready for unexpected use.⁴

3 Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, MA: Harvard University Press, 1999).

4 This frame or structure is also used for the book *Design Things* by Thomas Binder, Pelle Ehn, Giorgio de Michelis, Per Linde, Giulio Jacucci, and Ina Wagner (Cambridge, MA: MIT Press, 2011), in which we explore socio-material foundations for contemporary design from a pragmatic perspective. Ideas in this paper are dealt with in much more detail in the book.

Participatory Design, seen as design of Things, has its roots in the movements toward democratization of work places in the Scandinavian countries. In the 1970s participation and joint decision-making became important factors in relation to workplaces and the introduction of new technology. Early Participatory Design projects addressed new production tools, changes in production planning, management control, work organization, and division of labor from users' shop floor perspective.⁵

Participatory Design started from the simple standpoint that those affected by a design should have a say in the design process. This perspective reflects the then-controversial political conviction that controversy rather than consensus should be expected around an emerging object of design. In this situation, Participatory Design sided with resource-weak stakeholders (typically local trade unions) and developed project strategies for their effective and legitimate participation in design. A less controversial complementary motive for Participatory Design was the potential to ensure that existing skills could be made a resource in the design process. Hence, one might say that two types of values strategically guided Participatory Design. One is the social and rational idea of democracy as a value that leads to considerations of conditions that enable proper and legitimate user participation—what we refer to here as “staging” and “infrastructuring” *design Things*. The other value might be described as the idea affirming the importance of making participants' *tacit knowledge* come into play in the design process—not just their formal and explicit competencies, but those practical and diverse skills that are fundamental to the making of things as *objects* or *artifacts*.⁶

Hence, Participatory Design, as it emerged in the 1970s, might theoretically and practically be seen as a “modern” example of Things (or rather “thinging,” as Heidegger would call it). Latour has called for a thing philosophy or object-oriented politics.⁷ His explicit references to object-oriented programming are interesting, not least because a key actor in the early formation of Participatory Design in Scandinavia, Kristen Nygaard, also was one of the inventors of object-oriented programming. For our purposes, however, we focus on participation in *design Things* and on strategies for “infrastructuring” them. Included in this focus is the design of objects as “matters of concerns.” So *design Things* are in focus when inquiring into the “agency” not only of designers and users, but also of non-human “actants,” such as objects, artifacts, and design devices. How do they get things done their way? How are design and use related? How do design projects and design processes align human and non-human resources to move the object of design forward? How might designers participate in these Things and position themselves in the “collectives of humans and non-humans?”

5 Ehn, *Work-Oriented Design of Computer Artifacts*.

6 Ibid.

7 Bruno Latour, “From Realpolitik to Dingpolitik or How to Make Things Public” in Bruno Latour and Peter Weibel, eds., “Making Things Public: Atmospheres of Democracy” in *Catalogue of the Exhibition at ZKM – Center for Art and Media – Karlsruhe, 20/03-30/10 2005* (Cambridge, MA: The MIT Press, 2005), 4-31.

As the paper evolves, two “thinging” approaches emerge. In the first, Participatory Design is characterized as an approach to involve users in the design and, as suggested by Redström, to encounter in the design process use-before-use.⁸ In such a “traditional” approach, Participatory Design is seen as a way to meet the challenges of anticipating or envisioning use before actual use, as it takes place in people’s lifeworlds. A complementary position suggests deferring some design and participation until after the design project, opening up the possibility of use as design, or design-after-design.⁹ This approach means design as “infrastructuring,” addressing the challenge of design as ongoing and as anticipation or envisioning of potential design that takes place in use after design in a specific project.

Thinging: From “Projecting” to “Infrastructuring”

The *project* is the socio-material Thing that is the major form of alignment of design activities. A project is the common form for aligning resources (people and technology) in all larger design endeavors. Projects are Things that have objectives, time lines, deliverables, and more. In practice, resources that must be aligned in a design project might include project briefs, prototypes, sketches, ethnographies and other field material, buildings, devices, project reports, “users,” engineers, architects, designers, researchers, and other stakeholders.

Projects often are designed to go through a number of consecutive stages of gradual refinement. They typically have names like “analysis,” “design,” “construction” and “implementation.” However, the shortcomings of such an approach are well-known and many: the top-down perspective hindering adaptation to changing conditions, the hierarchical structure adverting “legitimate” participation, the rigidity of specifications. Hence, the call for user involvement and Participatory Design approaches.

Rather than thinking of a project as a design Thing consisting of the four phases of analysis, design, construction, and implementation, a Thing approach would see this as a collective of humans and non-humans and might rather look to the performative “staging” of it. Inspired by Pedersen, we could then consider these questions:¹⁰ *How do we construct the initial object of design for a project? How do we align the participants around a shared, though problematic or even controversial, object of concern? How do we set the stage for a design Thing? As work proceeds, how can the involved practices be made reportable (e.g., fieldwork, ethnographies, direct participation)? How can the object of design be made manipulatable, enrolling the participating non-human actors represented in forms that can be experienced (e.g., sketches, models, prototypes, and games)? How are the objects of design and matters of concern made into public*

8 Johan Redström, “Re:definitions of Use,” *Design Studies* 29, no. 4 (2008): 410-23.

9 Ibid.

10 Jens Pedersen, “Protocols of Research and Design” (PhD thesis, Copenhagen IT University, 2007).

Things and opened to controversies among participants, both in the project and outside it (e.g., negotiations, workshops, exhibitions, public debate)?

However, as Klaus Krippendorff has pointed out, projects are only part, or a specific form, of alignments in the life cycle of a device, and every object of design eventually has to become part of already existing ecologies of devices, in people's already ongoing lifeworlds.¹¹ Hence, both the beginning and end of a designed device is open and hardly ever constrained to the limits of the project. This openness is principally interesting because it emphasizes the importance of understanding how design in a project is related to user/stakeholder appropriation, be it as adoption or redesign, and how users make it part of their lifeworld and evolving ecologies of devices. Hence, strategies and tactics of design *for* use must also be open for appropriation *in* use, after a specific project is finished, and consider this appropriation as a potential, specific kind of design.

Participatory Design Things and Use Before Use

Early attempts to conceptualize Participatory Design were made by referring to Wittgenstein and the language-game philosophy.¹² Design was seen as meaningful participation in intertwined language-games of design and use (professional designers and professional users); whereas, performative design artifacts, such as mock-ups, prototypes, and design games, could act as boundary objects binding the different language-games together.¹³

With this conceptualization followed the specific design challenge of setting the stage for another specific design language-game—one that has a family resemblance with (professional) language-games of different stakeholders, especially users (lay-designers) and (professional) designers. Thus, in the language of this paper, this staging meant literally assembling socio-material *design Things*, with potentially controversial design objects and matters of concern. The focus thus shifted to *socio-material Things as assemblies* rather than being on *things as objects*.

This shift led to recommendations and practices for a design process based on the (work) practices of legitimate but resource-weak stakeholders (i.e., actual or potential “end-users”). Work ethnographies and other ways to focus on the users' understanding became central. So did engaging in participative design activities, such as participative future workshops.¹⁴ But the most significant shift was the replacement of systems descriptions with engaging hands-on design devices, like mock-ups and prototypes and design games that helped maintain a family resemblance with the users' everyday practice and that supported creative, skillful participation and performance in the design process. A decisive

11 See Klaus Krippendorff, *The Semantic Turn: A New Foundation for Design* (Boca Raton, FL: Taylor & Francis Group, 2006).

12 Ludwig Wittgenstein, *Philosophical Investigations* (Oxford: Basil Blackwell, 1953).

13 See Ehn, *Work-Oriented Design of Computer Artifacts*; see also Susan L. Star, “The Structure of Ill-Structured Solutions: Boundary Objects and Heterogeneous Distributed Problem Solving,” in *Distributed Artificial Intelligence 2*, Les Gasser and Michael Huhns, eds. (San Francisco: Morgan Kaufman, 1989), 37-54.

14 Robert Junk and Norbert R. Müllert, *Zukunftswerkstätten: Wege zur Wiederbelebung der Demokratie* (Future workshops: How to Create Desirable Futures) (Hamburg: Hoffmann und Campe, 1981).

shift in design approach occurred when user participation as design-by-doing and design-by-playing became ways to envision use-before-use.¹⁵ The shift came on the heels of a breakdown in communication between designers and users (lay designers) in using more traditional design methods. These methods did not make sense to all participants.

There are striking similarities here between how we started to use design-by-doing and design-by-playing design artifacts in participatory projects in the early 1980s (e.g., supporting graphic workers and their unions in shaping new technology and work organization in newspaper production) and the focus on prototyping and role-playing as creative tools in contemporary design thinking.¹⁶

Note that this view on design Things as intertwined language-games, with its focus on the relation between designers and users, was developed in the societal context for, and discourse around, democratization of the workplace in Scandinavia in the 1970s. In practice, design Things did not stand alone. They were linked to other Things—especially to a formal “negotiation model” for design projects focusing on skills and work organization, intended to strengthen the voice of workers and their local trade unions in negotiations with management and in controversies around the design and introduction of new technologies at the workplace.¹⁷

What, then, is the role of non-human “participants,” such as design devices in the form of prototypes, mock-ups, design games, models, and sketches in design Things? In project work, a strong focus is placed on “representations” of the object of design. Traditionally, these representations are thought of as gradually more refined descriptions of the designed object-to-be. The suggestion here instead is to focus on these devices as material “presenters” of the evolving object of design supporting communication or participation in the design process. This evolving object of design is potentially binding different stakeholders together, and it clearly also has a performative dimension. The “presenters” of the object of design, of course, have to be elected and enrolled by the other participants, but once engaged, they are active participants in a design Thing as a collective of humans and non-humans.

We might also view these “presenters” as boundary objects in participatory design Things.¹⁸ They stabilize the design Thing and allow some transference and commonality across the boundaries of language-games, but they also acknowledge that different stakeholders might at the same time hold very different views. Hence, in any design process, when establishing heterogeneous design Things with multiple stakeholders, considering how such

15 See Pelle Ehn and Morten Kyng, “Cardboard Computers,” in *Design at Work: Cooperative Design of Computer Systems*, Joan Greenbaum and Morten Kyng, eds. (Hillsdale, NJ: Lawrence Erlbaum Associates, 1991), 169-96, and Pelle Ehn and Dan Sjögren, “From System Description to Script for Action in Design at Work: Cooperative Design of Computer Systems,” in *Design at Work: Cooperative Design of Computer Systems*, 241-68.

16 Ehn, *Work-Oriented Design of Computer Artifacts*.

17 Pelle Ehn and Åke Sandberg, *Företagstyrning och Löntagarmakt (Management Control and Labor Power)* (Falköping: Prisma, 1978).

18 Star, “The Structure of Ill-Structured Solutions,” 37-54.

boundary objects can be identified and enrolled would be important, as would being aware of the diverse meanings that these “presenters” might carry in relation to the different stakeholders.

With this view of Participatory Design as participative, entangled design Things that align language-games with heterogeneous matters of concern, and of design objects or devices both as “presenters” for the evolving object of design and as boundary objects for binding these heterogeneous language-games together, we now look to the challenges of this participative approach.

Infrastructuring Things and Design after Design

One limitation of participatory design Things as we’ve conceptualized them is the focus on projects supporting identifiable users. Basically, the design process described is laid out to support such users’ interests, and the products or services designed are to be supportive of these interests as well. Critics have accurately pointed out that there are stakeholders other than immediate users and that people appropriate designs in unforeseen ways. Envisioned use is hardly the same as actual use, no matter how much participation has occurred in the design process.

Do the idea of Participatory Design and the strategies of envisioning “use before use” have to be given up altogether then? What can designers do, and how are these design actions related to unforeseen users’ appropriation of the object of design into their lifeworlds? How can users in their everyday activities understood as a kind of design activity, be inspired by and “enact” the traces, obstacles, objects, and potentially public Things left by the professional designers? These design Things are different from those played and performed by designers in a project, but nevertheless, they are design Things (in use). We are not suggesting, of course, that all appropriation in use can or should be understood as design Things. However, we do recommend opening up design approaches in a design project to explicitly support this kind of appropriation in use after the specific design project.

In such an approach, both professional designers and potential users are seen as designers, much as in “traditional,” project-bound Participatory Design; but rather than participating in design Things as synchronous entangled language-games, they are participating in design Things separated in time and space. Rather than focusing on involving users in the design process, focus shifts toward seeing every use situation as a potential design situation, as suggested for example by Fischer and Sharff.¹⁹ So there is design during a project, but there is also design in use. There is design (in use) after design (in the design project).

19 Gerhard Fischer and Eric Scharff, “Meta-Design—Design for Designers,” in *Proceedings of the 3rd Conference on Designing Interactive Systems (DIS 2000)*, D. Boyarski and W. Kellogg, eds. (New York: ACM, 2000), 396-405.

Hence, in design Things carried out in a project, (professional) designers have to acknowledge that design Things potentially will go on in use, and they eventually might also have entirely new stakeholders. Hence, in design Things, the crucial perspective at project time is to open up for new design Things in later use. This shift in focus moves from design Things that aim at useful products and services, to design Things that support good environments for future design Things at use time. Shifting from traditional design for use Things to ongoing design for design Things, we seem confronted not only with design Things that engage multiple stakeholders and presenters, but also a chain of one design Thing after another. So the move is toward design Things (at project time) designing potential boundary-objects (infrastructure) that can be supportive of future design Things (at use time). However, the relations between these design Things, rather than being clear-cut, form a web of interwoven language-games over time.

Star and Ruhleder have called such mediation infrastructuring, identifying it as more of a “when” than a “what.”²⁰ An infrastructure (e.g., railroad tracks, cables, or the Internet) reaches beyond the single event (temporal) and the site event (spatial); it does not need to be reinvented every time; and it is embedded into other socio-material structures. However, the infrastructure also is accessible only by participation in specific practices. Hence, infrastructure, or rather *infrastructuring*, means aligning socio-material public Things; it is relational and becomes infrastructure in the relationships between design Things at project time and (multiple, potentially controversial) design Things in use. This infrastructure is shaped over extended timeframes, not only by professional designers, but also by users as mediators and designers who “infrastructure” in ways never envisioned at project time. Infrastructuring entangles and intertwines activities at project time (e.g., selection, design, development, deployment, and enactment) with everyday professional activities at use time (e.g., mediation, interpretation, and articulation), as well as with further design in use (e.g., adaptation, appropriation, tailoring, re-design, and maintenance).²¹

An infrastructuring strategy, according to architect Stan Allen, must pay attention to how existing infrastructures condition use, but in doing so, it also must deliberately design indeterminacy and incompleteness into the infrastructure, leaving unoccupied slots and space free for unanticipated events and performances yet to be.²² Such strategies for opening up controversial Things serve as a kind of “event architecture,” where the focus is on designing “architecture-events” rather than “architecture-objects,” asserted Tschumi.²³ Here, the infrastructure supports multiple and heterogeneous, often controversial, design Things in use (rather than homogenous and unitary ones).

20 See Susan L. Star and Karen Ruhleder, “Steps Toward an Ecology of Infrastructure: De-sign and Access for Large Information Spaces,” *Information System Research* 7, no. 1 (1996): 111-34; see also Susan L. Star and Geoffrey C. Bowker, “How to Infrastructure,” in *The Handbook of New Media*, Leah A. Lievrouw and Sonia M. Livingstone, eds. (London: Sage Publications, 2002), 151-62.

21 See Helen Karasti, Karen S. Baker and Florence Millerand, “Infrastructure Time: Long-term Matters in Collaborative Development” *Computer Supported Cooperative Work*, 19 (Berlin: SpringerLink, 2010), 377-405; Michael Twidale and Ingbert Floyd, “Infrastructures from the Bottom-Up and the Top-Down: Can They Meet in the Middle?” in *Proceedings of the Tenth Anniversary Conference on Participatory Design* (2008) (Bloomington: Indiana University Press, 2008), 238-24; and Volkmar Pipek and Volker Wulf, “Infrastructuring: Toward an Integrated Perspective on the Design and Use of Information Technology,” *Journal of the Association for Information Systems* 10, no. 5 (2009): 447-73.

22 Stan Allen, Diana Agrest, and Saul Ostrow, *Practice: Architecture, Technology and Representation* (London: Routledge, 2000).

23 Bernard Tschumi, *Event Cities (Praxis)* (Cambridge, MA: MIT Press, 1994).

With an infrastructuring design approach at project time, then, perhaps one should try to develop the very object of design as public Things that potentially, by the appropriation and enactment by its users, can lead to new objects that in turn can make their way into the users' lifeworlds and already existing ecologies of objects. But this vision cannot be approached as design from nowhere. As we have mentioned, Participatory Design once grew out of a concern about how design could support resource-weak groups when information technology was introduced to the workplace. The designer in this case was clearly positioned in the midst of controversies regarding how the design was implemented in use. Continuing Participatory Design into design as infrastructuring, design-for-design, and design-in-use, the same guiding values—once advocated to counter a hierarchical and formalistic design process characterized by dominance—may prove useful. Dominance, hierarchy, and formalisms are certainly ways in which many social, technical, and spatial infrastructures can be characterized. Hence, the rational idea of democracy and legitimate participation might, in design as infrastructuring, lead to a focus on support for the emergence of design Things as “agonistic public spaces.” As Mouffe argues, the goal of democratic politics is to empower a multiplicity of voices in the struggle for hegemony and to find “constitutions” that help transform antagonism into agonism, moving from conflict between enemies to constructive controversies among “adversaries”—those who have opposing matters of concern but who also accept other views as “legitimate.”²⁴ These activities are full of passion, imagination, and engagement. As such, they are more like creative design activities than rational decision-making processes. We must then also pay special attention, as Star points out, to those “marginalized by standardized networks” or infrastructures.²⁵ These “creative design activities” cannot be performed in any universal sense as “design from nowhere,” but, as Haraway puts it, only as “politics and epistemologies of location, positioning, and situating,” where partiality rather than universality is the condition that allows users to be heard and to be understood in making “rational knowledge claims.”²⁶ This is what Suchman has called the “local accountability” of researchers and designers.²⁷

In this perspective, design becomes a question, not so much about the new or about innovative products, but, according to Barry, more about everyday practice in particular sites and locations.²⁸ This is a practice committed to the work of envisioning emerging landscapes of design through which social and material transformations take place, landscapes shaped by the opening up of questions and possibilities.

As we understand it, these challenges also relate to the design-thinking vision of designers engaging in design thinking and the bigger picture design, for example, to IDEO projects on

24 Chantal Mouffe, *The Democratic Paradox* (London: Verso, 2000).

25 Susan Star, “Power, Technology and the Phenomenology of Conventions: On Being Allergic to Onions,” in *A Sociology of Monsters: Essays on Power, Technology and Domination*, John Law, ed. (London: Routledge, 1991).

26 Donna Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” *Feminist Studies* 14, no. 2 (1988): 589.

27 Lucy Suchman, “Located Accountabilities in Technology Production,” *Scandinavian Journal of Information Systems* 14, no. 2 (2002): 91-105.

28 Andrew Barry, *Political Machines: Governing a Technological Society* (London: Athlone, 2001).

design for social impact. In a European tradition, these challenges have been addressed as design for social innovation. Social innovations can be products or services just like any innovation, but they can also be a principle, an idea, a piece of legislation, a social movement, or an intervention—or some combination of these innovative possibilities. The key aspect is their capacity to simultaneously meet social needs and create new social relations. The Young Foundation in the United Kingdom has been a major player in developing the social innovation perspective in theory and practice.²⁹ Italian designer and researcher Ezio Manzini and the international group of people around him have been primary drivers in spreading such design practices.³⁰ Here, new ideas emerge from a variety of actors directly involved in the problem to be addressed: end users, grass roots designers, technicians and entrepreneurs, local institutions, and civil society organizations. From this perspective, design is no longer just a tool for the development of functional, innovative consumer products but is increasingly seen as a process for radical change—for developing services, systems, and environments that support more sustainable lifestyles and consumption habits. A foundational concept for Manzini and his colleagues is “collaborative services:” The role of the designer is initially to support the development of new concepts and later to make them attainable so they can result in “social” enterprises.³¹

Approaches to social innovation are in line with the ideas of Participatory Design and design as infrastructuring, and with the corresponding guiding values put forth in this paper. Social innovation offers challenging ways for designers to deal with both Participatory Design and infrastructuring design Things.

In the next section, we elaborate on the challenges of infrastructuring design Things, based on our own experiences.

Exploring Infrastructuring Design Things in Practice

Our experiences related to social innovation infrastructuring of design Things have come through the Malmö Living Labs project, which started in 2007 as a small-scale laboratory to explore how subcultures could be enhanced with new media.³² The project may be characterized as providing venues for open-ended, prototypical practices, or arenas for communication and negotiations.³³ In practice, this environment has required that we build trust and long-term relationships with the various lab partners, and as a result, we have avoided having clearly predefined projects and project constellations. Instead, our aim has been to create working relations that allow for various constellations to develop and for different possibilities to be explored. Our role in such an open-ended design situation has been to conduct continuous match-making processes, where partners co-develop future possibilities and try

29 See Robin Murray, Julie Caulier-Grice, and Geoff Mulgan, *The Open Book of Social Innovation* (London: The Young Foundation, 2010).

30 See François Jégou and Ezio Manzini, *Collaborative Services: Social Innovation and Design for Sustainability* (Milan: Poli Design, 2008).

31 Ibid.

32 Malmö Living Labs is a program within Medea, a co-production and collaborative media initiative at Malmö University, Sweden (www.medease.se). Malmö Living Labs is sponsored by Vinnova, the Swedish Knowledge Foundation, and by the European Union Regional Development Fund.

33 See Björgvinsson, *Socio-Material Mediations*; Hillgren, *Ready-Made-Media-Actions*; Malmö New Media Living Lab, www.malmolivinglab.se (accessed February 23, 2012) and Erling Björgvinsson, “Open-Ended Participatory Design as Prototypical Practice,” *CoDesign* 4, no. 2 (June 2008): 85-99.

Figure 1
Early Workshop with RGRA.



them out in real settings. Given that grassroots organizations and cultural producers are typically more resource-weak than the design, media, and IT companies, we pay special attention to foregrounding concerns and issues these partners face and to how they match up with matters the company partners face.

The starting point for our infrastructuring process was the arts and performance center, INKONST, which hosts a variety of non-governmental organizations (NGOs) and stakeholders that run activities and events related to film, performance, theatre, concerts, and music clubs. Although we have set up experiments with several of these stakeholders, for the purposes of this paper, we concentrate on RGRA, a grassroots hip-hop community (aka The Face and Voice of the Street), whose members are first- and second-generation immigrants living in the suburbs of Malmö (see Figure 1). In hindsight, we can see how RGRA has been involved in a number of design Things: Now we see that what started out as broad, open-ended explorations has resulted in various constellations of projects in which RGRA youngsters and design researchers have collaborated with media companies, mobile phone software developers, mobile game developers, public transport companies, Swedish public television and radio, and city of Malmö departments. Several constellations have grown out of everyday issues: exploring how RGRA could engage in street journalism through mobile video broadcasting, dealing with dilemmas such as how professional media and grassroots media can collaborate, and looking at how to mediate a talent competition aimed at letting people in different parts of the city and enjoying and participating in different musical traditions meet and interact. Another strand of matters of concerns has centered on how RGRA might have a more visible and legitimate presence in the urban environment.

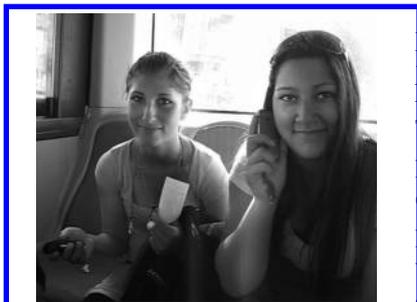


Figure 2
Passenger Listening to a RGRA Song
Downloaded to her Mobile Phone on the Bus.

A First Network of Working Relations Emerging into a Thing

During the open-ended infrastructuring process, several Things have emerged from the bottom up as one Thing led to another. Thus far, two of them have grown into more traditional research projects with more clearly defined project goals. The first concerned how RGRA could create new channels to distribute music produced by its members. The Thing's starting point was an early workshop between the Labs' designers and RGRA, where ideas emerged that RGRA could set up Bluetooth poles at strategic places or that Bluetooth senders could be put on buses, transforming the bus company into a media provider. (Many youngsters in Malmö spend up to two hours a day on a bus commuting back and forth to school.)

The interaction design company Do-Fi, which specializes in developing Bluetooth services, saw potential in the idea and agreed to participate in setting up a first round of experiments, as did two of our research colleagues at the university with special competence in place-centric computing. Skånetrafiken, a company in charge of the public transport in the region, and Veolia, which is contracted to operate many of Malmö's bus routes, also agreed to participate and to give access to the buses. The experiments indicated that the buses could become a new space for RGRA to distribute the music of its members and thus become more visible (see Figure 2). The bus company saw new commuter services geared toward teenagers, which could potentially diminish vandalism. Do-Fi saw the potential of developing a new product and new services in collaboration with the company, Epsilon Embedded Systems. The researchers saw the potential of developing a new research project focusing on place-specific media. The group consisting of all of these stakeholders was granted research funding to develop a portable, low-cost media hub.

In one sense, the Bluetooth bus undertaking can be seen as just another experiment—but that view does not tell the whole story. This undertaking was also a Thing. The experiment revealed not only the possibility of aligning different matters of concern, but also controversies and conflicting matters of concerns. One controversy concerned the constellation of partners. RGRA members had split emotions and varying opinions about whether they should collaborate with Veolia because the international branch of the company at that time was engaged in building transportation infrastructure in East Jerusalem, on what is perceived by many Arabs to be Israeli-occupied Palestinian territory. At the same time, they saw that they could gain financially by participating and could benefit from having access to the network of actors. RGRA decided to participate on the condition that RGRA's and Veolia's logos would not appear next to each other in any press material. RGRA, foremost, was collaborating with the researchers and the interaction design company and only indirectly was working

Figure 3

Youngsters Exploring a Neighborhood with the UrbLove Mobile Game.



with Veolia. The bus experiment also generated debates around immaterial property rights: Who could apply for patents, and who should gain financially if a new form for Bluetooth push technology was developed? It also raised questions about what type of (media) space the interior of the bus could be. Could it be transformed into a more public and inclusive space, or is it to remain an exclusive space leased out only to commercial actors, as is the case today?

Expanding the Network of Working Relations into a New Thing

RGRA members' experience of being to a large degree invisible in the urban environment parallels their feeling that their neighborhoods are largely unknown by people living in other parts of the city. (A common view is that their neighborhoods are dangerous.) One approach suggested by the group's members to handle this lack of connection or visibility is to construct "tourist" routes in their suburbs and guide people through the areas. To investigate this issue, a new Thing emerged, this time assembling RGRA, Do-Fi and researchers with the company Ozma Game Design, and the city of Malmö. The strategy was to see how the mobile game platform UrbLove, developed by Ozma, could be used to create new experiences of RGRA neighborhoods. Using the platform, young people can explore urban environments by solving "text"-quizzes related to specific places. Combining Ozma's gaming platform with Do-Fi's Bluetooth technology seemed fruitful because players would be given the capability to download media files at specific spots. An initial experiment in which youngsters from RGRA helped to develop a game path in their neighborhood was conducted. They selected places, made questions, and provided locally produced music files available for Bluetooth download, the lyrics of which related to the game (see Figure 3).

A trial game played by other youngsters showed (1) that they found gaming to be an interesting approach to learning about unknown urban environments, (2) that the game created a spontaneous interaction between the players and the locals, and (3) that developing a game engine with which the youngsters could easily make their own game paths was needed. The most important issue addressed in this Thing concerned which areas of the city are worth exposing in a positive light. The actors in this Thing applied for and received research money to explore how an open game engine could be developed and used to bridge urban barriers. This example illustrates how design Things also develops into specific projects (that then later may become part of new design Things).

In general, our experiences emphasize the challenging yet constructive ways in which unifying participation and infrastructuring can extend beyond the traditional design project and into new kinds of design Things. When reflecting on the shift from our previous experience of “projecting” to “infrastructuring,” we see our strategy has changed in several ways to allow for working with infrastructuring for ongoing Thinging, or design-after-design. First, we have worked on creating ongoing working relationships or new forms of infrastructuring practice(s) so that heterogeneous partners can bring forth the issues or possibilities they want to explore and see if their vision or issue makes sense and matches with other partners’ concerns. This approach has meant creating loose agreements and work practices on how to approach the unknown. This aspect of our work has been central because we live in a fluid society where access to a rich network of actors and resources is central—particular for providing the connections that those who are resource-weak tend to lack. It also has meant focusing on how specific issues and possibilities can be handled by creating ongoing infrastructuring processes, without predetermined sets of partners, that require reoccurring Things rather than a final solution. Our goal is to ensure that (1) these processes set precedents in ways that allow those participating to set up their own infrastructuring processes and Things, and (2) the objects designed allow for design-after-design and have at least elements of Thinging. In RGRA’s case, the aim has been to create conditions that allow ongoing design of Things and infrastructuring to happen. At this time, RGRA members do not construct any objects on their own, although the aim is that they will. However, in both of the cases described, we have seen Things go beyond a specific project into more sustainable and long-term learning and working relationships. The relationship between the company Do-Fi and RGRA has, for example, gradually emerged into a self-sustaining collaboration. During the past two years, they have collaborated on several experiments within the framework of Malmö Living Labs.

Their complementary competencies have been mutually recognized as valuable resources. They now are planning to form a company together.

Such Living Lab experiences bring to light the challenges that proponents of Design Thinking need to address. Although we agree with the basic tenets of Design Thinking, we argue that, to become a sustainable endeavor, it needs to go beyond projecting and be seen as ongoing infrastructuring for Thinging. Our experiences also show that those of us who take up the challenge of design-for-design need to consider how it can be done beyond making products that can be configured at use-time—in other words, how we as designers can develop practices that are always already ready for ongoing changes. This challenge is one we also bring with us as we seek to take our Living Labs infrastructuring design Things experience one step further.

Things That Matter?

During the past years, we have been able to scale up our Living Labs design Things engagement. To maintain our close working relationships and the trust built among our partners, we have decided to grow three small collaborating labs, rather than one large lab. The city of Malmö is characterized by multi-ethnicity, cultural production, youth culture, and new media industry. These aspects also lead to the rationale behind the content orientation and cultural and geographic position for the three collaborating living labs innovation milieus: “The Stage,” “The Neighborhood,” and “The Factory.” Although they differ in orientation and geographic location, these three living labs are all founded on some shared ideas and values. They are all based on user-driven design and innovation activities, growing out of social movements. They also are planned as open innovation social and technical platforms, integrated with the broader innovation systems in the city and region. From this position, they invite collaboration between people, companies, public agencies, cultural organizations, and NGOs, thus opening the borders and aligning potentially conflicting matters of concerns between users driving innovation, business incubators, new business models, research and education. Finally, although not driven by it, these environments all explore the potential of new media for co-creation and social innovation. As such, they support the collaboration between amateurs and professionals in collaborative cross-media productions. They use social media in co-creation projects leading to new services and products, and when applicable, they use new media co-creation strategies, such as open source, open content, do-it-yourself, etc.

Emerging design Things include a multiethnic group of women with a broad range of language skills organizing a collaborative service through which they provide meals for a large group

of arriving refugee orphans, urban planning initiatives by citizens using new tools and participative processes, and the implementation of a creative commons business model that supports independent movie makers in financing and distributing their productions.

This infrastructuring of design Things might seem a long way from designers' participating in projects with typographers and machinists who are struggling to democratize the workplace in the 1970s. However, in our view the basic design approach and values represent a continuation of that movement, and the progression results in ways to seriously engage in controversial design Things—ways that seem to converge with, but also challenge, contemporary design thinking.

In the early development of Participatory Design, proponents envisioned a new role for the designer in setting the stage for collaborative design Things at project time. In this paper, we have further elaborated on the designer's role in supporting future appropriation—as a kind of design at use time, as ongoing infrastructuring design Things.

We opened the paper with reference to Bruno Latour's view on things as socio-material assemblies and collectives of humans and non-humans and his quest for a thing philosophy. As a final note, we bookend this paper with the position of pragmatist philosopher John Dewey on controversial Things and the public—that in fact the public is characterized by heterogeneity and conflict.³⁴ Designing for, by, and with stakeholders may be challenging enough where common social objectives are already established, institutionalized, or at least seen as reasonably within reach. These social communities are supported by relatively stable infrastructures. The really demanding challenge is to design where no such consensus seems to be within view, where no social community exists. Such political communities are characterized by heterogeneity and difference with no shared object of design. They are in need of platforms or infrastructures, "agonistic" public spaces—not necessarily to solve conflict, but to constructively deal with disagreements. In such heterogeneous design Things public controversial matters can unfold as actors engage in alignments of their conflicting objects of design. Design thinking that wants to make a difference cannot ignore the challenge of passionate engagement in controversial design Things.

34 John Dewey, *The Public and Its Problems* (New York: Henry Holt and Company, 1927); Noortje Marres, "Issues Spark a Public into Being," in *Making Things Public: Atmospheres of Democracy*, Bruno Latour and Peter Weibel, eds. (Cambridge, MA: The MIT Press, 2005), 208-17.