

Infrastructuring for opening production, from participatory design to participatory making?

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ABSTRACT

Fabriken is a makerspace, a public workshop equipped with tools and machines that can be used to make (almost) anything: from fixing a flat tire to build a robot, from backing to meet new people. This space has been set up with the aim of opening production, to investigate what happens when means of production are made public and when people make things together by sharing facilities and skills.

From a participatory design perspective the making of Fabriken can be understood as process of design-for-design and infrastructuring. The paper discusses how Fabriken came to be and how, in looking for a strategy to design-for-design and infrastructuring, there has been a shift from a design-before-use to a design-in-use approach, where the tactics of events, small-scale interventions and long-term engagement have been used to foster a process of *participatory making* of the space.

Author Keywords

Opening production, infrastructuring, design-in-use, design tactics, participatory making

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WELCOME TO FABRIKEN!

Fabriken is a makerspace, a workshop equipped with tools and machines that people can use to build things and experiment with technology. Fabriken is hosted in a 2000sqm venue run by the NGO (non-governmental organization) STPLN, as a platform for supporting diverse kinds of cultural and creative initiatives.

The building opened in April 2011. On the ground floor there is a venue for concerts and conferences and another large room which during weekdays hosts a co-working facility. On this floor there is also a kitchen. The cellar hosts Fabriken, Cykelköket (a bicycle repair shop) Tantverket (the textile workshop) and, since a few months, Återskapa, an atelier of cast-off industrial materials where activities with children and adults are organized to foster creativity and environmental awareness.

Before telling how the space came to be, the phenomena of opening production is discussed.

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OPENING PRODUCTION, A MATTER OF DESIGN-FOR-DESIGN AND INFRASTRUCTURING

Opening production entails that accessibility to technology and knowledge can promote a new model for production based on commons and collaboration (Benkler, 2006, Bauwens, 2009). The success of open-source software, such as computer operating-system Linux, and open-knowledge platforms, such as Wikipedia, are proving the sustainability of “a new modality of organising production: radically decentralised, collaborative and non proprietary; based on sharing resources (...) among widely, distributed, loosely connected individuals who cooperate with each other without relying on either market signals or managerial commands” (Benkler, 2006 p.60).

Opening production has been mainly a phenomena regarding intangible production. Both open-source software, information and cultural production rely on intangible resources (code, knowledge, information) and generate intangible outputs, which are then distributed through the Internet (Benkler, 2006). When it comes to the means of production, these processes rely on personal digital technology devices, which are widely distributed among the population in advanced economies (Benkler, 2006).

In recent years, it has also become possible to experiment with the opening of tangible production, particularly thanks to the diffusion of personal fabrication machines, small-scale, cheaper versions of mass production equipment (3D Printers, laser cutters and CNC mills), which allow to have the efficiency of industrial production in small-scale processes. The expectation is that these machines will have the same role that personal computer played in the opening of intangible production processes (Gershenfeld, 2005), allowing the development of a non-proprietary and collaborative mode of production also for tangible goods.

From a participatory design perspective, opening production can be understood as a matter of creating the conditions for the emergence and development of production activities carried on by users. Specifically it concerns the creation of infrastructures that should support design during the use time, or design-after-design: “this perspective shifts towards seeing every use situation as a potential design situation. So design take place during a project (“at project time”) but also while the object of design is in use (“at use time”). In other words, there is design (in use) after design (during the project)” (Telier, 2011 p.171). This entails that design for opening production can be looked upon as form of design-for-design (Telier, 2011).

In intangible production, design-for-design activities have been particularly successful in developing online infrastructures, platforms where users can access and share resources, tools and skills for performing more or less collaborative production activities. These infrastructures are often organized according to a peer-to-peer (P2P) model which relies on a distributed network of individuals that aggregate on voluntary basis for generating and contributing to a pool of common resources widely accessible (Bauwnes, 2009).

In the opening of tangible production design-for-design activities have been focusing on the development of physical infrastructures, makerspaces, environments where personal fabrication machines and knowledge about tangible production processes become accessible. Makerspaces can present diverse models of organization: they can reproduce the P2P model (Hackerspaces), they can be commercial facilities (Techshops), or hybrids in between (Fablabs). While most of the online platforms have found some form of long-term sustainability, makerspaces are often striving with problems of participation and, consequently, sustainability. A survey on FabLabs states “The labs were primarily offering infrastructures to students, and they were relatively passive in reaching out to potential other users. Their funding came from government or hosting institutions. They have so far created a limited innovation ecosystem. This ecosystem, however, gets used rather rarely” (Troxler, 2010 p. 9).

From a design-for-design perspective, participation issues can be related to a limited capacity in supporting making and design activities during use time. In trying to enhance this capacity a promising approach could be to shift the understanding of makerspaces from infrastructures, as defined structures addressing specific uses and communities of practice (Telier 2011), to spaces for infrastructuring, which entails the creation of under defined structure, that can be continuously restructured at use time for supporting emerging activities. Infrastructuring allows to generate: “a socio material thing (which) is relational and becomes infrastructure in relation to design games (...) in use. Hence this infrastructure is shaped over extended time-frames (...) by users as mediators and designers “infrastructuring” in ways never envisioned at project time” (Telier, 2011 p172).

A key question resides in which strategies can be used in infrastructuring for opening production, as creating socio material things that can support diverse and emerging design and making activities during use time. The experience of Fabriken presents an approach which is based on an ongoing process of design-in-use performed through *participatory making*.

HOW THE SPACE CAME TO BE, DESIGN-IN-USE FOR INFRASTRUCTURING

Fabriken is co-owned by two actors: the NGO STPLN, which is running the facility where the workshop is placed; and Medea, a research centre at Malmö University working with digital media and co-production, which has invested in the equipment and in the salaries of

the researchers involved in developing the space. Fabriken was opened in April 2011 and it has been up and running for something more than one year. The design of the space started in August 2010 and it has involved the people from the NGO and some Medea researchers among which the author. In trying to work towards infrastructuring, the process of making Fabriken has been characterized by a shift from a design-before-use (Redström, 2005) to a design-in-use (Ehn, 2008) approach.

Since the early stages of the design process, the central role of future use was acknowledged. However we also realized that we could not be able to foresee all future activities at project time. As pointed out by Redström “the ‘use’ that we simulate, create and invite as part of a design process, be it iterative or participatory, cannot deal with what it means for something to become someone’s, what it means for an object to become part of someone’s life.” (Redström, 2005 p.130). Trying to define the use of Fabriken during project time, before the use, would have meant to reduce possibilities to accommodate unforeseeable future uses; fostering the creation of an infrastructure supporting specific uses and communities of practices, instead of infrastructuring.

In looking for a way to keep Fabriken as open as possible for future activities, we shifted to a design-in-use approach, which has been aimed at inviting uses and participants in the space, and progressively structure it according to the emerging needs and opportunities.

In trying to perform infrastructuring, there has been a shift from a design-before-use to a design-in-use strategy where events, small-scale interventions and long-term engagement have promoted the creation of Fabriken according to a process of *participatory making*.

EVENTS, SMALL-SCALE INTERVENTIONS AND LONG-TERM ENGAGEMENT, TACTICS FOR DESIGN-IN-USE

The activities carried out during the design-in-use have been mainly three: events, small-scale interventions and long-term engagement.

Events are characterized by a specific format, a loose frame supporting diverse participants’ initiatives. The first event was organized in February 2011, before the opening of Fabriken, with the aim of getting in contact with the local hacker community. It was framed as a Hackathon, a 48 hour gathering where hackers meet to work together on projects. During these two days participants were given access to tools for building things and hack together. At the same time the author with some colleagues worked for extending participation to the event by organizing sidetracks not related to electronics.

The Hackathon allowed to involve participants in designing the space by giving them the possibility to perform and explore future uses. They were coding and building robots, but they were also working with wood sticks and screws and dealing with organizational issues such as trying to fix the heating system that did not work for most of the two days. The event represented a frame where diverse uses overlapped and where it emerged a possible infrastructuring pattern, based on a tight

collaboration between the initial stakeholders and the participants performed through *making*.

After the Hackathon, similar events were arranged, such as the official opening after the renovation (April 2011), Vårstädning (May 2011), a weekend of workshops on the theme of sustainability, and Christmas Bizarre (December 2011) a weekend of workshops on the theme of Christmas. These events became occasions for inviting new participants to Fabriken, testing new activities in the space and reinforcing social connections between the current participants.

Events are quite demanding in terms of resources and effort. A lighter way of proceeding in exploring and inviting uses is to organize small-scale interventions according to needs or opportunities appearing in the space. Small-scale interventions can be looked upon as narrow design actions (Hamdi, 2004), which represent specific actions carried on inside a broader design strategy in order to acknowledge for serendipity and uncertainty in a design process.

For example the growing number of newcomers has created the need to organize several workshops about how to use the tools and machines, bringing in the space new participants and new uses. In a similar way the donation of pallets and soil from Malmö city department managing green areas, led to the creation of a collective garden placed outside Fabriken facilities.

Beside time-based activities such as events and small-scale interventions, another way of proceeding has been to develop long-term engagement as it happened when setting up the textile corner. After the official opening in April 2011, the decision was to keep the space open until late every Thursday, in order to have an evening when all participants could gather. Since the first Thursday the local hacker community was there together with the volunteers of the bicycle repair shop. But how to involve other potential users? That occasion came by meeting Luisa, the wife of one of hackers, who is an expert in traditional textile techniques. One evening she came with her husband to Fabriken and by starting chatting with the author it came out that she was interested in setting up a textile community in the space. On this basis in May 2011, Tantverket (the Grannies' Group) was established as a weekly meeting where people with interests in textile could meet and work together. The idea was to buy tools and fabrics to initiate the group activities and then to let the participants take the lead. However, it took much more effort than we expected. Besides being in the space every Thursday evening to meet the participants, several interventions have been performed: from organizing workshops, to setting up swap parties.

After one year, the Tantverket Facebook group counted more than 120 subscribers and the group had a high exposure on local media. However, the number of regular participants to the Thursday gatherings remained quite low and some evenings nobody showed up. Tantverket appears to be a marginal group in the *making* of Fabriken since it is not as active as the hacker or the bicycle repair shop community. However at the same time several projects have been set up around the textile corner often relying on the Facebook group for gathering participants

and spreading the word. In this perspective, the Tantverket experiment can be looked upon as an attempt of creating a public (Di Salvo, 2009) that can be involved on the basis of specific activities or events. Events, small-scale interventions and long-term engagement had a function as prototypes allowing to test activities, but also to try roles and collaborations in the space. Through them, uses were brought in to Fabriken, exploring possibilities but also challenging the existing understanding of the space (Mogensen, 1994). They can also be considered design tactics (Di Salvo, 2009), since they have promoted participation in the construction of Fabriken and the progressive appropriation of the space by the participants, which are continuously reshaping it according to emerging needs and uses.

FROM PARTICIPATORY DESIGN TO PARTICIPATORY MAKING?

Looking at how Fabriken came to be and how it is evolving, it emerges that the project time and the use time of the space have merged in an ongoing process of *making* and specifically *participatory making*.

The whole first year of the space has been about setting up events, carrying on small-scale interventions and working with long-term engagement; that is, creating occasions for *making* and particularly *making together*. Events, small-scale interventions and long-term experiments are ways to prototype and perform iterations of diverse kinds of *making* in Fabriken. They represent frames in which diverse activities have been proposed and invited in the space. But, they have also been the *making* of the space itself since, through them, Fabriken has been populated by tools, participants and materials.

As the time goes by Fabriken is becoming more and more inhabited by new participants driving their own design and production activities. The impression is that Fabriken lives in a state of organic evolution based on *making*, where the activities run in the space are actually shaping the space itself. For example, the guys working with electronics have organized a corner with soldering stations and other tools for making circuits, changing the space configuration but also confirming the idea of Fabriken as a space for working with electronics. In *making* Fabriken project time and use time are merged: each activity carried on in the space can be looked upon both as a form of use but also as a design act which reinforces a particular aspect of Fabriken or introduces new understandings of the space.

This *making* pattern can be considered a participatory process for several reasons. Design tactics rely on participation and on creating conditions for diverse *making* to emerge, but is up to the participants to explore them and decide which activities will continue. At the same way participants have the possibility to autonomously start new activities and make space for them in Fabriken, as it happened with the electronic corner.

Moreover, when new activities enter Fabriken, participants have the possibility to respond back to them

with other *making* or *not making*, as it happened with the moving of the textile space. Tantverket was initially hosted in a corner of the room. However, the environment was too noisy and dusty for working with textiles. For this reason, the textile corner moved around in other spaces of the building until the final decision of coming back to Fabriken and occupy one of the storage rooms, transferring the stuff that was there in another room. The moving of Tantverket has been not discussed with all Fabriken participants (since it was unclear who should be involved in the decision) - it just happened. For a few weeks, some people continued to store things in the new textile room but it was accepted quite quickly that the former storage room had become a space for sewing. The moving of Tantverket exemplifies how participation is entailed by the possibility to respond to the *making* with other *making* or *not making*.

From Fabriken experiences, it seems that the risk of a *making* pattern relies in the progressively homogenization of the space, since similar activities tend to reinforce one another, creating a specific imaginary of what *making* can be carried out in the space. Progressive specialization implies reducing possibilities for diverse uses to emerge, moving from infrastructuring to having an infrastructure. As a consequence, a specific role for the designer in the *participatory making* of Fabriken is related to keep the infrastructuring process ongoing, by supporting alternative practices emerging in the space and by bringing in new participants and activities.

This leads to another limit of *participatory making* related to newcomers. New users do not anymore need to be invited to the space, most of them are coming autonomously since they heard or read somewhere about the space. The issue is that if they do not get hooked up in some *making* activities they tend to not return. Entering Fabriken for the first time can be quite confusing since there are no explicit rules about the space or about how to use the machines. If newcomers do not get involved in some of the actual *making* going on in the space it is hard for them to understand how the space works. At the moment there is an ongoing discussion about how to ease access for newcomers but it is a quite complex issue, since participants come to the space for making and they are not too interested in creating conditions for the making to happen. On the other side, the NGO and the author, which are interested in creating these conditions, often feel that they lack of legitimacy and skills (knowledge about machines and processes) for introducing new behavioural patterns in the space.

Beside the highlighted difficulties, design-in-use through *participatory making* can be considered a promising approach in infrastructuring for opening tangible production. Particularly *participatory making*, by merging project time and use time, has allowed to create a space that organically grows and that can accommodate diverse uses. At the present Fabriken is hosting a good

variety of activities: beside the hacker group and Tantverket, an atelier of cast-off industrial materials has been established. Small companies are also regularly using Fabriken facilities, particularly two fashion design ateliers and one catering company. Moreover diverse temporal projects have been hosted in the space related to textiles, food production and electronics.

CONCLUSIONS

This paper presents the *making* of Fabriken, the establishment of a platform for opening production, which is understood as a process of infrastructuring where design is aimed at developing a socio-material thing to support design and making activities during the use time. By describing how the space came to be, the strategy of design-in-use is presented with the tactics of events, small-scale interventions and long-term involvement. These tactics have allowed the emergence of a *participatory making* pattern where project time merges with use time and where participants' activities are shaping the space.

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REFERENCES

- Bauwens, M. Class and capital in peer production, *Capital & Class*, 2009, 33: 121-141
- Benkler, J. *The Wealth of Networks*, Yale University Press, New Haven and London. 2006
- Di Salvo, C. Design and the Construction of Publics. *Design Issues*, 2009, 25(1), 48-63
- Ehn, P. Participation in design things. In *Proceeding of the 10th Conference on participatory Design, PDC 2008* (pp.92-101)
- Gershenfeld, Neil A. *Fab: the coming revolution on your desktop—from personal computers to personal fabrication*, Basic Books, New York. 2005
- Hamdi, N. *Small change. About the Art of Practice and the Limits of Planning in Cities*. Earthscan, London. 2004
- Mogensen, P. Towards a Prototyping Approach in Systems Development. *Scandinavian Journal of Information Systems*, 1994, 4(1), 31-53
- Redström, J.. Towards user design? On the shift from object to user as the subject of design. *Design Studies*, 2005, 2, 123-139
- Telier, A. *Design Things*, MIT Press, Cambridge Massachusetts. 2011
- Troxler, P. Commons-based Peer-Production of Physical Goods Is there Room for a Hybrid Innovation Ecology? *Proc. 3rd Free Culture Research Conference 2010*

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