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1. Article: Infrastructuring interventions or intervening infrastructures? The role of interventions in the infrastructuring process.

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0. Abstract

Design as ‘infrastructuring’ approaches design as a long-term process of anticipation or envisioning of potential design (Björgvinsson, Ehn & Hillgren, 2012), often via the development of tools, techniques and processes that allow actors to deal with uncertainties that they encounter in participatory ways (DiSalvo, Clement & Pipek, 2013). Although ‘long-term participation’ and ‘intervention’ may appear to be contradictory, this article describes how interventions contribute to infrastructuring processes that address public space and public issues. Interventions in public space are often driven by a wish to reclaim the common right to it and regularly use a ‘hit-and-

run tactic' (Markussen, 2013). This article discusses the role that these (short-term and often disruptive) interventions can play in long-term participation (O'Neill & Doherty, 2010) and specifically their ways of making uncertainties tangible.

We analyse an infrastructuring process defined by on-going participatory interventions in Genk (BE). We discuss three series of interventions that explicitly shaped our ways of working in the infrastructuring processes, being (1) 'Hack-a-thing', (2) 'FanLab' (see: Figure 1) and (3) 'The Other Market'. Using Latour's framing of uncertainties (Huybrechts, Dreessen & Schepers, 2015), we illustrate how the interventions made uncertainties related to actors, actions and objects/matters tangible and how (long-term) participation was enhanced or obstructed in the process (cfr. the above-mentioned approach).



Figure 1. 'FanLab': stimulating long-term participation in FabLab Genk

Our contribution takes on the form of an extended article and a live, participatory presentation of visualisations of the process, documenting how diverse constellations of actors, actions and matters of concern (Latour, 2005) take form and shift through the interventions over time. We specifically focus on the uncertainties that are associated with these constellations to gain an understanding of how interventions enhance or obstruct the infrastructuring process.

1. Introduction

Genk is the second largest city in the province of Limburg (Belgium) and is known for its mining heritage: the city saw its growth in the first half of the 20th century powered by three coalmines. Confronted with the progressive closure of the mines the city attracted new (manufacturing) industries, mainly concentrated around the activities of the automobile manufacturer Ford, which opened its factory in 1964. By the end of the 80s, the city of Genk became an important economic player in the region. However, by mid 2012, Ford Genk announced it would diminish its operations, eventually leading to a definitive closure of the plant in December 2014. This closure had an enormous impact on Genk and the broader region of Limburg, affecting 4000 jobs in the factory and another 4000 in related industries.

This abrupt ending of the traditional automotive manufacturing industry in Genk - as well as the historical precedent of the mines - forms the background of our infrastructuring process, exploring citizens' scenarios for work. As the work processes (e.g. in the automotive manufacturing industry) changed over time (Howard, 1995; Womack, Jones & Roos, 2003), also the ways in which Design research dealt with this topic evolved. In the 1970s, Participatory

Design (PD) researchers introduced participatory processes in workspaces as democratic means to include workers in the design and use of workplace computer applications (Ehn & Kyng, 1987). In these workspaces, PD researchers organised co-design workshops wherein workers, managers and designers could negotiate how, for instance, machines entered the workspace, using cardboard mock-ups (Ehn & Kyng, 1991). Although the democratic goals of PD have not changed, changing work models have altered PD's approaches to work. While in traditional PD co-design is perceived as a 'staged' process (Saad-Sulonen, 2014), today many PD-researchers (see e.g. Björgvinsson, Ehn & Hillgren, 2012) are paying more attention to 'infrastructuring processes' that allow co-design - like work practices in general - to become more interwoven with daily life. This enables engagement in long-term participation processes, extending flexibly throughout time and space (DiSalvo, Clement & Pipek, 2013).

This article wants to dive deeper into the role of interventions - in contrast to 'staged' workshops - in infrastructuring processes giving form to scenarios for work (spaces, tools, conditions, etc.) with Genk's citizens. Besides art and design, other contexts (such as applied psychology) often use the concept of 'intervention' to refer to processes of acting upon and improving a perceived critical situation (Boyd, 2012). Most definitions of interventions entail a traditional top-down model, in which one person or a selected group of people decides whether a situation asks for a certain action with which they - unannounced, unadvertised and not commissioned - enter into a context. In design and art contexts interventions are regularly defined by artists/designers, who reclaim the common right to a certain context using a 'hit-and-run tactic' or attempting to create a (temporary) disruption in the status quo (Gielen, 2013; Markussen, 2013). In this sense, the

nature of interventions seems to be in contrast with the more horizontal approaches of participatory processes.

However, building upon O'Neill & Doherty (2010), we argue that interventions can also contribute to long-term participatory processes when they build on each other and contribute to structuring durational networks over time. Therefore, this article focuses on the question of what role different types of interventions can play in democratically giving form to the on-going infrastructuring processes of scenarios for work in the city of Genk. We foreground uncertainty as the key feature of interventions in infrastructuring processes. Latour's (2005) understanding of uncertainties is used as a lens to get a closer understanding of how interventions contribute to making uncertainties tangible and how this defines the participatory process.

2. The role of interventions in infrastructuring

Democratic ways of giving form to today's flexible workspace environments are not straightforward. They do not necessarily take place in staged meetings wherein 'all' relevant actors are represented, since actors change over time, gather in different constellations and shift between work locations. In this sense we believe that in addressing work, participation can better unfold in the form of infrastructuring processes instead of a more 'classical' PD approach. Infrastructuring can be characterized as an on-going process of cultivating long-term working relationships with diverse actors (Hillgren, 2013; Thorpe & Gamman, 2013; Emilson, Hillgren & Seravalli, 2014). Star & Ruhleder (1996) state that an infrastructure is more than a disappearing substrate. It is a physical and institutional structure that has meaning and is meaningful for

someone within a particular practice (Hess & Ostrom, 2007; Marttila, Botero & Saad-Sulonen, 2014). Another essential aspect of an infrastructuring process is that it focuses on a setting or surrounding in which artefacts have a place, instead of on the particular artefact itself (Pipek & Wulf, 2009).

Giving form to participation as an infrastructuring process demands us to understand a more flexible take on democratic gatherings. Mouffe (2005) describes democracy as a polyphony of voices, opposing views and disputes among different groups of adversaries who debate matters of concern constructively and passionately. She refers to the term agonism: a struggle among adversaries that recognize the legitimacy of their opponents, although acknowledging that there is no rational solution to their conflict (Emilson & Hillgren, 2014). The core of an agonistic democracy is based on a constant confrontation of hegemonies, which are represented by a multitude of voices and disputes among heterogeneous groups (Mouffe, 2005). Mouffe stresses the need for artistic interventions as instruments to work within an agonistic democracy: *“[w]hat is needed is a widening of the field of artistic intervention by intervening directly in a multiplicity of social spaces in order to oppose the program of total social mobilization of capitalism”* (Mouffe, 2007, p. 1). She also recognises the power of design interventions in making this multiplicity of voices tangible, to find ‘constitutions’ that help to transform antagonism into agonism and change conflict into constructive controversies among adversaries (Boelen, Sacchetti, McGuirk, Mouffe, 2015). Thus, a challenge for design is creating situations that do not support rational decision-making processes aiming for consensus, but that make alternative voices in decision-making processes more tangible.

Although the role of interventions in infrastructuring processes is not to create a particular object, Latour (2005) states that they can play an important role in making alternative voices visible. He talks about object-oriented democracies, in which objects are defined as matters of concern or issues: “[w]e might be more connected to each other by our worries, our matters of concern, the issues we care for, than by any other set of values, opinions, attitudes or principles” (Latour & Weibel, 2005, p. 4). Moreover, he refers to ‘things’ that can foster situations of pluralism or gatherings of various perspectives around issues (Björgvinsson, Ehn & Hillgren, 2012). In this sense, interventions can be seen as ‘public things’ and infrastructuring as a process of ‘*thinging*’, referring to the gathering of human beings who develop settings, structures, tools, techniques and processes to deal with issues (DiSalvo, Clement & Pipek, 2013; Brandt, Binder & Sanders, 2012; Storni, 2012) .

3. The role of uncertainties in infrastructuring

The disruptive nature of interventions in infrastructuring processes can make pluralistic voices around issues visible. They particularly make the uncertainties surrounding these issues tangible, thus allowing them to be (re)negotiated (Markussen, 2013). In PD processes different models exist of how uncertainty can be approached (see: Huybrechts, Dreessen & Schepers, 2015). Most PD scholars agree that uncertainty should be made explicit, thus having a role and place in participation. We distinguish different ways in which this can be done: by managing uncertainties (uncertainty management model), by deliberately provoking them (disruptive uncertainty model) - often making use of interventions - and by avoiding any predefined approach to uncertainties. We call this last approach the open uncertainty model. It builds on

ANT theorists Callon, Lascoumes and Barther (2009) who state that ideas of knowing and controlling uncertainties distinguish between experts who can assess uncertainties and laymen who are at risk. Storni (2011) addresses the fact that in Design research, it is impossible and also not desirable to anticipate uncertainties, especially if we want to stress the equal relations between experts and laymen. Accordingly, we believe that in the flexible and long-term participatory set-ups of infrastructuring processes it makes no sense to anticipate uncertainties. Namely, sustaining participation over time deliberately opens up the process for many uncertain influences that cannot be anticipated, even though they may cause uncomfortable feelings for some participants. At the same time, long-term infrastructuring processes reduce uncertainties among participants since they are getting to know and trust each other (Björgvinsson, Ehn and Hillgren, 2012). If anticipation is not possible or desirable, the role of uncertainties in the design process should rather remain tangible and open for debate and interventions can play a key role in this. However, since designers still have the largest influence in how interventions define the debate on uncertainties (Bratteteig & Wagner, 2014), there is a need for further explaining how interventions set the scene for addressing uncertainties in an infrastructuring process in democratic ways.

Informed by recurrent uncertainties in infrastructuring processes, we created a lens to evaluate the role of uncertainties in an open uncertainty model (Huybrechts, Dreessen & Schepers, 2015). This lens is based on Latour's (2005) description of five uncertainties in studying the social, being: (1) actors and their uncertainties in group formation, (2) uncertainties on the heterogeneous character - and the lack - of complete control over actions, (3) uncertainties on the role of objects in the social, (4) uncertainties on the different views on 'facts', understanding

them as matters of concern, and (5) uncertainties on how the social should be studied in democratic ways (Latour, 2005; Venturini, 2010). The mentioned lens offers handlebars to investigate the infrastructuring process while focusing on:

1. uncertainties related to **actors**, entailing their goals, number, the level of involvement, their group formation, memberships and equality;
2. uncertainties related to **actions**, entailing actors' inclusion and exclusion mechanisms, their possibilities to develop independent views, reconfigure methods, tools and techniques and flexibly arrange technical and organisational structures;
3. uncertainties related to **objects/matters of concern**, entailing their importance for the actors, their delicateness, the ways in which their characteristics and evolution are described based on the contributions of various actors, their openness for debate and change and their careful or outspoken character.

4. Case: an on-going infrastructuring process in Genk

To further illustrate our theoretical reflections, we describe an infrastructuring process - initiated four years ago - that is structured around on-going participatory interventions in Genk and in which different scenarios for work were generated. In 2010, the process was initiated through the physical and online spaces and activities of Fablab Genk (www.fablabgenk.be). We consider this Fablab (Gershenfeld, 2005) as an open research experiment and workplace, functioning as an alternative work environment in which new work practices, tools, processes, etc. can grow in the difficult context of Genk. Fablab Genk allows people to freely access the lab, its equipment and the available knowhow to develop a prototype of almost any imaginable product (Milanese,

2006). In exchange, the Fablab user shares his/her designs with others in accordance with the principles of ‘open source’ (Bauwens, 2007). From the beginning, Fablab Genk aimed to be more than just a physical infrastructure; this is an issue that numerous FabLabs struggle with: “[Fab]labs were primarily offering infrastructures to students, and [...] relatively passive in reaching out to potential other users” (Troxler, 2010, p. 9). Therefore, Fablab Genk has involved local inhabitants - through interventions - as partners in a long-term participation process that resulted in various open objects, systems and services in various societal domains (De Weyer, Taelman, Luyten, Leen, Schepers & Dreessen, 2013). We engaged people from Genk and beyond to turn the Fablab into an environment that exemplified new work practices, infrastructures, services, etc. by offering them the Fablab tools and machines to organise - often slightly activist - interventions.

In 2014 we moved some of the Fablab working practices and tools into the neighbourhoods of Genk as we started to develop a parallel project with a Living Lab approach. Living Labs function as “an open innovation milieu where new constellations, issues and ideas evolve from bottom-up, long-term collaborations amongst diverse stakeholders” (Björgvinsson, Ehn & Hillgren, 2012, p. 41). They provide a setting for open innovation that supports experimentation with real users in real contexts and with a long-term strategy (Følstad, 2008). However, they all differ in approach; some Living Labs are very product-centred while others aim for creating long-term socio-material relations via continuous interventions, being open to what comes out of this process. The latter can be framed within a so-called ‘design for social innovation model’, in which infrastructuring processes give form to products or services, principles and ideas (Björgvinsson, Ehn & Hillgren, 2010; Björgvinsson, Ehn & Hillgren, 2012). The face of our

Living Lab approach in Genk is a shop front in the neighbourhood of Winterslag, called ‘The Other Market’. This location is complemented with a printing press mounted on a cargo bike, which we used for going into different neighbourhoods.

4.1. Case: methodology

The infrastructuring process was documented via ‘thick descriptions’ (Geertz, 1973), which were analysed at regular moments in time. The above-mentioned lens was used to identify and cluster uncertainties in relation to (1) actors, (2) actions and (3) objects and issues/matters of concern. The thick descriptions were made of different data, collected during the infrastructuring process (drawings, videos, articles, images, reports, posts on social networks, field observations, interviews and mappings with the participants and moderators of the different interventions). The main participating researchers - a product designer, an urban designer and two design researchers - independently conducted qualitative analyses of the process documentation. They continuously carried out an open coding of the different data to look for patterns. These analyses were regularly brought together to conduct a selective coding of the ways in which the uncertainties, made tangible via the interventions, drove or obstructed the infrastructuring process.

4.2. Case: three groups of interventions

We discuss three groups of interventions that explicitly shaped the infrastructuring process, being: (1) ‘Hack-a-thing’, (2) ‘Fanlab’ and (3) ‘The Other Market’. We illustrate how the interventions set the scene for renegotiating uncertainties related to actors, actions and

objects/matters of concern and how this benefited or obstructed the infrastructuring process (using above-mentioned lens).

(1) The ‘Hack-a-Thing’ interventions (see: Figure 2) explored how introducing local youth (16-20 years old) to Fablab Genk could allow them to imagine new relationships between themselves and their surrounding objects, triggered by informally teaching them new, particular skills (e.g. in hacking old appliances or used objects such as a printer, toaster, etc.) (De Weyer et al., 2013; Dreessen et al., 2014). We call these activities interventions since, in this case, we considered the act of hacking (i.e. creating new devices from components of old ones, with another function than originally intended) as a way of intervening.



Figure 2. Youngsters participating in the ‘Hack-a-Thing’ interventions

Using the above-mentioned lens on the level of actors, we state that although we - as researchers/designers - set the scene by introducing a certain script for action (i.e. ‘hacking old

appliances and objects'), the interventions were very much defined by the participants themselves. They were recruited after an open call for participation, inviting youngsters, expert programmers, hackers and designers (Dreessen et al., 2014). The unexpected connections between - human and non-human - actors that the 'Hack-a-Thing' interventions provoked resulted in several interesting outcomes, such as a coffee grinder and the 'Persistence of Vision Robot'. The latter entailed a moving robot that could write messages in light when photographed using the option of long-exposure of a photo camera. During the preparations of the hacking activities, attention was paid to people's existing skills in the uncertain process of working in new group constellations. This allowed them to more consciously use these as a resource and anchor point in the process. Interviews with the participants showed that the participants who were involved in hacking a vacuum cleaning robot into the 'Persistence of Vision Robot' all had some expertise in programming software, making the step to include Arduino (www.arduino.cc/) rather easy. Furthermore, the expertise and background (in PD, Interaction Design and digital production technologies) of the moderators steered the participants in specific ways, thus influencing the end-results of the intervention.

The participants indicated that at the beginning of the intervention they were uncertain about the resulting artefacts. The issue they were dealing with via the intervention - hacking surrounding objects to give them a new life - was thus kept open for renegotiation and allowed them to redefine the relationships with the challenging context of Genk. However, the objects they brought with them already defined the outcome of the intervention as well as how the participants made their own take on the issue tangible. For example, the group that worked on the 'Persistence of Vision robot' started with a vague idea of moving robots and therefore

immediately recognized the potential of the vacuum-cleaning robot. Interviews with the participants also showed that their contribution of bringing objects was perceived as highly valuable in giving people a feeling of control over the uncertain activity they were engaging in. Although the familiarity of the objects that were brought comforted the participants in the starting phase of the hacking process, these objects gained a new kind of agency by connecting them to other objects through hacking. For instance, it was not until an Arduino Motor Drive Shield was connected to the vacuum-cleaning robot that the ‘Persistence of Vision Robot’ (see: Figure 3) was able to move.

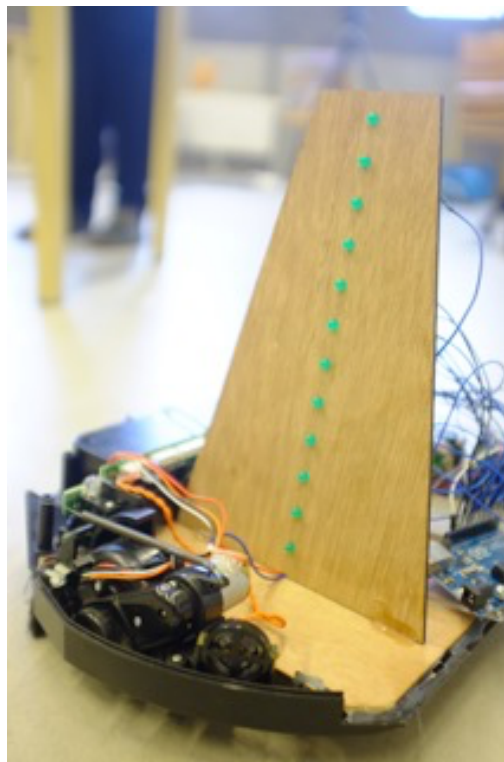


Figure 3. The ‘Persistence of Vision Robot’, created during the ‘Hack-a-Thing’ interventions

The intervening act of hacking felt uncomfortable to some who were more used to constructing from scratch. However, the process of online sharing - which is typical for hacking activities -

enabled rewarding changes in the relationships between the involved actors and their environment. For instance, by partaking in the interventions and sharing his design one participant, who co-created a coffee grinder, became part of an open source community, which - prior to the intervention - was unknown to him.

(2) In contrast to ‘Hack-a-Thing’ that worked with an open call, the second series of interventions focused on a pre-defined community. These interventions are framed within the ‘Fanlab’ project, in which Fablab Genk cooperated with screen-printing workplace KOPIJ (www.kopij.be) and the local football supporters group Drughi Genk. The intervention aimed at generating new ideas and creating tools that facilitate the actions of the football supporters as fans. As a reaction to a recent ban on banners in the football stadium of K.R.C. Genk, the participants created an open and activist toolkit for football supporters - and protesters alike - to intervene and communicate messages in public space.

At the start of the interventions, it became clear that all participants (being five members of the supporters group, two members of KOPIJ and two members of Fablab Genk) had different backgrounds and expertise. Collaboratively preparing the interventions was a first means for the participants to get to know each other and look for ways to work together. As all participants in the preparations of the intervention were equal, none of them took on the role of moderator since this would disrupt trust and the flow of the interventions. This open set-up kept the ways in which uncertainties would be negotiated very open, requiring much effort from the participants to negotiate their roles. Furthermore, being on an equal level also implied that the predefined roles of the actors shifted: participants became designers and vice versa.

Since most of the participants were not familiar with Fablab Genk, screen-printing techniques or making banners, this intervention started with exchanging knowledge about each others' skills and expertise. Similar to 'Hack-a-Thing', starting from their own skills and expertise provided people with some comfort in the uncertain activity they were going to engage in. The supporters group explained their working method for creating tifos (very large banners that often cover a whole tribune) and bandinieri (small banners or flags that can be raised by one person). For practical reasons, the intervention concentrated on creating bandinieri. The method they used for creating these banners is very time-consuming since the design and text is painted by hand, leading up to 12 hours of work invested in one single bandinieri. Furthermore, creating multiple bandinieri is always challenging since there is no automated way of reproducing a single design onto multiple banners.

By combining the knowledge and expertise of the involved participants, different tools were created to simplify the rather manual creation process of the banners (and allow for their reproduction). The toolkit consisted of a batch of wooden alphabet stencils and a stencil of the supporters group's logo, both created in Fablab Genk. Like in the 'Hack-a-Thing' interventions, the format of creating the tools was deliberately kept open and informal. This placed all actors on a 'horizontal level': the *laymen* (the supporters group) were considered as *experts*, equal to the design team. However, this also entailed a number of uncertainties: due to the open format of the intervention it was unclear for all participants what would be negotiated between them and what the outcome would be. Because of the engagement of participants in (preparing and participating in) the interventions and then using the toolkit for personal interventions in football stadia, the

ownership over the tools grew. This feeling of ownership was also extended in time by sharing the toolkit publicly. Although the call for participation was directed towards a specific supporters group, the results were openly shared through ‘Fab-moments’ (tutorials shared within the FabLab network), making it possible for others to use, adapt and reconfigure the toolkit.

The actions that took place in the intervention grew organically from the working methods each of the partners used on a daily basis. Exchanging knowledge and skills quite radically changed the hierarchical order within the supporters group. It allowed for making the different takes on the uncertain issue at hand - the ability to creatively express oneself in public space - tangible. Prior to the intervention there were two members of the supporters group (with graphical skills) who were in charge of designing the banners. After the working methods merged into the toolkit, other members became more strongly involved as graphical skills were no longer needed. The role of the more graphically skilled participants did not become superfluous, since the toolkit consisted of a limited set of elements with a specific graphical style. To design and create additional typographic and visual elements for the banners, the members of the supporters with graphic skills returned several times to Fablab Genk.

(3) Since Fablab Genk still did not sufficiently engage local inhabitants, we initiated a third series of - currently on-going - interventions called ‘The Other Market’. The goal is to see what kind of work, making-activities and skills are already present with the inhabitants of Genk and bring these to the surface, as a means to open an inclusive conversation on the future of work in the city. Here, we complemented the Fablab’s open activist approach with the Living Lab methodology. The first part of these series of interventions is initiated by a designer/researcher

who enters public space with the cargo bike. People can use a printing press mounted on it to create a poster that expresses and visualizes their skills. These posters attempt to resemble a shop sign and encourage participants to hang them in their window. By doing so, visual cues of the skills present in the city are created (see: Figure 4). The bike has integrated audio-visual equipment, which allows to record the process of making the sign, as well as the conversations (e.g. about how the skills of the participants are interwoven with their imagined future visions on work in Genk) triggered by it.



Figure 4. Visual cues of skills, created during 'The Other Market' interventions

Concerning the actors involved, the research team is a collaboration between research groups in Design (LUCA School of Arts) and Architecture (UHasselt) - both with a strong participatory focus - and Fablab Genk. The setup of these interventions was designed as inclusive as possible. The interventions target individuals - but remain open enough for specific groups to engage in - and potential bystanders of all ages, genders, cultures and communities. Therefore, it is uncertain who participates and in which constellation, since the interventions can be appropriated by whoever the bystanders were. When carrying out the interventions, we noticed that particularly young people (16-35 years old) are interested in participating. These participants are mainly technically skilled and finding a job is one of their biggest uncertainties at this moment, since there are little opportunities for skilled labourers. We noticed that these young participants are very sceptical towards initiatives trying to address this issue. Due to reorganisations or shutdowns of the mines and factories, their parents were sent home on early retirement at a very young age. This confronted young people in Genk with a deviating image of work. Involving them in 'The Other Market' thus requires us to immerse ourselves into their life worlds, using the interventions as ways to outreach. Since they are very much organised in cultural communities, this process also requires involving the groups they are already part of. Besides civil society and youth organisations, our main partner - and funder of the project - is the city of Genk, which strongly believes in a participatory policy. The city wants to co-design the interventions as a way to develop closer relations between the citizens and daily policy making. This puts us - designers/researchers - in an interesting position, for we are encouraged to develop mediating tools between the citizens and the municipality while still being able to cede some agency to both parties (e.g. by co-designing the events).

In the case of 'The Other Market' we moved both the preparation - that previously always took place in the Fablab - and the interventions to the public living areas of Genk. This public exposure made the designers/researchers more vulnerable since they entered the public space with unfinished artefacts. At several moments this confused participants about the goal of the interventions. For instance, the city of Genk expected clearly visible interventions with immediate results that can be quantified in policy documents and made public through official communication channels. However, we see the interventions as ways of prototyping our relations with the citizens, changing in character, intensity, depth and depending on the needs of the context and changing research questions over time. Since these interventions take place in public space, they are also much shorter than the previous 'Hack-a-Thing' and 'Fanlab' interventions and ask little commitment of the participants. This has generated some discussion within the design/research team and led us to question how these interventions can contribute to building long-term relations with the participants. So far, we have addressed this question by thoroughly documenting the interventions and the people taking part in them, using different types of media that allow people to see themselves represented through their own story and image. Furthermore, the contact details of all participants are collected so they can be invited to future (intervening) activities. Finally, the iterative nature of the interventions allows for a snowball effect, meaning that a passer-by who participates in an intervention is also invited to participate in the next one, maybe even taking on a more active role.

In the past months, the first series of the 'The Other Market' interventions have taken place. The main mediating objects are the shop front, the cargo bike, social media and the signs made by the

citizens, which are documented online and in posters. In the relation between the researchers and the city, the shop front was a way of building a clear partnership of trust since both parties were prepared to leave the nature of the Living Lab and its role in exploring work relatively open. The signs and linked stories are objects that explicitly travel publicly via posters and social media. This public character asks for a different attitude from researchers who are used to handle field data confidentially, citizens who are used to being anonymous faces in policy and policy-makers who have to get acquainted to a new approach to transparency in policy.

5. Discussion: interventions in infrastructuring processes

Referring to Mouffe (2007) and Latour (2005), we described interventions as a method in infrastructuring processes to make alternative voices and uncertainties around issues more tangible (see: Table 1 for a summary of our discussion). All interventions dealt with a slightly provocative issue/matter of concern, defined from the perspective of the designers/researchers. At the same time, the design/research team always left a high level of openness for participants to bring in something personal: an object from home, their skills, etc. However, each case dealt differently with this balance. In ‘Hack-a-Thing’, the main issue was deliberately left very open and was not explicitly communicated with the participants. This issue concerned ‘hacking our surrounding objects to give them a new life’, allowing youngsters to redefine their own relations with the challenging context of Genk. In contrast, ‘Fanlab’ dealt with a very focussed issue which was known in advance by all participants, namely allowing supporters groups to re-discuss an uncertainty they are dealing with: their ability to creatively express themselves in public space. Finally, in ‘The Other Market’, a semi-open issue was chosen, namely

communicating participants' own takes on work through expressing their personal skills, thus gradually opening the debate on work in Genk. The open and activist character of Fablab Genk, the used technologies and the website were all quite defining for how the issue was handled and thus steered the participants in a certain approach. Although the open and activist philosophy of the Fablab defined our approach to 'The Other Market', for the participants this was less clear. This resulted in more openness for them to define the context of these interventions. However, the used objects make clear that everything that was created in this process has a public character and aims for public debate.

Each of the interventions made uncertainties related to human actors tangible (see: Figure 5). In 'Hack-a Thing' and 'Fanlab', participants were brought together in unexpected constellations, forcing them to question each other's contributions to the issue. By combining different skills and expertise, unexpected results originated out of these interventions. Collaboratively giving form to the activist tools to make banners also challenged the different roles within the supporters group. The more graphically skilled members were no longer the only ones in the group contributing to making the banners, which opened up the internal discussion on group formation and goals. In 'The Other Market' anyone passing by was allowed to express his or her skills and opinions in relation to work in random moments in public space. This open invitation equalled an open exploration of who has and can have a voice in the public debate on work. The three series of interventions allowed multiple voices and uncertainties to be expressed in four phases of actions: invitation, preparation, intervention and aftercare.

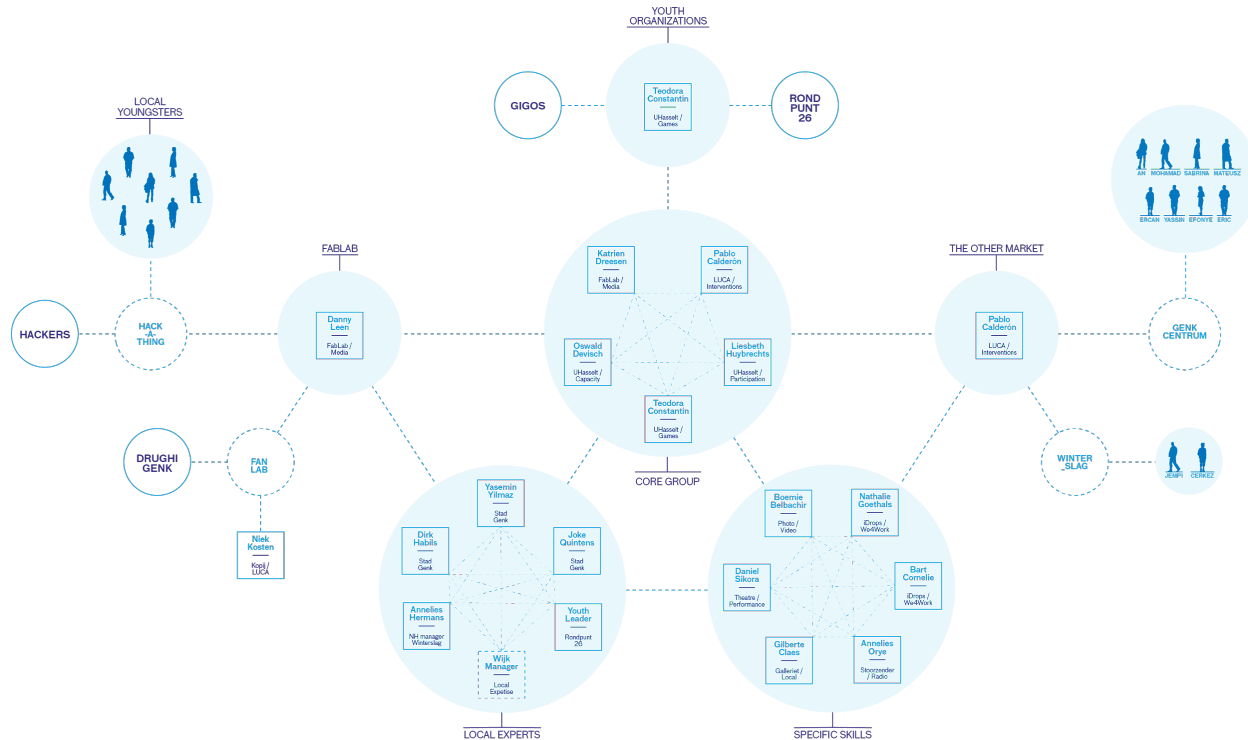


Figure 5. A visualisation of the uncertainties related to human actors in the interventions


With regards to the invitation in ‘Hack-a-Thing’, the designers did an open call to indicate that anyone is able to handle and change their surrounding objects. From the participants’ side, a simple email to express their interest was needed. In ‘Fanlab’, a specific supporters group was invited to make clear that we wanted to search together with them for a new voice in the public debate on visual expression in football stadia. The participants could simply attend an open meeting to express their participation and their uncertainties in doing so. In ‘The Other Market’, anyone who passed by was invited to participate. This explicit open invitation made peoples’ agency to participate in the public debate on work into a subject of discussion between the designers/researchers and the passers-by.

Each intervention - quite contrary to interventions using a 'hit-and-run tactic' (as described by Markussen, 2013) - paid specific attention to involving participants in its preparation. Sometimes the preparation phase was more important than the intervention itself. In 'Hack-a-Thing' and 'Fanlab' the hacking process was preceded by an elaborate exchange of knowledge and skills to discuss people's uncertainties on collaboratively hacking objects or the activist act of creating public banners. Next to this exchange of knowledge and skills, in 'The Other Market' and 'Fanlab' a snowball method was used. Community members who became involved in previous interventions were invited to co-prepare the tools and procedures for next interventions. Moreover, they were involved in discussing the uncertainties on how these interventions conducted the public debate on activism in football stadia or on work.

During the interventions themselves, people expressed their uncertainties in relation to the issues at hand. In 'Hack-a-Thing' and 'The Other Market' designers/researchers were present to facilitate exchange between participants and their tools for expressing their voice in the public debate on work or in hacking objects. However, in 'Fanlab' no designers/researchers were present in the intervention, since it was the community itself that intervened in the football stadia, using the activist tools that were co-designed with the designers in the preparation phase. The superfluity of the designer/researcher showed that the tools really fitted the context.

Also, in contrast with the 'hit-and-run' approach on interventions (Markussen, 2013), there was a special emphasis in the aftercare of the three (series of) interventions. This aftercare mostly consists of designers/researchers facilitating the sharing of hacked objects, created tools or visual output publicly via several physical and digital platforms and discussing people's uncertainties in

sharing publicly. In ‘The Other Market’, the aftercare also explicitly involved an invitation to be part and give form to next steps of the process, namely taking part in next public interventions and debates with policy makers, designers/researchers, property or technology developers, using their visually expressed skills as input.






		HACK-A-THING	FARLAB	THE OTHER MARKET	
INTERVENTION		HACKING OBJECTS	ACTIVISM IN PUBLIC SPACE	ACTIONS WITHIN NEIGHBORHOODS AND PUBLIC SPACES	
ACTORS		YOUNGSTERS, DESIGNERS AND PROGRAMMERS	FOOTBALL SUPPORTERS RESEARCHERS AND GRAPHIC DESIGNERS	RESEARCHERS AND PASSERS-BY (FOCUS ON YOUNGSTERS)	
MAKING UNCERTAINTIES TANGIBLE	DEBATE	INVITATION	OPEN CALL	PERSONAL INVITATION	ENCOUNTERS
		PREPARATION	FACILITATE KNOWLEDGE EXCHANGE	FACILITATE KNOWLEDGE EXCHANGE	ITERATIVE/ CODESIGN
		INTERVENTION	HACKING OBJECTS		ACTIONS IN PUBLIC SPACE
	ACTIONS	AFTERCARE	ONLINE SHARING	ONLINE SHARING	CO-DESIGN OF MEDIA AND PUBLIC DEBATES
		EXP. OF INTEREST	CONFIRMATION OF ATTENDANCE	ATTENDING OPEN WORKSHOPS	ENGAGING WITH MOBILE MARKET
		PREPARATION	BRINGING OBJECTS TO HACK	CO-DESIGNING TOOLS AND PROCEDURES	CO-DESIGNING INTERVENTION
		INTERVENTION	COLLABORATIVE HACKING	INTERVENING IN FOOTBALL STADIA	CO-CREATE SIGNS THAT VISUALIZE SKILLS
	AFTERCARE	SHARING HACKED OBJECTS	SHARED ONLINE AND IN PUBLIC SPACE	SOCIAL MEDIA/ PARTICIPATION IN LL	
	MATTER OF CONCERN		OPEN ISSUE (NOT COMMUNICATED TO PARTICIPANTS): "GIVING OBJECTS A NEW LIFE"	FOCUSED ISSUE (CLEAR TO PARTICIPANTS): "A RECENT BAN ON BANNERS IN GENK'S STADIUM"	OPEN ISSUE (PARTLY COMMUNICATED TO PARTICIPANTS): "WORK" SEEN THROUGH "SKILLS"
	OBJECTS		HACKING OWN OBJECTS TO CREATE NEW ALTERED OBJECTS	CREATE NEW TOOLS FOR THE PRODUCTION OF BANNERS	MOBILE MARKET/ VISUAL SIGNS/ MEMBERSHIP CARDS
					

Table 1. A summary of our discussion on interventions in infrastructuring processes

6. Conclusion

Describing and analysing three series of interventions has made clear that these can play an important role in infrastructuring processes, addressing an important challenge for design and long-term participation. Interventions prevent designers/researchers to close down a design

process too easily or to reach consensus via apparent rational decision-making processes. Interventions rather make uncertainties and a polyphony of voices in decision-making processes tangible. However, learning from our experience, we also want to stress the importance of designers/researchers and participants to use some handlebars - or reference points - in this process of intervening. We will explicate our conclusions using three clusters: actors, objects and actions.

In some interventions the group of actors was initially undefined, but gradually led to working with specific people in preparing, conducting and caring for the interventions. In 'Fanlab', the group of actors was very specific but was later opened up to other supporters groups. Although inviting specific groups can exclude interesting voices in the debate on the issue, it also helps to quickly do something meaningful for a specific community. The open approach of 'Hack-a-Thing' and 'The Other Market' allows anyone and also unexpected people to enter the debate. Simultaneously, it takes much longer to achieve meaningful results that the community can adopt. Therefore, the qualities of infrastructuring probably lay in combining both approaches.

We have seen how the open character of certain tools and spaces used for interventions can support infrastructuring processes (by allowing different actors to express their own voice). In the case of Fablab Genk, its space and tools are rather predefined (Gershenfeld, 2005), which may limit the appropriation by the community. In turn, the spaces and tools in 'The Other Market' were much more undefined and open for co-creation by the participants. This moment of negotiation allows for a constant balancing of power and ceding of agency between the different actors. The downturn is that this constant negotiation takes time and might create some

kind of ‘fatigue’ within the participants, as most of the times they might not see tangible results soon. We state that it is important that there are some spaces and tools already predefined, whilst others should still be allowed to be re-negotiated (thus enabling participants to have agency and balance power relations over time).

Each intervention was defined by a rather open, but also slightly provocative script of action: ‘hacking old appliances and objects’, ‘creating an open toolkit for football supporters to intervene and communicate messages in public space’ and ‘creating open tools and platforms to surface activities and skills, present with the people living in Genk’. At the same time, all interventions were, to a great extent, defined by the participants themselves. In ‘Hack-a-Thing’ participants brought old appliances with them, so they co-defined the objects involved. In ‘Fanlab’ we started from the supporters group’s current practices to co-design procedures and tools for communicating their messages in public spaces. In ‘The Other Market’ we triggered participants to create signs displaying their skills for co-creating the future methodology of the public debates taking place in the Living Lab. Asking the participants to bring something - or start from something personal - allowed them to feel in control while taking part in these open interventions and helped them to deal with numerous uncertainties.

Furthermore, the openness of the actions for many uncertainties was compensated by engaging the participants in a longer trajectory (not only being passive participants in the moment of an intervention, but being involved in the preparation, execution and care of further interventions). Although it can cause feelings of discomfort among participants and designers, the public exposure of all these phases makes everyone’s voices and uncertainties in the infrastructuring

process very transparent. In the preparation phase, a public exchange of skills and knowledge is a way of making the different takes on an uncertain issue tangible. Thanks to this phase, during the interventions objects, ideas and issues can gain new agency, acquiring a value beyond the individual designers and participants. 'Fanlab' showed that this could radically change hierarchical relations within groups. In the aftercare phase publicly sharing the process, tools, issues etc. allowed the interventions to be picked up by various publics: hacking communities, supporters groups, communities concerned with work issues, etc. Some interventions were more 'careful' than others: 'The Other Market' explicitly invited the participants during the interventions to become co-creators of next interventions, while in the other two this remained implicit. To conclude, by balancing carefully between provocative actions from designers/researchers and input from participants in all phases, the ownership of the participants over the interventions and the infrastructuring process can be increased.

To summarise, literature shows that changing work models have required a reframing of PD's approaches to work. Infrastructuring processes allow co-design - like work processes in general - to become more interwoven with daily life. We used Latour's (2005) understanding of uncertainties as a lens to evaluate how interventions can contribute to address uncertainties in a long-term infrastructuring process (Huybrechts, Dreessen & Schepers, 2015). It became clear that interventions can play a fruitful role in infrastructuring processes addressing work when great care is taken over the democratic character of the whole making process of the intervention: from its invitation to the aftercare. Building on these insights, we want to further reflect upon the challenges and pitfalls in how PD has dealt with design for work in the past.

7. References

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II. Recents cv of participants

-- Katrien Dreessen

Katrien Dreessen (1980, Genk, Belgium) is a researcher at the research group Social Spaces (research unit 'Inter-Actions', Luca, school of arts/KULeuven) and teacher at Luca, school of Arts in Genk. She is currently involved in several projects that are situated on the intersection of design research, healthcare and open production. Furthermore, she is also conducting a Phd research on FabLabs and how these open workplaces can become places of *infrastructuring*.

PROFESSIONAL EXPERIENCE

2008 - ongoing

Researcher at Social Spaces|CUO research group (research unit 'Inter-Actions'), Luca, school of arts, Campus C-mine, 3600 Genk.

Teacher at Luca, school of arts, campus C-mine (Communication and Media Design).

2013 - ongoing

Phd student - Social Sciences, KULeuven

Research projects

2014 - ongoing:	Innovatief woonzorgconcept Sint-Jozef Neerpelt
2012 - ongoing:	Design op Maat (OPAK)
2010 - ongoing:	MAP-it 2010 (Institute for Research in the Arts, KULeuven)
2013 - 2014:	Mobiel Design Lab (Provincie Limburg/Vlaamse Gemeenschap)
2013 - 2014:	Multitouch Genk (Provincie Limburg)
2011 - 2014:	FabLabs in de grensregio (Interreg)
2011 - 2014:	Creating Spaces (EFRO)
2011 - 2012:	Participation is risky (Mondriaan Foundation)
2008 - 2011:	Open Garments (EU FP7)

Education

2012 – 2015: Coaching Master's thesis (year 4, Communication & Media Design)
FabLab/Sugarlab module (year 4, Communication & Media Design)
Participatory Practices (year 3, Communication & Media Design)
Reporting (year 2, Communication & Media Design)

2007 – 2008:

Staff member for Senator/City council member Guy Swennen - City of Bilzen.

2006 – 2007:

Researcher at IBBT-SMIT, Vrije Universiteit Brussel, Pleinlaan 9, 1050 Brussels.
Teaching assistant at Vrije Universiteit Brussel (Communication Sciences).

Research projects

- 2006 - 2007: EU FP6 Integrated Project Citizen Media
2006 - 2007: IBBT ROMAS (Research on Mobile Applications and Services)
2006 - 2007: IBBT MADUF (Maximize DVB Usage in Flanders)

EDUCATION

2002 - 2005: **Vrije Universiteit Brussel**
Communication Sciences - specialisation 'Politics, Media and Citizenship'
Master thesis:
'De ideeënfabriek van sp.a-spirit: een voorbeeld van een online consultatie in Vlaanderen'

1999 - 2002: **Hogeschool Limburg, Hasselt**
Communication management - specialisation 'Corporate communication'

PUBLICATIONS

Braet, O., Ballon, P. & Dreessen, K. (2006, August), '*Cooperation Models for Mobile Television in Europe*'. Paper presented at the 17th European Regional ITS Conference, Amsterdam (The Netherlands).

Pierson, J., Jacobs, A., Dreessen, K., Van den Broeck, I., Lievens, B. & Van den Broeck, W. (2006, September). *Walking the interface: uncovering practices through proxy technology assessment*. Paper presented at EPIC 2006, Portland (USA).

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Hendriks, N., Dreessen, K. (2011, July). *Your map or mine: visualising involvement for the development of eHealth projects*. Paper presented at Design4Health Conference, Sheffield (UK).

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Schepers, S., Dreessen, K., Huybrechts, L. & Laureyssens, T. (2013) MAP-it: the art of designing a participatory mapping method. *Knowing (by) Designing. Proceedings of the conference ‘Knowing (by) Designing’ at LUCA, Sint-Lucas School of Architecture Brussels, 22-23 May 2013*, pp. 275-282.

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Schoffelen, J., Huybrechts, L. & Dreessen, K. (2013) *Please resuscitate! How to share a project concerning self-management in diabetes to enable participants to elaborate on it after project completion?* Paper presented at Design4Health Conference, Sheffield (UK).

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Dreessen, K., Schepers, S., Leen, D., Luyten, K. & De Weyer, T. (2015). Break-it, hack-it, make-it: the ‘Hack-a-Thing’ workshops as a showcase for the integration of creative thinking processes into FabLab Genk. In C. Coletta, S. Colombo, P. Magaudda, A. Mattozzi, L.L. Parolin & L. Rampino (Eds). *A Matter of Design. Proceedings of the V STS Italia Conference 2014*, Milan, STS Italia.

-- Liesbeth Huybrechts

Liesbeth Huybrechts (1979) is a Postdoctoral researcher in the area of participatory design and planning in the research group Arck (University of Hasselt). Her PhD research 'Participation is Risky' dealt with the risky trade-offs that designers, artists and participants engage in when being involved in participatory processes (Group Literature and Culture, Cultural Studies KULeuven). She was head of research of the research unit Inter-actions, researcher and lecturer in higher art education (mainly in the InteractionDesign Department) in Genk, LUCA School of Arts/KULeuven. In this context, she was active researcher in and co-founder of the research group Social Spaces (www.socialspaces.be), exploring the social meanings, uses and applications of design and art. Moreover, she is active as a freelancer in (exhibition/workshop) projects, writing assignments in the media, art and design field and in mentoring masters Social Design in Design Academy of Eindhoven. She published the book Cross-Over. Art, Media and Technology in Flanders' (2003) and more recently, "Participation is Risky. Approaches to joint Creative Processes" in collaboration with Valiz, BAM, Mondriaan Foundation en het Kunstendecreet. She is currently involved in the research project Traders (FP7, Marie Curie), dealing with the exploration of definitions and practices of Participatory Design and Art in Public Space (www.tr-aders.eu) and WeforWork Genk, researching contemporary workspaces and forms in participatory ways, after the closure of one of the most important employers (Ford factory) in the region of Limburg (Belgium).

Experience

2013-2014: Head of Research Inter-Actions, LUCA/MAD Fac/KHLim : 17.62 VTE researchers (of which

1.3 administration en 0.5 communication = 1.8 ATP) and 36 researchers in total.

2011- 2013: Head of Research Faculty of Art and Architecture, FAK:

<http://associatie.kuleuven.be/fak/>

2010-...: Head of Board Constant vzw. Association for Art and Media. Brussel.

2007-2014: Researcher Cultural Studies, KULeuven and Social Spaces (Media, Art and Design Faculty, Genk): www.socialspaces.be.

2005-2011: Phd research Cultural Studies, KULeuven.

2004-2007 Researcher Experience onderzoeksgroep, Media&Design Academie Genk.

2007-...: Editor e-cultuur nieuwsbrief Steunpunten IBK/IAK Vlaamse Gemeenschap

2007-2008: curator tentoonstelling Place@Space Z33. Relatie mens-kunst-media-ruimte/Relation media/art/space.

2004-2007: Curator Platform Limburg Beeldende Kunsten, a platform for contemporary arts in Limburg.

2004: journalist Cultural television programme "Nachtwacht", Canvas, Cultural radio programme "Alinea" op Klara.

2002 - 2006: main editor News en Cultural radio programme "À propos" on Radio Scorpio (volunteer)

Art/design work

I have co-developed (I always work in collectives) design/artistic research methods like MAP-it

(www.MAP-it.be), the Scenario Game (<http://cultivatingcommunitieshaspengouw.wordpress.com/2013/09/03/workshop-conflict-designtriennale/>), UseWell (<http://www.usewell.be/#/playchallengecards/>), ZitGoed (<http://www.zitgoed.be/>) and artefacts like the Multitouchable project Creating Spaces (<http://www.z33.be/projecten/creating-spaces>). Also I curated several exhibitions, which I also see as an output of a creative process (see Place@Space, Freespace in Z33, Out of Curiosity in Dortmund E-Culture Fair).

A sample of publications (complete list <https://lirias.kuleuven.be/cv?u=U0045429>)

*Huybrechts, L., Schoffelen, J., Hagenars, B. (2014). Make-and-tell in Haspenwood: on generativity in sustainable design. *PDC '14 Proceedings of the 13th Participatory Design Conference: Short Papers, Industry Cases, Workshop Descriptions, Doctoral Consortium papers, and Keynote abstracts: Vol. 2* (1). Participatory Design Conference. Namibia, 1-10 October 2014 (pp. 37-40). New York: ACM.

*Schepers, S., Dreessen, K., Huybrechts, L. (2014). Hybridity in MAP-it: how moderating participatory design workshops is a balancing act between fun and foundations. *NordiCHI '14 Proceedings of the 8th Nordic Conference on Human-Computer Interaction: Fun, Fast, Foundational: Vol. 8* (1). NordiChi. Helsinki, 26-30 October 2014 (pp. 371-380). New York: ACM.

*Huybrechts, L. (2014). Participation is Risky. Approaches to Joint Creative Processes. Antennae series, 13. Amsterdam, Netherlands.: Valiz.

*Schoffelen, J., Schepers, S., Huybrechts, L., Braspenning, L. (2013). Making design representations as catalysts for reflective making in a collaborative design research process. *FORMakademisk*, 6 (2), art.nr. 9, 1-14.

*Schoffelen, J., Huybrechts, L. (2013). Sharing is caring. Sharing and documenting complex participatory projects to enable generative participation, *Interaction Design and Architecture(s)*, 18 (1), 9-22.

*Huybrechts, L., Dreessen, K., Schepers, S. (2012). Mapping design practices: on risk, hybridity and participation. *Proceedings of the 12th Participatory Design Conference: Vol. 2* (12). Participatory Design Conference. Roskilde, 12-16 August 2012 (pp. 29-32). Danvers, MA: ACM. C1 publication in ACM conference proceeding.

*Huybrechts, L., Coenen, T., Laureyssens, T., Machils, P. (2009). Living Spaces: A Participatory Design Process Model Drawing on the Use of Boundary Objects. In Pipek, V. (Ed.), Rhode, M. (Ed.), *International Reports on Socio-Informatics (IRSI): Vol. 6* (2). 2nd International Symposium on End User Development (EUD 2009). Siegen, 2 March 2009 (pp. 6-21) Internationales Institut für SozioInformatik. C1 conference/journal publication.

Research projects

1.9.2013-1.9.2017: Training Art and Design researchers in participation in public space Marie Curie Project (ITN/FP7). Partners: Media, Arts and Design Faculty, Architectuur KULeuven, Architecture

Technical University Chalmers Sweden, Art and Design Göthenburg University, Architecture Royal

College of Art, Public Space Design Academie Eindhoven, kunstencentrum Z33, STBY, Studio E,
 KOMPAN, City of Gothenburg

1.2.2014-1.2.2015: Backstories. (research on the documentation of artistic and design research processes via 'documentation games'. Kunstendecreet Vlaamse Gemeenschap

1.1.2014-30.12.2014: ZitGoed! (research on the participatory design of furniture). Funded by the CiCi (Creative Industries), the Flemish Ministry of Innovation (Ingrid Lieten), executed by Flanders DC and IWT

1.10.2013-30.09.2014: Mobile design Lab. How media and design can mediate interactions of care in multicultural communities. Funded by Design Hub Limburg and Flemish Community (coordinator)

1.11.2009-1.9.2012: Participation is risky. A design and book project on participatory media, art and design. Funded by Kunstendecreet Flemish Community, BAM and Mondriaan Foundation. Partners: BAM, Valiz Publishers and Virtueel Platform

1.1.2011-30.04.2013: A Touch of Memory, Designing Internet-of-Things technology to enhance the quality of life of/with people with dementia. IBBT/ICON. Partners: CUO, VUB/SMIT, WiCA, EDM, Nascom, GS1, Televic, Pyxima (coordinator).

1.10.2009-31.12.2012: PWO. GimmeGimme... A Game. Games en education. KHLIM, EDM, PHL,
 KULeuven

1.3.2010-31.3.2012: EFRO. GameHub. KHLim, EDM, Groep T, PHL

1.9.2010-31.8.2011: Interreg. A Euregional Fablab. Partners: EDM, Z33

7.1.2007-1.7.2008: Mijn Ervaring (2007-2008). How media and design engage participation of citizens in mining heritage. Funded by Koning Boudewijn-stichting

1.3.2007-30.6.2007. Carefree Living in Elderly Care/Zorgeloos Wonen in de ouderenzorg (2006-2007). Participatory design of quality of living for/with elderly in elderly care. Imagocampagne ouderenzorg.
 Funded by: Province of Limburg. Available at: <http://experiency.be/zorgelooswonen/index.html>

1.3.2007-1.3.2010: Institute For Research in the Arts (KULeuven): Interface our Space. MAP-it, a participatory mapping toolkit

1.3.2008-28.02.13: EFRO. Creating Spaces 2. Research in the participatory use of multitouch technology in the cultural field. Partners: Media&Design Academie. Expertisecentrum Digitale Media (Philip Bekaert en Johannes Taelman), kunstencentrum Z33

1.7.2010-30.6.2011. Flanders In Shape (IWT). UseWell. Roadmap for User Centered Design. KHLim
 (MDA), KULeuven (CUO), Alcatel Lucent, Pyxima, Usentric, STBY, @tit (coordinator and participating researcher)

14.6-25.8.2010: Out of Curiosity. A video-installation on e-culture education in Belgium and the Netherlands and Germany. Provincie Limburg en E-culture Fair.

-- Selina Schepers

Selina Schepers graduated in 2009 as a Master of Philosophy (mPhil) in Cultures of Arts, Science and Technology at the University of Maastricht, The Netherlands. Currently, she is part of the research group Social Spaces and coordinates several design research-related courses at the Media, Arts & Design-faculty. Since 2010, she participated in various research projects such as 'Open Garments', 'Euregionaal FabLab' and "Hack-a-Thing". Since 2012, she is coordinating research group Social SpacesICUO.

Professional experience

2010 – present

LUCA School of Arts, campus C-mine (Genk, BE)

Researcher and research coordinator at Social Spaces I CUO (research unit 'Inter-Actions')

Teacher, Communication & MediaDesign

Research projects

2014 – present *TraPIST – Train Passenger Information for Smart Travel* (iMinds, ICON)

2013 – present *TRADERS – Training Art and Design Researchers for Participation in Public Space* (FP7, EU)

2013 – 2014 *MELoDiA – Music Eductainment Looking at the Digital Age* (iMinds, MIX)

2013 – 2015 *Innovatief Woonzorgconcept Sint-Jozef Neerpelt* (Stad Neerpelt)

2011 – 2012 *Participation is risky* (Mondriaan Foundation)

2010 – 2011 *Euregionaal FabLab* (EFRO / Interreg)

2010 – 2011 *Open Garments* (FP7, EU)

2010 – ongoing *MAP-it* (Institute for Research in the Arts, KU Leuven)

Teaching experience

2011 – present *Coordination and coaching 'Research project' (year 3, cross-disciplinary)*

2014 – present *Coaching Bachelor's thesis (year 3, Communication & MediaDesign)*

Coaching Master's thesis (year 4, Communication & MediaDesign)

Education

2007 – 2008

Maastricht University, Faculty of Arts & Social Sciences (NL)

Master of Philosophy in 'Cultures of Arts, Science and Technology'

Thesis: Schepers, S. (2009) 'Creative images: the portrayal of male and female scientists as creative beings since the late seventeenth century.'

2004 – 2007

Maastricht University, Faculty of Arts & Social Sciences (NL)

Bachelor of Arts in 'Arts & Culture', Specializations: Media & Culture and Art, Science & Culture

Publications

- Schepers, S., Huybrechts, L. & Dreessen, K. (2011) MAP-it: on friction, risk and releasing control. *Research Design Journal*, 2.11, pp. 32 – 38.
- Dreessen, K., Huybrechts, L., Laureyssens, T., Schepers, S., & Baciù, S. (2011). *MAP-it. A participatory mapping toolkit*. Leuven: Acco.
- Huybrechts, L., Dreessen, K. & Schepers, S. (2012). Mapping design practices: On risk, hybridity, and participation. *PDC 2012. Embracing New Territories of Participation. Proceedings of the 12th Participatory Design Conference. Volume 2: Exploratory Papers, Workshop Descriptions, Industry Cases*. Roskilde University, Denmark.
- Huybrechts, L., Schoffelen, J., Schepers, S. & Braspenning, L. (2012). Design Representations. Connecting, Making and Reflecting in Design Research Education. In: Boutsen, D. (Ed.), *Good Practices. Best Practices. Highlighting the Compound Idea of Education, Creativity, Research and Practice*. Antwerp: EPO, pp. 35-39.
- Huybrechts, H., Dreessen, K. & Schepers, S. (2013). The role of ‘openness’ in participatory design research. *10th European Academy of Design Conference, 17 - 19 April 2013, Gothenburg, Sweden. ISBN 978-91-979541-5-0*, pp. 1 - 13 [Refereed Conference Paper].
- Schepers, S., Dreessen, K., Huybrechts, L. & Laureyssens, T. (2013) MAP-it: the art of designing a participatory mapping method. *Knowing (by) Designing. Proceedings of the conference ‘Knowing (by) Designing’ at LUCA, Sint-Lucas School of Architecture Brussels, 22-23 May 2013*, pp. 275-282.
- Schoffelen, J., Huybrechts, L., Braspenning, L. & Schepers, S. (2013) Making and reflecting via playful design representations. *Knowing (by) Designing. Proceedings of the conference ‘Knowing (by) Designing’ at LUCA, Sint-Lucas School of Architecture Brussels, 22-23 May 2013*, pp. 685-694.
- De Weyer, T., Taelman, J., Luyten, K. Leen, D., Schepers, S. & Dreessen, K. (2013) *Hack-a-thing: A Series of FabLab Genk Workshops for Reusing and Repurposing Depreciated Objects*. The First European Fab Lab Conference FabLabCon 2013, Aachen, Germany, September 9, 2013.
- Schoffelen, J., Schepers, S., Huybrechts, L. & Braspenning, L. (2013) Making design representations as catalysts for reflective making in a collaborative design research process. *FORMakademisk, Vol.6, Nr.2, Art. 9*, pp. 1-14.
- Huybrechts, L., Schepers, S. & Dreessen, K. (2014). Participation and Risky Trade-offs. In: Huybrechts, L. (Ed.) (2014). *Participation is Risky: Approaches to Joint Creative Processes*. Amsterdam, NL: Valiz.
- Huybrechts, L., Lee, Y., Schepers, S. & Ho, K.L. (2014). Participation and Hybridity. In: Huybrechts, L. (Ed.) (2014). *Participation is Risky: Approaches to Joint Creative Processes*. Amsterdam, NL: Valiz.
- Dreessen, K., Schepers, S., Leen, D., Luyten, K. & De Weyer, T. (2014). Break-it, hack-it, make-it: the ‘Hack-a-Thing’ workshop series as a showcase for the integration of creative thinking processes into FabLab Genk. *A Matter of Design: Making Society through Science and Technology. Proceedings of the 5th STS Italia Conference*. Milan, 12-14 June 2014.
- Schepers, S., Dreessen, K. & Huybrechts, L. (2014). Hybridity in MAP-it workshops: a balancing act between fun and foundations. *NordiCHI’14. Proceedings of the 8th Nordic Conference on Human-Computer Interaction: Fun, Fast, Foundational*, pp. 371-380.

-- Pablo Calderón Salazar

Pablo Calderón Salazar (1985, Bogotá, Colombia) is a designer and researcher living in Brussels. He studied Industrial Design (bachelor level) at the Jorge Tadeo Lozano University of Bogotá, Colombia (2008) and Social Design (Master in Design) at the Design Academy Eindhoven (June 2013). He recently started (March 2014) a PhD in the Arts with the group Social Spaces at LUCA/KULeuven, in the wider context of the project TRADERS (Training Art and Design Researchers for Participation in Public Space). The essence of his practice lies in collaboration with local partners in the different contexts where his projects take place, where he empathically interprets the interests of different constituents, using dialogue as his main tool.

Experience

RESEARCHER. Social Spaces – MAD Faculty. Genk (BE), 2014 – Ongoing

INDEPENDENT DESIGNER. Self-employed. 2008 – Ongoing

SOCIAL DESIGN INTERN. Stichting Freehouse (Jeanne van Heeswijk). 2013-2014

ACADEMIC INSTRUCTOR. Jorge Tadeo Lozano University. Bogotá, 2009-2011

COMMUNICATIONS DESIGNER. Global Ethics Foundation. Bogotá, 2008-2011

Participations

WHAT DESIGN CAN DO (For Public Space – Breakout session). Amsterdam, The Netherlands. 2014.

(Co-organizer) FREEHOUSE: Radicalizing the Local. International Symposium – Rotterdam, The Netherlands. 2014.

Dissecting Process. DAE Master Symposium – Eindhoven, The Netherlands. 2013

PKN Eindhoven #8 & PKN Rotterdam – The Netherlands. 2013

MILESKM RESIDENCY - Utrecht, The Netherlands. 2013

WHAT DESIGN CAN DO (Breakout session: *All design is political*) – Amsterdam, The Netherlands. 2013

SUMMER SCHOOL NOP – Nordoostpolder, The Netherlands. 2012

FORO: TRANSFORMACIÓN SOCIAL DESDE EL DISEÑO INDUSTRIAL – Bogotá, Colombia. 2012

WELCOME TO ST. GILLES! Liège, Belgium. 2012

MAKE-DESIGN RIGA! Dutch Design Made in Latvia Riga, Latvia. 2011

TIME-SPACE INTERFACES. workshop with Klaus Krippendorff. Bogotá, Colombia. 2011

Exhibitions

ENACTING PROTEST? A Performance Exhibition. Leuven, Belgium. 2014.

SELF-UNSELF EXHIBITION, The Other Market in collaboration with A Place For Trust. Milán, Italy. 2014.

GRADUATION SHOW DAE 2013, The Other Market (Master Graduation project). Eindhoven, The Netherlands. 2013.

TODAYS ART 2013, THE NEW INSTITUTE'S HOT100. The Hague, The Netherlands. 2013.

GRADUATION SHOW DAE 2012, FRIENDS OF THE ACADEMY. Eindhoven, The Netherlands. 2012.

RECIPROCITY, INTERNATIONAL DESIGN BIENNIAL. Liège, Belgium. 2012

UTRECHT MANIFEST, BIENNIAL FOR SOCIAL DESIGN. Utrecht, The Netherlands. 2012.

Education

PHD Luca, school of Arts/KULeuven – PhD in the Arts. Public space and participation 2014 (started).

MASTER Design Academy Eindhoven – MDes Social Design 2013.

COURSE Universidad Jorge Tadeo Lozano — Design Pedagogy 2009.

BACHELOR Universidad Jorge Tadeo Lozano — Industrial Designer 2008.

Recognitions

FELLOWSHIP Marie Curie Actions Research – Selected as a Marie Curie Actions Research fellow, for the project TRADERS. 2014 – 2017.

SELECTED as one of the top 100 graduates in the arts, media and technology by The New Institute. 2013.

GRANT Colfuturo – Selected as beneficiary of the Loan-Scholarship program for the period 2011-2013.

SELECTED as member of the self-evaluation committee for the accreditation process of the Industrial Design program of the Jorge Tadeo Lozano University. 2010

SELECTED to participate in the “design pedagogy” course (teachers training) from the Industrial Design program of the Jorge Tadeo Lozano University. 2008

Publications

{Author / Editor} *It is what it is.* Social Design master Thesis. Design Academy Eindhoven. Non indexed. June 2013.

{Author} *Más allá de la Primera Bienal de Diseño de Estambul.* On ForoAlfa. Non indexed. May 2013.

{Contributor} *Alphabetalog: An anti-manifesto by Design Academy Eindhoven formulates a possible ABC of design teaching.* On ABITARE 529, Non indexed. February 2013.

{Co-author} *Making something out of nothing.* Interview to Gunter Pauli. On Source #7: What if we were all producers?. Non-indexed. Design Academy Eindhoven, 2012.

{Author} *En el caso de las disciplinas creativas, ¿son éstas las que modelan el perfil de los estudiantes o estos los que modelan el perfil de la disciplina?.* En **Diseño y Educación (cuadernos de diseño industrial)**. Indexed. Bogotá, 2010.

III. an indication of technical or other requirements for the contribution / presentation.

Our contribution takes the form of an extended article and a live presentation of two large maps/visualisations of the processes, documenting how diverse constellations of actors, actions and matters of concern take form and shift through the interventions over time. Building on Latours' (2005) uncertainties, we specifically focus on the uncertainties that are associated with these constellations to gain an understanding of how interventions enhance or inhibit the quality of the infrastructuring process.

Depending on the number of audience members,

1. small number: we would like to place the maps on the floor so that people can stand around them and on them and give them tools to engage with the maps
2. large number: hang the maps in front and structure a live presentation via navigating through them

This means that technically we need:

1. a place to hang the maps and some tools to do so;
2. a piece of empty floor to place the maps.