

MAKER CULTURE IN URBAN PLANNING

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ABSTRACT

The maker culture, born in makerspaces, FabLabs and hackerspaces, is beginning to influence and inspire actors engaged in urban development. Its open approach to emergent technologies and sharing and collaborative practices are celebrated for enhancing democratic and sustainable production processes that give people agency and control by becoming makers instead of consumers. To understand the complexities of engaging values and practices of this growing culture in urban development this thesis has, through an ethnographic critical case study, investigated a planning process in Nordvest, Copenhagen. The area renewal project and the local youth club, aiming to empower the youth in the disadvantaged neighbourhood, are building a makerspace, engaging local makers and designing a maker educational program. The target group, where 90% have another ethnical background than Danish, has challenges related to self-confidence, positive contact with adults and a high risk of ending in crime environments, as well as difficulties in school.

By focusing on self-empowerment and entrepreneurial aspects, that dominant voices and owners of maker business promote, the institutions might fail in truly empowering the youngsters to challenge the structures that have given them the disadvantage position in the first place. Instead of giving them the tools to challenge the structures of power that contribute to create exclusive and unequal societies, they are promoting neo-liberal values that contribute to reinforce those power structures.

Critiques have pinpointed that the maker culture, although promoting itself as opened and accessible, is exclusive due to the uneven demographics of its community, where the majority are well-educated white men. It is positive that the public institutions are opening a makerspace for a group that isn't represented in this culture, nevertheless they might face challenges in motivating the youth to become makers due to the fact that technology are associated with white and well-educated men.

Even though there are power structures that might need to be considered and challenged in urban maker projects, a maker approach in planning is shown to have innovative potentials regarding experimental participatory processes that can include groups that otherwise don't participate in local development projects.

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PREFACE

While I was writing this master's thesis, I got offered a position as a Technology Guru at FabLab RUC, where I'm going to start after finishing my studies. This means that I'm going to work within the scope of the culture I have studied in this thesis. I hope that the critical questions and aspects that I have approached and discussed in this work will help me be ongoing critical in my practice and help me develop the maker movement towards being more democratic, equal and inclusive.

I want to thank David Pinder for his constructive feedback and flexibility and family and friends for their support.

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INTRODUCTION



Figure 1 – “Build our square” at Smedetoften (Områdefornyelse Nordvest 2018)

In the summer of 2017, an urban experiment took place in Copenhagen in the neighbourhood of Nordvest, more specifically in an area called Smedetoften. For one day, a local FabLab, *FabLab Nordvest*, opened the doors of one of their shipping containers placed in the area and invited the neighbourhood youngsters inside. The shipping container holds a big a CNC-machine, which is a computer-controlled cutting machine that they used to cut designs of outdoor furniture (see figure 1). Funded by the area renewal project, *Områdefornyelse Nordvest*, FabLab experts and the neighbourhood youngsters built

FABLAB

Fabrication Laboratory is (usually) a user-driven digital fabrication and computation workshop, equipped with a range of emergent fabrication and digital technologies.

MAKER

Make refers to a subculture that drives makerspaces, hackerspaces and FabLabs.

outdoor furniture, based on the open models designed by Better Block¹. The furniture was made for the grey and poorly furnished public square located in the back of the local youth club, *Klub Bispebjerg*. Sharing a will to improve the area, the public institutions saw in the success of the experiment a range of possibilities to empower the youngsters and bring a new identity to the neighbourhood. A set of projects, all around the idea of fostering a maker community in the area, with the support and engagement of FabLab Nordvest, are now under development. These are the planning projects I will investigate in this thesis.

Planning presupposes a wish of intervening and making a change, it gives direction and form to the development of society (Jensen et al. 2007). My aim by looking at this planning process is thus to understand which interventions and changes the ones involved envision, why they are inspired by the maker culture to achieve the intended change and how they are planning to use it as a tool to form the development of Smedetofte. The maker culture is a relatively new phenomenon that, for the last few years, has inspired several public and private institutions, scholars and politicians worldwide to think in new ways of developing society, especially related to developing local and sustainable means of production and technically empower communities and citizens (Smith et al. 2017). Ideas that also have reached actors engaged in urban planning, as in the case of Smedetofte where Områdefornyelse Nordvest and Børne- og Ungdomsforvaltning (Children and Youth Administration) are planning to promote the development of a maker community in the neighbourhood. Given being a movement in its early stages, arising out of experimental laboratory facilities and entering wider social contexts it seems to me important to investigate to what extent it contributes to a more democratic, equal and inclusive development of society. Inspired by critical theory, that with its roots on Carl Marx' thoughts, underpins how liberal ideas and capitalistic economies create unfair and inequality societies (Brenner 2012), I aim to ask critical questions regarding the potentials and pitfalls of using new tools and practices in urban development. Having in mind that critical theory is not only committed to exposing the forms of power that create unjust and uneven societies, but also committed to shedding light into emancipatory alternatives (Brenner 2012), I want to question whether the maker movement has such an emancipatory quality or if it its merely a new product of neo-liberal structures and contributing to an ongoing conflictual

¹ *Better Block Foundation is a 501(c)3 nonprofit that educates, equips, and empowers communities and their leaders to reshape and reactivate built environments to promote the growth of healthy and vibrant neighborhoods (Better Block Foundation 2017)*

society. A question I think important to discuss particularly when the movement proclaims itself as revolutionary.

The revolutions

In a talk for TED in 2007 Neil Gershenfeld, professor at Massachusetts Institute of Technology (MIT) and director of the Center of Bits and Atoms, claimed that they, at MIT, were at the edge of a third digital revolution. Gershenfeld explained that, after the world had been through a digital revolution in communications, due to the birth of the internet, and in computation, by the invention of the computer, the third revolution was then about to happen, now in fabrication (Gershenfeld 2007). He recognised this when beginning to experiment with his students at MIT at what they called a FabLab (Fabrication Laboratory) (see figure 2), coding, not the virtual world this time, as in digital communication and computing, but the physical one (Gershenfeld 2007).



Figure 2 – A typical Fab Lab, according to fablabs.io (FabFoundation n.d.)

Connecting bits and atoms, using computation methods and the new fabrication tools, such 3D printers and laser cutters, they started exploring the possibilities of digital fabrication. Gershenfeld observed that the students at the FabLab developed very personalised objects that responded to their very individual needs; he called it the “market of one” (Gershenfeld 2007). With access to digital tools and fabrication technologies students at the FabLab at MIT could now ideate, draw, compute and built their own very customised products. The concept was also taken abroad. In Ghana and India Neil Gershenfeld observed that personal fabrication could be used to empower communities, help them develop tools that otherwise

would be unavailable or unaffordable, and find very customised solutions for the very local challenges (Gershenfeld 2007).

In the book *Makers – A new industrial revolution* (2012), Chris Anderson, tech-journalist and entrepreneur, argued some years later that a new industrial revolution was taking shape by looking at how the maker-movement evolved. He claimed:

“The idea of a factory is, in a word, changing. Just as the Web democratised innovation in bits, a new class of "rapid prototyping" technologies, from 3-D printers to laser cutters, is democratising innovation in atoms.” (Anderson 2012:14)

He saw this new revolution as a democratisation process. According to Anderson, everyone could get access to and knowledge on digital tools and fabrication technologies which gave them the chance to come up with an idea, prototype it, get help online to optimise it and become small-entrepreneurs doing what they are passionate about (Anderson 2012).

The maker movement emerged, when technology enthusiasts, in the early days of Silicon Valley, started playing with technology. They were just playing without any a goal in mind: “They learned by making things and taking them apart and putting them back together again, and by trying many different things” (Dougherty 2012:12). A maker can be described thus, as a person that makes things because he or her is curious about how some technological artefact works and learns about it by experimenting and playing with it. The internet gave these makers the possibility to connect, becoming an important aspect of the maker culture. Sharing and posting ideas, projects and guides online are, in fact, one of the drivers of this community. The movement is not only driven by making things, it is also committed to the idea of sharing and collaborative learning (Anderson 2012). Such values combined with the new digital and fabrication tools, are seen to be the potential promoters of a bigger change in society. Technical universities and technology enthusiasts aren't alone celebrating the movement. Jeremy Rifkin, an economic and social theorist, author to the book *The Zero Marginal Cost Society* (2014), argues that this movement can grow from being a “hobbyist-subculture to a new economic paradigm” and “change the way civilization is organized in the twenty-first century” by “easing us out of the capitalist period and into a collaborative era” (Rifkin 2014:99). But how is this capitalist period going to be overcome if the ones celebrating it, still talk in languages of markets, products, individual needs, and entrepreneurial promises?

The technological development within fabrication technologies that Gershenfeld, Anderson and Rifkin envision revolutionary assumes to some extent that the access to technologies is in itself going to determine the development of society. With a different understanding of how change is achieved, critical urban scholars, that have focus on structural aspects of society, can help me questioning on to what extent the maker culture can truly promote a change towards a more democratic and equal society.

Inspired by Marx's critiques of capitalism, critical urban scholars such David Harvey have pointed out how neo-liberal forms of power promote social inequality in our cities (Brenner 2012). This understanding can be an important one to draw from when studying how the FabLabs and the maker culture is being used in city planning. Peter Marcuse, that more explicitly explores alternatives, envisions a "City for People, Not for Profit". He believes that if the focus is taken from capital and put on people, the city might promote the coalition of the "oppressed and alienated" and "give birth to a new city" (Iveson 2013). Can the maker culture respond to these critiques and present possible alternatives for the way cities are structured and organized by giving people access to technologies at FabLabs, shifting the power from manufactures to the people? Can it promote more democratic and inclusive cities, overturning power structures controlled by neo-liberal politics by letting people produce their one goods, instead of being dependent on markets and governments? Before celebrating a possible shift, it might be important to ask some critical questions too. How is the maker culture ensuring equal access to FabLabs and makerspaces? Is everyone able to become an entrepreneur? Should a democratic society promote the development of products for individual need?

A growing movement

It can be discussed in what extend the maker culture is bringing a social revolution. Gershenfeld was looking into a very controlled laboratory facility and predicting a revolution and Andersons predicts a revolution assuming everyone has the same access to technology and information. But the fact is that fabrication technologies have become cheaper (Space10 2017a), online shops where one can buy the components necessary for personal fabrication are growing (Adafruit 2016), and the popularity of FabLabs and makerspaces is increasing worldwide (Thompson 2018). The makers don't meet only at FabLabs, they meet as well in hackerspaces and makerspaces. Briefly, a FabLab is a maker space concept developed originally by MIT in 2001 and an organised network managed by the FabFoundation. Hackerspaces are places where hackers gather and experiment with software and hardware, users at

hackerspaces usually have high-technological skills. Makerspaces are user-driven technological spaces where people make things alone or together at shared facilities.

The increasing interest in opening FabLabs is a phenomenon I recognised. As a student working at FabLab RUC, founded in 2008, I often meet people at the Lab coming from educational institutions around Denmark, to learn how we run the FabLab at RUC. It is my impression that the maker community in Denmark is growing and becoming more established. There are seven FabLabs around the country certified by the FabFoundation (FabFoundation n.d.). In the city of Copenhagen there are two: The Copenhagen Fablab, founded in 2013, located at a public culture house in Valby, is an open-access, municipal and user-driven facility where everyone can walk in and use it (Copenhagen FabLab 2018); The other is a user-driven and non-profit FabLab at Nordvest, established in 2014 and the one studied in this thesis, where users need to be members and pay a monthly fee of 150kr (FabLab Nordvest 2017a). Recently the city council of Copenhagen has launched a pre-fabrication facility, inspired by the maker movement, aiming to be a platform for makers to meet and a platform where they get help to develop and scale up their projects. Memberships cost from 500kr to 1500kr per month (Underbroen 2018). This facility is a member of and neighbour to, the new urban innovation hub BLOXHUB, where Danish companies, organizations and researches that work within the field of urban planning are brought together (BLOXHUB 2018). The presence of this makerspace in such an innovation hub that houses the most prominent actors engaged in developing new urban solutions and projects, might have an influence on how the maker culture and the fabrication technologies will be used in future urban developments. Recently the Danish Design Center, also a member of BLOXHUB, started a national consortium called FabDanmark, that aims to foster local, sustainable and circular production inspired by the ideas of the global initiative FabCity, a network of cities committed to bring production back to cities relaying on ideas and technologies related to the concept of FabLabs (FabDanmark n.d.). Finally, another meaningful actor in Denmark is Maker, the co-founder of Underbroen. Maker organises a maker festival in Copenhagen every year where the Nordic maker community and technological frontrunners meet (Copenhagen Maker n.d.; Underbroen 2018). There is in addition a range of libraries and universities in Denmark that have also have makerspaces (Kjærulff, Hilmer Rex, and Jensen 2017).

This brief sketch of the how the maker movement is taking shape in Denmark, more particularly in Copenhagen, emphasizes that it is indeed a growing culture, not only at the grassroots level but also at the institutional level. The way institutions working within the urban context are getting inspired by the maker culture and fabrication technologies is a phenomenon I find interesting and want to investigate

further in this thesis. I am, however, aware that it is being unfolded differently depending on which scale of planning I chose to look at. There are often contradictory rationalities, strategies and practices in the different levels of planning (Jensen et al. 2007). The municipality's intentions in taking part in BLOXHUB, FabDanmark and Underbroen are most probably different than the intentions the area renewal project has for Smedetofte. The overall city strategies are often more concerned in increasing the city's competitiveness in a global economy, while local initiatives are more concerned with aspects of inclusion, empowerment and bottom-up democracy (Jensen et al. 2007). Therefore, choosing to look at the plans and projects at Smedetofte, I am aware that I will generate knowledge related to how the maker culture and FabLabs are shaping urban planning in a local scale. My contribution will thus be reflections and perspectives on how the maker culture and fabrication technologies relate to inclusion, empowerment and bottom-up democracy. Nevertheless, I hope that this research contributes with discussions that also can inform more broadly planning strategies that often neglect these aspects (Jensen et al. 2007).

Research question

With the following overarching research question, I want to get more solid base to reflect upon how the maker culture can shape our future and the future of our cities:

How is the maker culture shaping urban development?

Studying the case of Smedetofte I want to create an understanding on how the maker culture is shaping urban development. I will therefore investigate what a FabLab, the fabrication technologies and global maker movement can promote in a neighbourhood, and investigate what else it takes, despite access to technologies, to build a maker community and improve a disadvantage neighbourhood. With an understanding on these issues I wish to contribute to a discussion on how the maker culture can promote places of real inclusion and true democracy and push urban development towards a more inclusive paradigm.

Thesis Outline

In the first part of the thesis I draw a framework that will help me answer the questions I have posed in the second part of the thesis.

I will have in mind, inspired by the critical theoretical approach, the importance of historical and contextual understanding when building social knowledge. To produce knowledge one must understand the context of the subject studied, since social processes are a result of an historical and social change (Brenner 2012). Critical theory is however not interested in all knowledge, but more focused on “how oppositional, antagonist forms of knowledge, subjectivity, and consciousness may emerge within a historical formation” (Brenner 2012:16). It is these conflicts that enable the critique (Brenner 2012). I will therefore need to gain an understanding on how the maker movement has evolved, and what conflicts there might be in how it is understood and put into practice, which is done in the *Maker Culture* chapter. I will as well need to understand the area of Smedetofthen and the actors involved, and their interest in engaging with the maker movement to improve the area, material I have collected in my empirical work which I present in the chapter *Studying Smedetofthen* and elaborate on in the analytical part of the thesis.

The following outlines the structure of the thesis.

Maker Culture

This chapter contributes to an understanding on the development of the maker culture. It will address the technical and social developments that have influenced the growth of the maker culture, to give an understanding of how it has evolved. Based on critical discussions from various authors that have studied the maker community, aspects of empowerment and inclusion are debated. These debates will inform the later analysis on this matter. Finally, a range of innovative potentials that have been celebrated by various institutions concerning the revolutionary potential of the maker culture are presented to inform the later discussion on how engaging maker culture in urban development can lead to an innovative development of the city.

Studying Smedetofthen

In this chapter I will start presenting the context of study and afterwards the methodological approaches taken. It will present the considerations to be made when making a case study, based on ethnographic work that in this study was conducted by observations and interviews, also presented in this chapter. I have also based my understandings on document analysis of the projects planned for Smedetofthen, where the institutions engaged express their visions and plans.

Plans and intentions

In this chapter I describe and analyse how the actors, individually and collectively, envision the projects they have launched for Smedetofthen. Firstly, I will describe the context in which the plans have come about and afterwards analyse how the maker culture is understood in this project and how it is seen to contribute in improving the area. To help me address these issues I have posed the following question:

What are the plans and intentions of FabLab Nordvest, Områdefornyelse Nordvest and Klub Bispebjerg in creating a maker community at Smedetofthen?

This question will mainly be answered based on the analysis of the empirical material collected through the official documents, the interviews and initial informal conversations with the interviewees.

Empowerment and Inclusion

In this chapter I analyse how the projects at Smedetofthen are using maker culture to empower the neighbourhood youngster and promote inclusion, and look at how, in this case, empowerment as a planning tool aims to improve the area. My intension is to discuss the potential and pitfalls of using ideas and practices from the maker culture to respond to problems of inclusion and empowerment in an area renewal project. I will therefore work with the following question:

How do the maker projects at Smedetofthen seek to promote empowerment and inclusion and what implications can be involved when using maker culture as an approach to promote these aspects?

It will draw on the discussions about empowerment and inclusion in the maker culture, mentioned in the chapter above, as well as discussions on empowerment in urban planning.

Innovative potentials

Lastly, I want to discuss how the maker culture can innovate urban development. I want to relate the innovative aspects of the maker culture, that Smith et al. (2017) argue are attracting institutions, to the case in question and reflect upon how these innovative potentials match the visions and plans of the institutions engaged in the projects at Smedetofthen. My intension is to discuss how the innovative aspects that have been identified in this case, apply in the context of urban planning. Second, having studied a real case, I want to contribute to the discussion that question to what extend the maker culture should

be adopted by institutions or not to truly unfold its innovative potential. I will hereby discuss the following question:

How can the innovative potentials of the maker culture be unfolded in urban development?

MAKER CULTURE

This chapter presents the technological and social changes in society argued to have influenced the growth of the maker culture as well as how they are seen to contribute to those changes. This will be put in perspective to aspects related to urban studies and planning issues, drawing on discussions related the case studied and examples where elements of the maker culture have been applied in urban projects. The chapter draws on arguments from different authors that have studied the maker movement and makerspaces in different countries. Their focus is mainly on the social aspects of the phenomenon. They raise critical reflections on the issues, which will be set in perspective to aspects related to urban planning relevant for a further analysis of the projects at Smedetofthen.

Technological developments

The rapid growth of the maker movement and makerspaces, FabLabs and hackerspaces, is argued to be related to the technological development that happened the past decades (Anderson 2012; Davies 2017; Diez 2012; Smith et al. 2017). The movement has at the same time adopted and contributed to the development of new fabrication technologies. The appropriation of fabrication technologies by more and more people is related to how accessible such technologies have become. Technologies as 3D printers, laser-cutters, CNC-machines and micro-controllers have felt significantly in price. For instance, one can find a 3D printer on the market today for under \$300 (Yusuf 2018) which is a noteworthy decrease from the amount of \$50.000 five years ago (Miller 2016). There are free online guides, made by the maker community, on how to build a home-made CNC-machine spending only around 350\$ on materials² and there is free software available online, like TinkerCAD to draw 3D designs and Inkscape for 2D design and vector graphics. Regarding electronics, the Arduino, a cheap micro-control, has made easier for non-skilled people to enter the world of programming and electronics. Many guides and projects created in Arduino are also shared online and well documented for other people to use (B_E_N n.d.).

The development of the internet and the user-friendly platforms for sharing and accessing content made possible for many people to connect to a global network. Knowledge doesn't belong to individuals or

² See: <http://www.instructables.com/id/Build-Your-Own-CNC-Machine-1/>

academic institutions only. Knowledge relies on collaboration and lives in the network (Diez 2012). Makers are combining the power of the Web, where people and ideas connect and grow, with the fabrication technologies, and thereby connecting bits to atoms and opening the way for a new industrial revolution (Anderson 2012). The digital aspect of the designs allows them to be shared and improved by the network and be produced everywhere using the accessible fabrication technologies (Davies 2017). By setting up the concept of a workshop equipped with the same digital and fabrication technologies, the FabLab, Niel Gershenfeld envisioned a collaborative process where designs made at a FabLab could easily be produced in another a FabLab in another part of the world (Smith et al. 2017). The falling cost of fabrication technologies, the development of free software, the digital aspect of designing and the online collaboration platforms have in part allowed the growth of the maker movement. There are, however, also some social developments in society that influenced such a development.

Social developments

If needing to explain to people where I work and what a FabLab or a makerspace is, I always refer to the Do-It-Yourself (DIY) culture, and say “It’s the same, but with machines like 3D printers and laser cutters, electronics and programming”. For the less curious that is enough, as the DIY culture seems to be known by many. Sarah R. Davies have studied hackerspaces across the US (2017), reflects on the developments she sees resonating with the growth of hacking culture, addressing the DIY movement to explain why people started making and building things. The years that followed the financial crisis of 2007 made it acceptable to re-use and repair (Davies 2017). Repair cafés opened in several cities, where people got help and learned how to fix things themselves. Despite being a cheaper way to get along, it was also a way of gaining new skills giving for example young people new perspectives on employment (Davies 2017). This goes along with the fact that many young people didn't trust institutions and corporations any longer, like educational institutions or food producers, and start home-schooling their children, growing their food and trying to live a self-sufficient lifestyle (Davies 2017).

Davies argues that the acts of crafting, whether it’s baking, gardening, preserving or building are also understood as acts of taking control. She cites Wehr, that also has studied the DIY culture, which defends that people are DIY-ing not only to save money but because they feel powerless:

“The world, Wehr writes, feels ‘increasingly unmanageable’: governments ignore us, our workplaces make decisions over our heads, and terrible, tragic things happen to us, our families and people on the other

side of the world. By DIY-ing anything from our education to home decor or food supply, we seek to live our lives outside of the control of experts or bureaucracies, and to rely on our own knowledge and know-how. We ‘take back’ some agency.” (Davies 2017:40)

The DIY movement is also discussed in the urban context. While DIY as described above, is more focused on the individual agency and looking in-wards, the forms of DIY that have been identified taking place in urban spaces, are more focused on collective issues related to contesting common space and looking out-wards (Iveson 2013). What they have in common is, that by taking action, the DIY’ers are questioning power structures and presenting alternatives. DIY urbanism is for example community gardening, flash mobbing, retail cooperatives, occupation of empty buildings, graffiti, skate boarding, etc. (Iveson 2013).

DIY and “Making” share the starting point of being responses to the fact that some people became tired of being mere consumers. Making as an alternative to consumerism imposed by capitalist structures is defended by Anderson (2012) and Diez (2012), when they explain the reasons of a growing maker movement. While this might be a reaction to neo-liberal ideas where people are seen as being mere consumers, the movement, it has been argued, has nevertheless been appropriated by these very structures (Davies 2017; Smith 2017). Examples are websites as Instructables and Thingiverse, where users can download free blueprints and how-to-guides. These platforms are owned or sponsored by producers of personal fabrication technologies that use these new sharing platforms to familiarise makers with their services and technologies (Smith 2017). Another example is the corporation Maker Media (Davies 2017; Smith 2017; Smith et al. 2017). Maker Media is a division of O’Reilly, and an IT media business, that produces and sells magazines, books, guides, kits and tools to makers. The co-founder and CEO, Dale Dougherty, has a strong influence in defining what the maker movement is, and how it should evolve. He has published a document called *Maker Mindset*, a guide to educational institutions that help them transform their students into makers (Dougherty 2012). He is also the Board Chair of MakerEd, a non-profit organisation that promotes and supports institutions in including the maker culture in education (Maker Ed n.d.). The public institutions in Nordvest refer to the Maker Mindset document and use it as a model to develop program for the youth club (Børne- og Ungdomsforvaltningen n.d.). The size of the media and the dominant voice of its founder has been highlighted as problematic. The way Dougherty and others business owners within the maker industry have boosted the movement as revolutionary can limit its truly revolutionary potential. Such a discussion can be compared to the early

days when Apple claimed that the personal computer would promote empowerment of the users, but didn't let them see or modify the source code:

“Just as most of us are handcuffed by the blackboxed settings of our operating systems or iPhones, a commercialized maker movement runs the risk of allowing us to tinker only within certain pre-defined limits.” (Davies 2017:124)

Having a corporation set the agenda of a possible revolutionary movement can be problematic. It can limit what is allowed to be questioned if corporate interests are put in front of community or societies interests.

Regarding DIY practices in urban spaces, these too can become appropriated by capitalist power structures. They can valorise properties and boost neighbourhoods and thereby increase price speculation and accelerate processes of gentrification (Tonkiss 2013). An aspect that should particularly be considered when public institutions, as the ones working at Smedetofte, are encouraging DIY practices in a neighbourhood where the majority of the citizens, due to their economic and social conditions, might be vulnerable to such processes. Gentrification in Nordvest is actually already happening as Linda Lapina, author to a PhD about gentrification in Nordvest, underlined in a tour I made in the area, organized by the Architecture Festival this year.

Empowerment

The movement has also attracted the attention of governments. Davies argues that the dominance of neo-liberal structures has led to the rise of the individual responsibility (Davies 2017). One is expected to take a pro-active engagement regarding employment, education and healthcare. Davies exemplifies this explaining how people today are expected to choose the right training to be able to compete with others, in contrast to older days when social structures defined people's future.

“In a world in which we are expected to ‘make our own opportunities’ we are faced with continual choices – choices which are liberating, but which may also be overwhelming. What work should I do? Who do I want to be intimate with, and how? Where should I live? Ultimately: who am I? The hacker spirit, and its expression in the maker movement and related forms of serious leisure like DIY or crafting, fits squarely into these dynamics in that it can help individuals consider these kinds of questions.” (Davies 2017:198)

Davies is aware that personal empowerment is important, but she argues that it overlooks solidarity, giving an example of some North American families. Families wanting to have access to organic grocery products started buying products from local producers. In this way, they insured only the quality of their food but didn't change the overall quality of the food chain that people with fewer resources still rely on (Davies 2017). Not everybody has the same preconditions and opportunities to be self-empowered, but if governments are dependent on the presumption that it is an individual responsibility to change their lives, most probably it will result in societies with high levels of inequality. Makers are expected to be pro-active and engaged and to give something back to the community (Davies 2017), but what if one doesn't have the conditions to behave as such? Are makerspaces and the maker movement still for everyone, as makers are claiming?

Empowerment has also been a matter of discussion in planning studies. While the neo-liberal approach to empowerment is focused on the individual ability to be economical sustainable but ignores issues related to the inequality structures of the economic markets, a transformative empowerment approach is committed to fighting aspects of inequality, seen as products of neo-liberal power structures (Andersen 2007). It is focused on supporting underprivileged groups by encouraging collective action through improving their socio-economic, socio-cultural and living conditions (Andersen 2007). The latter approach is often used as a tool in local urban planning, for instance in area renewal projects (Jensen et al. 2007). I find interesting to investigate how this empowerment approach might be applied in the process of building a maker community in Smedetofte, since the DIY and maker culture, as mentioned above, has been accused of building upon a more individual and exclusive mindset.

Exclusion and inequality

Exclusion and inequality are debated aspects, in the critiques of the maker movement. Smith highlights the uneven demographics in makerspaces. Different studies have shown that around 80% of the users/members are male and white and many have formal education (Smith 2017). Sarah R. Davies reflects upon this issue by drawing on Putnam's discussions of social capital and the terms bonding and bridging social capital (2017). Bonding is understood as an "inward-looking" activity built around the shared interests for fabrication technologies, making or hacking. Bridging, as an "outward-looking" activity is by Davies interpreted as the ambition of makerspaces to be open to everybody and inclusive places (2017). Davies puts into discusses the extent to which bonding social capital is being produced only based on the shared interest in making things. Highlighting the demographics, she questions if

bonding isn't also happening around the fact that members share intellectual, economic and social backgrounds. When bonding social capital occurs between groups of well-educated white men, it can complicate the production of bridging social capital, which makerspaces claim to have:

“The irony is that these are the people who are least likely to require the empowerment that so many hackers and makers talk about their practices as bringing. By defaulting to the ‘dominant culture’ of the wider tech community, hackerspaces run the risk of neutering the power of hacking and making, and of turning it into just another hobby for the middle classes.” (Davies 2017:99)

There are nevertheless some groups of makers aware of such challenges. Christina Dunbar-Hester studied a group of maker activists that engaged in promoting technical engagement to combat uneven levels of expertise and political participation related to technological know-how (2014). The group aimed to promote the maker identity and helped empower communities giving them technical knowledge and tools. Dunbar-Hester observed that this group encountered challenges related to the promotion of the maker identity (2014). She refers to studies that have shown that technology for a long time has been associated with white masculinity and criticises that fact that the maker movement isn't considering this legacy (Dunbar-Hester 2014).

Considering that Klub Bispebjerg has 90% youngster with a non-western background, it can be an important consideration to have in mind what kind of activities the youth club offers and how these activities are promoted, particularly because they express in the documents, a wish to empower the youngsters at Nordvest by offering them a maker program at the club and expect to engage experienced makers in this project as role models for the youth (Børne- og Ungdomsforvaltningen n.d.).

The potentials of the maker movement

In the book *Grassroots Innovation Movements* (2017), Smith et al. studied makerspaces among other grassroots initiatives and their potential to foster social innovation. They argue that the majority of users of such workshops are still just experimenting with the technologies and exploring their possibilities, only a few places have engaged with social, political or economic dimensions (Smith et al. 2017). However, the new technologies used in makerspaces, the way they are used, and the values the community promote have caught the attention of scholars, public institutions, and businesses that envision this development as one that might have a significant impact on society. Smith et al. identify five different aspects that mobilise people into the movement:

- Free software, free hardware and peer production
- Personalized manufacturing, mass customisation and a new industrial revolution
- Democratizing power of technological citizenship
- Unlocking grassroots innovation
- Sustainable developments.

(Smith et al. 2017)

Firstly, the authors point out the sharing and collaborative culture that allow working processes independent of classic institutions. The majority of makerspaces have rules regarding sharing the designs made within the workshops. Everything coming out of the workshops should be shared freely online, allowing others to reuse and modify. One reusing a design only needs to acknowledge the sources. Commons-based peer-production is a common practice, as in the collaborative production of open-source software, where different people collaborate in making and improving designs that is made possible by the modularity allowed by digital design. Unlike more traditional professional projects, these creation and production methods allow for a de-centralised and self-managed development (Smith et al. 2017). This commons-based peer-production has inspired several organisations, one being the P2P foundation. This is an international non-profit organization committed to study and promote peer-to-peer initiatives, and that believes in the power of collective creation of commons goods, based on open and participatory production to change the economic and social paradigm we live in (P2P Foundation 2018). It is interesting to see how the sharing and collaboration mindset born in the maker movement is being unfolded and applied in other aspects of society, inspiring and promoting a bigger social change. What possible repercussions will the creation of a maker community have for Nordvest if such values like commons-based peer-production and sharing and collaborating practices, start inspiring other organisations?

The second innovative potential that Smith et al. highlight is that the movement is seen as having the potential to transform production and fabrication, making it more personalised, challenges classic ways of mass production. This is an aspect that the FabCity initiative has unfolded and is working on. The FabCity is global initiative lead by IAAC, Center for Bits and Atoms, the Barcelona City Council, and the FabFoundation that aims to explore a new model for cities. The objective is lowering cities' environmental impact and empowering socially engaged citizens, by using cutting-edge technology to foster local-production. By promoting local production, they believe that more materials will be recycled,

and production will in a greater extent be meeting local needs (FabCity 2018). By doing this, they believe in the possibility of building cities that are self-sufficient and globally connected using the power of the maker movement and the global FabLab network (Ajuntament de Barcelona n.d.). But while they are putting forces into finding new ways of doing local production and finding sustainable solutions, they might be overseeing an important aspect of city development, such as inclusion and empowerment, as the following example discusses.

In the summer of 2016, SPACE10 – IKEA’s external future-living lab located in Copenhagen and the FabCity Research Laboratory created the first prototype of a FabCity. A group of very skilled people worked together for 5 days in temporary Lab facilities at Poblenou in Barcelona to experiment with recycling and up-cycling. Using collected garbage to re-design products with fabrication technologies, they claimed to have demonstrated “how productive a neighbourhood can become when its inhabitants are empowered by the knowledge, tools and infrastructure necessary to make and remake products locally and sustainably” (Space10 2017b). But which empowered inhabitants? The ones who only spent five days there? Local makers were participating as well, but were they representative of the people that live and use the neighbourhood? Experiments should not overlook local challenges and social aspects, especially if they are used as arguments for a more permanent implementation. Is Smedetofte a better example of how FabLabs and the maker culture can be implemented in an urban context, where social challenges and local conflicts are being considered in its implementation?

The third framing that attracts people into the maker movement is that this movement is allowing more people to engage with technology, promoting free access, free learning and sharing practices that question traditional institutions concerning property, ownership and control (Smith et al. 2017). The ideas and concepts identified in the maker culture have not yet reached out significantly and impacted on society in a way that have changed entirely the way we live, consume and produce (Smith 2017). But some examples show how the maker culture has the potential to become a more significant agent of change. The following example highlight this potential, that goes beyond personal fabrication and entrepreneurial dreams.

An exciting project that emerged within a FabLab that explored ways of democratising technology is the Smart Citizen Kit project (see figure 4). It was a crowdfunded project developed by FabLab Barcelona and Institute for Advanced Architecture of Catalonia (IAAC) that started in 2013.



Figure 3 - Smart Citizen Kit (IAAC Barcelona n.d.)

Using low-cost sensors, they developed a kit that lets citizens measure air pollution, noise and humidity, generating data that can be shared and analysed in an open source data platform (Smart Citizen n.d.). It gives the citizens the possibility of gathering data, which usually is collected by municipalities, states or big corporations, with which they can build open data platforms. It's an attempt to give citizens tools that can be used to raise political awareness. Having graphs and numbers can help in making a strong argument. The project is also an attempt to try to show how citizens can be engaged in the making of the Smart City (Smart Citizen n.d.).

The fourth aspect, highlights the innovative power makerspaces might have for local communities. This framing is not focusing on the transformative aspects related to production and consumption but is instead focusing on the possibilities of real-life experimentation:

“Workshops are conceived of not so much as heralding an industrial transformation or wave of democratization, but rather as places where ideas relevant to local communities can be explored in practice.” (Smith et al. 2017:108)

The fact that a local community gets a shared facility where they can build and create things is in focus here. It’s not the material possibilities given by high technological facilities that are celebrated, but the social possibilities given by the free access, the training and the reflections that such spaces can give local communities.

Lastly, there is a frame looking at the sustainable elements that are or can be promoted within such cultures and workshops. This framing claims that making things connects people with objects, which foster a reflexion on consumerism and material culture (Smith et al. 2017). There are some makerspaces having a strong focus on sustainability, but many raise only a little awareness regarding sustainable practices (Smith 2017). Davies tells how she mainly sees 3D prints of "cheap plastic crap" in hackerspaces and Smith et al. observe how “crapjects” fill the shelves and bins of makerspaces (Davies 2017; Smith et al. 2017). Makerspaces might be places where people can learn how to use emergent technology and promoters of individual ways of production as an alternative to mass-production, but if they don't raise awareness regarding questions of sustainable practices, they will fail, as the mass production industry failed in this regard (Smith 2017).

Smith et al. argue that makerspaces should engage with the institutions that are celebrating these above mention aspects if the maker culture is to achieve their transformative potential, but they also recognize that there might be some challenges in such a collaboration. This discussion is interesting regarding the this investigates that looks at how planning and educational institutions at Smedetofthen are using the maker culture in a planning process and in an education program.

On one hand, they pinpoint that if makerspaces collaborate with institutions it can reduce the levels of experimentation and lower the degree of autonomy of such spaces (Smith et al. 2017). If makerspaces and FabLabs are to engage with institutions, which they often do to get funding, they will need to engage

with specific strategies and deliver some results (Smith et al. 2017). It can be challenging for makerspaces to run under institutions because institutions often find it difficult to understand and embrace activities that are unstructured, open-ended and flexible (Smith 2017). When workshops are appropriated by dominant economic, political, social, cultural or research institutions, these expect such places to achieve some goals which can steal focus from the development of more innovative pathways and create challenging conditions for members of makerspaces to question these agendas, according to Smith et al. This is relevant to have in mind when considering that a maker community is being fostered by public institutions in Smedetofte.

On the other hand, Smith et al. question if independent workshops alone can become serious promoters of social change and open up for alternative paths (2017). They are not proposing to merely institutionalise such workshops but rather suggesting collaboration between these different agents:

“If workshops are to realize alternative development pathways, activists and sponsors will require strategies to counter inhibiting structures, retain autonomy from some institutions and influence the shape of new institutional forms. There is a long way to go in order for the socially transformational aspirations to materialize in practice. The ideas and experiments are there in workshops, and they point to inspiring possibilities for anyone pushing for wider changes in economy, society, politics and culture.” (Smith et al. 2017:121)

Will Holman, the general manager of OpenWorks, a makerspace in Baltimore, also recognises that makers and makerspaces have a great potential, but that this potential is not truly unfolded yet (2015). He refers to educational institutions, as colleges and libraries, that already provide access to shared resources and are ubiquitous and sustainable platforms and argues that makerspaces need, like educational institutions, to offer that “*institutional stability*”. This stability will help makerspaces achieve a broader impact on local communities, education and grassroots economic growth (Holman 2015). He mentions that there is little proof that makerspaces to date have empowered their members to the point of giving them ways to make a living or given them anything more than basic DIY-skills (Holman 2015).

Summary

The lower prices and the easier access to fabrication technologies are technological developments that have influenced the growth of the maker culture. Socially, people’s wish to take control and become independent of markets and governments that have led society into economic crisis have also influence

the growth of maker culture. It comes to terms when some people started making instead of consuming, whether it was making robots or gardening they started gaining agency and taking control over their lives. This self-empowerment is celebrated, but also criticised because it overlooks aspects of solidarity. Critiques also pinpoint that the maker culture isn't considering how structural aspects of society impede some disadvantage groups in society of participating equally in the maker community. Discussions on the demographics of makerspaces are shedding light into the difficulty of imposing the maker identity to others than the ones who dominate the community, namely white and well-educated men. The maker movement is, however, celebrated as enhancing innovative potentials related to production, democratisation of technology, and promoter of local experimentation. The maker movement might need to collaborate with institutions be able to unfold these potentials, but at the same the institutions might inhibit the movement of reaching its revolutionary potential.

In conclusion, I will leave you with Davies remarks on how contradictory the culture is being understood:

“Hacking is something that will both change the world and that is primarily meaningful at the level of individual satisfaction and self-actualization. It is edgy and counter-cultural but also readily commodified. It is a radically alternative way of looking at the world and something that is excitedly adopted by mainstream educators. It celebrates a self-reliant, DIY ethos but is being framed as the solution that businesses and national economies need to spark their growth. It is a relaxed leisure activity but also a means of empowerment and transformative social change.” (Davies 2017:128)

These contradictions highlight the relevance of studying how the maker culture comes into terms in projects such as the one at Smedetofte, to better understand the potentials and pitfalls of letting the values, ideas and methods of this culture play a bigger role in the development of society.

STUDYING SMEDETOFTEN

This research project studies how the FabLab Nordvest, the Områdefornyelse Nordvest, the Klub Bispebjerg are developing projects for the area of Smedetoften in Nordvest, inspired by the maker culture. To understand the methodological approach taken in this project there is a need to first present the area at hand and the actors engaged. Afterwards the methodological approaches used are addressed.

The context

Bispebjerg/Nordvest is a neighbourhood in the north of Copenhagen that in 2011 was appointed by the city council as one of the six marginalised [in Danish “udsatte”] neighbourhoods in the municipality (Teknik- og Miljøforvaltningen 2011). Marginalized urban areas are characterized by having citizens with low income, unemployed, with a non-western background and by being unsafe areas with small apartments (Teknik- og Miljøforvaltningen 2011). Having these characteristics, the neighbourhood has therefore been undergoing administrative area renewal. An area renewal project is a local based initiative that is committed to develop the urban area physically, socially and culturally (Områdefornyelse Nordvest 2016a). It is a requisite for such a project to involve local citizens, public and private institutions and businesses in such a development process. There is a conviction, expressed by the responsible ministry, that engaging local actors is giving them responsibility for the development of the area and a way of ensuring durability in the developments after the public renewal project is finished (Trafik- Bygge- og Boligstyrelsen 2018).

The public administration in charge of the development of Nordvest, with the involvement of local actors, has written a plan for the area that describes the work they intend to do in the area the next 5 years – The Neighbourhood plan 2016-2021. They have identified that the community in Nordvest misses public spaces where they can meet each other in their everyday life and have in this regard pinpointed the area of Smedetoften as a potential meeting space. They are working on developing the area in this direction and have, based on some experiences and analysis, developed a program for the area of Smedetoften that is now under public tender.



Figure 4 - Smedetoften, the square and the street (own pictures)



Figure 5 - The area of Smedetoften (Områdefornyelse Nordvest 2018)

Smedetoften is a street and a public square in the north part of Nordvest (see figure 5 and 6). The youth club is located in Smedetoften 12 - 14 having the square as their outdoor area. The youth centre is a public offer for youth in the neighbourhood between 13 and 18 years old where they can hang out and take part in activities after school (Københavns Kommune n.d.). In the street there are a supermarket, a newly open café and a wine shop. In the square there is some sports equipment, closed workshop facilities belonging to the youth club and a couple of shipping containers belonging to the FabLab Nordvest.

The FabLab Nordvest, a user driven FabLab that has had their workshop in the neighbourhood for around 5 years, has besides the workshop facilities at Glentevej, some containers with equipment. These are now placed at Smedetoften but were before placed temporarily in a creative area near by Nørrebro Station, in an area established by the prior area renewal project in Fuglekvarteret. Being only temporarily,

the creative container area was closed and FabLab Nordvest had to find a new place for their containers. They received permission from the youth club to place them in the square at Smedetofthen in the beginning of 2017.

Having a container equipped with a CNC-machine and the interaction with the community of FabLab Nordvest, inspired the public institutions to develop projects that embraced the maker culture. Klub Bispebjerg employed one person to develop building and workshop activities with the youngsters in the youth club in collaboration with FabLab. Områdefornyelse Nordvest financed and helped organize activities in Smedetofthen for and with the neighbourhood youngster, but also activities targeted the rest of the community.

The institutions, in collaboration with FabLab Nordvest, have thereafter begun to work on a couple of projects that develop upon the experience from 2017, described in the introduction. One is the renewal program for the area that establishes the intentions to transform the square into a maker square. This program is under public tender, and soon the chosen architects will begin developing the area following the Områdefornyelse's requirements analysed in this thesis. The other project is an application to get funding to embed maker education as a part of what the club offers the youth in Nordvest. They haven't yet got funding but are in negotiations with Velux, the funding institution to which the institutions have sent the application to.

Klub Bispebjerg has been running "maker" activities since the summer 2017 and their experiences are included in this study. However, the bigger projects are still under development. This means that I will focus in greater extend on how the establishment of the projects and collaborations have started and the narratives and visions for future developments expressed by the institutions involved. Although I have been aware that the intensions and plans aren't yet implemented, and that the plans and visions might play out differently than what it is assumed in the beginning I know that some of my analysis might therefore be speculative. I have, however, tried to be nuanced by including experiences that the Klub Bispebjerg already has had with the youngsters and examples from the literature and from other projects. My intension is not to evaluate the projects, but rather discuss critical questions on how the maker culture is shaping urban development, which the case helps me discuss.

Case Study

I wanted this project to help me understand how a grassroots movement is influencing urban development and saw this case as a possible framing to help me reflect upon a more overarching phenomenon. I have therefore chosen a case study as a methodological approach inspired by Garry Thomas' writings on case studies.

Thomas starts by stating that a case study is an exploration of the complexity implied in real situations. As a research approach it allows for “in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, institution, program or system in a “real life” context” (Simons in Thomas 2011:512). Because of the uniqueness of a particular project, working with a case study is not choosing a method but rather choosing a framing in which the relevant methods for the particular case can fit in (Thomas 2011). In this framing, the terms subject and object play a central role. The subject being the instance of an object and the latter the phenomenon the subject is a case of (Thomas 2011). In a case study, to be able to analyse and interpret the particular project, the subject, one needs an analytical and/or theoretical framing from where the study is conducted, the object (Thomas 2011). The subject then reflects back to the object. Thomas writes: “For the study to constitute research, there has to be something to be explained (an object) and something potentially to offer explanation (the analysis of the circumstance of a subject)” (Thomas 2011:513). This highlights that the object it's not alone an analytical tool, it is also the phenomenon that the subject explains. A case study is, however, not attempting to give general explanations, but a way of interpreting a phenomenon and understand its complexities (Thomas 2011). Thomas explains this relation further, highlighting the need for a context when one wants to investigate a case. A context allows relating reality and the observed facts to the concepts and hypotheses presented by the context (Wieviorka in Thomas 2011:515). It is although important to keep asking, as one acknowledges new things, what the case of study is a case of and what the context one is working with is? Having a dynamic relation to the theoretical framing allows “discovering or testing tools of explanation” instead of testing on determined theory (Thomas 2011).

In this thesis, in the *Maker Culture* chapter I have created an understanding of the phenomenon by presenting and discussing the maker culture based on other's authors work, examples on how the maker culture plays out in urban spaces, as well as presented perspectives on the issues related to urban planning.

But to explore the complexities of the culture, I chose to explore how the Områdefornyelse Nordvest and Klub Bispebjerg in collaboration with FabLab Nordvest are developing the projects in Smedetofte, and thereby contribute with knowledge and reflections that inform the more broadly discussions about how maker culture in a planning context.

Relating to the terms of subject and object, the projects at Smedetofte are in this case study the subject of study and the maker movement, its ideas, values, methods and innovative potentials to make social, political and economic changes in society, the object of study.

Ethnography

To understand how the projects at Smedetofte are being unfolded, and how the different parts understand, contribute and became involved in the project, I have drawn inspiration from the ethnographic research approach and conducted observations and interviews. In this section I'll present ethnography as a research approach and explain how I entered the field and conducted the studies.

An ethnographic study aims to understand how the world is experienced by the ones who live it (Cook and Crang 1995). It is not a study focused on finding an objective truth about the matter in question, it is instead acknowledging that subjective data, collected by ethnographic studies, has the potential to reveal how the world is constructed, understood and acted upon (Cook and Crang 1995). The ethnographer is not interested in finding one truth, but rather interested in understanding “why so many versions of events are produced and recited” (Cook and Crang 1995:11). By conducting observations and interviews for example, the researcher seeks to reveal how people make sense of their everyday life to gain an understanding of how they are involved in larger social, cultural, economic and political processes (Cook and Crang 1995).

I have used the ethnographical approach to get access to the field and become closer to the ones involved. My aim was to get a better understanding of how Smedetofte, as a maker square, is being envisioned and on what basis it is being developed. What are the stories being told? How is the collaboration between the parts involved working out? How are the citizens and youngsters experiencing changes in Smedetofte? What in the maker movement inspired the institutions and what problems do they wanted to solve using this approach as a tool? These were some of the questions I wanted cover by the ethnographic research.

In an ethnography study, where one wants to study a community, organisation, industry or area it's important to establish first contacts to the field. These contacts can help the researcher find out if a research is possible and how it should be taken methodologically and theoretically (Cook and Crang 1995). I used a couple of months trying to understand what kind of access I could get to the field and which approach I should take to study it. I considered several approaches: should I develop some activities with the club and the youngsters? Should I do a deeper ethnography study at the FabLab Nordvest? Or could I become engaged developing the projects with the different parts, inspired by the action-research approach?

I participated in a meeting for members at FabLab Nordvest, and although I gained some knowledge about the FabLab I also realized that a deeper ethnography study at the lab would not give me much empirical material related to the projects at Smedetofte. I also asked several times if I could participate in the meetings for the working group in Smedetofte, where citizens and local actors discuss the development of the area, a group settled by Områdefornyelse Nordvest, but I never got invited. However, my contact at FabLab Nordvest and my contact at Områdefornyelse, shared official documents with me and show willingness to be interviewed. Additionally, despite of telling me they would let me participate in some building activities with the youth, two of Klub Bispebjerg employees, never reached back either. But one day, heading back to the library from an interview in Nordvest with Områdefornyelse Nordvest and a walk in the area of Smedetofte, I stepped into one of the Klub Bispebjerg's employees, that invited me to pass by the day after. The following day, the youth club had planned to build a skate ramp with the youngsters for a local event at the local pizzeria. He also told me, that he had not called back because the CNC-machine was broken, and they had not yet planned any activity with it. This made me realise that I hadn't been clear about the purpose of my research. Unclearness can present barriers towards engaging with the field, as described by Cook and Crang (1995). Jens thought my only interest was in the activities involving FabLab machines. This illustrates, however, the importance of being in the area and open to approaching people in an ethnographic study.

It is by sensing and taking part in the everyday life of the particular field of study that the researchers conduct ethnography studies (Larsen and Meged 2012). I could have done a more intense ethnography research in the area, but I was limited by time and resources. I took part in what I could and what was accessible to me, as explained before. The table below shows what I have taken part in and engaged with in this research:

Type of empirical material	Material	Notation	Date	How I refer to it
Initial informal talks	Rasmus Grusgaard (FabLab Nordvest) in DI and by phone, Copenhagen	Notes	February	Talk RG
	Anne Steen Hansen (Områdefornyelse Nordvest) by phone			Talk ASH
	Jens Hybschmann (Klub Bispebjerg) at Smedetoften			Talk JH
Observations	Second Members meeting at FabLab	Notes	February 22	Members meeting #2
	Building activity at Smedetoften – Skate Ramp for Behov Pizzeria		April 19	Building activity
	Gentrification Tour in Nordvest – Architecture Festival		May 3	Tour in Nordvest
Interviews	Anne Steen Hansen, at Områdefornyelse Nordvest	Recordings	April 17	Interview ASH
	Rasmus Grusgaard, at DI		April 16	Interview RG
	Jens Hybschmann and Lukas Jonsson, at their private workshop in Nordvest		May 18	Interview JH and LJ

Observations

By doing observations one can relate what people say they do, to what they really do, (Larsen and Meged 2012), or in other words “evaluate what people say in relation to what they do” (Miller in Larsen and Meged 2012:307). In my study, I gained a better understanding of what the FabLab Nordvest is and how it is organized, what the users do, and who is using the FabLab by taking part in the members meeting. My sources of information about the FabLab were not only Rasmus Grusgaard and what I could read online, but also what I observed and talked about with other members at the meeting. The observations in Smedetoften, where I observed the building activity of a skate ramp, gave me an understanding on how a strange person (me) is welcomed in the square while such activities are taking place, how the dynamics are between the youngsters and Jens Hybschmann and Lukas Jonsson, how an afternoon is spent in the club and who are the kids that frequent the centre. When I interviewed Jens Hybschmann

and Lukas Jonsson later on, I could ask into specific situations and relate their description to what I had observed. In the walk in the neighbourhood organized by the Architecture Festival, I got to observe how the hosts (the owner of the local pizzeria, a person representing Områdefornyelse Nordvest, a chairwomen of a local housing association, and a scholar that studies the gentrification process in the area) presented the area and the projects going on in Nordvest. I'm not only relying on information I've read in the documents or got told by Anne Steen Hansen but also on the information I've obtain by listening to their stories about the neighbourhood.

Interviews

I have made three semi-structured interviews. They were with Anne Steen Hansen, project chief at Områdefornyelse Nordvest; Rasmus Grusgaard, chairman of FabLab Nordvest; and Jens Hybschmann and Lukas Jonsson, educational staff at Klub Bispebjerg. By interviewing the three representatives of the parts involved in the project, I wanted to cover how they separately see the projects.

According to Kvale and Brinkmann, authors of *InterViews: Learning the Craft of Qualitative Research Interviewing* (2008), one should ask the following questions when preparing the interviews: What do I want to investigate? And why and how am I going to do it? By asking this, one ensures producing usable knowledge (Kvale and Brinkmann 2008). By interviewing Steen Hansen, from Områdefornyelse Nordvest, I wanted to understand how the city administration managed such a project, and what their intensions are in relation to improving the neighbourhood. By interviewing Grusgaard, I wanted to understand the FabLab's motivation in participating in a local public project. With the interview with Hybschmann and Jonsson I wanted to cover the experiences in engaging the youngster and the community in the building and maker activities and set these in perspective to the plans and intentions described in the plans.

For the three interviews I made individual interview guides that helped me define the purpose of the interview and make sure I covered the questions I wanted answered. This was done following Kvale's and Brinkmann's thematic strategy, dividing the guide in a theme, a research question and interview questions (Kvale and Brinkmann 2008). The guides help me conduct the interview but being a qualitative semi-structure interview it allows for the interviewees to raise own discussions and let me deviate from the questions in the guide and ask into specific topics raised under the interview situation (Kvale and Brinkmann 2008).

In preparing the interviews I made sure had read the available planning documents about the projects. Understanding the subject, the interviewer ensures the interviewee to have an understanding of the topic of the interview and is therefore able to ask more detailed questions (Schoenberger in Cook and Crang 1995). For example, in the interview with Anne I asked into how they believe that the maker community could improve the area of Smedetoften as described in the plans. In the interview with Rasmus I asked him what they meant when they write in their website that the “FabLab Nordvest is a living city FabLab with high ambitions”.

Document analysis

Since the projects haven't been put into practice, the planning documents and the funding application are important sources of information. It is in them that the institutions express their official plans and intentions for the area and that ones setting the agenda for the future development of the area. I've mainly examined the following documents:

Neighbourhood plan

Title: Kvarterplan 2016-2021 – Områdefornyelse Nordvest

Author: Områdefornyelse Nordvest (Urban Renewal Administration)

Date: June 2016

Funding application to Velux

Title: *Maker-fællesskaber - en konstruktiv platform* (first draft) (translation: Maker communities – a constructive platform)

Responsible organisation: Fritidscenter Bispebjerg Syd (Børne- og Ungdomsforvaltningen i Københavns Kommune), Områdefornyelse Nordvest (Teknik- og Miljøforvaltningen, Københavns Kommune), Kultur- Nord (Kultur- og Fritidsforvaltningen, Københavns Kommune) og FabLab Nordvest (Fablab).

Date: Winter/Spring 2018

Program for Smedetoften: Public Tender

Title: *Smedetoften – Et tryghedsfremmende byrum* (translation: Smedetoften - A security-enhancing urban space)

Author: Områdefornyelse Nordvest

Date: March 2018

Political plan for disadvantaged urban areas in Copenhagen

Title: *Politik for udsatte byområde.* (translation: Political plan for disadvantaged urban areas)

Responsible institution: Teknik- og Miljøforvaltning, Københavns Kommune

Date: September 2011

In the analysis of the above mentioned documents I have followed Bowen's advice to "look at documents with a critical eye" (2009:33). The purpose of the document, the author and the target audience must be considered to ensure an understanding of the context the document was produced in. Documents are not "precise, accurate or complete readings of events", therefore researchers should analyse and establish meanings considering the context of the document, avoiding simply including information and data in their studies without considering them critically (Bowen 2009:33). As one establishes meanings from what it is written in documents, one should as well consider what is missing. The fact that something is absent from a report or document can, according to Bowen, suggest that "certain matters have been given little attention or that certain voices have not been heard" (2009:33). These aspects of document analysis were taken into consideration in my readings and interpretations.

Summary

By conducting a case study, I investigate how the maker projects for Smedetofthen are envisioned and planned, to understand how the maker culture is affecting urban development. Drawing inspiration from ethnographic studies I seek to investigate how the projects are understood by the ones involved by doing observations in the area and interviews with the institutions engaged. I've analysed the planning documents available about the projects having in mind the author and the context it was produced in.

PLANS AND INTENSIONS

In this chapter I aim to answer the following question:

What are the plans and intentions of FabLab Nordvest, Områdefornyelse Nordvest and Klub Bispebjerg in creating a maker community at Smedetoften?

I will describe the challenges the neighbourhood face, according to the city council, the Områdefornyelse and the Klub Bispebjerg. I will mainly focus on the challenges concerning the youth in Nordvest, and the challenges concerning the physical challenges in the area of Smedetoften, due to the relevance that these aspects have for the study in case. This is done to get an understanding of the issues they aim to address by creating a maker community. After, I look at how the stakeholders understand the maker culture. An understanding of the aspects of the maker culture they are aiming to work with will help me pinpoint critical questions relevant to discuss.

Challenges at Smedetoften

The area of Bispebjerg/Nordvest, where Smedetoften is located, has been pointed out as a disadvantaged neighbourhood in 2011 by the city council of Copenhagen (Teknik- og Miljøforvaltningen 2011). The city council describes in the development plan for the area, which is made based on the city council policy for disadvantage neighbourhood from 2011, the challenges the neighbourhood face according to them (Københavns Kommune 2012). The challenges they highlight are the high number of citizens that are unemployed, that have a low income and a low education. That the health condition is lower in Bispebjerg/Nordvest than in the rest of the municipality and that there are challenges concerning adults with mental diseases, addictions and too many living in isolation. Regarding the youth, the number of children that don't live with their families is the highest in Copenhagen. There is further highlighted the challenges regarding a group of young people that don't have positive contact with adults, and don't have neither knowledge or belief in the possibilities that are offer to them. Further, it is described that groups of young people have negatively impact on the community's experience of safety in the neighbourhood (Københavns Kommune 2012).

The challenges regarding the youth in Bispebjerg/Nordvest are still present in the area and addressed by the institutions I've interviewed. Their description of the problems regarding the youth are consistent with the descriptions above. Hybschmann and Jonsson describe the youngsters that frequent the youth club by mentioning that 90% are boys with a different ethnicity than Danish, that have externalizing behaviours, have a high risk of ending in criminal communities and not getting a proper education (Interview JH and LJ). This is the group of young people that the Børne- og Ungdomsforvaltning, the responsible public council for the youth club, wants to engage in the maker program they still are seeking to fund. Another group of young people in the neighbourhood, which Hybschmann and Jonsson also have contact to and that also are a target for the maker program, are the ones above 18, that are too old for the youth clubs or that have bad behaviour or even gang affiliations (Interview JH and LJ). This group they call the *clubless* youngsters. Some of them hang out in the outdoor area of the youth club at Smedetoften, that besides being the outdoor area of the club is also a public square, which means the youngster that don't belong to the club can hang out there without being asked to leave, a fact that they are well aware of, according to Hybschmann and Jonsson. This group also gathers at the public library at Rentermestervej. In the beginning of 2017 Jens Hybschmann worked with this young group that hang out at the library before he became employed at the youth club. He describes that the library, after the staff went home, became the youth club for the clubless youth³. His work was to work with them and try to activate them instead of letting them use the library as a hang-out space. They didn't follow the code of conduct of the library and disturbed other users (Interview JH and LJ). The fact that the young people hang out in public outdoor areas in this neighbourhood is according to Hybschmann, due to the fact that their family homes are too small. In my first conversation with Hybschmann at Smedetoften, he mentioned this problem and compared to how Danish boys have a room from themselves and a computer at home and are therefore able to entertain themselves without having to use the public space. This is not the case for the young people he works with at the club, they, instead of gathering at home, are using the streets as hang-out spaces after school (Talk JH). The small homes are also pinpointed by Områdefornyelse Nordvest in the program for Smedetoften, when describing the youngster in Nordvest (Områdefornyelse Nordvest 2018). Steen Hansen also mentions this issue and say that there is a need to create "teenage-rooms" in the area for the teenagers that don't have such a room, which is what Områdefornyelse Nordvest intends to do with the renewal of Smedetoften (Interview ASH). They wish to create a space for the youth, but at the same time create a public outdoor space where adults, staff and makers, engaged in the maker activities watch the youngsters without being "guards" (Interview ASH;

³ Libraries in Copenhagen are accessible to 10 pm, but unstaffed after 5 pm.

Interview JH and LJ). In this way they wish to create a space where the youngsters can get in touch with adults, and thereby address the issue that some young people in the area don't have much contact with adults.

Concerning issues of safety, Smedetoften has, according to Områdefornyelsen been the most unsafety area in Bispebjerg/Nordvest, which according to them is due to the physical character of the place, being described as worn, dark and dirty and being an area that reflects lack of ownership (Områdefornyelse Nordvest 2018). Rasmus Grusgaard, that lives in the neighbourhood, told me that when he moved in 8 years ago, the square was a very sad place, with burned containers and broken gates (Interview RG) (see figure 7).



Figure 6 – Smedetoften (by Jens Hybschmann)

Hybschmann and Jonsson tell me that before they built the workshops and closed the access to the sheds, it was used by the youngster to hang out, but also by criminals to sell drugs and fight (Interview JH and LJ). The area has had problems related to crime and gang related conflicts that escalated last year, with a

gang-war in Copenhagen that also was carried out in the neighbourhood of Nordvest and got quite much media and political attention (Fischer and Bjerregaard 2017). The funding to renew Smedetoften was partial financed by Områdefornyelse's budget and partially by the municipality's budget for 2018 (Interview ASH). In the municipality's budget, Smedetoften is listed under the heading "Safe and secure city". This item is, according to the city council, focused on controlling the gang-crime that has been going on in Copenhagen lately and promote safety in the city (Københavns Kommune 2018). Under this headline there is also allocated money to extend the opening hours of municipal youth clubs to give youth a better alternative to hang-out than the streets, as well as to address the problems at self-service public culture institutions, that as the local library in Nordvest have problems with vandalism and bad behaviour (Københavns Kommune 2018). This shows that the issues the public institutions at Smedetoften are trying to address also concerns higher institutions.

The development plan for Nordvest/Bispebjerg also highlights positive aspects. The old industrial buildings, workshops, small creative businesses and different housing types makes the neighbourhood diverse in terms of its physical attributes which is one of the positive attributes stressed in the plan (Københavns Kommune 2012). The Områdefornyelse writes in the program for Smedetoften that they intend to improve the area by using the physical qualities the district already has and reinforce its character of an old industrial neighbourhood (Områdefornyelse Nordvest 2016b). Considering the predictions that see maker movement as the fulcrum of future local industries, it is interesting to see how the industrial heritage is considered in the renewal of the area.

Other qualities described in the plan are the diversity in terms of resident groups, high tolerance and a strong citizen engagement. The fact that several educational institutions and business might support the neighbourhood development are also described as a positive aspect and finally a long and strong tradition of developing new solutions by cooperating between different administrations, with the public housing sector and with other local actors (Københavns Kommune 2012). The good cooperation between different actors and their will to develop new projects, is also mentioned by Steen Hansen and Grusgaard as qualities of the neighbourhood. Steen Hansen had before worked for the local commission of Bispebjerg, and the reasons she went back to Bispebjerg/Nordvest, after working in the central administration, was the good will and engagement there is in the neighbourhood shown both by public and private actors (Interview ASH). Grusgaard also mentions that what he likes the most about working with the Områdefornyelse is the way they are willing to support small initiatives and take risk in supporting new projects and experiments (Interview RG). One example of actors helping each other and

cooperating in Nordvest, can for example be the cooperation between the FabLab and the public workshop facilities that use to be at the public library. Due to water-damages the public workshop needed to find a new temporary space and is now sharing facilities with FabLab (Members meeting #2). The projects at Smedetoften can also be seen as a project that shows how different actors work together in a common project for the local community.

The start of a local collaboration

The collaboration between FabLab, the Klub Bispebjerg and Områdefornyelse Nordvest started when FabLab Nordvest placed their containers at Smedetoften. Both Grusgaard and Steen Hansen described the process as myriad of coincidences, that started with FabLab needing a place for the containers, to getting permission from the youth club to place the containers at Smedetoften, that in combination with the fact that the Områdefornyelse was developing the area and the youth club wanting to attract more youngster ended up in a collaboration between the three organisations (Interview ASH; Interview RG).

I see other phenomenon that might have influenced such a development. The fact that the square didn't have any clear function, almost any outdoor furniture and was not being taking care of the past years (the youth club moved into the buildings 3 years ago), turned this place to a *no man's land*, as Steen Hansen mentions (Interview ASH). Nordvest, is one of Copenhagen's old industrial areas, and as many other spaces in post-industrial cities, the industrial period is still imprinted in their spatiality. Space where a new planning order not yet has arrived to, have been called *terrain vague*. "Here can alternative projects be tested, developed and maybe be established as new order" (Larsen, Frandsen, and Brandt 2014, own translation). The lack of ownership that characterizes the square and the lack of a clear meaning of what it should be used for, has given the youngster the possibility to hang out, criminals to sell drugs, or FabLab to place their containers. It has at the same time made possible for the area renewal project to support an experiment where the youth club, the youngster and the FabLab, that together build benches for the poorly furnished square.

It is here important to remember that the interest of the are renewal project is to engage local actors in the development of an area to ensure its durability, as mentioned in the *Studying Smedetoften* chapter. Such experiment, where the three stakeholders got to work together, showed Områdefornyelse the potential of a possible collaboration, a collaboration Områdefornyelse Nordvest wants to support and involve in the area renewal project for Smedetoften (Interview ASH).

When I asked Hybschmann about this activity, he told me that the activity only succeeded because he had a relationship with the youngsters and convinced them to show up. Otherwise they would have never participated (Interview JH). These everyday struggles Hybschmann and Jonsson encounter in their work with the youngsters and their experience at Smedetoften don't seem to be considered in the plans in great extent. I have therefore considered their experiences with the youngsters and the building activities as an important source to reflect on how these plans might succeed.

The bench activity opened a way for a partnership between the FabLab, the Områdefornyelse and the youth club, a collaboration that is the turning point for the plans for Smedetoften and the plans of developing a maker training for the youth club. It was not only the fact of having a local grassroots group wanting to engage that made the Områdefornyelse and the youth club develop these projects, the values and ideas the FabLab is ambassador for, have also been considered by the stakeholders as values and ideas that had potential to solve some of the challenges they wanted addressed. Let's take a closer look at how the maker culture comes to terms in FabLab Nordvest and look at how the stakeholders understand the culture and envision it helping solve the challenges embed in neighbourhood.

The understanding of the maker culture

The FabLab Nordvest has existed since 2014 and has been opening more and more up for new members (see figure 8). The group of people that started it had before been a community located in the south of Zealand. A FabLab community that Grusgaard had started, as a branch project of his prior work, aware of, that such a workshop and community could only run if there was voluntary and engaged people involved, otherwise, he mentions, it will cost too much to support (Interview RG). Some years later, they decided to open a FabLab in Copenhagen because they all lived in the city and chose to search for places in Nordvest to establish the new FabLab. They chose Nordvest because it was not full developed yet and because of its "creative" and "arty" character, which they saw as perfect place to open a FabLab (Interview RG). The first 5 years, they rented a part of the building belonging to the urban renewal project at Fuglekvarteret, that ran from 2012 to 2018, in another part of Nordvest. Here, FabLab offered a free admission and training in FabLab technologies to entrepreneurs and companies with a social economy purpose, in collaboration with the urban renewal project, and got therefore a cheaper rent (FabLab Nordvest 2017b). In the beginning they were not inviting new members in, like they do today, it was rather a workshop for the group of people who started, and the ones engaged in the entrepreneurship training (Interview RG).

While they were establishing in Nordvest the FabLab considered to run it more like a business instead of continuing being a non-profit organization, but the group decided together that they wanted to build a community and stay a non-profit organization (Interview RG). Rasmus Grusgaard tells me that the way he understands the concept of FabLabs is that it presupposes being an open community and he sees a great potential of becoming part of a global community, the same do the founders group. He also mentions that choosing this model, gives them more recognition among the maker community (Interview RG). As mentioned in the chapter *Maker Culture*, there is an understanding of the culture as open-ended, which is high valorised in the community.



Figure 7 - FabLab Nordvest at Fuglekvarteret (FabLab Nordvest 2015)

They have recently focused on running courses, inspired by the way a FabLab in Dallas sustain themselves and grow by offering a range of courses with a high frequency (Members meeting #2). These courses at FabLab are primarily introduction to the machines, like the CNC-machine or the laser-cutter, and everyone can participate by paying a fee of around 200kr,- (Fablab Nordvest n.d.). The courses aim to introduce the possibilities offered by the FabLab to new beginners.

Although the number of members has doubled since August last year to February this year, from 42 to 100 (Members meeting #2), Grusgaard is aware that the FabLab appears close and exclusive (Interview RG). The FabLab is not visible from the street, therefore it requires that people are aware that it's there and opened for everybody to become a member. He has a wish of opening the lab more up, make it visible from the street and eventually open a FabCafe to make it more welcoming, but it requires economical resources that they don't have at this point yet, having only around 100 members (Interview RG).

This conflict between the open-ended values against the level of openness and inclusiveness practices in makerspaces, as mentioned in the chapter *Maker Culture*, is also something that FabLab Nordvest struggles with. They are aware that their workshop appears closed, and that it is difficult and intimidating to step into a high-technological workshop the first time, but their financial conditions don't allow them to be at a place that has a more inviting character, something they believe would make the FabLab Nordvest more welcoming. Even though makerspaces want to be as open as possible and welcoming for everyone, it can be difficult to do it in a sustainable way. Namely to ensure a certain openness, makerspaces can collaborate with public or private institutions. The fact that the maker facilities at Smedetofthen are envisioned to be more accessible, is one of the reasons that Grusgaard is enthusiastic about the opening of it. He hopes that having an outdoor facility that is easier to approach from the public space will result in more people becoming aware that there is an open workshop in their neighbourhood (Interview RG). As discussed in the next chapter, it might not be enough to just have the knowledge about the existence of a FabLab to become an engaged user, but this can be the first step.

I asked Grusgaard what differentiates their makerspace from other makerspaces, hackerspaces and FabLabs in Copenhagen. He explains that their focus on making socio-economical oriented projects for instance in collaboration with area renewal projects is what differentiates them from others (Interview RG). The FabLab Nordvest has always found it interesting to take their technologies and methods and bring it out of the lab and that's the reason why they have made the containers that now are at Smedetofthen (Interview RG). They have had containers other places, and have been a part of different projects, but for Grusgaard Smedetofthen is the most interesting one. Placing the FabLab container at Smedetofthen has had an interesting resonance in the area, both the youth club and the Områdefornyelse have reacted and engaged the FabLab in their work (Interview RG). But what is it that these institutions find interesting in the maker culture?

In the plans for area, the institutions pinpoint the growth of the maker community in Denmark and abroad (Børne- og Ungdomsforvaltningen n.d.; Områdefornyelse Nordvest 2018), which shows that they are aware of the growth of the movement, which validates their work in terms of future developments. They describe the makers as a grassroots movement, referring to Chris Andersen, author of *Makers – The New Industrial Revolution*, and Dale Dougherty, the CEO of Make Media, highlighting the intension of the movement in democratising technology that before was unreachable to everyone but now is available to everyone in creative workshops as makerspaces, FabLabs, hackerspaces and maker fairs (Børne- og Ungdomsforvaltningen n.d.). The online sharing-platforms mentioned are the Make Magazine, Thingiverse and Instructables (Børne- og Ungdomsforvaltningen n.d.). It is interesting to observe that the sources they have used and referred to when describing the maker movement are the ones, as mentioned in the *Maker Culture* chapter, that own a range of maker business and have been criticised of appropriating a grassroots culture and turning out to be dominant voices in defining the further development of it. The way the public institutions are using these understandings in their development of Smedetofte is an example of that dominance.

The “makers” are described in the plans as people that make everything themselves, and are socially engaged, creative, skilled and willing to work on voluntary basis (Børne- og Ungdomsforvaltningen n.d.; Områdefornyelse Nordvest 2018). This is at the same time how they describe the people they aim to engage on voluntary basis, but also how they envision the youngster turning out to be. There is a discussion related to the value of community gardens that I want to draw from that among other issues discuss the role of voluntary work in maintaining public urban spaces. Community gardening have been criticised as a “wider ‘neo- liberal strategy’ for outsourcing municipal services to (unpaid) private actors” (Rosol in Tonkiss 2013), alleviating the state from service provision (Crossan et al. 2016). When the public institutions are counting on the work of voluntary makers to run courses with the youngsters they are to some extent outsourcing some educational services. On the other hand, it has been addressed the danger of portraying neo-liberalism as a “hegemonic story” (Larner in Crossan et al. 2016), that can be suppressing the growth of new alternatives (Crossan et al. 2016). Not knowing more exactly how the projects are going to take shape in practice and having mainly plans and visions to analyse I might not have an empirical foundation to discuss fully the above aspects of such a project. Nevertheless, I want to shed light into challenges that might be involved in engaging voluntaries in working with these youngsters, based on the experience the youth club has had in the past building activities. Hybschmann and Jonsson problematise the fact that some of the youngster at Smedetofte can be challenging to work with, due to unbalance behaviours that might compromise safety when working with dangers tools

(Interview JH and LJ). Engaging voluntaries, that don't know the youngster, their problems or can predict their behaviours can be irresponsible, according to Hybschmann and Jonson that advocate that working with these young people should only be assigned to educators (Interview JH and LJ). Anne Steen Hansen expresses that this is been taken into account, and that they are aware that there will be a need of briefing the voluntaries about these challenges (Interview ASH). It can although still be seen as outsourcing a task to voluntaries, as criticised above.

Grusgaard mentions, however, that there are some activities that he only sees makers engaging with if they get payed, as for example running the CNC machine a whole day (Interview RG). This contradicts the plans of engaging makers only on voluntary basis. Another example of how voluntary work sometimes can be challenging is a project with two artists and the local school that used the FabLab facilities. According to Grusgaard, the project had got funding to engage the FabLab (Interview RG), which means that the FabLab doesn't engage only on a freely and voluntarily basis. Hybschmann and Jonsson mention that they also helped in finalizing the project, which means that their payed hours weren't used with the youngsters but concluding the project (Interview JH and LJ). It can be controversial to rely on voluntary work on an area-based project, if the ones with know-how aren't willing to help voluntarily with production when one of the visions is to help the youngster do small productions (Børne- og Ungdomsforvaltningen n.d.). Neither sustainable if the educational staff needs to help other users of the public maker facilities that work with other projects, that don't directly are targeted the youth club. The economic structure to support such projects might need to be well considered if the maker square and the maker education are envisioned to be self-sustainable. The plan for the youth club expresses however the intention of educating staff in maker culture that eventually can run some activities with the youngster without needing to engage voluntaries (Børne- og Ungdomsforvaltningen n.d.). It is nevertheless a challenging practice to learn if the staff is supposed to get knowledge on programming, digital design, wood-work, electronics, etc.

The educational intension in offering maker activities at the club is to develop the youngsters mindset and self-image, from a "fixed mindset" to a "growth mindset" (Børne- og Ungdomsforvaltningen n.d.). Inspired by Dale Dougherty's writings about it, they envision that the youngster mindset, by enrolling in maker courses, will change from having a self-image of their capabilities as set and out of their control (fixed mindset) to gaining the ability to turn challenges into opportunities and the ability to develop their capabilities and themselves (growth mindset) (Børne- og Ungdomsforvaltningen n.d.). This intention meets the challenges the city council pinpointed in their analysis of the youngster not having knowledge

or belief in their opportunities which affects their future life in terms of education and employment. This aspect will be developed further in the next chapter concerning questions of empowerment.

The task of the youth club is to work with the youngsters that are assigned the club, but as mentioned above there are other young people in Nordvest that also struggle with the same challenges. Some frequent the square, some not, but many are vulnerable not having a club to hang-out and positive contact with adults in hours after school. The institutions hope that having the maker activities running outdoors, and a local maker community using the square and the workshops, that it will attract these youngsters in taking part in it too (Interview ASH). The overall vision is to offer the youngster, the ones that use the club and the clubless, a new and constructive community that they can take part in. This is an alternative to the street community, which many are a part of, that often is associated with vandalism and crime, and makes them vulnerable in terms of being recruited by local gangs (Børne- og Ungdomsforvaltningen n.d.). The plans are not that specific about how they are planning to motivate the youngster in engaging in such a community. There might be some challenges, specially related to inclusion, that I discuss in next chapter.

Despite not being described in the plans, all the interviewees mentioned that they also hope to attract more resourceful young people that today don't frequent the youth club by offering maker activities with a high technological quality (Interview ASH; Interview RG; Interview JH and LJ). Hybschmann and Jonsson mention that this group don't frequent the club, because their parents have the resources to paid for private after school activities (Interview JH and LJ). But maker activities are not activities that one can pay for. As described in the *Maker Culture* chapter it presupposes a level of self-engagement to become part of a makerspace. By wrapping the maker culture, that implies working with emergent technologies, in an educational offer they hope to appeal to this group of youngsters in Nordvest. An aspect I will discuss in the following chapter.

It's not only improving the youth's social condition that the institutions seek to address. It is also improving issues related to the physical condition of Smedetoften. This is particularly addressed in the program for Smedetoften, where the Områdefornyelse Nordvest have described the challenges they have identified and how they envisioned it solved by renewing the square (Områdefornyelse Nordvest 2018). They want the renewal of the square to be designed in order to support the maker activities and have asked the consultancies to break with the Copenhagen standards, so the square reflects that Smedetoften is something different (Områdefornyelse Nordvest 2018). This might be to prevent that the square is

used in other ways that pushes the youth aside. Steen Hansen mentions that when they started planning Smedetoften, they envisioned the square as a plaza and as a meeting point for the community but went from that idea to start planning the street as a meeting place for the community. The square should serve other purposes (Interview ASH).



Figure 8 - Sheds at Smedetoften before being transformed to workshops (by Jens Hybschmann)

Steen Hansen mentions a conversation she had with the youngsters about them contesting the fact that they had been described as elements that make the square unsafe (Interview ASH). This made her realise that the physical attributes of the square influenced in a great extent the way these youngsters are seen by local community. The fact that youngsters hang out at a square that is painted with tags, has bad lighting and dark corners make them to unsafe elements (see figure 9). Although there have been problems with drug-selling and fights, the way the square looked, reinforced the narrative about all the youngsters that hang-out at the square being troublemakers. Giving the youngster a place to hang-out that emanates a maker spirit, might empower them but also change they are perceived by the community, which is a matter discussed in the next chapter.

Summary

The city council of Copenhagen has since 2011 been working with the neighbourhood of Nordvest and have among other issues worked towards improving the conditions of the local disadvantage young people. This group has in majority a different ethnical background than Danish, a lack positive contact with adults and uses the streets as their teenage-rooms, due to the fact that their family homes are small. These issues have also caught the attention of the city council, which might have to do with recent gang-war played out in the neighbourhood, since this year's budget addresses these issues.

The public institutions aiming to improve the area, have seen in the renewal of Smedetofte a possibility to give the youngsters a safe public space to be. Due to their network-based approach to planning, they are working towards connecting the local FabLab, that needs a place to their containers and wants to be more open and become a bigger player in Nordvest, with the local youth club. The club wants to empower the young people and protect them from ending up in crime. With the plans of building a maker square and developing a maker education they aim to give the youngsters a possibility to leave the street community and engage in a maker community, where they can develop new skills and be in contact with inspiring adults.

There is also a wish, through the physical renewal, to give the square a new character that transmits positive and productive values instead of transmitting unsafety and incentivise misconduct, that subsequently imposes the ones who use it the same values. Thereby the local stakeholders aim to shift the story about the youngster being troublemakers to being productive makers.

EMPOWERMENT AND INCLUSION

“In the meeting between the youngster and the creative enthusiast, a committed community is created, that builds upon social and voluntary engagement. Here young people are helped on their way. And young people help young people.” (Områdefornyelse Nordvest 2018:5, own translation)

”Smedetoften should be an example of how we, in Copenhagen, can develop an inclusive urban space that supports community building” (Områdefornyelse Nordvest 2018:5, own translation)

These are two excerpts taken from the vision for Smedetoften written by the Områdefornyelse Nordvest in the program for the area, where the two themes that I see playing an important role in the development of Smedetoften come to terms. One is empowerment, the other is inclusion. Themes that also are of concern of the maker movement. What I find interesting is that the way these themes are understood within the maker community are not addressing the structural aspects of society that enable equal empowerment and inclusion, as discussed in the *Maker Culture* chapter, while the empowerment perspective in urban planning acknowledges this fact. The following analysis will look at how these two approaches come to terms in the projects at Smedetoften and will discuss potential conflicts and benefits of using the maker culture as a tool in an area renewal project. I will therefore in this chapter engage with the following question:

How do the maker projects at Smedetoften seek to promote empowerment and inclusion and what implications can be involved when using maker culture as an approach to promote these aspects in an area renewal project?

The Maker-Mindset

The primary target for the developments at Smedetoften engaging with the maker culture, are the youth in Nordvest, both the ones that frequent the club and the clubless. These two groups, as mentioned before, are described as having among other challenges, lack of faith in their own abilities, difficulties in taking part in committing communities and only few have dreams and future goals (Børne- og Ungdomsforvaltningen n.d.). These characteristics are also emphasized by Hybschmann and Jonsson in the interview I made. They can't for instance just give the youngster a task, because they don't picture themselves as ones who can build and be responsible for a project by themselves, they need guidance

and group acceptance. They also mentioned that it is difficult to get the youngster to sign up for activities or get them to make commitments (Interview JH and LJ).

A person that fit in the description above will most probably not enter a FabLab, learn how to operate new technical equipment by itself, make a crowdfunding campaign and start a small business, as some of the maker culture enthusiast envision everyone do (Anderson 2012). It is nevertheless similar to the description of how the institutions envision the youngsters to be, by the way they have formed the educational program to be centred around the idea of the maker mindset. What I find interesting is that the public institutions know that it's not enough to simply invite the youngsters inside of FabLab Nordvest and make them take a couple of courses in how to use the machines at the workshop. This understanding that structural changes need to be done for empowerment to succeed is typical present in planning processes such as the ones in area renewal projects (Jensen et al. 2007), and is indeed also an understanding that comes to terms to some extent in the maker project at Smedetoften.

Although, according to John Andersen, individual and collective empowerment is an objective in itself to achieve welfare, it presupposes changes in social structures as well as changes in individual and group awareness (Andersen 2007). To achieve such changes, a planner needs to work with horizontal empowerment process, and vertical empowerment processes. The first cares about social mobilisation of a certain social group or a local community, the later cares about enhancing the impact of an action externally, affecting structures of power that are located outside of the community (Andersen 2007).

Vertical empowerment has been identified in the developments of Smedetoften. The activities in Smedetoften in the summer of 2017, played a role in the getting attention of city council politics, that afterwards commissioned extra funding to the renewal of Smedetoften. (Interview ASH). This shows that Områdefornyelse Nordvest is aware of the fact, that empowerment also needs to happen vertically.

Regarding the horizontal empowerment process, the Områdefornyelse Nordvest has for example used many resources in managing the conflict between the neighbours and the youngsters (Interview ASH). This might have a critical importance if the local community is to accept the fact that the public square is going to be used to make maker activities with the youngsters and acknowledge and support the outputs that might come out of the it. It can be difficult to truly empower the youngsters without the support and engagement of the local community. Ways in which this empowerment perspective comes to terms is for example one of the activities promoted last summer at Smedetoften. The neighbourhood was

invited to communal dining, where the youngsters made food for the community (Interview JH and LJ). In this way, a forum was created where the local community and the youngsters could meet and begin to establish a connection. The funding application shows clear intentions to host more of these events at Smedetoften to showcase Maker projects and connect with the community. These will be Maker Fairs where the youngsters will have the opportunity to show and present their products for the local community and future employers (Børne- og Ungdomsforvaltningen n.d.). Hybschmann and Jonsson hope that the fact that the youngsters have been engaged in building signs, furniture and other outdoor articles for the local shops and schools (see figure 10) also will have an impact in how the locals accept the future activities.



Figure 9 - Youngster building a skate-ramp to Behov Pizzeria at Smedetoften (by Jens Hybschmann)

Hybschmann and Jonsson mentioned an episode where the youngster helped one local elder cutting a piece of wood he was missing in his apartment, something Hybschmann and Jonsson would like to happen more often from now on (Interview JH and LJ). It is interesting to see the two different approaches to which kind of activities are being developed for Smedetoften. Drawing from the discussion

related to what ideas and values are being promoted at Smedetofte, it can be argued that the first approach, the one presented in the application is more focused on the entrepreneurial aspects, where the approach being practice and defended by Hybschmann and Jonsson is more oriented through helping the community and by this, gain their consideration and acceptance. Hybschmann and Jonsson also mention the entrepreneurial potential of engaging the youngster in maker activities, and I'm almost sure that the public institutions also celebrate the fact that the youngsters are helping the community, but what I want to emphasize is that the possibilities to develop projects and focus on the community empowerment that don't only focus on developing products and business, like the maker program promotes when focusing on teaching how to develop products and how to become entrepreneur.

The maker culture is intended to empower the youngsters through giving them a new mindset. The maker mindset, according to Børne- og Ungdomsforvaltning, makes you believe that you can develop and build anything. This mindset, they hope, will address the issues of lack of self-confidence and difficulties in commitment among the youth in Nordvest. The maker culture encourages indeed taking control over your own life and fosters a thinking that you can do anything without needing the help of institutions, as described in the chapter *Maker Culture*. This understanding is also expressed in the application, where it is described how the maker mindset and the maker activities will “increase the youngster self-confidence, by seeing the results of what they built” and contribute to “a better view on life, that gives the youth faith on their ability to build their own future” (Børne- og Ungdomsforvaltningen n.d., own translation). They are furthermore proposing that all the youngsters should try to become entrepreneurs, a step in the program “Maker to Market”. In this level the young makers will be encouraged to try to be entrepreneurs based on the products they develop in the maker program offered by the youth club (Børne- og Ungdomsforvaltningen n.d.).

This individual responsibility of building your own future has been assigned to neo-liberal regimes, where individuals are expected to take control and agency, and make the best choices regarding health, education and employment and in that way to be able to compete with others (see *Maker Culture* chapter). The neo-liberal ideas focused on entrepreneurialism and self-empowerment might be reproducing the aspects that initially could have caused the disadvantaged position of the youngsters. This focus might oversee the solidarity aspect that societies need to become democratic, equal and inclusive (see *Maker Culture* chapter). Why are the public institutions not incentivising the development of projects that improve the life of the whole community instead? Or what if the products the youngsters want to build can't be commodified? Why are the program not promoting the development of tools like the Smart Citizen kit, that give the

ones engaged a political understanding and a tool to confront the ones in charge? This could unfold the innovative potential concerning the democratizing power of technological citizenship, mentioned in the Maker Culture chapter. Paulo Freire, the scholar who made the empowerment concept popular, describes it as the ability to “understand social, political and economic contradictions and the ability to act upon the real oppressive elements” (Freire in Andersen 2007:48). When the institutions at Smedetofte want to empower the youngsters, they could incentivise them to understand why they were being oppressed to start with, which might have to do with the neo-liberal competitiveness power structures. True empowerment might thus be compromised in Smedetofte if these contradictions aren’t planned to be addressed and challenged but merely reproduced.

Conflicts of power

There is an overall intension of changing the narrative about the youngsters. An aspect that can have a significant importance in the later developments of the square and has to do with what Andersen calls for *status and symbolic empowerment* that works with questions related to the way disadvantaged social groups are viewed and categorized by the dominant discourses (Andersen 2007). Empowerment processes in local communities need to be collective acts (Andersen 2007), and as a community it is important to agree on the final goal, otherwise powerful structures might counteract the empowerment process, as the following examples illustrates.

The bench building workshop, that has been mention before, was called “Build Your Square”. This activity was thought as an activity where the youngster could take part in defining how the square could be improved. Inspired by Better Block, that work with rapid prototyping for placemaking as a tool of community empowerment (Better Block Foundation 2017), the youngsters were engaged in building benches for Smedetofte and took an active part in deciding where these could be placed (Interview JH and LJ). Giving the youngster this opportunity of influencing the placemaking of Smedetofte, even though being temporarily, was a way of engaging the youngster in a participatory process, that they otherwise would not participate in. For example, Hybschmann mentions that the youngster he works with don’t take part in more traditional participatory process (Talk JH). There was although a conflict that rolled out after these benches and a rooftop built on the top of the FabLab containers were finished, that problematise these questions of power.



Figure 10 – Rooftop building at Smedetoften (Børne- og Ungdomsforvaltningen n.d.)

After have letting the youngster “build their own square”, the Områdefornyelse decided to move to rooftop (see figure 11) to the ground and make sure that the benches were locked inside in the clubs closing hours (Talk Rasmus; Interview JH and LJ). After building these outdoor facilities, the square attracted even more youngsters, also in the hours the youth club was closed, which might make sense, because the facilities were built with them and for them. Nevertheless, the fact that the neighbours felt intimidated by the youngster’s behaviour at the square, made the institutions decide to take them down (Interview ASH). In the interview with Steen Hansen talking about the neighbours at Smedetoften, she tells me about a neighbour, member of the board of 3B, the housing company that owns the houses that share backyard with the square, that lives in one of these houses. When the board of 3B, were supposed to talk about the gang-conflict at Nordvest last year, they spent 2 minutes discussing the issue and the rest 18 discussing Smedetoften (Interview ASH). The housing companies are big players in Nordvest,

due to the fact that Nordvest has many apartments of this housing. When a member of the board is directly affected by the noise and confronted with the youngster behaviour plays a role on what happens in the square. These highlights that there are structures of power that need to be broken or managed differently to give the youngsters a way to also truly be empowered and seen as citizens with equal rights or become citizens with equal power.

There is furthermore a plan of creating a green area between the square and the houses, that better separates the two to address the conflicts between these two spaces. This means that the neighbours would lose their view over the square, which according to Hybschmann and Jonsson is something they are dissatisfied with (Interview JH and LJ).

Steen Hansen mentions although that their ambitions for the square are high, and they are working in gaining the confidence and acceptance of the neighbours to develop the maker projects at Smedetofte (Interview ASH).

Role models

The uneven demography of makerspaces, that usually are dominated by white male with a high education, has been criticised as an aspect of exclusivity that goes against the values of openness and inclusion promoted by the culture (see *Maker Culture* chapter). In the following I will discuss what this may imply for Smedetofte.

There is an ambition to engage local makers in the projects at Smedetofte as new role models for the youngsters, and a hope that this community will use the place to develop their projects.

In the members meeting I participated in, we were 12 and 6 were women, 4 of them worked for the library-workshops that was about to move into the FabLab facilities. The first thing that the person leading the meeting said was that it was great to see so many women, which I interpreted as a comment to how rarely there are women at the FabLab. The majority of the people at the Lab that day were white indeed, I observed. And in terms of education, the way these makers are described by Børne- og Ungdomsforvaltning in the application is very revealing. They write:

“They [the makers] will be a different form of role models, since the youngsters don’t normally have contact with for example software developers, engineers or entrepreneurs.” (Børne- og Ungdomsforvaltningen n.d.:6, own translation).

Drawing from Christina Dunbar-Hester (see *Maker Culture* chapter), the projects at Smedetoften might encounter some difficulties related to the fact that the role models probably will be white, male and high educated. In the study, she concludes that it was difficult to promote the maker identity in an African-American neighbourhood, because emergent technologies have been identified with white masculinity.

It is difficult to say if it will have a consequence for Smedetoften that the role models, might in majority be people the youngster don’t identify themselves with, them having in other ethnical backgrounds. This is also addressed by Hybschmann and Jonsson that have noticed the youngster fascination with the owner of Møller Kaffe og Køkken, that has just opened a shop in the street of Smedetoften, which also has a different background than ethnical Danish (Interview JH and LJ). It is however still difficult to say if this aspect is going to play an important role. On the other hand, the fact that they are creating a safe framework for the youngsters in Nordvest to try these emergent technologies, is a positive aspect, regarding the fact that they initially wouldn’t have the same preconditions to become a part of a local maker community. Although the institutions don’t address the fact that it might be challenging for the youngster to look at experienced makers as role models, they express intentions of instructing the youngster that have been through the workshops to become role models afterwards. These might have a better precondition to succeed as role models.

It is also interesting the fact that the institutions are trying to attract the more resourceful local youngsters to the youth club, by offering programs with emergent technologies. They are assuming that the technologies itself will attract this group, what can be in accordance with an embedded understanding that technologies will always attract white, well educate “young” boys. On the other hand, Hybschmann and Jonsson are trying to make the building activities at the square as “cool” as possible, by playing loud hip hop, working with “dangerous” tools and painting graffities to attract the disadvantaged youngsters. I felt what type of spirit they are trying to give the activities at the square, as the following note describes:

“I got the feeling of being in a very ‘urban’ place, like in the movies that show scenes from the projects in NY. We were listening to hip-hop, the youngsters with cool sporty clothes where playing basketball, I

and others were just hanging out sitting in the benches, smoking cigarettes and chilling, enjoying the sun.” (Notes from Building activity) (see figure 12)



Figure 11 - Building activity at Smedetoften (own picture)

It will be interesting to see what happens when the high technological maker space is going to meet the urban environment in Smedetoften. The experiences Hybschmann and Jonsson have had with this two groups in an activity where they built sound boxes, required mediation. The “well-educated, white, young boys” where the ones with the knowledge on electronics, that had to be acknowledged by the staff, to gain the respect of the “troublemakers”, and the “troublemakers” that have learned to build things with wood, had as well be acknowledged by the staff to gain the respect of the other group (Interview JH and LJ). Although I believe that the maker activities might have the potential to get these two youth groups

to work together, it might be important to have in mind that electronics have long been associated with white masculinity, and that it can be challenging to change this path.

Finally, despite being an aspect that I haven't investigated that much, I can't just ignore the fact that this project seems to be made only for the boys and not for the girls too. The youngsters are often referred to as "the boys" by all the persons I've talked to. Both when talking about the troublemakers or when talking about the visions and plans for the square. The two times I've heard about the girls, was when both Steen Hansen and Hybschmann and Jonsson referred to how the girls are engaged in DIY make-up workshops. When I participated in the building ramp activity I observed that there were three or four girls hang-out at the square playing basket with the boys. I asked a girl seating next to me if she had participated in building the ramp, (I arrive a little late, and they had already build some part of it). She told me she hadn't, but that she had tried to make something similar at school once. I then challenged her to try the sander, which she did. But after 2 minutes she stopped, and no one incentivised her to continue. I'm aware it was one observation but combined with the way the participants talk about the project it doesn't seem to me that it will become a project that is going to challenge the gender gap in the maker culture.

Summary

Empowerment is promoted by creating a framework for the youngsters, a maker square, where they can unfold their potentials safely and contest the space as theirs. This is not without struggles. Some neighbours don't have the same ambitions for the square yet, something Områdefornyelse is working on. The empowerment of a disadvantaged social group needs to be a collective act, and therefore it's important that the local community works commonly to achieve the goal of empowering the youngsters.

To address issues of the lack of confidence that characterizes the disadvantaged young people involved, the institutions are developing a maker program around the idea of changing the youth's mindset and help them become makers, with a maker mindset. The maker mindset focuses on individual needs and entrepreneurial aspects, that might not contribute to changing the structures that have made the youth disadvantaged in the first place.

In terms of inclusion, it is positive that the institutions at Smedetofthen are aware that they need to create a safe space for the youngsters to engage in such a program, that historically has been associated with white masculinity, and thereby engage people in using emergent technologies that more and more

dominate our cities. On the other hand, the institutions point to experienced makers as inspirational role models for the youth, although not considering to what extent the youngsters are going to identify with them. An aspect that can turn out to be challenging.

INNOVATIVE POTENTIALS

Given my position where I've investigated and reflected upon the use of maker culture in an urban context, I would like to discuss how relevant innovative aspects, mentioned in *Maker Culture* chapter, are taking or can take shape in urban development and how they can contribute in achieving a more democratic, equal and inclusive city. I want as well to contribute to the discussion on the opportunities and pitfalls that might be implicated in the meeting between institutions and a grassroots movement.

I will in this chapter engage with the following questions:

How can the innovative potentials of the maker culture be unfolded in urban development?

Collaborative production

The way the maker community is creating and developing new products based on collaborative production and sharing practices is one of the aspects that is seen as innovative, because it presents a different approach to classic production and thereby allow for a de-centralized and community managed processes that don't rely "on either market signals or managerial commands" (Benkler in Smith et al. 2017:106). An example of this potential being unfolded in the studied case is the process of building temporarily benches for the square last summer in Smedetofte that I will include in the discussion of how collaborative production can be unfolded in urban development.

Having used free designs available online and having access to a CNC machine in Nordvest, made the process of producing the benches easy, if comparing to how the process of getting new public outdoor furniture normally is carried. In a classic way, the local stakeholders would have had to ask the municipality for public benches and the municipality had to have the resources to make it happen, it would most probably need to become a part of the overall plan for the area, since it is under development, which could have made the process less inclusive and slower. The way it was carried out in this experiment skipped the more bureaucratic process. Today there are a couple of benches in the square because the local institutions, together with the youngster and the FabLab had an easier access to production. Another aspect of engaging the youngster in this collaborative production process was, according to Hybschmann and Jonsson, the fact that the youngster got respect for the equipment because

they built it themselves. Things get broken often, vandalism is a common problem in the area and in youth clubs that are situated at disadvantages neighbourhoods (Interview JH and LJ).

These ideas of sharing and collaborative processes seem to be influencing the way the square is being used today and the way the Områdefornyelse Nordvest and the youth club are intending to define the maker square. Steen Hansen and Grusgaard mention that they envision the square as a public sport-facility that every citizen can access and use. The way the square is being used today, where the youngsters are allowed to paint graffiti in a wall, another local institution is starting an urban gardening project, Steen Hansen mentions a group of bee-activists that want to make activities in the square, the FabLab makers using the CNC machine and artists getting help to build green-benches for local schools will hopefully continue after the renewal. This way of using a public space where the space is shared, as well as knowledge, facilities and machines, can be seen as a practice of commoning that produce and define goods and services for the community. In critical urban studies, scholars have defined commoning as a collective and non-commodified use of public space:

“At the heart of the practice of commoning lies the principle that the relation between the social group and that aspect of the environment being treated as a common shall be both collective and non-commodified – off-limits to the logic of market exchange and market valuations” (Harvey 2012:73)

Although common spaces are often described as places where neither the market or other authorities control how it should be used, in this case the use is going to be more less defined a place where one is supposed to make something. Nevertheless, promoting the use of a square based on maker values of sharing and collaborating, and intending to equip it with production technologies and workshop facilities, might have a great potential of becoming a place where commoning is practiced. However, as David Harvey argues, common places might still need a degree of enclosure, because there are always political and social interests involved in the contesting of the commons (Harvey 2012). In the case of Smedetofte, there are intentions of opening the square and the maker activities to everybody, but the local institutions are still aware of the disadvantage position of the youngsters they work with. Therefore, they are using different tools to ensure that part of the square and specific activities is primarily for the youth, otherwise, as Hybschmann and Jonsson mention, the youngster won't take part in it at all (Interview JH and LJ), and the issues the institutions are aiming to address would not be tackled.

Regarding the discussion about the role of institutions in the unfolding of the innovative potential concerning the collective creation of common goods, it can be argued that institutions can create structures that ensure that the collective creation of common goods also include the less disadvantaged people, that initially don't have conditions or means to engage themselves. But there is a danger of also letting the institutions be the ones in charge of a maker community. Let's take a look on what happened in Barcelona, a pioneering city in exploring ways in which digital technologies can empower citizens and exploring how FabLabs and the maker movement can be integrated into city environments to help solve urban social challenges (Smith 2015). Smith, discusses in an article for *The Guardian*, how city authorities in 2015 became engaged in implementing FabLabs in the city an envisioned a town populated by makers-citizens (Smith 2015). When the opening of FabLab at Ciutat Meridiana, a working-class neighbourhood that was hit by the economic crises, the public institutions encountered resistance from the local community. The opposition was reasoned to the fact that the Lab opened where there before was a food-bank (Smith 2015). Locals then occupied the place, but after negotiations, the FabLab opened, although promises were made to re-establish the food-bank and to let the Lab focus on giving young people training and work (Smith 2015). According to Smith this conflict "shines a light on the tension between what citizens wanted from their city now, and what city-leaders envisage for future citizens" (Smith 2015). He concludes that it is essential, if the vision is to explore technology, citizenship and urban governance, to let communities lead the spaces and not allowing them to be controlled by the city authorities only.

The example of Smedetofthen shows how institutions can be important actors ensuring that the less disadvantage can take part in collaborative projects, and as shown in the chapters above, and important player in making sure that the local community is collectively engaged in the project. The example of Barcelona, shows that when the local communities aren't engaged in the establishment of collaborative spaces, projects may fail. These examples show that it can be important to ensure the social conditions are well defined, as well as having a clear definition of what a FabLab or maker space is contributing to in a local community before just implementing a makerspace in an urban area.

Local production

Another celebrated innovative potential is related to the way production and manufacturing can become personalized and customized, and meet individual need or the needs of a community. This implies that production is establish in the city and becomes a local affair.

As mentioned in *Maker Culture* chapter, the FabCity initiative is inspired by this potential and is trying to experiment with how a new form of local industries, made possible by maker technologies, can create more sustainable cities. As discussed before, the prototype of a FabCity made in Barcelona in collaboration with Space 10, did not mention the social and political structures that also may influence the further development of such a FabCity. If a change is to be made in how cities are managed inspired by FabCity thinking, we might need to prototype beyond the new technologies available, that allows us to recycle, like they did in Barcelona. In contrast, what I see being developed at Smedetofte is a project that initially has been listening to the community, getting stakeholders to work together and thereafter start to plan to establish a high-tech workshop facility. This approach might give an insight in what structural implications might need to be considered before establishing a makerspace, as well as insight in what the area has to offer in terms of integration of maker technologies and values. For example, Områdefornyelse Nordvest has got insight in the conflicts between different groups and are trying to manage them, as well as they have identified local resources, such the makers in Nordvest.

It is positive that these structural aspects are guiding and influencing the process of fostering a maker community in Nordvest, but on the other hand the public institutions are not considering the more ambitious vision of contributing to become a self-sufficient city, that challenge ways of mass-production as the FabCity is doing. It is two approaches to planning that can be identified here. One, the FabCity, has a more overall masterplan related to problems concerning sustainability, the other, the maker square at Smedetofte doesn't even mention the word, but has the focus on promoting a balanced local community. Nevertheless, the fact that a maker square will allow local production can promote sustainability. Furthermore, the fact that the youngsters are getting help and learning to repair shoes and clothes at the Youth Club, might also contribute to promote a sustainable development (Interview JH and LJ). The FabCity project aims also to engage local communities and make them self-sufficient (FabCity 2018), but if their experiments, like the one with Space10, don't also engage in understanding which implications local communities struggle with, they might fail towards inclusion and democracy issues.

If FabLabs and makerspaces are becoming centres of local production, it is difficult to envision a truly democratic space if it still promotes entrepreneurialism and self-empowering, like the plans for Smedetofte are promoting. It runs the risk of becoming a space where makers start competing instead of collaborating in improving the community. It could be interesting to see a project like the one in Smedetofte promoting the productions of commons. It can be difficult to become entrepreneur and

really break through. If the goal is to give the youngsters self-confidence and new skills, promoting commoning instead of entrepreneurialism could also be a way of giving them skills and recognition that they need to choose a different life than crime, instead of promoting values and practices that contribute to creation of uneven societies.

CONCLUSION

The growth of the maker culture is related to the fact that fabrication technologies are becoming more accessible, the internet is making sharing and collaboration worldwide possible and digital design is adding a modularity aspect to production, but also related to the fact that more and more people want to take back some agency and be in control of their lives, refusing to be merely consumers. It is a culture that was born in FabLabs, hackerspaces and makerspaces, but it's ideas, values, methods and technologies have the past decade start interesting various agents, as scholars, business and public institutions that envision that maker culture can contribute to a paradigm shift.

Wanting to understand how this growing culture is influencing urban development I have studied the planning projects at Smedetofte, that although being in their early stages, are an example of how the maker culture is being integrated in the development of the city. Inspired by urban critical theory I aim to pose critical question to the case regarding structures of power related to neo-liberal regimes that dominate society today, to reflect on whether the growth of maker culture might contribute to reinforce those structures of power or present an emancipatory alternative.

To explore the complexities of such phenomenon I have engaged in a case study, that investigates the development of a public maker square in Smedetofte, Nordvest. Using an ethnographic approach, I have conducted observations and interviewees to gain a deeper understanding of the area and the ones involved. To help me draw a framework from which I could approach the case, I have engaged with the work of other scholars that have studied the maker culture and the maker community. Their work helped me pinpoint what critical issues would be relevant to investigate in the case of Smedetofte.

I have first analysed the plans and intentions of FabLab Nordvest, Områdefornyelse Nordvest and Klub Bispebjerg in creating a maker community. This showed that Områdefornyelse and Klub Bispebjerg are trying to address issues related to the disadvantaged position of the youth in the area, which are issues that have been identified already in 2011 but are still eminent challenges in the neighbourhood. FabLab Nordvest is investing their resources in developing the area, in part because they need a space for their containers, but also because, being engaged in the maker community, find it interesting to participate in projects that bring the maker technologies, methods and values to more people.

To address the fact that some youngsters in Nordvest, both the ones that frequent the club and the clubless, don't believe in their capabilities, the institutions are developing a maker program to offer them. They are designing a program that focus on changing the youngster's mindset and empower them, by becoming makers. Since the maker mindset is mostly concerned in self-empowerment and the program being designed to help the youngsters focus on develop products and become entrepreneurs, it might not truly empower them to challenge the structures, related to liberal and capitalistic structures, that might have placed them in a disadvantaged position in the first place.

It is, nevertheless positive that the institutions are aware that the youngsters don't have the preconditions to engaged alone with the maker community and maker practices that might become more central in the future, and therefore are developing a safe maker space to help them become engaged with it. It might, however, become challenging to motivated them to become a part of a maker community that is mostly associated with white masculinity, when this group in its majority have another ethnical background. It has also been observed that issues concerning the gender gap in the maker community are either being addressed.

The use of accessible fabrication technologies in urban development can make experimentation processes easier and more democratic. A prototyping approach can be a tool in planning that test ideas out and a way of engaging other groups in participatory processes. In Smedetofthen, the bench and the rooftop the FabLab build with the youngsters was a way of testing the project out and identify the potentials and pitfalls of such a project. Using this approach might also be an alternative way to engage citizens, like the youngsters that otherwise don't participate in more classic participatory processes and give them a voice in the discussions of local development.

Promoting sharing and collaborative values that characterize the maker culture in an urban space can potentially promote the practice of commoning, and thereby begin to challenge the neo-liberal paradigm that dominate our cities. It is, however, important to ensure that disadvantaged groups can participate in these activities, as they are making sure in Smedetofthen having as primary target the Neighbourhood youngsters.

When planning to open a public makerspace, institutions should avoid technology determinism and stop believing that by giving access to emergent fabrication technologies to the citizens, these become

engaged, empowered and productive makers. To ensure social conditions first might be fundamental to succeed in citizen empowerment and promote democratic and equal developments in cities.

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