Designing urban citizenship

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Gabriele I. Schliwa

School of Environment, Education and Development
Department of Geography
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## Abbreviations

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<th>Abbreviation</th>
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<tbody>
<tr>
<td>CycleHack HQ</td>
<td>CycleHack Headquarters</td>
</tr>
<tr>
<td>DMM</td>
<td>Design Methods Movement</td>
</tr>
<tr>
<td>DT</td>
<td>Design thinking</td>
</tr>
<tr>
<td>GPS</td>
<td>General Problem Solver</td>
</tr>
<tr>
<td>HCD</td>
<td>Human-centred design</td>
</tr>
<tr>
<td>HCI</td>
<td>Human-computer interaction</td>
</tr>
<tr>
<td>HMW</td>
<td>How might we</td>
</tr>
<tr>
<td>IBIS</td>
<td>Issue-Based Information System</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and communication technologies</td>
</tr>
<tr>
<td>OR</td>
<td>Operational research</td>
</tr>
<tr>
<td>UGL</td>
<td>Understanding Group and Leader</td>
</tr>
<tr>
<td>UX</td>
<td>User experience design</td>
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Abstract

Innovation initiatives across the globe are currently transforming the spaces, practices and subjects of urban governance. An ever-increasing number has started to mobilise design thinking in the promise of empowering citizens to participate in city making. Design thinking originates from ICT development and gained prominence after the 2008 financial crisis as a process for creative problem-solving. Particularly so-called civic hackathons and innovation labs enthusiastically apply and promote design thinking without questioning the political implications of this trend.

Drawing on Foucault’s concept of dispositif, my thesis lays the groundwork to understand a global phenomenon within urban scholarship. It conceptualises design thinking as a technology of government within urban computational dispositifs and unpacks its logics and political implications. CycleHack Global Movement, a design thinking initiative that is “tooling up citizens” to improve cycling in the city through civic hackathon events, serves as an in-depth case study. Mobilising a reflexive methodology, this study is grounded in a total of 18-months of active participation in CycleHack events in Manchester and 4 years of ethnographic study of different urban innovation events.

My thesis illustrates how urban innovation initiatives develop quick technological fixes in relation to participants instead of in relation to the city. Driven by an expanding digital and design thinking industry, the active participation of citizens enables the creation of experiential markets through the urban. Design thinking thereby introduces a computational logic into urban politics through which human thought and knowledge production become interoperable with visions and realisations of ‘smart’ urbanism. Citizen-centred urban development improves customer experiences for people that participate, while political conditions in the city are maintained. In doing so, urban innovation initiatives normalise an operational logic of computational problem-solving as a way of life.
Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

Gabriele Schliwa

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To my dear parents – Danke, dass ihr immer für mich da seid.
The Solution

After the uprising of the 17th June
The Secretary of the Writers Union
Had leaflets distributed in the Stalinallee
Stating that the people
Had forfeited the confidence of the government
And could win it back only
By redoubled efforts. Would it not be easier
In that case for the government
To dissolve the people
And elect another?

Poem by Berthold Brecht (1953)
1 Introduction

The first thing I normally do when arriving to a city is to get a bike. Cycling is cheap and makes it easy to get around at any time. A bike enables me to explore places I would normally not see when bound to a bus, a metro or a car. This changed when I moved to Manchester over four years ago. Even before arriving to the city I was told the streets are not safe and I should better walk or take the bus if I do not want to put my own life at risk. Rather than giving up on my bike and being bound to the confusing offer of private bus operators, I wondered: How can Manchester become more cycle friendly? And what are the opportunities for me to impact that change? This was the first time I discovered cycling as an interesting lens to understand processes of urban change. But this thesis is not about cycling. It is about a new tool that promises to empower everyone to cycle - even in a city like Manchester: Design thinking.

Design thinking came to prominence after the 2008 financial crisis as a tool for creative problem-solving in the context of business innovation (Brown, 2008; Martin, 2009; Verganti, 2013). Today, notions of ‘design’ and design thinking appear to evolve into a new mode of governing urban life in the 21st century (Johansson-Sköldberg et al., 2013; Kimbell, 2011; Razzouk & Shute, 2012; Seitz, 2017). What was previously known as user-centered design in the context of information and communication technologies (ICT) and digital product and services development is now proliferating in the urban. Particularly so-called civic hackathons and innovation labs represent energetic workshop-type events that mobilise ‘design’-led approaches in the promise to solve complex issues together with citizens – often in less than 48 hours (Kimbell & Bailey, 2017). The approach is predominantly mobilized through toolkits or professional designers that are commissioned to facilitate citizen participation in innovation workshops under the banner of smart, sustainable or hackable city agendas. Promoted as “putting people first” approaches or “citizen-centered” innovation, a wide range of initiatives make design thinking tools accessible to the masses without questioning the political implications of this trend.
Contemporary innovation efforts are transforming the spaces, practices and subjects of urban governance, while reposition the meaning of (political) citizenship (Swyngedouw 2005). Going beyond the analysis of changing urban strategies and discourses (Vanolo 2013; de Jong et al, 2015), a range of scholars started to critically unpack the practices and mechanisms of innovation efforts in the ‘smart’ city (Cardullo & Kitchin, 2017; Gabrys, 2014; Krivý, 2016; Marvin & Luque-Ayala, 2017). As Marvin and Luque-Ayala (2017) argue, the proliferation of computerized technologies developed for the private sector, such as software corporations IBM and Cisco, have a longer historical trajectory towards developing interoperability with computational processes across urban infrastructures. Alongside these technologies, design thinking is meanwhile also promoted by large corporations such as IBM and design agency IDEO, and encourages the active participation of citizens in a human-centred (as opposed to technology-centred) approaches to city making. Positioning the emergence of design thinking discourses and practices in the context of ‘smart’ urbanism, my thesis is concerned with the role of the citizen therein.

It has been argued that discourses on governance lack any reference to a society or population and move instead towards "an art of governing premised on solving problems" (Enroth, 2014:61). This tendency is in particular reflected in so-called civic hackathon events, who promise new terrain for government-citizen interaction in response to selected problems (Irani, 2015; Schrock, 2016; Robinson & Johnson, 2016; Perng & Kitchin, 2015). Their themes are as varied and ambitious as tackling climate change (Climate-KIC Climathon), improving public services (Global GovJam), saving the UK's national health service (NHS Transformation) or making children "future ready" (Designathon Works). Images of colourful post-it notes, hashtags such as #empoweringpeople, #humancentredesign, #systemschangers are flooding social media accounts, leaving the viewer with the calming impression that people are collaboratively solving the problems of our time as we speak.
As attention and governance efforts move from populations towards issues, the notion of “urban citizenship” gained considerable attention in academic literatures on the city (Giband & Siino, 2014). Amid processes of globalization, the crisis of politics and diversification of urban areas, it promises an alternative to nation state citizenship. As Giband and Siino (2014) argue, urban citizenship manifests itself through a revised relationship with urban space. More recently, new modes of citizenship emerged in relation to changing city discourses and governance innovations, such as ‘smart citizenship’ (Cardullo & Kitchin 2017), ‘design citizenship’ (Weber, 2010; Julier 2016), ‘entrepreneurial citizenship’ (Perng et al., 2018) or ‘operations of citizenship’ (Gabrys, 2014). Weber (2010) urges scholars to take design seriously for the political analysis and understanding of citizenship, pointing to the need to better understand how citizenship, citizens and those who are not (fully) counted as citizens are designed, re-designed, or designated as beyond the scope of design by states, professional designers, activists, citizens and citizen groups, and non-citizen and non-citizenship groups, in all the richly varied ways design and citizenship interact. (Weber, 2010:8-9)

The ways in which citizens are being ‘designed’ or ‘re-designed’ however becomes ever more difficult to grasp. Innovative approaches to governing urban life have quickly become so common they evade critical reflection (Zandbergen, 2018). Notions of ‘design’ move today explicitly into the arena of politics, but are also becoming more implicit as the conceptual language moves towards the concept to ‘co-‘ (Bason, 2014) as processes of co-production, co-creation and collaboration. Tracing today’s notions of ‘design’ back in history, one of the most frequently cited sources is American economist Herbert Simon’s The Sciences of the Artificial in which he famously suggested that “[e]veryone designs who devises courses of action aimed at changing existing situations into preferred ones.” (Simon, 1969:111). If “everybody designs” (Manzini, 2015) today, central concerns arise about who precisely is everybody, what is preferable and how decisions are made in the face of voluntary and forced mass migration, processes of digitalisation and responses to economic as well as environmental crises. Richard Buchanan (1992:6) summarises the dilemma:
Without integrative disciplines of understanding, communication and action, there is little hope of sensibly extending knowledge beyond the library or laboratory in order to serve the purpose of enriching human life.

This concern resonates with contemporary understandings of design as epistemic culture (Mareis, 2011) and also implies a human-centric perspective that requires further unpacking. Considering Michel Foucault’s notion of power-knowledge (Foucault, 1980), a further concern arises as to which extent ‘design’ activity generates knowledge that leads to more empowered action and decision making.

Richard Buchanan discussed design thinking as a “new liberal art of technological culture” a quarter of a century ago. He concluded a common discipline of design thinking “is changing our culture, not only in its external manifestations but in its internal character” (Buchanan, 1992:21). Since the publication of Buchanan’s paper, a range of design thinking schools and technology industries contributed to intensify rather than unpack this cultural change. For example, the Hasso Plattner Institute of Design at Stanford University (in short the “d.school”) and the HPI School of Design in Potsdam, Germany (in short “HPI D-School”) are two key institutions to educate future designers and have been influential in disseminating design thinking toolkits. Their design thinking process is composed of five stages consisting of ‘empathise’, ‘define’, ‘ideate’, ‘prototype’ and ‘test’ (Stanford d.school, 2010). Even though the approach is promoted as 21st century skill (Razzouk & Shute, 2012) and a new collaborative “we intelligence” (HPI D-School, 2016), articulations of what design thinking aims to achieve remain vague, are overly confident or curiously refer back to the process as value in itself. As design thinking is said to evolve into the “new spirit of capitalism” (Kimbell, 2011; Seitz, 2017), the emerging design industry thrives on collaborations with philanthrocapitalists (Wilson, 2014) and governments in the promise of solving the problems capitalism continues to create by re-framing system failures as opportunities (The Rockefeller Foundation, 2014; Design Thinking Philanthrophy, 2016).

Questioning the emanzipatory and empowering promise of emerging urban
innovation initiatives, the overall aim of this research is to understand the political implications of mobilizing design thinking for urban citizenship and the city. Following questions are guiding my research and analysis. The first has been the guiding question throughout my fieldwork, the second emerged based on my empirical findings in order to address my analytical needs:

a) What is the role of the citizen in ‘smart’ governance innovation and how do urban innovation initiatives design new modes of urban citizenship?

b) How can we conceptualise design thinking to understand its mechanisms of power and political implications for the city?

Designing urban citizenship describes the central idea and hypothesis that emerged from my fieldwork. It is based on four years of engaged ethnographic research in the context of urban innovation including 18 months personal experience of actively participating in and facilitating urban innovation events endeavouring to improve cycling in Manchester. The case study CycleHack Global Movement (CycleHack) explicitly mobilises design thinking to “tool up citizens” in order to improve cycling within 48 hours through a civic hackathon event format. The explicit use of design thinking as well as the short timeframe of the initiative – hosting a 48 hour event as opposed to a longer term project – made CycleHack a critical case study (Flyvbjerg, 2011) and therefore a rich example to study the governing rationalities and techniques. The initiative was founded in 2014 and expanded to over 25 cities with support of Glasgow’s Future Cities demonstrator project. Following the development of this young design thinking initiative over time between 2014 and 2017 represented an ideal opportunity to study design thinking in different urban contexts from the perspective of participating citizens. My thesis draws on literatures on ‘smart’ urbanism, architecture, critical theory, design research as well as computer science to unpack and understand the rising phenomenon of design thinking in cities today.

The next section Conceptual Framework positions design thinking within current academic debates on ‘smart’ urbanism and develops a conceptual framework that helps to understand implicit power mechanisms. Taking the
problematisation of ‘the citizen’ in urban innovation practices as point of departure, the first section elaborates on the notion of ‘urban citizenship’ and reviews how changing ‘smart’ urban discourses and rationalities shape the roles and responsibilities of citizens in city making. The second section moves on to focus on the practices of active citizenship in urban innovation. It unveils that such active citizenship is facilitated through design thinking. A genealogical perspective on design thinking is provided that unveils a computational nature as common governing rationality between contemporary understandings of design thinking and ‘smart’ urbanism. Based on the findings of section two, the third section conceptualizes design thinking as technology of government within a wider set of urban computational dispositifs (Gabrys, 2014; Marvin & Luque-Ayala, 2017; Pløger, 2008). I elaborate on Michel Foucault’s notion of dispositif as conceptual tool with its function in response to an ‘urgent need’ (Bussolini, 2010; Callewaert, 2017; Frost, 2015). My framework positions design thinking therein as a normalizing device that enables the interoperability of citizens with computational logics and practices in the city.

Moving from theory to practice, the Methodology section justifies the approach and methods I used to conduct my research and analysis of the computational dispositif I was studying from within. My study is grounded in a total of 18-months of active participation in CycleHack events in Manchester and 4 years of ethnographic study of different urban innovation events in a smart city context. The central element was a reflexive iterative process that went in my case in one direction only, which was leaving the field in which I was already embedded in at the start of my research. Central for my mixed methods approach was the triangulation of different types of knowledges: episteme, techne and phronesis. In order to enhance understanding of power relations and rationalities I focused on phronesis – to account for experience over time and experiential knowledge of innovation events - as well as technical knowledge (techne) in addition to epistemic knowledge. I developed my conceptual framework after the completion of my active participation, which enabled me to disentangle different types of knowledges in order to understand how
design thinking shapes power relations within an urban innovation milieu.

My empirical chapters are structured based on three different positionalities and knowledges. The first empirical chapter (chapter four) considers the governing milieu by focusing on the actors and their motivations to engage in urban innovation based on epistemic knowledge and discourse (episteme) that does not require active participation in CycleHack. The second empirical chapter (chapter five) moves from actors to activities and draws on technical knowledge (techne) to understand the design processes encountered during the facilitation of a CycleHack civic hackathon event. The last empirical chapter (chapter six) expands the scope of analysis beyond the event by following and discussing the outcomes of CycleHack events based on phronesis. I briefly elaborate on the content of each chapter:

*Designing community – A network for new form of activism* analyses the discursive formations and actors within the urban innovation initiative CycleHack Global Movement. It explores how participants as well as non-participants envision change in the city, which makes inherent tensions between the CycleHack community and urban activists explicit. I consider three major aspects: First, cycling can be understood as the subject of concern that mobilises actors to participate and engage in affective, voluntary labour. Second, the community mobilised through cycling under the initiative CycleHack can be understood as a latent knowledge asset that can be mobilised to respond to challenges or ‘urgent needs’ in the future. Third, the building of a community of ‘design thinkers’ can be understood as the configuration of a network that links human knowledge to computational problem-solving in the future. Those that do not think like a designer are excluded from the network.

Chapter five, *Designing new thinking – System integration through normalisation*, analyses the activities and practices within urban innovation milieus, particularly focusing on the facilitation techniques deployed during CycleHack events. Particular attention is put on the mechanisms of power and logics of design thinking tools. This chapter unveils four major aspects of design thinking in the city: First, the role of the designer as facilitator of
computational processes. Second, the role of the event to trigger computational problem-solving in response to a challenge – in this case to improve cycling within 48 hours. Third, the politics of normalising ways of thinking and knowledge production through creativity to become interoperable with processes of computational problem-solving. Fourth, the transcendence of computational processes from a computational domain into the workshop through the creation and extraction of ideas that are supposed to be immediately actionable within urban computational dispositifs.

The final empirical chapter, 6 Designing urban experiences – Interoperability with the digital economy, widens the scope of the empirical case by analysing outcomes beyond the event and the economic drivers behind it. It considers how and if actionable ideas become implemented to improve the urban cycling experience. Central to this analysis is experiential knowledge that I argue is subject to governing and economic exchange. This chapter discusses concerns about ‘dark patterns’ of design thinking in the city as a means to address unintended effects that result from the participation in urban innovation initiatives.

Chapter seven concludes my thesis by addressing the research questions and synthesising the key arguments made. I state my contribution to knowledge and end with suggestions for future research on ‘design’ in the city.

As the proliferation of computational technologies across the urban has become ever more elusive, my thesis designing urban citizenship lays the groundwork to understand a global phenomenon with potentially transformative impacts for urban life in the digital age. The next chapter takes the first step by addressing the first central question: What is design thinking?
2 Conceptual framework
Designing urban citizenship

In Chinese, ‘she ji’ is the term for design. The term originated in military affairs. It is a word consisting of two characters, ‘she’ and ‘ji’. ‘She’ means set-up or planning. ‘Ji’ means strategy or calculating. Putting these two characters together, she ji means to establish a strategy. (Friedman et al., 2015:2)

Introduction to the first edition of
She Ji - Design, Innovation, Economics Journal

2.1 Introduction

Design gives material form to the ideological embodiment of a particular politics (Fry, 2010). An example found in Gary Huswit's design documentary Objectified (2009) illustrates this claim in relation to industrial design. Therein design critic Anne Rawsthorn explains how the goal of industrial design has been mass production - producing standardised objects for consumption by millions of people. One of the earliest examples of applied design thinking could be attributed to Ying Zheng, the First Emperor of unified China in 221 BC. One of his problems, as he was colonising what would eventually become China, was that each of his archers made their own arrows. If an archer died in battle, a fellow archer could not pick up his weapon and start shooting at the enemy, because bow and arrows would not fit. The solution the First Emperor and his advisors came up was to standardise the design of all weaponry so that each arrow would fit any bow (Rawsthorn, 2013).

While we can read a lot into the above story, one aspect is of particular relevance in relation to the city today: the role of design thinking for the production of standardised objects. It has been argued that the operation of standards can be understood as an expansion of politics beyond territory in an increasingly complex world (Peña, 2014). The generic use of the term ‘the citizen’ to describe the involvement of wider parts of society in urban innovation suggests a certain standardisation understood as the establishment of a new norm. This is reflected in descriptions of collaborative
governing processes as public-private-people partnerships (Majamaa, 2008; Schaffers et al., 2011), citizen-driven innovation (Eskelinen, Garcia Robles, Lindy, Marsh, & Muente-Kunigami, 2015) or human smart cities (Concilio & Rizzo, 2016). The problematisation of ‘the citizen’ and forms of citizenship in an urban context is the starting point to develop this theoretical framework. Problematisation emerges according to Foucault out of practices (Bacchi, 2012; Foucault, 1984). It is therefore the primarily concern to identify what governing spaces and practices in an urban context give rise to problematise ‘the citizen’ in urban innovation and thereby design new modes of citizenship.

This combined literature review and framework serves to unpack and integrate the key concepts relevant to my thesis. The notion of designing urban citizenship evolved since October 2016, which was after I completed the most active phase of my fieldwork in which I actively participated in ‘smart’ city initiatives. This approach aligns with grounded theory, which has become a popular method for the analysis of qualitative data, with interviewing being the most frequently form of data collection (Charmaz & Belgrave, 2012). Through a reflexive research methodology that I detail in chapter three, I gradually contextualised and translated participants’ experiences in consideration of this conceptual framework to understand the phenomenon I was researching from within. The practices and operations of citizenship represent the central focus of analysis for my thesis. In line with an increasing body of literatures, I use Foucault’s concept of dispositif to better understand power relations and infrastructural configurations in the city (Braun, 2014; Easterling 2016; Gabrys, 2014; Pløger, 2008). This enables me to put emphasis on innovative governance practices and spaces as opposed to a sole focus on subjects of governance, thereby stressing the process of designing more than resulting modes of urban citizenship.

The following sections review how such designing of urban citizenship is currently analysed and understood. I do so in three steps: The next section clarifies the notion of urban citizenship and positions my thesis in the context of urban innovation, in particular within the literatures on ‘smart’ urbanism. It provides a review of contemporary understandings of citizenship in the
‘smart’ and ‘hackable’ city. Here, I will elaborate on innovative governing spaces, in particular civic hackathon events, that invite citizens to participate in city making. The subsequent section 2.3. serves to address the still widely underacknowledged role of design thinking in urban geography. I address this gap by making explicit that design thinking is mobilised to facilitate collaboration in innovative governing spaces, such as for example civic hackathon events. Prior to illustrating this in my empirical chapters, this section serves to foreground the historically marginalised underlying computational nature of design thinking and its rise in the digital economy today. Finally, section 2.4 conceptualises design thinking as technology of government within ‘smart’ urbanism. It elaborates on the concept of dispositif as a lens to understand the practices and processes of designing urban citizenship through Michel Foucault’s modes of disciplinary and normalising power.

Going back to the initial example of China, key aspects to consider are: What precisely is the strategy? Who or what is the object or objective? Who is holding bow and arrow? Just as urban infrastructures often only become visible and disrupt cities when they fail (Graham, 2009), design is often said to be 99% invisible and might function strategically like a “Trojan Horse” (Hill, 2014). This chapter makes implicit design thinking processes explicit in preparation for the analysis of my case study in the empirical chapters.

2.2 Urban citizenship between discourse and practice

Contemporary design-led innovation efforts are repositioning the meaning of (political) citizenship (Swyngedouw 2005), and change the ways in which urban infrastructures are currently being reconfigured. The concept of citizenship has been of renewed interest for political philosophers and social scientists for over two decades (Perron, Rudge, & Holmes, 2010; Schinkel, 2010; Weber, 2010). This renewed interest in notions of citizenship relate to wider debates on transnational migration, globalisation and multiculturalism (Balibar, 2003; Kymlicka & Norman, 1994), while the concept has also found prominence in scholarship on more specific fields such as psychiatry (Perron
et al., 2010), sport (Eley & Kirk, 2002) or volunteering (Baillie Smith & Laurie, 2011). Citizenship can be generally understood as “the experience of belonging to a socio-political community vested with specific rights and responsibilities that shape one’s life within a broader social, economic and political system” (Perron et al., 2010:100). Highlighting the role of the state, Schinkel (2010) argues that, in the case of the Netherlands, a shift from formal citizenship to moral citizenship occurred in which the “moralisation of citizenship is largely state-initiated and is accompanied by a neoliberal focus on ‘individual responsibility’” (Schinkel, 2010:256).

The notion of “urban citizenship” is given considerable attention in academic literatures on the city (Giband & Siino, 2014). Acknowledging various literatures concerned with state citizenship as well as citizenship as formulated in governance beyond-the-state innovations (Swyngedouw, 2005), my thesis and theoretical framework focusses on problematisations of citizenship in urban innovation initiatives. As Giband and Siino (2014) argue, urban citizenship is established through a new relationship with urban space. It proposes an alternative to nation state citizenship against the backdrop of globalization, the crisis of politics and diversification of urban areas. Going beyond citizen-state relationships through direct collective or individual engagement with the city, urban citizenship is “shifting the debate towards the active citizen’s territorial engagement” (Giband & Siino, 2014: 644). The interesting parallel here is the previously mentioned role of standardisation as an expansion of politics beyond the territory (Peña 2014), which in this case is reflected in the changing scale from state territory to cities as new territories.

With urban autonomy being recently highlighted as a new political project for cities in the wake of recently intensifying debates over this subject (Bulkeley, Luque-Ayala, McFarlane, & MacLeod, 2018), questions of urban citizenship as opposed to state citizenship gain relevance. As highlighted in the introduction, Weber (2010) urges scholars to take design seriously within the realm of citizenship studies to address the political and suggests:

If we want to better understand citizenship, we need to better understand how citizenship, citizens and those who are not
(fully) counted as citizens are designed, re-designed, or designated as beyond the scope of design by states, professional designers, activists, citizens and citizen groups, and non-citizen and non-citizenship groups, in all the richly varied ways design and citizenship interact. (Weber, 2010:8-9)

In line with this concern, my framework helps to understand how urban citizenship is “designed” and “re-designed” and by what means through design thinking. To do so, I move from debates about state citizenship or citizenship in specific domains of life to the contemporary city. In the contemporary urban context, new modes of citizenship emerged in relation to changing city discourses and governance innovations. This framework positions emerging discussions and evolutions of new modes of urban citizenship in the still most dominant urban discourse, the ‘smart’ city.

2.2.1 The ‘smart’ city and operations of citizenship

After the ‘sustainable’ city promised to solve urban problems by greening the economy (Agyeman & Evans, 2003; McCormick, Anderberg, & Neij, 2013), current academic debates are predominantly concerned with the ‘smart’ city (de Jong et al., 2015). Since its rise after the 2008 financial crisis, there has been little consensus over the precise meaning of a ‘smart’ city. Instead, we encounter a continuous re-framing and re-interpretation of ‘smart’ urbanism. As Luque-Ayala and Marvin (2015) suggest, one reason for this ambiguity is that the term means different things to different disciplines. Visions about the ‘smart’ city are predominantly infused with normative visions of a future in which digital technology represents the main driver for change (Luque-Ayala & Marvin, 2015). Large corporations, such as technology and information technology (IT) solution providers IBM and Cisco, have been on the forefront to promote stories and visions of urban technological optimisation (Söderström et al., 2014). Further proposed and funded by the European Union and other international funders, the smart city imaginary “has been reclassified to produce new visions of the ‘good city’ and the role of private actors and citizens in the management of urban development” (Vanolo, 2013:883). Visions of the smart city gone mainstream appeal in particular to
policy-makers as they promise efficient management of governance processes, both financially and in terms of resource uses (Cowley et al., 2018).

Arguing “against the smart city” (Greenfield, 2013), practitioners and scholars have started to question the concept by raising concerns about democracy and citizenship (Greenfield, 2013; Halpern, LeCavalier, & Calvillo, 2013; Kitchin, 2014; Townsend, 2013). Following these more critical accounts, smart cities can be for example understood as or corporate story telling (Greenfield, 2013; Söderström et al., 2014) or techno-utopian policy mobility (Wiig, 2015). As such, they provide a strong notion of introducing corporate principles into urban life that manage the city as a system of networked connections, processes and flows (Kitchin, 2014; Klausur et al., 2014; Wiig & Wyly, 2016). Smart cities may therefore further intensify the splintering of urban networks that dominated the latter part of the twentieth century, creating deep divides between those with access to ‘smart’ and those without (Kitchin & Dodge, 2011; Klausur et al., 2014; Luque-Ayala & Marvin, 2015; Graham & Marvin, 2001). Of major importance is the regulation and management of constant logistical circulations, rather than the integration of particular places, people or functions (Kitchin, 2014; Luque-Ayala & Marvin 2016).

In this context, urban citizenship is imagined as an operation mediated through digital technologies. Considering smart and sustainable discourses in conjunction, Gabrys (2014) analysed “how practices and operations of citizenship emerge that are a critical part of the imaginings of smart and sustainable cities.” (Gabrys, 2014:32). Even though telecommunication technologies have been deployed in cities since the 1990s (Graham, 1995), the smart city enabled these technologies to surface and enter wider public awareness of urban infrastructures (Luque-Ayala & Marvin, 2016). Highly visual and visualised modes of governing through ‘data dashboards’ (Kitchin, 2016) or “Urban Operating Systems” (Marvin & Luque-Ayala, 2017) co-evolve with a body of literature critically investigating notions around governing through code (Klausur et al., 2014; Gabrys, 2014). Despite rising concerns about issues of urban surveillance, via for example new security apparatuses governed by algorithms (Amoore, 2017), this trend appears to be intensifying.
At the same time, a significant proportion of smart city discourses, projects and publications continues to highlight the opportunities arising from the use of ICT towards more equal, effective and efficient public services (Concilio, Bonis, Marsh, & Trapani, 2012; de Lange & de Waal, 2019). Following the logic “Society in the loop” for an engaged civil society that has a say in digital development (Robinson, 2018), a vast number of initiatives driven by national and international funding streams as well as private investments currently materialise the smart city. In the face of normative calls for citizens to participate in ‘smart’ cities, scholarship started to highlight the relevance of conducting normative work (Cardullo & Kitchin, 2017). Today, ten years after Hollands published the widely cited paper “Will the real smart city please stand up?” (Hollands, 2008), academia has not only been debating the smart city phenomenon at a discursive level but moreover plays a key role in enabling smart city visions to slowly but steadily ‘stand up’ and become demonstrable case studies.

2.2.2 The ‘hackable’ city and active citizenship

Suggesting to represent an alternative to the technologically deterministic and often portrait as ‘top-down’ approaches to ‘smart’ urban development, a new set of initiatives emerged that promises to empower citizens to participate in city making. As the general public is still largely unaware of the smart city or does not find it a useful concept (Thomas, Wang, Mullagh, & Dunn, 2015), a new era of urbanists and technologists have started to focus on the “smart citizen” instead (Waag, 2013). This gave rise to a new form of urban strategies that revamp the smart city as “human smart city” (Concilio & Rizzo, 2016) or “hackable city” (Ampatzidou, Bouw, van de Klunder, de Lange, & de Waal, 2016) where “smart citizens prototype early” and become active participants in city making (Hemment & Townsend, 2013). This scholarship at the interface between the top-down ‘smart’ city and the bottom up ‘hackable’ city seeks to advance the debate by moving beyond “the (promises of) practices of computer-aided community organisation” towards a “systemic understanding of the interactions between institutional actors such as local governments and bottom-up civic initiatives in the context of democratic societies.” (de Lange &
de Waal, 2019:5, emphasis added). This promises a more analytical focus, while focussing on interactions within defined system boundaries.

Such continued re-invention and repackaging of smart city discourses that promise “under a new strategy, a new name or a new innovation, this time, we will get it right” (Graham, 2015) is a condition that human geographer Steve Graham labelled as “almost thereism” (Graham, 2015). Along similar lines, Vanolo (2013) describes the smart city as a ‘disciplinary strategy’, providing a discourse that may function as a “powerful tool for the production of docile subjects and mechanisms of political legitimisation” (Vanolo 2013:883). ‘Docile’ comes from the Latin word ‘docere’, which means ‘teaching’ – a docile student is hence easy to teach. The projects associated with the idea of ‘hackable’ city making are smaller scale and often more aligned with civic tech instead of high tech. This takes the form of so-called urban living labs (Schliwa & McCormick, 2016; Voytenko et al., 2015), innovation labs (Eskelinen et al., 2015), jams or civic hackathons (Perng et al., 2018; Schrock, 2016; Robinson & Johnson, 2016). Rather than large urban management systems or ideas of city-wide IT system solutions as the likes of IBM or Cisco promote, these initiatives promise to engage citizens more democratically in smart city projects. The understanding of democratic engagement is no longer the legitimacy of representatives and public administration, but understood through the direct and active participation of citizens in the process of ‘smart’, or using the new term ‘hackable’, urban development (de Lange & de Waal, 2013; Concilio & Rizzo, 2016).

A growing number of publications, manifestos and toolkits are meanwhile available online, developed and written with technologically minded research institutes or innovation labs such as Waag Society in Amsterdam, FabLab in Barcelona or Future Everything in Manchester. The Smart Citizen Manifesto (Waag, 2013), for example, is a short document developed at technology research institute Waag Society in Amsterdam that summarises the vision for a ‘smart citizen’. The Hackable City manifesto describes in a similar manner the new role of the citizen to appropriate data and technology (Lange & Waal, 2013). Making Sense is another toolkit report funded by the European Union
and developed in collaboration with human-computer interaction scholars that suggests ways of creating communities around issues of common concern and ‘making sense’ of data through digitally enabled environmental sensors (Waag, 2018). It is in this realm that we find notions of ‘active citizens’, ‘hacking citizens’ or ‘smart citizens’ emerging (Ampatzidou, Bouw, van de Klunder, de Lange, & de Waal, 2016; Hemment & Townsend, 2013). Recent urban scholarship has begun to critique these approaches, raising awareness to new problematics associated with “cybernetic citizenship” or ideas of “rapid democracy” (Zandbergen, 2018).

Practical examples are not only toolkits, but also city-wide events, such as "Design and the City" held in April 2016 in Amsterdam, that explored social and democratic "citizen-centred design approaches for the smart city" (Hogeschool van Amsterdam, 2016; Hill, 2016) or the Beirut Design Week 2018 under the theme “Design and the City: _____” (Beirut Design Week, 2018). It is precisely within a ‘smart’ city discourse and milieu – that criticises passive forms of citizenship and technocratic urban management - that ‘hacking’, 'design' and design thinking terminology emerges around modalities of citizenship that imply the active participation in city making.

In conclusion, contemporary urban innovation discourse witnesses a change in language that let the initially heavily criticised ‘smart’ city disappear, only to be resurrected under the banner of the ‘hackable’ city or ‘design’ and the city. This is accompanied with a move from passive citizens within the ‘smart’ city towards the ‘active’ citizen in the ‘hackable’ city, who is ought to be empowered by adapting a 'hacker' ethic and participate in city making. This rearticulates state-citizen relationships by proposing urban citizenship through direct engagement with urban space (Giband & Siino, 2013). Discussing the opportunities emerging from design citizenship, Julier (2016) emphasises the need to account for the Janus-face of such governance innovation (Julier, 2016; Swyngedouw, 2005). Of central relevance is to understand how this change in discourse leads to a change of governing rationality and more or less empowered citizenship in practice.
2.2.3 Events for ‘active’ citizenship: The case of civic hackathons

Practices of active urban citizenship become increasingly mediated through events. Public events are traditionally associated with entertainment or disruptive incidents in the city. Today, events emerge as new spaces of governance and citizen participation in response to a need or problem in the city. Prior to the emergence of the ‘smart’ or ‘hackable’ city, citizen participation was predominantly associated with planning processes of longer-term urban development projects. Therein, conflict is immanent to planning and argued to be particular to this practice within a pluralistic, multicultural society (Pløger, 2004). In the ‘smart’ city, the top-down characteristics of traditional technologies of planning are argued to become rejected in favour of efficiency and emergence, resulting in ‘anti-planning’ (Cowley & Caprotti, 2018). Seen from the perspective of the citizen, previous analyses of governing mechanisms, rationalities and visions of the ‘smart’ city were based on vision documents (Gabrys 2014), the spectacle of urban operating systems (Marvin & Luque-Ayala 2017), the experience of visiting urban showrooms (Ek 2011) or the practices of citizen sensing through monitoring devices for environmental sensing (Zandbergen, 2018, Nolde, 2018). Complementary to these, my thesis will analyse an urban innovation initiative that suggest to govern the city through the active participation in an event. It does so by ‘tooling up’ citizens with design thinking in the promise of empowerment.

One of such event formats are civic hackathons. Different from the constant monitoring of citizens via digital technologies as well as different from the ongoing or episodic participation in e.g. participatory planning, civic hackathons are time condensed spaces that promise new terrain for government-citizen interaction in response to specific challenges (Irani, 2015; Schrock, 2016; Robinson & Johnson, 2016; Perng et al., 2018). While actively promoted by government and corporate actors, rising criticism of civic hackathons problematises their actualisation of citizenship through “a short-lived event dominated by an unrepresentative participant population” (Gregg, 2015:186), resulting in temporary experiments of democracy and speculative
citizenship (DiSalvo et al., 2014 in Gregg, 2015). While much of the civic hackathon literature focusses on notions of “entrepreneurial citizenship” (Perng et al. 2018), my thesis is concerned with the mostly invisible facilitation practices and ways of thinking that underpin these event spaces to understand the ways in which these design modes of urban citizenship and impact urban infrastructural reconfigurations.

A majority of hackathon literatures focusses on data practices that are explicitly linked to ‘smart’ urbanism (Perng et al, 2018). In contrast to these hackathons, that are predominantly concerned with the production of technical solutions for the exploitation of new markets, civic hackathons put social concerns at the centre (Gregg, 2015). This shift in attention has been conceptualised by making the difference between “focus-centric” and “tech-centric” hackathons (Briscoe & Mulligan, 2014). The specific subset of civic hackathons subject to my investigation are “focus-centric” formats that suggests to provide a progressive and social alternative by focussing on ‘design’ and ‘the social’ as opposed to technology.

As my fieldwork found, these civic hackathon events (as only one example of a variety of innovative ‘design-led’ public engagement events) become increasingly professionally facilitated through so-called ‘design thinkers’. To better understand the core subject of my study, and following the need that an “analysis of the interface between the urban and IT requires a historical and theoretical perspective” (Marvin & Luque-Ayala 2017:84), the following will provide a short history of the present design thinking phenomenon in the city. I will thereby unveil its computational nature, which counter-argues the widespread public perception that ‘design’ provides an alternative approach to computerized data practices and technologies.

2.3 Design thinking for urban governance innovation

This section will unpack what design thinking as a discourse and practice is today and where it originally came from before it surfaced in the city through urban innovation events. The next sections will emphasise a shift in governance towards problem-solving. She second section provides a short
history of design thinking, and by doing so, unveils the computational nature of this emerging problem-solving approach. The third subsection explains how and why this logic is relevant under today’s dynamics of cognitive and computational capitalism in the creation of new markets driven by the digital and experience economy.

2.3.1 From governing populations to solving urban problems

As Enroth (2014) argues, the “discourse on governance is taking us from an art of governing premised on producing policy for a society or a population to an art of governing premised on solving problems with no necessary reference to any kind of society or population.” (Enroth, 2014:61). Instead of referring to a population or society, contemporary governance discourses and practices suggest “citizen-driven” and “human-centred” approaches to innovation or urban issues. Despite the mentioning of ‘citizens’ and 'human', these governing efforts suggest to engage with the city in relation to a problem instead of relation to an urban population. This is an important notion to which I will return in section 2.4. For now, it is important to consider how this shift from governing populations to solving problems is reflected in contemporary urban innovation efforts through design thinking.

As my empirical work found, design thinking for urban governance innovation is predominantly mobilized through toolkits or professional designers that are commissioned to facilitate participatory innovation workshops under the banner of sustainable, experimental, smart or hackable city agendas. Taking the form of e.g. civic hackathons and urban labs, these innovation workshops and initiatives are bounded spaces in which citizens are invited to share their needs, knowledge and ideas in relation to public issues (Evans et al. 2016; Robinson & Johnson, 2016). These practices are multiple and varied, so I shall again emphasise that I focus on design thinking practices, that became explicit in business innovation (Brown, 2008; Martin, 2009; Verganti, 2013), then design for public policy development (Armstrong, Bailey, Julier, & Kimbell, 2014; Kimbell, 2011; Kimbell & Bailey, 2017) and meanwhile in urban governance contexts more widely.
A range of examples for human-centred and ‘design’-led urban governance can for example be found in the 2015 publication Citizen-Driven Innovation - A guidebook for city mayors and public administrators (Eskelinen, Garcia Robles, Lindy, Marsh, & Muente-Kunigami, 2015) written in collaboration with the World Bank and the European Network of Living Labs (ENoLL). The guidebook includes a variety of case studies and advice for city mayors, proposing to conceive of citizens as “valuable sources of first-hand knowledge about a city’s problems” (Eskelinen et al., 2015). This rationality aligns with ideas of the citizen as an “operational component” of infrastructure instead of a political subject (Luque-Ayala and Marvin 2016:205) as the distinction between users and citizens continues to blur (Schliwa & McCormick 2016). Such “operations of citizenship” (Gabrys, 2014) reduce the rights and responsibilities of citizens to providers of user data. The critical question is hence not only who has a say in urban development, but moreover in what ways people have a say once process technologies enter the arena of politics.

To understand the emergence and nature of these process technologies for urban decision making, we need to look a bit back in history. Herbert Simon is widely cited to be one of the first researchers who talked about design as a “way of thinking” in his 1969 publication The Sciences of the Artificial (Simon, 1969). Several blogs reference his work today (from interaction design blogs to online newspapers) repeating the below paragraph word by word:

Herbert Simon outlined one of the first formal models of the Design Thinking process. Simon’s model consists of seven major stages, each with component stages and activities, and was largely influential in shaping some of the most widely used Design Thinking process models today. (Interaction Design Foundation, 2017)

One of these blog posts further suggests how Simon is “noted as having spoken of rapid prototyping and testing through observation, concepts which form the core of many design and entrepreneurial processes right now.” (Interaction Design Foundation 2018). While Herbert Simon’s work resonates strongly with design thinking today, a major part of his work focused on artificial
intelligence, investigating whether it is possible to synthesise human forms of thought through computational mechanism (Newell & Simon, 1961).

**Figure 2.3-1**: General Problem Solver and Double Diamond frameworks.

Source: Based on A. Newell et al. (1959) and UK Design Council (2018)

The alignment of design thinking with computational logics rather than design can be traced within the historical origins of the very idea of problem-solving. Publications co-written by Simon together with computer scientist and cognitive psychologist Allen Newell are seldom referenced in current design thinking articles. Two of their papers in particular help to unpack the computational nature underpinning design thinking. *A General Problem-Solving Program for a Computer* (Newell, Shaw, & Simon, 1959) and *Computer simulation of human thinking* (Newell & Simon, 1961) were issued by US think tank RAND cooperation. RAND stands for "Research ANd Development" and is an American nonprofit global policy think tank. RAND developed amongst others defence technologies, of which many became re-appropriated for civilian uses and meanwhile also in cities (Light, 2002; Halpern, 2014; Marvin & Luque-Ayala, 2017). The two papers I refer to were written and published before *The Sciences of the Artificial* with its famous quote “[e]veryone designs who devises courses of action aimed at changing existing situations into preferred ones” (Simon, 1969:111). The process and logics described in the
article in the development of a tool called General Problem Solver (GPS) overlap widely with the ways design thinking is promoted today, as for example the similarities with the UK Design Council’s ‘Double Diamond’ framework show (see Figure 2.3-1). The similarity is an iterative approach to problem-solving, while the difference in terminology refers merely to the framing of the problem as “command to achieve goal” and the solution as “goal achieved”.

Problem-solving and operational thinking is however not merely computational, but moreover a human activity that was translated into machines and algorithms. Principles of artificial intelligence and machine leaning were influenced by French Psychologist Jean Piaget’s theories on problem-solving in child development. Piaget personally attended design research conferences and published Relations between psychology and other sciences, where he discusses principles of psychology in relation to artificial intelligence and cybernetics (Piaget, 1979). He proposed four stages of cognitive development which he conceptualised as (1) sensorimotor intelligence, (2) preoperational thinking, (3) concrete operational thinking, and (4) formal operational thinking. Concrete operational thinking is developed at the age seven or eight and relates to appropriation in computational domains. The relevant characteristic about this particular state is logical reasoning about real situations (Beilin, 2010; Wood, 1998). This operational phase can be seen as a trial and error phase in human learning and thinking, while ethics and morals are developed from about age ten onwards.

We encounter similar logics of child learning trial and error in today’s discourses and practices of the experimental city and urban living labs, that suggest to test and learn from what works in a real-life environment (Evans et al, 2016; Yoytenko et al. 2016). Piaget’s child development theories also had influence on Jürgen Habermas theory on communicative action and were also informing research on how to think mathematically (Schoenfeld, 2016). This suggest decision making on the basis of information processing.

The absence of references to child development theory, defense technology research and computer science in popular discourse about ‘design’ and design
thinking can be understood by what Michel Foucault terms ‘subjugated knowledges’. The relevance to understand historical subjugated knowledges relates to today's huge appeal of design thinking as an aspirational discourse and practice that engages citizens in new labour relations through the urban. As Foucault (1980) explains:

(...) historical contents that have been buried and disguised in a functional coherence or formal systemization.[...] By ‘subjugated knowledges’ one should understand something else...namely a whole set of knowledges that have been disqualified as inadequate to the task or insufficiently elaborated; naive knowledges, located low down on the hierarchy, beneath the required level of cognition or scientificity. (Foucault, 1980:81)

The observed parallels between the General Problem Solver, design thinking and contemporary governance logics shall provide the basis to let knowledges that were subjugated come to the surface again. What requires further unpacking is the computational nature between emerging visions of the ‘smart’ city and ‘design’ practices today.

2.3.2 The computational nature of design thinking: A short history

Since the 2008 financial crisis, design thinking has risen to prominence not only as an approach for creative problem-solving and customer experience design in the context of business management and innovation (Brown, 2008; Martin, 2009), but also far beyond the private sector (Bason, 2014; Mareis, 2011; Kimbell, 2011; Julier, 2017; Cowley et al. 2018). Tim Brown, CEO of design consultancy IDEO and a prominent advocate of design thinking, inspired designers at a 2009 TED talk - entitled Designers -- Think Big! – to solve complex global challenges. Over the past twenty years, Brown's IDEO has been at the forefront of design agencies increasingly commissioned to use design thinking to address problems that appear “far afield from traditional design” (Brown & Wyatt 2010). This section will explain why design thinking does not only appear far afield from traditional design, but moreover is far afield from traditions such as urban design (King, 1988; Sorkin, 2009) by foregrounding its computational nature.
Few of the current design thinking literature reviews put particular emphasis on the links with computational science or today’s notions of ‘design’ prior to Herbert Simon’s *The Sciences of the Artificial*, which was published in 1969. Notable exceptions are historian Orit Halpern’s *Beautiful Data – A history of vision and reason since 1945* (Halpern, 2014) and Claudia Mareis’ *Design as epistemic culture – Interferences between design and knowledge discourse since 1960* (Mareis, 2011). Halpern (2014) traces the post-war impact of cybernetics and communication sciences and thereby illustrates how today’s shifts towards visualising and analysing information became intelligible as emerging governing rationality in the ‘smart’ city. Mareis (2011) traces emerging governing rationalities from the perspective of knowledge production through the lens of design and a shift in the perception of design as epistemic culture. Both works let us understand today’s ways of reasoning based on design practices and the visualisation of information. The relevance of both of their works in conjunction with regard to design thinking is precisely the combination of design thinking as thought visualising practice, as well as the process of design thinking as a simultaneously knowledge generating activity. What this means in practice will be illustrated in chapter five, that provides the empirical basis to understand design thinking as a technology of government.

In his essay “The Question Concerning Technology”, Martin Heidegger argues that the essence of technology is by no means technological. Instead, technology is not just a means to an end, but instead provides a way of ‘revealing’ (Heidegger, 1977). This way of understanding technology reflects what Foucault describes as a ‘history of the present’ - a search for processes of descent and of emergence (Foucault, 1984: 80–86 in Garland, 2014):

> The idea is not to connect the present-day phenomenon to its origins, as if one were showing a building resting on its foundations, a building solidly rooted in the past and confidently projected into the future. The idea, instead, is to trace the erratic and discontinuous process whereby the past became the present: an often aleatory path of descent and emergence that suggests the contingency of the present and the openness of the future.

Such revealing then provides insight into the social and political processes and human decisions that lead to a contemporary form and function. In the case of
design thinking, it will not be images but instead the retelling of short encounters and major works over time that shall reveal how design thinking surfaces today and can be understood as a technology of government, which I will conceptualise in section 2.4. I will do so by providing a genealogical review to trace how today’s dominant design thinking practices and institutions emerged out of historical struggles and alliances between programmes, individuals and institutions. Considering the social construction of technology (Bijker, Hughes, Pinch, & Douglas, 1987; Feenberg, 1999; Heidegger, 1977), a genealogical approach serves to better understand the mechanisms of governing technologies that promise citizen empowerment. To provide necessary context and future opportunity for further interrogation, the following will provide a selective and encyclopaedic review of design literatures in the realm of computer and software development as well as human-computer interaction design. While this shall emphasise a heterogeneous field of study, I will point out how these developments link to contemporary ‘smart’ urban governance innovation that condenses this heterogeneity through design thinking.

2.3.2.1 1960 – Post-war optimism and design methods movement

One of the earliest historical reference popularly associated with today’s design thinking is the work by Herbert Simon. In 1968, the cognitive and computer scientist and Nobel Prize laureate for economics gave the so-called Compton Lectures at the Massachusetts Institute of Technology (MIT). It is this widely influential work that we already briefly discussed in the previous section. The 1960s further marked an era in which the design methods movement emerged (Mareis, 2011). Predominantly led by scholars from the US and the UK, a Design Methods Group (DMG) was established at the University of California, Berkeley in 1967, while the first conference on design methods took place in London in 1962 (Margolin, 2010). Horst Rittel was central to the Design Methods Group, which continued to publish widely since its launch. Another group was established with Donald Schön, also developed at MIT. Shortly after the launch of the design methods movement, Christopher Alexander published Notes on the synthesis of form in 1964. The book aimed at
turning unselfconscious design into self-conscious design by examining the design process (Alexander, 1964). He was architect and later in his career became influential in object-oriented programming, particularly the C++ programming language, which is widely used today in the computer game design industry (Alexander, 1996). The idea of object-orientation is necessary to consider in relation to conceptions of “citizen-centric”, “focus-centric” or “tech-centric” innovation events and hackathons (Briscoe & Mulligan, 2014).

Overall, the 1960s have been marked by a positivist, optimistic and rational view on design science that was seeking to integrate design and arts into technology. Themes that emerged from their work targeted sustainability and are conceiving of design activity as a form of calculated thinking and analysis. Design research as a specific discipline dates mostly to this era (Mareis 2011, Halpern 2014). The crucial relevance is the link between design optimism and the geopolitical climate in the 1960s, including worldwide student protests, the Tet Offensive in 1968 (one of the largest military campaigns during the Vietnam War), emerging environmental crisis and the begin of the end of the Soviet Union (Kurlansky, 2005). This points to recent debates on ‘design’ that recognise design surfacing in times of global uncertainty – pointing to today’s normalisation of crisis (Mareis, 2018).

2.3.2.2 1970 – Cold War, interface design and reflective phase
The relevance of the 1970s is the emergence of a reflective phase, that appears to be still missing in today’s emerging design thinking optimism. Following on from the 1960s, more critical accounts came up during the 1970s about the limits of design and the direction it would take. Dominant was the critique of the development of solutions to societal and political issues (Rittel & Webber, 1973). Rittel and Schön continued to be key figures - including highly influential publications Dilemmas in a General Theory of Planning (Rittel & Webber, 1973). While work on design in the realm of software development advanced, their essay reflected upon the limits of problem-solving and coined the term ‘wicked problems’ (1973). This paper gained salience today in human geography discussions on the “wicked city” (Cowley, Barnett, Katzschner, Tkacz, & Boeck, 2018). The term ‘wicked problem’ is today often associated
with Buchanan due to the title of his 1992 paper *Wicked problems in design thinking*, while Rittel & Webber’s definition refers to public policy and planning. The authors argue that the

...search for scientific bases for confronting problems of social policy is bound to fail, because of the nature of these problems. They are "wicked" problems, whereas science has developed to deal with "tame" problems. Policy problems cannot be definitively described. Moreover, in a pluralistic society there is nothing like the undisputable public good; there is no objective definition of equity; policies that respond to social problems cannot be meaningfully correct or false; and it makes no sense to talk about "optimal solutions" to social problems unless severe qualifications are imposed first. Even worse, there are no "solutions" in the sense of definitive and objective answers. (Rittel & Webber, 1973).

Alongside this general evolution of design practice and theory, research on cybernetics advanced during the 1970s (Mareis 2011, Halpern 2014). Interface designer and design theorist Gui Bonsiepe for example led the design team for the operations room of the *Cybersyn* project in Chile 1970 to 1973. The project’s name consists of the words "cybernetics" and "synergy" and aimed to use computers and communication networks to allow the communist government to maximise production while preserving the autonomy of workers and lower management. Cybernetics was developed and populated by Mathematician Norbert Wiener in 1948 with his book *Cybernetics: Or Control and Communication in the Animal and the Machine* (Wiener, 1961). The project *Cybersyn* was abandoned after the Chilean military coup d’état on 11 September 1973 in which socialist President Salvador Allende was overthrown by armed forces and national police under Augusto Pinochet (Medina, 2014).

After leaving Chile, Gui Bonsiepe went on to become professor for Interface Design at Köln International School of Design (KISD) in Germany from 1993 to 20031. The school was originally part of the department of "Art and Design"

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1 During his active years at KISD, Gui Bonsiepe examined my sister Karin Stark’s (geb. Schliwa) diploma thesis titled *Urban Data Information* (2002), which envisioned a data-based governance model for Rotterdam. She works in user experience design today.
in the university of applied sciences. In 1991 the design degree program was reformed into the so-called "Cologne Model", which was characterized by project-oriented teaching and the removal of traditional disciplines and semester structures (KISD, 2018). Such project-oriented teaching reflects shifts in governance from governing populations towards solving problems on a project basis, as addressed earlier. This way of teaching resembles today’s most prominent design thinking schools such as Hyper Island, the Hasso Plattner Institute as well as Stanford d.school, which I will introduce later. After leaving the KISD, Bonsiepe published on the themes of design and democracy and disobedience of design (Bonsiepe, 2006). In Germany and Latin America, his writings are considered standard in design theory.

Later on, Rittel and his colleague Kunz developed an Issue-Based Information System (IBIS) to tackle wicked problems with multiple stakeholders. Interest in IBIS emerged in the 1980s as this software aided system facilitated collaborative design and problem-solving (Kunz & Rittel, 1970). The idea shows similarities with today's popular public-private-people partnerships and 'urban living labs' that are spaces for collaboration on issues of concern (Voytenko, McCormick, Evans, & Schliwa, 2015).

Overall, the 1970s served as an awakening from the positivist tendencies of a design science, while research on user-centred design continued. The 1970s were a period defined by Cold War technological advancements as well as the rise of capitalism in the Western world with the US promoting industries in a variety of communist countries, particularly Latin America. Information design and industrial design activities appear to have played a key role in enabling the further spread of consumerist culture.

2.3.2.3 1980 – User-centred design and visual thinking
The 1980s appeared to broaden the scope of design thinking and its fields of applications further, with two developments that became relevant today: A specific focus on ‘user-centred’ design, which strongly resonates with ‘citizen-centric innovation’ as introduced in the previous section as well as advances in visualisation techniques and creativity (Halpern, 2014). Donald Norman
coined and populated the term user-centred design. His books User-Centered System Design (Norman & Draper, 1986) and the shortly afterwards published The Design of Everyday Things (1988) are exemplary of the merging logic between information systems as well as physical object design. From 1996 – 1997, he served as advisor at the DARPA Advisory Board, Information Science Advisory Team (ISAT), Defense Advanced Research Projects Agency, US. In 1994 he published Things That Make Us Smart: Defending Human Attributes in the Age of the Machine, in which he argues for the development of machines that fit our minds, instead of minds that need to conform to the machine (Norman, 1994). Considering today's rise of ambiguous ‘smart’ discourse, his argument about what ‘smartness’ means was very clear. In contrast, the expansion of smart technologies and processes of digitalisation in the ‘smart’ city suggest that his argument found little resonance with the wider public as design thinking becomes applied for smart technology implementation.

Figure 2.3-2: Visual investigation of psychedelic agents and Stanford design thinking.

Source: Authors own based on Google image searches for "LSD trip", "design thinking Stanford" and "mescaline trip" from 25th September 2018.

Robert H. McKim was Emeritus Professor of Mechanical Engineering at Stanford University, a university that works closely with design agency IDEO. His research concerns the impact visual thinking had on our understanding of things and our ability to solve problems. Particularly the ideas discussed in his 1980 book, Experiences in Visual Thinking are considered to underpin the design thinking methodology (Interaction Design Foundation 2018). Much earlier in 1966, McKim co-authored a pilot study titled Psychedelic agents in creative problem-solving, where the use of LSD-25 and mescaline was investigated to enhance creativity (Harman, McKim, Mogar, Fadiman, & Stolaroff, 1966). Subject of the psychedelic problem-solving sessions were
amongst others the consideration of 'empathy’. Empathy is the very first step in Stanford d.school's design thinking process, which shows also similar colour themes as images associated with LSD and mescaline trips (see Figure 2.3-2). This might indicate that today’s widely populated colourful post-it notes and process frameworks serve to enhance the creativity and empathy of design thinking practitioners. This aspect will be illustrated in chapter five.

2.3.2.4 1990 - Launch of design thinking schools by software moguls

Key institutions that shape today's design thinking education and agenda have been founded in the 1990s. One is the private sector design agency IDEO, the other is the completely privately funded Hasso Plattner Institute (d.school) and School of Design (HPI D.School). The relevant aspect is their background in software application development. The Hasso Plattner Institute was founded by Prof. Dr. h.c. Hasso Plattner in 1998 in Potsdam, Germany. Plattner is a software mogul who previously co-founded Europe’s largest software company and ‘solution provider’ SAP. The Hasso Plattner Institute is funded entirely by its founder’s private donations (Higher Times Education, 2018). Plattner also helped to found the Hasso Plattner Institute of Design (also known as ‘d.school’) at Stanford University, which integrates business and management training into more traditional engineering and product design education. The school meanwhile published a series of handbooks on design thinking (Plattner et al., 2010, 2012).

McKim’s Stanford colleague David M. Kelley continued to expand work on design thinking and creativity. Kelley is said to have adapted design thinking for business purposes and founded the design agency IDEO with Bill Moggridge in 1991. Tim Brown joined the team at a later stage (Fast Company, 2009). A year after IDEO was founded, Richard Buchanan published his article Wicked Problems in Design Thinking (1992). Therein he forecasted individuals shift towards more experiential “learning by doing” approaches that not only change the external manifestations of our culture, but its internal character (Buchanan, 1992). This notion is highly relevant to de-naturalise today’s thinking in problem and solution categories, as it is reflected in imperatives that call cities to respond to challenges (or solve urban problems).
2.3.2.5 2000 - Design thinking movement and 2008 financial crisis

From 2000 onwards, design thinking as a formal process has been steadily introduced into business and management practices for innovation. Scholarship and business development in the US, Canada, Sweden and Italy were among the pioneers. Key institutions are IIT Design Insitute in Chicago, the Hasso Plattner Institute in Potsdam, Germany and the d.school (Hasso Plattner School of Design) at Stanford University. The IIT School of Design in Chicago is said to have launched the design thinking movement in the 2000s, “linking design more closely to business innovation” (IIT Institute of Design, 2018). There, Professor Charles Owen has taught design thinking since 1965 and published and promoted the design thinking process for social innovation more widely (Owen, 1993). In 2005, Stanford's d.school began teaching design thinking to engineering students as a formal method. As we already know, this school was co-founded by IDEO’s co-founder David Kelley and SAP’s Hasso Plattner. Tim Brown has been working for IDEO since 1992 and became the CEO of the company in 2000.

The financial crisis of 2007–2008 was followed by an explosion of design thinking for business innovation bestsellers, with the majority published around the second half of 2009. Most notably during this time, Italian Roberto Verganti, Professor of Leadership and Innovation at Politecnico di Milano, published Design-Driven Innovation: How to Compete by Radically Innovating the Meaning of Products (2009) in which he suggests that “design-driven innovations do not come from the market; they create new markets. They don’t push new technologies; they push new meanings” (Verganti, 2009).

IDEO CEO Tim Brown has since become a public figure. In October 2009 he published Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation (Brown, 2009) as well as his TED Talk titled Designers – think big! (2009) which has over 1.3 million views. Canadian Roger Martin published Design of Business: Why Design Thinking is the Next Competitive Advantage (Martin, 2009) in the same month. Martin was dean of the Rotman School of Management and is now leading the Martin Prosperity Institute - housed at the University of Toronto's Rotman School of Management - with the
mission to “explore the necessary requirements to achieve a prosperous future for all – one in which democracy and capitalism work in support of each other” (Rotman School of Management, 2018). Their work on “democratic capitalism” has since been problematised as approach to “designing consent” through design thinking (von Busch and Palmås, 2016). It is in particular this discussion that points to the concept of computational capitalism (Beller, 2017; 2018), as it enables to explain how ways of thinking become subject to design thinking as “new spirit of capitalism” (Seitz, 2017).

2.3.2.6 2010 – Innovation as the new normal: Everybody ‘designs’
Designer Enzo Manzini coined the term “everybody designs” in 2015 (Manzini, 2015). While his conception of design is not directly related to design thinking, the systematic approach to problem-solving also expanded its reach. Whether it represents wishful thinking, marketing, or reality, the website of the Hasso Plattner Institute summarises the development of design thinking from 2010 onwards as follows:

In the meantime, Design Thinking has become more than just a creative process. What was originally intended as an innovation method for products and services in Stanford, has advanced to a completely new way of seeing people in relation to work, of imagining the concept of work and of posing questions about how we want to live, learn, and work in the 21st century. The appeal of Design Thinking lies in its ability to inspire new and surprising forms of creative teamwork. “We-intelligence” is the new catchword and collaboration the foundation for a new work awareness. (Hasso Plattner Institute, 2018).

Projects promote to change mindsets and redesign the “way we solve messy problems”, addressing for example Africa’s malnutrition or the refugee crisis under this banner (Design Thinking Philantrophy, 2016). The Hasso Plattner Institute, together with its associated d.school in Stanford, were the key developers and promoters of design thinking as a process technology. Meanwhile, a large variety of design thinking toolkits and promotion materials are being circulating online by companies, publishers and consultancies such as frog design, IBM, Oracle, Citrix, Harvard Business Review, IDEO, MIT, Cooper Hewitt, SAP, LUMA Institute, Intuit Labs or Gravitytank. The list keeps expanding, as do speculative areas for applying design thinking and creative
problem-solving as a service. From what we can find online, it appears that design thinking now covers virtually all aspects and areas of human life, being promoted as the 21st century skill to creatively and collaboratively secure life and business.

Thus far, this chapter has shed light on aspects of the computational nature of design thinking as problem-solving tool. What we still need to consider for a contextually aware analysis are the economic dynamics that might link “political rule to economic exploitation” (Lemke, 2002:52). The next section elaborates on contemporary dynamics of capitalism in relation to contemporary design thinking practices and knowledge economies.

### 2.3.3 Urban expansion of the digital and experience economy

Throughout history, dominant design practices have been strongly linked to capitalism and have been inherent to capitalist modes of production (Julier, 2017). We now appear to be at a moment in which technologies of production and value extraction are ever more sophisticated. What requires careful consideration is to understand the nature of capitalism and the commodity today, which has arguably changed dramatically over the past decade in Western liberal societies.

Cognitive work becomes increasingly source of value production in our post-Fordist society (Tsogas, 2012). Fordist production previously concerned the assembly line and mass production of products and services. In factories, it is still physical labour along with technological advancements such as standardisation that increase productivity, efficiency and profit. Reinforcing the Californian ideology and popular mantras emerging from Palo Alto and beyond, human creativity is today said to be the key driver of innovation and creating a competitive business advantage within the corporation as opposed to the factory (Mareis & Bruder 2015, Julier, 2017). Considering visual artist Harun Farocki’s work “Workers leaving the factory in 11 Decades” (Tate, 2006) in conjunction with design thinking, we may pay particular attention to the absence of the factory and the non-place based presence of the corporation in contemporary modes of production.
Analysing the work of a Berlin-based innovation agency, Seitz (2017) identified design thinking as “the new spirit of capitalism”. Given the insights provided in the previous sections, the nature of design thinking is computational as it orders information in rational instrumentality towards problem-solving based on knowledge or information input towards a defined or perceived problem. This purely operational logic, as it moves from a focus on populations or solutions to a focus on problems-solving, is reflected in what Beller (2018) describes under “computational capital”, which orders the “material-symbolic and the psycho-social even in the absence of a conscious, subjective awareness of its operations.” As he further elaborates, the process through which the “computational unconscious” functions is through its language-like structure, “a computer language that is also and inexorably an economic calculus” in the ways in which it organises thought from the domain of the unthought (Beller, 2018). This structuring of thought through language is reflected in design thinking and its problem-solving terminology.

The notion of ‘design’ is however not only associated with visual and cognitive activity; we see a broadening of intellectual terminologies and concepts concerned with ‘design’ that address practice-based debates around the more ‘creative’, ‘intuitive’ and ‘implicit’ aspects of design practice (Mareis, 2011). These are not directly concerned with design thinking, but with ‘experiential knowledge’, ‘sensuous knowledge’, ‘research through design’, ‘practice based research’ or ‘inquiry by design’ (Mareis 2011). Having reviewed the interferences between design and knowledge since 1960s, design historian Claudia Mareis concluded that design is today predominately understood as an epistemic culture (Mareis 2011), hence a way to produce knowledge. Mobilised within multi-stakeholder collaborations, design thinking builds on an ever-expanding set of techniques and discourses targeted at the management of human behaviour with “the desire for ‘new’ holistic synthesis of insight and knowledge dimensions (‘rational’ and ‘intuitive’)” (Mareis 2011:189, own translation). Still far afield from the design of infrastructures or physical objects, the outcome of a design thinking process are conceptual ideas in the form of speculative prototypes, promising to be ready for
implementation. While sociologist Seitz’ (2017) analysis concerned the business sector, and work is underway that examines design thinking in the public sector (Kimbell & Bailey, 2017), my research complements these studies by laying the groundwork to understand the phenomenon that organises thought in a computational manner and its implications in the ‘smart’ city. As the empirical chapters will unveil, design thinking in the ‘smart’ city is productive of experiences and extractive of experiential knowledge.

While there is a nascent literature on the most recent mutation of capitalism as computational capitalism (Beller, 2017; Stiegler, forthcoming), I like to introduce two concepts that help to better understand the relevant modes of capitalist production in relation to design thinking: communicative capitalism and cognitive capitalism. Jodi Dean argues that our contemporary socio-political situation is defined by communicative capitalism, a modification in which capitalism and democracy have merged into one single entry (Dean, 2005). The circulation of information on media platforms such as Facebook, Spotify, Slack, and so forth forecloses the antagonism necessary for politics through smooth interface design, and the platform becomes the key medium of production and accumulation (Dean, 2005). In the era of fake news, the actual content doesn’t matter. Considering the productive element of design thinking and its emphasis on ‘ideas’ and ‘creativity’, this concept appears useful to keep in mind, but might not serve as a best way to understand contemporary market forces.

A different concept that appears more suited considering the cognitive science behind the development of design thinking is cognitive capitalism (Moulier-Boutang, 2011). Cognitive capitalism was developed by French economist Yann Moulier Boutang, whose work was influenced by intellectual exchange with Toni Negri. Following excerpt of Gerardo Serra’s book review provides insight into the key characteristics of cognitive capitalism (Serra, 2012):

Cognitive capitalism can be explained by looking at the change taking place in three foundational elements common to every economic system: the type of accumulation, the mode of production, and the type of exploitation (p. 56). Changes in the configuration of these three elements have determined through
human history the shift from mercantile capitalism, “based on the hegemony of mechanisms of merchant and finance accumulation” in the sixteenth and seventeenth century, to the rise of industrial capitalism, founded on “the accumulation of physical labour” (p. 50). Since 1975, the rise of new technologies has driven the beginning of “cognitive capitalism”. This type of capitalism is an economic system characterised by the fact that “the object of accumulation consists mainly of knowledge, which becomes the basic source of value, as well as the principal location of the process of valorisation” (p. 57). (Book review by Gerardo Serra for LSE, London)

What is of particular relevance is knowledge as the object of accumulation. As I argue, the processing of knowledge under design thinking follows a computational nature and process, as design thinking consciously or unconsciously orders ways of thinking and acting towards interoperability with urban computational processes. It is hence the contextualisation of the design thinking phenomenon under both, cognitive capitalism and computational capitalism that merges these logics under new market dynamics that operate under a problem-solving logic in the urban. In this urban domain as opposed to the computer domain, citizen-centred engagement renders the city into a field of endless opportunity for customised technological solutions (Halpern, 2014).

In particular, the focus on knowledge, knowledge sharing, knowledge economies and ‘design’ understood as epistemic culture (Mareis, 2011) that shall further inform my analysis. This further opens up the empirical question of how such knowledge can be commodified. Both computational capitalism and cognitive capitalism appear to be useful concepts to understand current economic dynamics. Yet it is the combination of new technologies that harness knowledge as source of value that seems to define the production apparatus in the new economy.

**2.4 Design thinking as a technology of government**

Introducing the theoretical lens for the analysis of power in urban innovation initiatives under cognitive and computational capitalism, I would like to highlight one aspect that made me choose French philosopher and historian of
ideas Michel Foucault’s work to develop my thesis. It is his understanding that “power is everywhere; not because it embraces everything, but because it comes from everywhere” (Foucault, 1998:93). This provides an alternative to conceptions of power that is seen as repressive by considering its enabling forces (Dreyfus & Rabinow, 1983). In particular, Foucault emphasises the productive force of disciplinary power as he concludes the section “The means of correct training” in his work *Discipline and Punish* (Foucault, 1977:194):

> The individual is no doubt the fictitious atom of an ideological representation of society; but he is also a reality fabricated by this specific technology of power that I have called ‘discipline’. We must cease once and for all to describe the effects of power in negative terms: it ‘excludes’, it ‘represses’, it ‘censors’, it ‘abstracts’, it ‘masks’, it ‘conceals’. In fact, power produces; it produces reality: it produces domains of objects and rituals of truth. The individual and the knowledge that may be gained of him belong to this production.

Power is productive. What requires conceptualisation is how design thinking can be contextualised and understood in the production of realities and new modes of urban citizenship. An increasing body of literature understands and (re-)discovers Foucault as a philosopher of technology (Behrent, 2013; Feenberg, 1999; Gerrie, 2003; Lustig, 2014), which is also the way I read his work. With his emphasis on governing technologies and techniques, this may seem obvious. It still requires making explicit what I consider to be a technology, particularly in a ‘smart’ and ‘sustainable’ city context. Therein, technology may refer to air pollution sensors combined with Internet of Things (IoT) devices for automated traffic management, smart grid applications to increase energy efficiency or CCTV cameras combined with urban dashboards for crime detection or even prevention (Kitchin, 2014; Söderström, Paasche, & Klauser, 2014). These are technologies that have a hardware and software component and, according to the ‘techno-centric’ critique or ‘smart’ urban development, the key commodities that multinational companies like IBM, Cisco and Hitachi provide for the optimised management of the computerized city (Marvin and Luque-Ayala, 2017). Complementary to these technologies, I conceptualise design thinking as a technology of government in the production of new subjects and modes of urban citizenship.
2.4.1 Interoperability with urban computational dispositifs

Developing my conceptual framework based on the practices I encountered during my fieldwork, I identified a 'design'-led mode of governing as common pattern across various urban innovation initiatives. As my literature review unveiled, this conception of design relates to problem-solving and as I shall argue operates under a computational logic in the context of the ‘smart’ city, and thereby brings the initially unrelated literatures on ‘smart’ urbanism and design thinking together. I am still using the term ‘design’ here to contrast this notion, that is targeted at problem-solving, from design practices that are grounded in arts and crafts. What I needed therefore is a conceptual lens that helps to further unpack and understand this phenomenon.

Rather than understanding ‘design’-led governance and the citizen through a governmentality lens as previous studies did (Julier, 2016; Swyngedouw, 2005), I wish to draw attention to the heterogeneous elements that together form ways of governing or ‘designing’ the citizen or certain mentalities within governing practices. The concept that best serves this analytical need is Foucault’s concept of dispositif (Bussolini, 2010; Callewaert, 2017; Pløger, 2008). Governmentality is composed of ‘gouverner’ and ‘mentalité’ (Lemke, 2002), which can be understood as the outcome or effect of a dispositif.

In an interview from 1977 published in Power/Knowledge (Foucault, 1980), Foucault elaborated in great detail on what he means by dispositif so let us read it together:

What I’m trying to pick out with this term is, firstly, a thoroughly heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions - in short, the said as much as the unsaid. Such are the elements of the dispositif. The dispositif itself is the system of relations that can be established between these elements.

Secondly, what I am trying to identify in this dispositif is precisely the nature of the connections that can exists between these heterogeneous elements. Thus, a particular discourse can figure at one time as the programme of an institution, and at
another it can function as a means of justifying or masking a practice which itself remains silent, or as a secondary re-
interpretation of this practice, opening out for it a new field of rationality. In short, between these elements, whether discursive or non-discursive, there is a sort of interplay of shifts of position and modifications of function which can also vary very widely.

Thirdly, I understand by the term dispositif a sort of - shall we say - formation which has as its major function at a given historical moment that of responding to an urgent need/emergency ('une urgence'). The dispositif thus has a dominant strategic function.

In the first instance, it was the notion of 'une urgence' that caught my attention, since the initiatives subject to my analysis playfully project the appearance of manufactured urgency (Irani, 2015). Hackathons or design jams advertise themselves with headlines such as '48 hours to save the world', while the approaches they mobilise are explicitly need and action oriented. Considering framings of 'citizen-driven' or 'human-centred' innovation, we may interpret such need not only in relation to the issues addressed therein (such as climate change, sustainability or children's future readiness), but also as a discourse and practice that addresses the very need to be heard as a citizen – particularly within our contemporary political climate. Referring back to Aexander's concept of “object-oriented programming” (Alexander, 1996), we can understand this process as a configuration towards interoperability with computerised problem-solving processes.

This shift in governing rationality is also reflected in the subject of governing. It is argued that Foucault referred to a ‘population as a political subject’, and a preoccupation he famously called ‘the conduct of conduct’ (Foucault, 1982: 221; 2007:42 in Enroth, 2014). In the case of governance, as opposed to government, a shift in governmental power occurred that no longer has the population as subject and object of care, but instead has the goal to solve problems. As Enroth (2014:61) argues, the “modern art of governing is now coming undone, in the name of governance”. He elaborates:

The discourse on governance is taking us from an art of governing premised on producing policy for a society or a population to an art of governing premised on solving problems
with no necessary reference to any kind of society or population. (Enroth, 2014:61)

This conception reflects the practices encountered in the field, since event-enabled urban innovation initiatives seldomly focus on a population but on an urban issue to be solved instead. Several scholars argue that the concept of dispositif has so far not been given the attention it deserves (Agamben, 2006; Bussolini, 2010). Urban scholarship started to draw on Foucault’s notion of dispositif as a conceptual device to account for increasingly dispersed and networked governing infrastructures in the contemporary city (Gabrys, 2014, Easterling, 2015, Marvin & Luque-Ayala 2017). In relation to citizenship, these urban computational dispositifs refer to operations of citizenship that emerge environmentally through urban data practices (Gabrys, 2014). What requires further understanding is how this logic can be understood in relation to active citizens and moreover, how the interoperability of the active citizen across multiple infrastructures and data practices towards computing is being imagined or actually achieved.

With design thinking being understood as problem-solving approach and urban strategies being widely dominated by a problem-solving focus under urban computational dispositifs, I suggest the nature of connections between the elements – discourses, practices, toolkits, events etc. - encountered to be computational, with the major function to problem-solve. The next sections will further expand on design thinking as a disciplinary and normalising technology in the contemporary ‘smart’ or ‘hackable’ city.

2.4.2 Disciplining citizens for computational problem-solving

A field that has been neglected in contemporary analysis of power is normalising power. Foucault’s work Abnormal provides an early account of how processes of normalisation are central to his thought and instrumental for the way dispositifs work (Foucault, 1999, Pasquinelli, 2015). My framework will follow an increasing body of literatures that foreground normalisation as aspects as central to Foucault’s analysis and our wider understanding of power (Pasquinelli, 2015; Vanolo, 2013). The rapid proliferation of ‘the citizen’ and
‘design thinking’ within the smart city context suggests that these discourses and practices form another element of such normalising dispositifs. The entanglement within existing technologies and digital development based on systems thinking requires a certain normalisation to become interoperable.

Two aspects are of major concern to understand human interoperability with computational systems. The first is the process of normalisation understood as the “individual to be corrected” from the originally abnormal to the normal (Foucault, 1999:57). The second is the process of establishing a design thinking mindset and the underlying computational logic as the ‘new normal’ understood as long-term normalisation. Within computer science, the concept of normalisation in relation to databases has been developed by Edgar F. Codd and published in his paper *A Relational Model of Data for Large Shared Data Banks*, for the IBM Research Laboratory in 1970 (Chaczko, Jacak, Klempous, & Nikodem, 2007; Codd, 1970). Therein, Codd discusses the data processing procedure for large data sets for which the “possibility of eliminating nonsimple domains appears worth investigating” (Codd, 1970:381). He points out a “very simple elimination procedure” which he calls normalisation, resulting into the “normal form” (Codd, 1970:380). As I will illustrate in chapter five, design thinking represents the tool that eliminates nonsimple domains for computational processing of urban problems.

Combining the insights from computer science and the Foucauldian production of normalised subjects, I conceptualise design thinking as the technological device that enables interoperability of citizens for problem-solving activity within urban computational dispositifs. As processes of digitalisation proceed driven by digital and design thinking industries, human ways of thinking and activity are made compatible with the same computational logic that previously infused technocratic management of the city through hardware and software (Gabrys, 2014; Marvin & Luque-Ayala 2017). This process exceeds earlier concerns to defend human attributes in the age of the machine as raised by Donald Norman (1994) and touched upon in section 2.3.2.3. In the context of defense application development in the US of the 1990s, Norman argued for the development of machines that fit our
minds, instead of minds that need to conform to the machine (Norman, 1994). It is hence an excess in technological development brought about by private sector technology corporations such as IBM, design agencies such as IDEO as well as private educational institutions such as the HPI School of Design that leads to a designing of the social, rather than for the social.

While ways of thinking and governing are largely invisible and implicit mechanism, design thinking renders such shifts explicit, visible and governable. The empirical chapters of my thesis will then unpack the ways in which design thinking can be understood as a technology of government, in particular as a technological device, that enables the interoperability of participating citizens with processes of urban computational problem-solving. It does so through disciplining towards a normalisation for as well as of a computational logic. As Rose (1999: 52) defines:

a technology of government, then, is an assemblage of forms of practical knowledge, with modes of perception, practices of calculation, vocabularies, types of authority, forms of judgement, architectural forms, human capacities, non-human objects and devices, inscription techniques and so forth, traversed and transected by aspirations to achieve certain outcomes in terms of the conduct of the governed.

While aspects of control and cybernetic mechanisms are of relevance within automated systems and technology comprised of hardware and software (Gabrys, 2014; Krivý, 2016; Marvin & Luque-Ayala, 2017), they seem insufficient for understanding how modalities of citizenship are governed and sustained without their presence. Foucault says none of the previous dominant modes and forms of power (sovereignty, discipline, control) were replaced by the previous form of power. Instead, they have different functions. Exchanging the word ‘body’ for ‘mind’ while reading the following excerpt illustrates the ways I conceive of design thinking as a technology of government for the remainder of my thesis:

The historical moment of the disciplines was the moment when an art of the human body was born, which was directed not only at the growth of its skills, nor at the satisfaction of its subjection, but at the formation of a relation that in the mechanism itself
makes it more obedient as it becomes more useful, and conversely. What was then being formed was a policy of coercions that act on the body, a calculated manipulation of its elements, its gestures, its behaviour. The human body was entering a machinery of power that explores it, breaks it down and rearranges it. A ‘political economy’, which was also a ‘mechanics of power’, was being born; it defined how one may have a hold over others’ bodies, not only so that they may do what one wishes, but so that they way operate as one wishes, with the techniques, the speed and the efficiency that one determines. Thus, discipline produces subjected and practiced bodies, ‘docile” bodies. Discipline increases the force of the body (in economic terms of utility) and diminishes these same forces of the body (in political terms of obedience). (Foucault, 1977:137-8)

Foucault emphasises how disciplinary technology is a productive force by creating docile bodies, which I translate as the creation of docile minds that increase the productive force of thought towards economic utility on the expense of political agency. The central question arises of how people are made to adapt such technology that – following the genealogy of design thinking - introduces a computational logic for decision making into the city.

Considering the background of today’s ‘design’ within the context of computer and defence technology development at RAND corporation, it is less a surprise that today’s ‘design’ and design thinking movement is not reduced to ‘civic’ or civilian’ society. In 2010 design was introduced into the military doctrine of the US army (document FM-05 ‘The Operational Process’). Zweibelson (2017) suggests a “second generation military design” is on the horizon, discussing Army Design Methodology in relation to business and civic design methodologies. One of his recent papers features an extensive reference list of design and design thinking publications from army and military journals. The Canadian Army has, for example, experimented with design since 2013 at their Canadian Forces College (CFC) by overlapping military and ‘civilian design processes’ (Zweibelson, 2017):

The CFC is unique in that it draws from design applications from civilian design institutions such as the Stanford Design School and associated variants. The next figure below provides several civilian design methodologies where prototyping occurs prior to developmental processes for sequential reasons. The
prototyping period of divergent thinking permits critical and creative thinking (idea making) while sense making with the environment also occurs. Civilian design processes do share several similarities with first generation military design models, despite different goals and emphasis (products and consumer experiences instead of complexity in war). With these overlaps and interplay, it is understandable that some military design programs have included or assimilated elements of civilian design processes, and this trend likely will continue.

Michel Foucault’s analysis of military power and the ‘docile body’ was fundamental to his work in Discipline and Punish. Today, military power and strategy changed and as architect Eyal Weizman suggests “cities have always reflected the dominant military techniques of their times” (Misselwitz & Weizman, 2003). His analysis of Israel’s architecture of occupation illustrates the operational character of urban warfare (Weizman, 2017). A notable institution subject to his analysis is the Operational Theory Research Institute (OTRI). Weizman provides an excerpt of an interview with its co-director who summed up their mission as follows: “We are like the Jesuit order. We attempt to teach and train soldiers to think ... We have established a school and developed a curriculum that trains ‘operational architects’.” (in Weizman 2017:187-188). This emphasises that technology is no longer a hardware or software component, but a specific way of thinking to cope with uncertainty and complexity or to design smooth customer experiences.

2.5 Conclusion

My conceptual framework lays the groundwork to understand design thinking as technology of government in the contemporary city. To be able to understand and analyse power mechanisms within emerging forms of governing, I contextualised two concepts that are central to my thesis designing urban citizenship: urban citizenship and design thinking for urban governance innovation. Foucault’s notion of dispositif serves as analytical tool beyond governmentality to account for heterogeneity, rationality and function within emerging urban innovation practices.

The first section clarified the notion of urban citizenship as redefined engagement of citizens with urban space. I reviewed contemporary notions of
urban citizenship between discourse and practice in the currently most dominant urban imaginary, the smart city. This found a shift from passive to active citizenship that is predominantly activated in events as new spaces of urban governance.

The second section elaborated on the current shift in governance from governing populations towards solving urban problems. Based on my empirical work, I foregrounded design thinking as an approach that facilitates problem-solving in e.g. civic hackathon events. To understand this phenomenon, I traced design thinking as it emerged from the historical development of ‘smart’ and computational technologies in a military and defence context that now became re-appropriated within civilian context and gain salience today through a proliferation of urban computational dispositifs (Gabrys, 2014; Marvin & Luque-Ayala, 2017). This logic in relation to citizenship is masked behind today’s public discourses on city making and design, which can be understood as subjugated knowledges (Foucault, 1980).

The third section conceptualised design thinking as a technology of government that enables the normalisation of knowledges and ways of thinking to become interoperable with urban computational dispositifs through disciplinary power. As such, design thinking functions as technological device within the ‘smart’ city at the interface between human and computer interaction. Processes of normalisation are understood as both, the introduction of a norm through disciplining citizens to adapt to a standardised process as well as the longer-term normalisation of such norm within a productive milieu. Design thinking broadly refers to cognitive activities of creative problem-solving (Johansson-Sköldberg et al., 2013; Kimbell, 2011; Mareis, 2011; Seitz, 2017). Compared to design practice that is targeted at designing a thing, object or service, I suggest design thinking and what I label ‘design’ (instead of design) can be understood as operational process in itself that orders thought for “computational capital” (Beller, 2018). For the remains of my thesis it is of relevance to consider the converging logics of today’s design thinking as computational thinking.
This conceptual understanding serves to analyse if and how participatory initiatives 'design' citizens to adapt to an operational logic of computational problem-solving in the 'smart' city. It is precisely the creation of active modes of citizenship that can be operationalized through urban computational dispositifs, that I summarise under the idea of *designing urban citizenship* and that are subject to my analysis throughout the empirical chapters. The methodology chapter details how I gradually unpacked power mechanisms from within urban computational dispositifs by becoming an active hacking citizen.
3 Methodology

A reflexive approach to dispositif analysis

People know what they do; they frequently know why they do what they do; but what they don't know is what they do does.

Michel Foucault (In Dreyfus and Rabinow 1983:187)

3.1 Introduction

My thesis advances understandings of the power mechanisms within urban innovation initiatives and the ways in which they design and re-design new forms of urban citizenship from the perspectives of participants as well as non-participants. My research methodology has three key objectives. First, with respect to urban citizenship and the city, to understand the actors of urban innovation initiatives and along with their rationalities to engage or disengage with design thinking approaches in the city. This knowledge is predominantly based on epistemic knowledge (episteme). Second, with respect to designing urban citizenship, to understand how design thinking works to empower citizens to change the city. This is informed through technical knowledge and instrumental rationality (techne) that I gained through engaging in design thinking practices as well as an analysis of design thinking tools encountered in practice. Third, with respect to myself, to develop as a researcher by building reflexive awareness of power-knowledge (Foucault, 1980) mechanisms from within the urban computational dispositifs I was studying. This is grounded in knowledge gained through practice and experience as well as through a foregrounding of value-rationalities of experienced participants (phronesis). To disentangle the different types of knowledges that are co-constructive, I developed a reflexive methodology over time.

The case study subject to analysis is an urban innovation initiative called CycleHack Global Movement (CycleHack from now on). CycleHack promises to ‘tool up citizens’ and reduce barriers to cycling in the city by mobilising design thinking approaches. It does so by facilitating an annual civic hackathon event
in cities worldwide on the same weekend by providing organisational support and free to use CycleHack HackPack toolkits to local event organisers. A civic hackathon is in this case a 48 hour workshop during which people from different backgrounds are engaged to develop and test ideas how to make cycling better and share their ideas with the public. The first annual CycleHack event took place in June 2014 in Glasgow, Melbourne and Beirut and was followed by annual CycleHack events taking place in about 25 cities in the following years. Between 2015 and 2016, I became active participant and co-organiser in CycleHack events in Manchester, UK.

My methodology is structured as follows: Section 3.2. elaborates on my research aims and approach. Section 3.3. provides detail on the case study selection. Section 3.4. details my engaged ethnography and mixed methods for data collection as well as reflexive data analysis. Section 3.5. reflects upon the research process and limitations, before I conclude this chapter in section 3.6.

3.2 Research aim and reflexive approach

The main aim of my study is to explain the power relations and governing techniques that unfold in contemporary urban innovation initiatives in the promise of citizen empowerment in order to understand their political implications. To do so, my research and methodological approach puts the perspectives of people that participate in urban innovation initiatives center stage. As the majority of ‘smart’ city and urban innovation initiatives is unfolding as we speak, scholarship points to the need to study and analyse ‘actually existing smart cities’ to develop better understandings of how these policies and practices translate into material effects in cities around the world (Sheldon et al., 2015). Kitchin (2016) suggests further that the call for collaboration and engagement applies to academic institutions too. He argues “critical scholars have to become more applied in orientation: to give constructive feedback and guidance and to set out alternatives and to help develop strategies, not just provide critique” (Kitchin, 2016). A call that has been meanwhile picked up and translated into academic practice (de Waal and de Lange 2019). For my research I took on both, the role as academic
researcher of urban innovation initiatives as well as the role as active citizen who seeks to improve cycling in Manchester through innovative and collaborative approaches.

My research follows the development of CycleHack Global Movement, an initiative that ‘tools up citizens’ to improve cycling through a design thinking approach over the period from 2014-2017. While the case study is the center of analysis, my research consisted of several phases to contextualise and analyse the case comprehensively. Similar to the ‘slow ethnography’ of a building or institution (Yaneva, 2018), my research concerned an innovation initiative and process that unfolded in the city to which I applied a principle of slowness. This enabled me to experience how a process and ways of thinking unfolds “through a continuous intertwinement of human and non-human entities” (Yaneva, 2018:89). Rather than entering and leaving an innovation event for ethnographic field study as has been done with civic hackathons previously through participant observation and digital ethnography (Gregg, 2015; Richterich, 2017), my ethnography concerns a wider innovation milieu and process that I am studying – both in relation to how it unfolds in the city as well as how I became shaped by this process and therefore was able to understand the perspectives and experiences of my interviewees. It was hence both, the process of me becoming a “CycleHacker” with a transformation in attitudes and ways of thinking as well as the process of how the design thinking process impacts the city starting with the organization of a 48 hour event across a timeframe of 18 months.

An extensive body of research is using ethnographic methods to research processes of urban innovation based on epistemic knowledge (see for example Irani, 2015; Gregg, 2015; Gómez-Cruz & Thornham, 2016; Pink et al, 2016; Richterich, 2017). Having started my research with an engaged ethnographic approach, I developed a reflexive methodology that I adapted to evolving findings and knowledge needs over time. This reflexivity was necessary to unpack power relations of the urban computational dispositif I was studying from within. As the following excerpt from Dreyfus and Rabinow (1983:121) explains:
Dispositif is distinguished from *episteme* primarily because it encompasses the nondiscursive practices as well as the discursive. It is resolutely heterogeneous, including discourses, institutions, architectural arrangements, regulations, laws, administrative measures, scientific.

Human experiences are subjective and human behaviour context dependent. Moreover, human experiences and behaviours become increasingly shaped and co-created through their interaction with ‘smart’ digital technologies (Pink et al., 2016) as well as design thinking practices that underpin ‘human-centred’ approaches for urban governance innovation. My research approach therefore acknowledges a weakened ontological position, that poses limitations to purely epistemological approaches. An approach that enabled me to reflexively translate participants’ experiences as well as my personal engagement in urban innovation into knowledge that enables to understand governing mechanisms is Bent Flyvbjerg’s work on phronesis (Flyvbjerg, 2001). While Flyvbjerg applied this approach to urban planning research, I incorporated his conceptualisation into my research on urban innovation, which I will detail in the following.

### 3.2.1 Dispositif analysis through episteme, techne and phronesis

Bent Flyvbjerg addressed the methodological problem in contemporary political science by criticising an alignment with natural science methods that seek to produce universal generalisations and general laws based on large samples (Flyvbjerg, 2001). Instead, he claims if political science is to matter, the key questions should be: Who gains and who loses? What are the mechanisms of power? Is this desirable? These questions are the starting point for *phronetic* social science, which, according to Flyvbjerg (2001:63):

focuses on values, the authors get close to the people and phenomena they study, they focus on the minutiatae and practices that make up the basic concerns of life, they make extensive use of case studies in context, they use narrative as expository technique, and, finally, their work is dialogical, that is, it allows for other voices than those of the authors, both in relation to the people they study and in relation to society at large.
Flyvbjerg suggests to understand phronesis as prudence or practical wisdom based on Aristotle (Flyvbjerg, 2001). With the intention to conduct research capable of informing practice and to understand processes of empowerment and change, phronetic research represents a suitable approach that acknowledges the absence of a unified ‘we’ in relation to the questions posed and hence the impossibility of a final or objective answer (Flyvbjerg, 2007). This is in particular of importance when studying governance innovation processes, that have been argued to be decisively Janus-faced (Swyngedouw, 2005), as a way to express that to the extent as they empower some, they are disempowering other societal actors. A judgement of good or bad, or empowerment and disempowerment, hence depends on the perspective taken.

**Table 3.2-1:** Definitions of three different knowledges mobilised (intellectual virtues).

<table>
<thead>
<tr>
<th>Knowledges</th>
<th>Key features and today's use</th>
<th>Application to urban planning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Episteme</strong></td>
<td>Scientific knowledge. Universal, invariable, context-independent. Based on general analytical rationality. The original concept is known today in the terms “epistemology” and “epistemic.”</td>
<td>Planning research practiced as episteme would be concerned with uncovering universal truths and laws about planning.</td>
</tr>
<tr>
<td><strong>Techne</strong></td>
<td>Craft/art. Pragmatic, variable, context-dependent. Oriented toward production. Based on practical instrumental rationality governed by a conscious goal. The original concept appears today in terms like “technique,” “technical,” and “technology.”</td>
<td>Planning research practiced as techne would be consulting aimed at arriving at better planning by means of instrumental rationality, where “better” is defined in terms of the values and goals of those who employ the consultants, sometimes in negotiation with the latter.</td>
</tr>
<tr>
<td><strong>Phronesis</strong></td>
<td>Ethics. Deliberation about values with reference to praxis. Pragmatic, variable, context-dependent. Oriented toward action. Based on practical value-rationality. The original concept is not to be found in an analogous contemporary term.</td>
<td>Planning research practiced as phronesis would be concerned with deliberation about (including questioning of) values and interests in planning.</td>
</tr>
</tbody>
</table>

Source: Table author’s own, definitions quoted from Flyvbjerg (2004:287).
More important than taking a normative perspective in relation to processes of urban innovation was for me the *how* and by what means. It is further Flyvbjerg's (2004) distinction between *episteme* as scientific knowledge and *techne* as technical knowledge when arguing for a phronetic approach to planning research that informs my approach to researching urban innovation. He draws on Greek philosopher Aristotle’s definition of three intellectual virtues phronesis, techne and episteme (see Table 3.2-1). With respect to techne he summarises the “objective of *techne* is application of technical knowledge and skills according to a pragmatic instrumental rationality. This is what Foucault calls “a practical rationality governed by a conscious goal” (Foucault 1984b, 255 in Flyvbjerg, 2004:286). It is in particular techne as a craft, art and form of technical knowledge that informed my understanding of design thinking as a technological device within urban innovation initiatives.

**Table 3.2-2**: Illustration of knowledges considered for each chapter.

<table>
<thead>
<tr>
<th>Knowledges</th>
<th>Data produced and collected</th>
<th>Analytical focus</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Erlebnis</em> (experiential)</td>
<td>Sensation, lived experience in time</td>
<td>Experiential knowledge of an event</td>
</tr>
<tr>
<td><em>Episteme</em></td>
<td>Interviews, reports, social media, participant observation, discursive</td>
<td>Chapter 4</td>
</tr>
<tr>
<td><em>Techne</em></td>
<td>Event participation, toolkits, skill development, active participation in civic hackathons, discursive and non-discursive I (experiential)</td>
<td>Chapter 5</td>
</tr>
<tr>
<td><em>Phronesis</em></td>
<td>Professional experience, intuitive, values, reflective discussions with experienced participants, non-discursive II (experience)</td>
<td>Chapter 6</td>
</tr>
<tr>
<td><em>Erfahrung</em> (experience)</td>
<td>Practical wisdom, experience over time</td>
<td>Embodied accumulation of knowledge</td>
</tr>
</tbody>
</table>

Source: Author's own.
Table 3.2-2 illustrates the three different types of knowledges considered for my analysis. Studying an event and event facilitation techniques, it was of relevance to understand how techne shapes participants’ actions and experiences during a short-lived event (Erlebnis, blue in Table 3.2-2) and thereby also the discourses re-produced through active participation in CycleHack. On the other end, to understand the non-discoursive and non-instrumental views, I accounted for phronetic knowledge that made instrumentality explicit rather than replicating it (Erfahrung, grey in Table 3.2-2). This knowledge is based on reflective interviews with experienced participants as well as non-participants that did not become instrumentally operationalized through the initiative. It is precisely the combination of episteme, techne and phronesis - as opposed to drawing on episteme only - that my research methodology is based on in order to understand participants’ ways of thinking and experiences, governing techniques and the ways power produces new urban realities through governance innovation practices.

3.2.2 Research ethics and positionality

With respect to research ethics, two aspects were of major importance. Ethical data collection as well as ethical data analysis for knowledge production that does not reinforce existing power relations, but instead helps to understand them. Prior to starting my semi-structured interviews, my research proposal went through the University of Manchester’s Research Risk and Ethics Assessment and was categorised as low risk, which means that “the research is of a routine nature does not involve vulnerable or potentially vulnerable groups and is considered non-contentious”. I created a consent form for my semi-structured interviews that informed my research participants about my research project. The data I collected and stored for my research (audio recordings and anonymised interview transcripts) were anonymised and kept on my computer to which only I have access. The second major source of information are online screenshots, which I also stored in a dedicated folder on my computer. The third major form of data I collected were photographs as well as handwritten notes, that only I have access to. With respect to social media use and analysis, I only used publicly available digital media and
carefully considered which to incorporate in the final document to not violate privacy or informed consent.

Having started my academic research from within urban innovation practices, a self-reflexive research process was crucial for the development of my framework and critical data analysis for ethical knowledge production. The self-reflective analysis unfolded throughout my fieldwork was conducted after the completion of the majority of data collection. This points to the need not only to critique and engage (Kitchin, 2016; de Waal and de Lange, forthcoming), but moreover to critically reflect upon research findings and one’s own positionality. Rose (1997) elaborates drawing on Haraway (1991) “'position' indicates the kind of power that enabled a certain kind of knowledge. Knowledge thus positioned, or situated, can no longer claim universality.” (1997:308). In short: “positioning is ... the key practice grounding knowledge” (Haraway, 1991: 193 in Rose 1997). It is hence the reflexive data analysis, that I detail in section 3.4., that I added to my methodology as part of my research ethics and thereby add a value-based dimension based on phronesis to it.

3.2.3 Overview of research design

My research has been explorative and reflexive. The conceptual framework has been developed after the completion of the fieldwork, which is reflected in my research design. The design is divided into four major phases. Figure 3.2-1 illustrates how I developed my case study research as well as research approach over time in relation to the subject (cycling) and the approach (design thinking) in Manchester between 2014 and 2017. The Pre-Phase established a comprehensive understanding about the issue of common concern I selected (in this case cycling). This was enabled through the ESRC Impact Acceleration Account funded Manchester Cycling Lab project, in which I situated myself as action researcher within public-private-people partnerships in order to produce applied research that would support a cycling transition. Phase 1 expanded the process of engagement through embedding myself further in the urban innovation milieu in Manchester. This
enabled me to select a suitable case study, while continuing to do engaged ethnographic research that was relevant to better understand my case. The knowledge gained through this phase was predominantly episteme and phronesis.

**Figure 3.2-1**: Illustration of the four main stages of my PhD research. Source: Author’s own.

*Phase II* and positionality was active participant in urban innovation from 2014-2015 as an engaged ethnography through the participation in CycleHack Global Movement as co-organiser of civic hackathon events as part of the CycleHack Manchester team. The knowledge gained throughout this phase was predominantly techne (understood as instrumental technical knowledge or arts and craft), as I was able to closely observe and experience the practices of urban innovation. *Phase III* and positionality was as academic researcher not participating in the initiative anymore, supported with further reflexive interviews with participants. The knowledge dimension gained in this phase was mainly phronesis based on personal reflection on values as well as judgment of experienced participants. This process allowed me to re-contextualise and re-analyse knowledges and experiences that have already
become normal to me since I became more immersed in the innovation milieu subject to my study.

3.3 Case study selection and rationale

The selection of my case study was a consequence of previous practically oriented work. Central to my research and analysis is an ethnographic study of an urban innovation initiative called CycleHack Global Movement (‘CycleHack’ from now onwards). CycleHack is an initiative that promises to ‘tool up citizens’ and reduce barriers to cycling by mobilising design thinking approaches. It does so by providing design toolkits as well as branded material to locally host a civic hackathon event once a year over a weekend in June. During this annual civic hackathon event, participants are guided through a design thinking process to develop ideas about how to make the city more cycle friendly. The case study will be further detailed in chapter four with respect to its rationalities and in chapter five in relation to its practices. The following sections will detail and justify the choice of case study.

3.3.1 The issue of concern: Cycling

The first feature to considered for the selection of my case study is the issue of common concern (Balestrini et al., 2017) that drives affective labour in cognitive capitalism (Tsogas, 2012), which is in my case cycling. Cycling is gaining popularity on political and urban research agendas. Cities struggle with congestion, air pollution and health related problems. Cycling represents a highly visible issue of common concern as opposed to for example air quality. To improve cycling requires change on various levels of urban governance which are predominantly shaped through infrastructure, regulation and local culture. This poses major constrains at city scale and is structurally difficult to achieve. On the other hand, the diversity of cycling activities (e.g. cycling campaigns, cycling festivals, critical mass bike rides) along with an active cycling community provide opportunity for city-wide citizen engagement.

Cycling has been therefore from the start the fixed variable and what I saw of major relevance due to the ways in which cycling reflects society. On a societal
level, cycling implies meaning and enables the researcher to make values explicit. Cycling and its meaning for people has an incredible diversity that I consider important to make explicit in relation to urban change and innovation. I incorporated this by asking participants “What does cycling mean to you?”. Cycling as a subject and lens to understand motivations to engage in the city enabled me to make underlying values explicit. As previous scholarship highlighted, cycling historically reflects societal changes as well as contemporary notions of citizenship (Aldred, 2010; Cox, Horton, & Rosen, 2012).

On a more personal level, I never thought much about cycling before moving to Manchester. I do not consider myself as cycling enthusiast or cycling activist, but I always use my bike to get around. It was therefore a cultural phenomenon to me that cycling was not normal in most UK cities and I was initially told not to cycle in order not to risk my own life. That was the first time that I discovered cycling as an interesting lens to understand society and local politics in different geographical contexts. Looking at cycling, we learn about how the cycling citizen shapes the city as well as how the cycling citizen becomes shaped by the city.

3.3.2 The digital milieu: Manchester’s innovation community

Building upon a so-called urban living lab pilot project at The University of Manchester, conducted under the name Manchester Cycling Lab, my research set out to connect academic research with civic society, public and private sector needs through a mixture of qualitative, quantitative and user-led research methods to support a cycling transition. The project began in February 2014 and developed as a platform to build cross-sector partnerships with Manchester City Council, Transport for Greater Manchester, local businesses, community groups as well as open innovation labs to develop a suite of applied research projects. These contacts provided a valuable foundation to conduct applied PhD research, along with the opportunity to explore different potential case studies in practice (see Table 3-3).
Greater Manchester represents a relevant and interesting example in the context of the devolution agenda that provides more decision power at local level (Hodson, Evans, & Schliwa, 2018). Networks and knowledge developed throughout the Manchester Cycling Lab project served as foundation to access and set the study into the context of the local cycling and smart city agenda.

**Table 3.3-1: Overview of potential case studies previously considered.**

<table>
<thead>
<tr>
<th>Case Study</th>
<th>Initiative</th>
<th>Urban Issue</th>
<th>Time-frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>CycleHack</td>
<td>Civic hackathon</td>
<td>Cycling</td>
<td>48 hours, ongoing</td>
</tr>
<tr>
<td>ThingsNetwork</td>
<td>Community</td>
<td>IoT infrastructure</td>
<td>Ongoing</td>
</tr>
<tr>
<td>PuBliC</td>
<td>Festival lab</td>
<td>Cycling</td>
<td>48 hours, one off</td>
</tr>
<tr>
<td>Man Cycling Lab</td>
<td>Urban living lab</td>
<td>Cycling</td>
<td>6 months</td>
</tr>
<tr>
<td>Citizen Green</td>
<td>Innovation lab</td>
<td>Urban greening</td>
<td>3 months</td>
</tr>
</tbody>
</table>

Source: Author's own.

### 3.3.3 CycleHack as a critical case within the digital milieu

The strategic choice of a study may add to the generalizability of findings (Flyvbjerg 2006). I investigated several potential case studies and decided to choose CycleHack as a case that best suits the approach (citizen-centred urban innovation) as well as the urban issue of concern (cycling) of my research. Looking back at this decision and the findings that emerged from that case, I suggest CycleHack Manchester can be interpreted as a critical case with respect to study the governing techniques of emerging urban innovation practices. Critical cases allow a generalisation along the lines of “if it is valid for this case, it is valid for all (or many) cases.” or expressed the other way around, “If it is not valid for this case, then it is not valid for any (or only few) cases.” (Flyvbjerg, 2006). As Bent Flyvbjerg (2006:230) elaborates:
when looking for critical cases, it is a good idea to look for either 'most likely' or 'least likely' cases, that is, cases which are likely to either clearly confirm or irrefutably falsify propositions and hypotheses.

He further suggests there is no universal principle that allows to certainly identify a critical case, which is why experience is required to locate such a case. In my case, CycleHack Global Movement represents an initiative that hosts events that promise to empower citizens within a 48 hour event though design thinking. What makes this case critical with the claims about the empowering impact of urban innovation is the explicit focus on ‘design thinking’ in an urban context. As previous hackathon literatures have suggested, a civic hackathon can be “tech-centred” or “focus-centred” (Briscoe and Mulligan, 2014). CycleHack as initiative proposes both by promoting a ‘human-centred design’ approach to cycling. It is “tech-centred” since it suggests to tool up citizens with design thinking in a human-centred way, and at the same time it is “focus-centred” as it suggests to apply this particular technology to cycling in the city. What makes CycleHack Manchester, as opposed to other cities that hosted the event, an even more likely case to explain the power mechanisms of design thinking in an urban context is its embeddedness within a milieu of experienced design thinkers due to the proximity to business management school Hyper Island. This enabled the design thinking tools to be mobilized the way intended by CycleHack. Other cities could have for example ignored the design thinking tool kits and merely held a social gathering to discuss cycling in the city.

Compared to other urban innovation initiatives we might also consider CycleHack as a critical case as it condenses citizen participation and the design thinking approach to a workshop of 48 hours in the promise to be relevant to the city. This very short time frame for public engagement sits opposed to mid-term engagement in e.g. urban living lab projects that stretch over several months and are geographically embedded (Voytenko et al. 2015). At the same time, this ‘extreme’ form of citizen engagement evolves currently into the new normal, as the approach and event format continues to rise in popularity in various domains (addressing e.g. public policy, climate change, refugee crisis,
or homelessness among others), which heightens the relevance of this type of case study.

### 3.3.4 The geographical context: Manchester (and the world)

Urban innovation initiatives are often promoted and practiced through toolkit approaches (Ampatzidou et al., 2016; Veeckman & van der Graaf, 2015), which are by their technical nature aspatial. It was of relevance for me to understand the geographical dimensions and differences across cities in the ways in which such processes materialise. As Castree (2005) emphasises, such geographical difference – stretched over space and time - has constitutive effects on regulations, rules and processes. CycleHack as a “Global Movement” and the tools provided by the initiative represented not only the opportunity to actively participate from start to finish due to its short-term nature as annual 48 hour ‘event’, but also the opportunity to compare the same approach in different cities.

Manchester served as an in-depth case study to illustrate how design thinking reconfigures urban infrastructures and effects change in the city. With only 2% cycling modal share, which describes the percentage of people cycling compared to other modes of transport, Manchester is a particular good example of poor cycling infrastructure provision in need of improvement. In August 2013, Transport for Greater Manchester (TfGM) was awarded 20 mio national funding as part of the UK’s Cycling City Ambition Grant to invest in cycling infrastructure. The implementation of the programme including further follow-on cycling investments coincided with the time my PhD started, which meant that the research conducted as part of the project could directly inform ongoing developments in the city.

As comparative case, I have chosen Amsterdam to understand how design thinking approaches differ in relation to cycling as urban issue. Amsterdam has a long-standing smart city strategy and moreover, Amsterdam has a 35% cycling modal share and is considered to be one of the most cycle friendly cities in the world. Rather than this being an outcome of contemporary innovation activity, this was the result of long-term radical protests in the 1960s as part
of the Provo movement. The major rationale was to compare how design thinking initiatives would be different within a city that is not cycle-friendly as opposed to a city that counts as very cycle-friendly. What became clearer in retrospect was that Manchester represented an ideal example with respect to the design thinking practices, as the CycleHack milieu was close to a management school that taught in design thinking methods and was affiliated with the professional networks of CycleHack’s co-founder. This means that the design thinking practices I encountered in the field were closely aligned with the ways the initiative’s co-founder practices design thinking and therefore representative of the approach.

The initiative hosts global civic hackathon events and started in 2014 with three cities (Glasgow as headquarter, followed by Beirut and Melbourne). This expanded to about 25 cities hosting the event in 2015 (including Amsterdam, Athens, Bergen, Istanbul, Glasgow, Brussels, Manchester, Prague, Bilbao, Aberdeen, Nuremberg, Wuppertal, London; Vancouver, Twin Cities and New York; Pelotas in South America; Amman, Beirut, Bengaluru, Chennai, Coimbatore and Tokyo; as well as Melbourne and Sydney). Being an active participant as well as co-organiser of CycleHack events enabled me to analyse the same approach in different contexts to understand its more basic mechanisms in comparison to previous approaches to improve cycling in the city. I did so from the early stages since its foundation in 2014 over three iterations (2015, 2016 and 2017).

3.4 Data collection and analysis

The active participation in CycleHack generates data in itself through online communication, regular team-meetings in Manchester, social media activity and the use of toolkits provided by the CycleHack founders. For an academically rigorous capture of my and other people’s experience of participating, I mobilised ethnographic and phronetic tradition of triangulation: combining different qualitative research techniques. This section will detail the various ways in which I collected and analysed data from different positionalities, which ultimately led to the development of more
critical awareness of my positionality – particularly compared to the first year of research. Crucially, this data analysis was accompanied with expanded study of critical theory as well as reflexive practice.

3.4.1 Detailing mixed data collection methods

The data I use draws on knowledge gained as active participant and co-organiser of workshops that are part of CycleHack Global Movement over 18 months from May 2015 until December 2016. This data is complemented with participant observation during in total 8 public CycleHack events and approximately 20 urban innovation workshops and meetings in Manchester and Amsterdam (3.4.1.1.), CycleHack document and design thinking toolkit analysis (3.4.1.2.), digital ethnography and auto-ethnography (3.4.1.3.) and semi-structured interviews and reflective conversations (3.4.1.4.). The triangulation between those different data sources enabled me to create a multi-layered description of the research phenomenon. The data considered for my thesis was collected during different phases, between February 2014 until August 2018.

3.4.1.1 Participant observation and relational ethnography

The first phase of my data collection consisted of relational ethnographic research, which I continued throughout within Manchester’s ‘smart’ city and innovation milieu as exploration of the urban computational dispositif. Desmond (2014:547) describes this approach as alternative to group- or place-based fieldwork, defining:

Relational ethnography takes as its scientific object neither a bounded group defined by members’ shared social attributes nor a location delimited by the boundaries of a particular neighborhood or the walls of an organization but rather processes involving configurations of relations among different actors or institutions.

Relational ethnography consisted predominately of ethnographic research and participant observation during innovation workshops, project meetings and public events. I pro-actively reached out to participate in urban innovation initiatives as part of my case study selection and activities as an engaged
Manchester resident (see Table 3.4-1). Over time I learned to distinguish between different types of innovation workshops along with their practical commonalities and differences.

Table 3.4-1: Different types of design-led workshops encountered between 2014-2017.

<table>
<thead>
<tr>
<th>Design workshop</th>
<th>Example</th>
<th>Duration</th>
<th>Design facilitation?</th>
<th>Relational ethnography notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lunchtime workshop</td>
<td>Make -&gt; Reflect</td>
<td>2x 1.5 hours</td>
<td>yes, explicitly</td>
<td>Organiser: “This is more slow than fast prototyping” Participant: “You already know how it feels to participate. This is different.”</td>
</tr>
<tr>
<td>Festival Lab</td>
<td>PuBIC Festival Lab</td>
<td>48 hours</td>
<td>yes, explicitly</td>
<td>yes</td>
</tr>
<tr>
<td>Civic hackathon</td>
<td>CycleHack</td>
<td>48 hours</td>
<td>yes, explicitly</td>
<td>“We need more designers to help with the facilitation next time”</td>
</tr>
<tr>
<td>Meet-up</td>
<td>HCD Meet-up</td>
<td>2 hours</td>
<td>yes, explicitly</td>
<td>“Cards for Humanity” Human-centred design toolkit testing</td>
</tr>
<tr>
<td>Lean startup weekend</td>
<td>FE Lean startup</td>
<td>48 hours</td>
<td>yes, implicitly</td>
<td>“I don’t really know if I want this” (Participant after winning the further development of her idea)</td>
</tr>
<tr>
<td>User workshop</td>
<td>Horizon 2020 smart city project</td>
<td>2 hours</td>
<td>yes, explicitly</td>
<td></td>
</tr>
<tr>
<td>Design charrette</td>
<td>Design &amp; The City</td>
<td>24 hours</td>
<td>yes, explicitly</td>
<td>“Here is a problem, these are our tools, and now we will come up with a solution”</td>
</tr>
<tr>
<td>“Community forum”</td>
<td>Innovate UK smart city project</td>
<td>2 hours</td>
<td>yes, implicitly</td>
<td>Organiser: “It’s all about being citizen-driven.” “Yes, yes yes...” “And open?” “Yes, yes, yes...”</td>
</tr>
<tr>
<td>Event</td>
<td>RSA - Citizens and inclusive growth</td>
<td>4 hours</td>
<td>yes, implicitly</td>
<td>“We hate post-it notes” (organiser website)</td>
</tr>
<tr>
<td>Un-conference format</td>
<td>Post-fact politics</td>
<td>6 hours</td>
<td>no</td>
<td>“We don’t want people to feel we channel the process into one direction” (organiser)</td>
</tr>
<tr>
<td>Infrastructure lab</td>
<td>Future Everything</td>
<td>8 hours</td>
<td>yes, explicitly</td>
<td>“So this is the way we will do the engagement for the other workshop too?” “Yes.”</td>
</tr>
<tr>
<td>Workshop</td>
<td>SimplMyEd</td>
<td>2 hours</td>
<td>yes, explicitly</td>
<td>Engagement workshop was hosted after the project finished</td>
</tr>
<tr>
<td>World cafe</td>
<td>Cycling &amp; Society</td>
<td>1 hour</td>
<td>yes, implicitly</td>
<td>“We will share the results” (which never happened)</td>
</tr>
</tbody>
</table>

Source: Author’s own.

Those that were more relevant to my subject of study had always a presence of professional facilitators, many of whom I started to personally recognise across different events as they were educated in the same management school in Manchester. Having identified this as a pattern, I started to pay more careful attention to the event facilitation, staff and their techniques. This was how I was able to identify design thinking as process that configured action between different actors and institutions (see section 3.4.2.1).

3.4.1.2 Participant observation and engaged ethnography

The second phase of my data collection started when I engaged in CycleHack Global Movement as active participant of the Manchester team. Therein, data collection was part of the design thinking process since the founders of the CycleHack Global Movement required local event hosts to capture as much content as possible. With respect to my positionality, I entered a double role as CycleHack participant as well as researcher that I negotiated in dialogue with the small CycleHack Manchester team.
We co-organised in total 8 CycleHack related design workshops that each took between 2 - 10 preparation meetings and were facilitated by my design thinking experienced team colleague. The experiential knowledge of organising and participating is complemented by interviews with participants and non-participants and social media analysis. Further, I actively promoted CycleHack during a variety of public events. All events are listed in Table 3.4-2.

Table 3.4-2: CycleHack related events I participated in from May 2015 until Dec 2016.

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Event</th>
<th>Date</th>
<th>Type</th>
<th>Collaboration partner</th>
<th>Design thinking tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CycleHack meet up #1</td>
<td>06/2015</td>
<td>2 hours social</td>
<td>CycleHack Manchester</td>
<td>Idea and barrier cards</td>
</tr>
<tr>
<td>2</td>
<td>CycleHack meet up #2</td>
<td>06/2015</td>
<td>2 hours social</td>
<td>CycleHack Manchester</td>
<td>Idea and barrier cards</td>
</tr>
<tr>
<td>3</td>
<td>Annual Cycle Event 2015</td>
<td>06/2015</td>
<td>half day exhibit</td>
<td>University of Manchester</td>
<td>Idea and barrier cards</td>
</tr>
<tr>
<td>4</td>
<td>CycleHack Global Event 2015</td>
<td>06/2015</td>
<td>48 hour workshop</td>
<td>CycleHack Global Headquarter</td>
<td>Double Diamond</td>
</tr>
<tr>
<td>5</td>
<td>CycleHack Winner’s workshop</td>
<td>08/2015</td>
<td>2 hour workshop</td>
<td>Future Everything 'Innovation Lab'</td>
<td>Design Future (STEPP model)</td>
</tr>
<tr>
<td>6</td>
<td>CycleHack Social #1 'Bike Life Report'</td>
<td>11/2015</td>
<td>2 hour workshop</td>
<td>Sustrans</td>
<td>MASH &amp; ‘new thinking’ canvas</td>
</tr>
<tr>
<td>7</td>
<td>CycleHack Social #2 ‘Normalising Cycling’</td>
<td>01/2016</td>
<td>2 hour workshop</td>
<td>Greater Manchester Cycling Campaign</td>
<td>new thinking’ canvas</td>
</tr>
<tr>
<td>8</td>
<td>CycleHack Social #2 ‘Women on Wheels’</td>
<td>03/2016</td>
<td>2 hour social</td>
<td>CycleHack Manchester</td>
<td>Idea and barrier cards</td>
</tr>
<tr>
<td>9</td>
<td>SPIN Cycling Festival</td>
<td>04/2016</td>
<td>15 min public talk</td>
<td>SPIN cycling festival</td>
<td>Public talk (event promo)</td>
</tr>
<tr>
<td>10</td>
<td>HCD meet up</td>
<td>06/2016</td>
<td>5 min public talk</td>
<td>local digital design agency</td>
<td>Public talk (event promo)</td>
</tr>
<tr>
<td>11</td>
<td>Annual Cycle Event 2016</td>
<td>06/2016</td>
<td>half day exhibit</td>
<td>Manchester Metropolitan University</td>
<td>Event promo</td>
</tr>
<tr>
<td>12</td>
<td>CycleHack Global Event 2016</td>
<td>06/2016</td>
<td>48 hour workshop</td>
<td>CycleHack Global Headquarter</td>
<td>Double Diamond</td>
</tr>
<tr>
<td>13</td>
<td>Open Data MCR meet-up ‘Transport special’</td>
<td>06/2016</td>
<td>10 min public talk</td>
<td>Open Data Manchester</td>
<td>Public talk (event presentation)</td>
</tr>
<tr>
<td>14</td>
<td>Manchester City Council ‘Cycle Forum’</td>
<td>06/2016</td>
<td>10 min public talk</td>
<td>Manchester City Council</td>
<td>Public talk (event presentation)</td>
</tr>
<tr>
<td>15</td>
<td>TechForGood meet-up ‘Rapid Prototyping’</td>
<td>08/2016</td>
<td>15 min public talk</td>
<td>local digital design agency</td>
<td>Public talk (event presentation)</td>
</tr>
<tr>
<td>16</td>
<td>CycleHack Winner’s workshop 2016</td>
<td>12/2016</td>
<td>2 hour workshop</td>
<td>local digital design agency</td>
<td>Customer journey mapping</td>
</tr>
</tbody>
</table>

Source: Author’s own

In addition to attending innovation and participatory workshops concerning innovation and transport projects in Manchester, I also joined social activities, talks and meet-ups that were advertised by the community I met through CycleHack. These were amongst others the after work ‘Silicon Drinkabout’, ‘Ladies in UX’ and TechForGood talk series, as well as human-centred design (HCD) meet-ups. All of which were frequented by similar range of people, which enabled me to identify who of CycleHack participants is external and who is part of the already existing tech and design milieu.

3.4.1.3 Document review and toolkit analysis

Based on the understanding I developed that design thinking was a crucial element of my study of power relations within urban innovation initiatives, I added extensive review and analysis of design thinking toolkits to my
methods. This enabled me to understand design thinking as ‘techne’ (technical knowledge) as well as the discursive formations (episteme) that support this instrumental practice.

With respect to the case study, I focused on the toolkits provided by the CycleHack co-founders. These were updated on a regular basis to simplify the messages as well as make the design tools more accessible to non-design thinkers. With respect to local event facilitation in Manchester, it was in particularly the Hyper Island toolbox – an online repertoire of different ‘design’ methods – that I analysed to understand the methods encountered in Manchester. It explained the goals, terminologies and mechanisms of process technologies that were already common language within the CycleHack Manchester community. Other cities might have had different experiences, depending on the facilitation techniques used locally. In addition to the ‘global’ and ‘local’ CycleHack toolkits, I also analyzed different versions of the UK Design Council’s Double Diamond framework, which has proven to be the most popular design thinking tool to explain the process technology.

3.4.1.4 Digital- and auto-ethnography

My research was not only concerned with the civic hackathon event, but moreover with personal engagement in digital practices necessary to facilitate the CycleHack event in Manchester. The capture of photographic and video images was in 2015 incentivised by the CycleHack co-founders’ promise to create a so-called ‘Global Capture’ documentary (which was never realised thereafter), and on a more functional basis to share all ideas on an Open Source Catalogue as part of the event as well as to share activity on social media. This meant that I was able to draw from an already rich data set that was publicly available, which I knew I could revisit on social media and online. As opposed to doing participant observation during one 48 hour CycleHack event, I engaged with the entire preparation, co-organisation, facilitation well as processes after CycleHack events. This activity itself produced data, e.g. in form of emails, social media posts and printings of promotion and facilitation material that was by the nature of the event stored digitally and physically (see Table 3.4-3).
Table 3.4-3: Digital media accessed, co-produced and exposed to during my research.

<table>
<thead>
<tr>
<th>Digital media Content producer</th>
<th>Public media (public engagement and communication)</th>
<th>Internal media (event organisation and feedback)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CycleHack Global</td>
<td>TEDx talks, promotion videos, CycleHack website, Twitter, Instagram, Facebook, Slack</td>
<td>Basecamp, Newsletter, Email, Event survey, Basecamp notifications</td>
</tr>
<tr>
<td>CycleHack Manchester</td>
<td>Local CycleHack websites, That’s Manchester TV, “How the hacks get made” on YouTube, Twitter, Facebook, Instagram</td>
<td>Email, Trello, WhatsApp, Slack, photography</td>
</tr>
<tr>
<td>Design thinking industry</td>
<td>UX design events via YouTube, blogs, Twitter, Facebook targeted advertising, toolkits</td>
<td>/</td>
</tr>
</tbody>
</table>

Source: Author’s own.

Research on civic hackathons using digital ethnography aimed at “understanding the digital, material, affective, and social relations of events” (Pink et al, 2016:152 in Richterich, 2017). As the authors emphasise, digital ethnography needs to be individually developed (Pink et al., 2016; Richterich, 2017). In my case digital ethnography served as part of my auto-ethnography by re-vising the event experience and facilitation to identify the design thinking tools used in practice. I reviewed videos that were produced about the initiative including YouTube videos of “How the hacks get made”, and a local TV report summary made for That's Manchester TV of CycleHack Manchester 2015. Additionally, I watched several TEDx talks about CycleHack Global Movement and read newspaper as well as blog posts concerning the initiative multiple times throughout my research, each time discovering new insights as well as different relations between me and the case (e.g. perceiving the same presentation first as inspiring and at a later point as disciplining).

Website material changes over time and new insights about mechanisms become part of everyday knowledge. I therefore took screenshots to freeze online content in time as well as to capture the moment in which a new aspect appeared new or interesting to me (see Figure 3.4-1). The taking of screenshots was mostly instinctive or out of interest. It helped to revisit these
images and texts over time to rethink already available datasets such as interviews, videos and social media posts from a different point of view.

Figure 3.4-1: Screenshot of screenshots of CycleHack related online impressions.
Source: Author’s own.

3.4.1.5 Semi-structured interviews and reflective conversations
I held over 33 semi-structured interviews and conversations with participants, supporters and organisers of CycleHack events as well as non-participants. These semi-structured interviews varied in length and formality, depending on the social context. Formal semi-structured interviews were recorded and (partially) transcribed, other conversations were captured by notes taken during or after the conversation.

Table 3.4-4 provides an overview of conversation partners and indicated the CycleHack events they attended with an ‘X’. I coded the interviews chronologically and indicated their respective role in relation to CycleHack. 6_Co-founder and 31_Co-founder is the same person that I talked to twice – first from my position as an active participant and about nine months later as a non-participant. The capital letters indicate the CycleHack city (for example ‘8_ParticipantA stands for the eight interview I held in total, with a participant from CycleHack Amsterdam). I use this coding throughout my thesis as indication about my positionality during the interview.
The semi-structured interviews included the following areas of questioning:

1. Talk about themselves, their work and motivations to engage in the city (What are you doing, what does cycling mean to you?)
2. How this relates to CycleHack (How did you find out about it, what was your motivation to take part, what are your views now?)
3. Testing and reflecting upon my recent findings and hypotheses
4. What are key positives and negatives about CycleHack?
In the majority of cases, I interviewed people about an event that we both attended and experienced. It was therefore the major role of the interview to understand different rationalities as well as identify shared and non-shared experience, and to reflect critically upon already collected data.

3.4.2 Data organisation and reflexive analysis

Particularly ethnographic approaches require to critically consider the values, beliefs and identity the researcher embodies as they become inherent to the questions asked and the way research is conducted (England, 1994; Yeo & Dopson, 2018). My awareness of the need for reflexivity on my position grew with this shift and the development of more critical understanding of urban innovation. Instead of becoming an insider to a milieu and ‘getting lost to be found’ (Yeo & Dopson, 2018), my development as a researcher went predominantly from the inside of a milieu towards the outside and was hence a process of ‘having been lost, but got found’.

As Pam Shurmer-Smith wrote, “Ethnographic research should transform the researcher and it certainly is not for people who are unwilling to take risks with their selves” (Bennett & Shurmer-Smith, 2001:260 in Cook & Crank, 2005:56). The major effort was to gain a critical perspective on my own research practice. This insider/outsider problem of ethnography has been problematized previously (England, 1994; Yeo & Dopson, 2018). As Flyvbjerg noted phronetic research requires to answer the questions of where are we going, who is winning and losing and if this is desirable (Flyvbjerg 2001). The risk I was already exposed to was to produce knowledge that might reinforce existing power relations.

For the data analysis, it was important to contextualise experiences, practices, images and statements. I have done so through three major media. The first are reflective interviews (producing knowledge concerning episteme and phronesis), the second was participant observation (producing knowledge concerning techne) and the third document and toolkit analysis (producing knowledge concerning episteme and techne). The following sections will briefly elaborate on these three approaches to data analysis over time.
3.4.2.1 Identifying and understanding “design thinking” as a pattern

The introductory quote to this chapter by Michel Foucault has been ever since I encountered it a guiding idea in support of my methodology and my way of understanding processes of urban innovation. My research interest emerged from the increasing problematisation of ‘the citizen’ in the context of urban innovation initiatives, along with impact agendas that make citizen participation a requirement to secure public funding for academic research. This trend is likely to continue and poses critical questions concerning normativity, the types of knowledges produced and the positionality of the researcher (Rose, 1997). Not only do collaborative research projects open up new ways for potentially democratising inquiry and impact through academic practice, they also pose new responsibilities, methodological, as well as ethical considerations about the types of impacts they achieve. Of central relevance is then to combine methods that improve our understanding of power within collaborative research as well as inform future academic and governing practices in the public interest.

Foucault summarised this concern in a conversation which has been interpreted and contextualised as follows by Hubert Lederer Dreyfus and Paul Rabinow in their work *Michel Foucault: Beyond Structuralism and Hermeneutics* (1983:187):

This is the insight, and this is the problem. How to talk about intentionality without a subject, a strategy without a strategist? The answer must lie in the practices themselves. For it is the practices, focused in technologies and innumerable separate localizations, which literally embody what the analyst is seeking to understand. In order to arrive at “a grid of intelligibility of the social order ... one needs to be nominalistic, no doubt: power is not an institution, and not a structure; neither is it a certain strength we are endowed with; it is the name that one attributes to a complex strategical relationship in a particular society” S. 93). There is a logic to the practices. There is a push towards a strategic objective, but no one is pushing. The objective emerged historically, taking particular forms and encountering specific obstacles, conditions and resistances. Will and calculation were involved. The overall effect, however, escaped the actors’ intentions, as well as those of anybody else.
In my case it was design thinking as a technology of government that I encountered across “innumerable separate locations” (Dreyfus and Rabinow, ibid.) and followed intuitively until I understood that it was a design thinking approach that configured relations between actors and institutions. The first time I heard the term “design thinking” was in July 2014 via a friend’s friend who just finished her degree at the HPI School of Design in Potsdam, Germany. I was at that time pleasantly surprised about the similarities between design thinking and the living lab approach I was studying at that time. It however was not until June 2017 that I started to more critically investigate what design thinking actually is or means. I then developed the conceptual framework to understand design thinking practices in a non-linear manner after the completion of my fieldwork.

3.4.2.2 Disentangling knowledges: Moving from inside towards outside

The evolving focus on design thinking as a technology of government enabled me to disentangle the different types of knowledges and experiences gained during the actively engaged phase of my fieldwork. As highlighted, “Dispositif is distinguished from episteme primarily because it encompasses the non-discursive practices as well as the discursive.” (Dreyfus and Rabinow, 1983:121). On the basis of my improved understanding of design thinking as an approach for the creation of customer experiences, I put more analytical emphasis on phronesis by making a distinction between experiential knowledge (in German: “Erlebnis”) and experience (in German: “Erfahrung”).

Such experiences may differ widely as they are situated, subjective and context dependent (Rose 1997). My research approach is hence grounded in practice, while in need of reflexive practice and wider contextualisation to understand power mechanisms. I am not entering and leaving my field, but instead trying to understand the field from within and acknowledge my own entanglement:

> to achieve a shift of focus away from a view of research methods as objectified procedures to be learnt by researchers, and towards the development of researchers who craft procedures integral to the environments in which they operate – environments of which they are also a functioning constituent.(Attia & Edge 2017:33)
My data collection and data analysis were therefore most of the time a simultaneous effort, which I had to spread over time. This was enabled through continuous self-reflexive practice as well as reflective conversations with participants in which I tested my hypotheses. I therefore also treated different types of knowledges differently. An “Erlebnis” is in the case of CycleHack shaped through techne (understood as design thinking facilitation of the event as well as feedback through digital media) and manifests itself as experiential knowledge mediated and gained through the active participation in innovation events. On the other hand, “Erfahrung” is phronetic knowledge gained through (unmediated) accumulation of practical experience over time and provides more robust knowledge, independent from the power mechanisms of a dispositif by highlighting value-rationalities.

Having paid attention to the professional backgrounds of people I talked to, particularly the insights by more experienced participants (with respect to life experience in general as well as community engagement in particular) served to distinguish between discursive and non-discursive information as shaped by design thinking. I gave more weight and significance to interviewees that were normally non-participants or those with more experience. Taking a phronetic approach, their long-term experience in practice was better suited to understand power and potential future implications. In contrast, I conceived of interviewees with less experience or participants that were less critically involved in design thinking practice as part of the urban computational dispositif’s discourse.

I would argue it is not only relevant how data is collected, but also where it is processed and analysed. Instead of writing at my PhD desk at the university, I have spent a lot of time in cafés and libraries, which enabled me to read and write in public spaces in which it was easy to ‘bump into people’ and have a chat, catch up on ones projects, reflect upon my project, make plans for future events or just work next to each other. It was a way of making sense of my data. Not only was it people that I knew, but also strangers I started to talk with and that were curious about my research. They were interested in cycling, technology and design or in general in Manchester as a city. As a frequent
visitor, people would come over and ask “Hey, how is it going?”. In a UK context this is sometimes just a way to say hello, I however took its often as opportunity to communicate my research, get feedback and completely new viewpoints along with a sense of the current concerns of people beyond the scope of my case study. There are several cafés in Manchester that I frequently visited with at least ten people in my immediate environment with whom I could discuss findings as a continuous reflection. Comments - no matter how brief the conversation or little in-depth the engagement with my case study - often enabled me to explore yet another line of inquiry, but also brought me back to key questions as the following snippets illustrate:

- “To be honest, I don’t think design is the solution.”
- “Let me think, was it Emilie Durkheim?”
- “You should read this book by that neglected Russian anarchist and communist...”
- “Ha, what they say is not 1 billion new cyclist, what they say is 1 billion new customers!”
- “I guess a question is also who gets to participate in these design processes.”
- “Yes - how to design a good city facing urbanisation. Someone has to take control. Who is not defined yet.”
- “Ah that is an interesting question. I mean, look around you! That outside is a public space, but it is all private!”
- “Cycling is not urgent.”

It was for me often very eye opening to know what participants and non-participants associate with the initiative. The quotes above illustrate the ways in which I gained more in-depth understanding through being present in the city and exposing myself to opportunities to talk with people working in the field or not working in the field. Rather than being my main source of epistemic knowledge, these conversations were key to disentangle episteme, phronesis and techne as well as approach the case study material from a different perspective. Being open to chance encounters and conversations has been a major support in developing a reflective practice and to challenge my own
interpretations and ways of thinking. However, I am aware that this ‘public’ is also my immediate social milieu.

3.4.2.3 Explaining discourses and practices through “design thinking”
Time and timing was an important aspect to consider when conducting the interviews and conducting their analysis. With respect to CycleHack participants, a key aspect was to let enough time pass between the participation in the event as well as the interview. I purposefully let several months pass to interview key individuals (in particular local authority and cycling activists) in order to be able to discuss findings with CycleHack participants from a more distanced perspective. I used the distance between the event and the interview to jointly discuss and interpret findings with respect to design thinking as a process technology. I did so by e.g. reviewing website content and design thinking toolkits with interviewees in order to discuss the instrumentality of the approach and their relation to it.

Figure 3.4-2: Timespan between CycleHack events (red end) and interviews (blue end).
Source: Author’s own.
It was my way of doing research with participants in an attempt to jointly make sense of the experience and data collected. Figure 3.4-2 illustrates the months that passed between participants attended the event (the majority took part in CycleHack 2015) and the interview. The shortest timespan between event participation and interview was three months and the longest timespan between attending the event and being interviewed was 1.5 years. This served the purpose to evaluate it from a more critical distance as well as put its promised outcomes in relation to what was achieved. As the graph further illustrates, I did not interview all participants at once, but gradually over time.

As already explained in chapter two, I developed my conceptual framework based on the practices I encountered during my fieldwork based on design thinking practices and discourses as pattern across various urban innovation initiatives. From July 2017 onwards, I then returned to my empirical data (consisting of interviews, images, personal experiences, fieldnotes), to crystallise and be able to explain how design thinking as a technology of government shapes political and urban processes through a computational logic. What follows in my empirical chapters is then the illustration of computational processes as they were found in practice and are now explicable through ‘design thinking’ in the ways in which they empower or disempower citizens to take part in city making.

3.5 Limitations and reflections on the research process

The methodology I developed over time evolved to be best suited to my research needs. There are however some key reflections as lessons learned I take away along with limitations based on my methodological decisions. I would like to highlight the following four aspects:

First, with respect to suitable field sites and case studies, I suggest I have encountered an ideal case to illustrate the design thinking logic. However, this realization would not have been possible through extensive relational research within and beyond the CycleHack milieu. This has been partially by chance and partially persistence. The academic format of a PhD pushes towards finishing a thesis within three years. It was also in the interest of my
supervisors that I stick to one case and explore it in-depth. However, I would often ignore advice to stop further engagement and instead continued to attend various stakeholder meetings, workshops and contributed to community groups. While this drastically extended the time I needed to finish this piece of work, it more importantly allowed me to identify design thinking clearly as a pattern. Manchester has been the ideal site for this type of research due to its close alliance of CycleHack with digital business management school Hyper Island, who share members of staff. I found therefore a high concentration of ‘design thinkers’ and was situated in an austerity effected city, in which local authorities welcomed the approach as a way to save public resources. I also did investigate hackathons in other locations online and in Amsterdam in person. This unveiled a network approach, but also that the event is heavily shaped by the network of the organiser and the focus on cycling versus focus on design thinking differs between locations and geographical contexts.

Second, the explorative and emerging nature of my methodology let me to focus predominantly on qualitative and technical features of design thinking and the event. I did not capture participants’ demographics systematically nor did I clearly quantify the various conversations or time spent to organise it. Engaging more with methodology literatures such as “Researching Events” (Pink et al., 2016 found in Richterich, 2017) would have been beneficial at the start of my research, which I will consider going forward. With respect to the data analysis, more work can be done to capture experiential data, which is an aspect that I however only considered at a later point.

Third, with respect to data analysis, a major aspect I still need to work on is the balanced integration of empirical data and theory. The specific focus on design thinking emerged during a writing retreat in July 2017 in which I was advised that I needed definitions. That was the first time I profoundly engaged with the concept design thinking, while I previously focused on the hackathon format as well as facilitation. It was through the more in-depth historical and contextual understanding of my case that I felt I was able to write, which is why next time I would start much earlier to contextualise a phenomenon in
order to be able to dedicate more time for the analysis and integration with literatures. The development of my conceptual framework took a long time, which however now provides the opportunity to rework elements of my empirical material in a more theoretically robust manner through academic papers. Further, as I was focusing on the facilitation techniques and logics, the empirical insights on the actual ideas and imaginaries that participants put into the event became more marginalized. The reason why I did marginalize this aspect however was also inherent to the initiative that focuses predominantly on the process instead of the goal, since the process became the goal as reflected in my final argument.

Fourth and finally, reflecting about the engaged research process, I want to consider two central aspects: it was a long process and emotionally intense. Several aspects were particularly challenging with this immersive form of doing applied research. On a personal level, the major struggle for me was to detach myself from the field and gain a critical distance from the case study. Removing from the field has been elaborated previously (England, 1994; Yeo & Dopson, 2018), which I will consider more systematically in the future. It was challenging to keep expectations at a reasonable level and avoid personal over-involvement. Having CycleHack as my PhD case study meant also that the time I spend engaging was over-proportional to what other people might be able to spend on it.

As scholarship on civic hackathons suggest, these event shape social-economic relations (DiSalvo et al. 2014, Gregg, 2015; Irani, 2015; Richterich, 2017). This has been something I experienced very strongly throughout the research. This not only relates to the affective labour I engaged with, but moreover to the instrumental-rationality (techné) as opposed to value-rationality (phronesis) that the initiative brought about within the design thinking milieu. While instrumentality in other design disciplines relates to material, design thinking’s object is human thought, human relations as well as the value that can be produced through them. More than valuing the social, the main focus that emerged during CycleHack was to make the ‘event’ a success within the milieu. Having promoted the initiative very proactively has still left a sense
that I would best describe with the words uncanny and unsettling, both in relation to participants as well as team members of which some became friends and colleagues. The discovery that the motivation behind CycleHack HQ is a mainly commercial and business oriented intensified my sense that human relationships build under the initiative are commodified without me having direct influence on that process. It has been until I discovered design thinking and the industry behind that I was able to write about it constructively and academically, as I was able to understand the value extracting feedback mechanisms within the urban computational milieu (Gabrys, 2014). Yet, it was a valuable experience to understand how it feels like when the dynamics of cognitive (Moulier-Boutang, 2011) and computational capitalism (Beller, 2018) impact ways of thinking, affect and human relationships.

3.6 Conclusion

My research methodology enhances understanding of power relations within urban innovation initiatives that promise to empower citizens in city making by taking on the perspective of the participating citizen. To do so, I have immersed myself in a local innovation community and became co-organiser of so called ‘civic hackathon’ events through which I attempted to improve cycling in Manchester. Mobilising a slow ethnography (Yaneva, 2018) of a process, I have actively engaged in CycleHack events for 18 months, studied relational events for four years and traced the design techniques encountered in practice back into the historical context that reaches back to the 1960s. The development of a conceptual framework from a position of non-participation enabled me to understand the processes and practices in retrospect.

Through my personal experience and engagement, I became capable to research a self-transformation with respect to ways of thinking, sensations of empowerment and disempowerment, enthusiasm, disappointment, frustrations and social tensions, as well as relate those sensations and perspectives to my research participants. Central to my research methodology were personal reflexivity, relational ethnography, joint reflection with
research participants over time and the testing of boundaries of an approach in relation to empowerment or disempowerment in the wider urban context. This approach enabled me to understand the logics and mechanisms of design thinking in relation to citizenship as well as how they impact Manchester.
4 Designing community
A network for a new form of activism

[Co-founder, 2016]: It is a network of a different way of thinking. It is not something from the shelf. I would love it to be some kind of movement in some kind. It is like “tooling up to real citizens” you know, active hacking citizens, with the skills and the materials to do so.

4.1 Introduction

This first empirical chapter provides a comprehensive overview of my case study by introducing and analysing the key actors and their ways to envision urban change through urban innovation. CycleHack Global Movement (from now on 'CycleHack') is an urban innovation initiative that explicitly mobilises design thinking tools to empower people to make cities more cycle friendly. By considering who is included and who is excluded from this innovative way of governing, I unpack the above quote by making underlying rationalities explicit. By not only considering participants, but likewise non-participants this chapter foregrounds voices that are not featured in promotional material and sets up inherent tensions.

Through the lens of dispositif, we can understand ‘participating in’ as a process of becoming ‘deployed’, which is a notion based on my personal experience with the initiative CycleHack Global Movement. Throughout the following I will explain how CycleHack Global Movement mobilised cycling as issue of common concern to introduce design thinking into the city, by drawing citizens into the governing milieu and connecting them to a network of likeminded actors. It is precisely this inverse logic of governing the city through the citizen as part of a network - as opposed to governing the city through political mandates, citizen participation in planning or urban activism - that will be further unpacked through the notion of designing urban citizenship. The difference to traditional forms of citizen participation is that citizens are not imagined to participate in a discrete infrastructure project or
policy, but instead become infrastructural component of a network of citizens with a design thinking mindset that respond to future challenges when needed.

The type of knowledge relevant to this chapter is predominantly episteme to foreground the discourses that shape motivation and action, which is supported by phronesis and techne to understand how these materialise in the city through the creation of a network of participants. The data I use draws on epistemic knowledge gained through document analysis, 33 reflective conversations with participants as well as non-participants of the initiative up until July 2017, desktop research and social media analysis. This is complemented with the knowledge gained as active participant and co-organiser of workshops that are part of CycleHack Global Movement from May 2015 until December 2016.

This chapter unfolds in four major sections. Section 4.2. provides an in-depth overview my case study CycleHack Global Movement. This section will unpack the governmental rationalities and context that gave rise to CycleHack as urban innovation initiative in the promise to ‘hack the city’ through a new form of urban activism. Sections 4.3. and 4.4. analyse participants and supporters as well as non-participants and opponents of CycleHack by foregrounding the ways in which they envision change in the city. These two sections are central to understand opportunities, alternatives and limitations to a design thinking approach in the city. Section 4.5. links the empirical analysis to the lens of dispositif by showing how local community becomes integrated in the urban computational dispositif through local creative hubs and discusses the tensions that emerged between section 4.3. and 4.4. The conclusion summarises the key findings of this chapter and links it to chapter five, which moves from an analysis of actors to the analysis of activities.

4.2 Reimagining urban activism

The first time I came across CycleHack was through social media. Several friends and colleagues knew that my PhD research broadly concerns cities and cycling. Ever so often I would thankfully receive their latest news and discoveries on cycling cities and sustainable mobility. I remember reading one
of these messages early 2015 with a link to a website: “Gabi, have you seen this already?”. The website was familiar, but I haven’t paid much attention to it first. I was still in search for a suitable PhD case study and there it was:

CycleHack is a global movement on a mission to make the world more sustainable through reducing the barriers to cycling. By taking a grassroots approach to innovation we are tooling up citizens to take a pro-active, DIY approach to making cycling easier, more fun, and accessible. (CycleHack, 2015a)

Not only did this mission statement cover all elements that I was interested in as part of my research at that time - including an explicit focus on sustainability, grassroots innovation, citizen engagement and cycling - I was also drawn into the beautiful website and impressed by the international character of the initiative on the screen in front of me. Glasgow, Melbourne and Beirut hosted a ‘CycleHack Global Event’ in June 2014. Meanwhile many more cities joined the ‘global movement’ and have signed up to run a CycleHack in 2015. Glasgow, Melbourne and Beirut - what an intriguing combination!

But what is CycleHack all about? And how did it turn into a global movement so quickly? I browsed through the website. CycleHack started over a coffee between two friends, who wanted to improve cycling in their city in a positive way. How this looks like was just a click away - a three-minute video from last year’s ‘CycleHack Global Event’ showed an inspiring summary in high definition image quality supported by an upbeat soundtrack. I continued and scrolled through the initiative’s dedicated Instagram and Twitter accounts. The images featured people working together: smiling and discussing, holding colourful cardboard boxes with wires in their hands, sitting in front of laptops in spacious rooms furnished with plywood. To my surprise, I did not see many bikes. In another subsection I finally found surprisingly specific, yet abstract answers to my question what ‘CycleHack’ or ‘a CycleHack’ is:

WHAT IS A CYCLEHACK?

A CYCLEHACK IS A TANGIBLE PROTOTYPE THAT ADDRESSES A BARRIER TO CYCLING. IT IS AN IDEA OR SET OF SOLUTIONS, THAT SOLVES PROBLEMS WITH CYCLING FROM PEOPLE WANTING TO GET INTO USING BIKES, TO PEOPLE WHO RIDE ON A DAILY BASIS.
CY.CLE.HACK (SI-CAL HAK)

noun, plural CycleHacks

A tangible prototype that addresses a barrier to cycling.

verb, CycleHacked, CycleHacking

To retrospectively modify current infrastructure and/or cycling products & services using a cyclist’s intuition.

Source: CycleHack website (accessed 03/04/2015)

‘Prototype’ and ‘hack’ were terms that I was not very familiar with at that time, even though I got fairly fluent with innovation-speak through my research on urban living labs and urban experimentation. The curious overlap between these concepts: they are taken from a computer systems and information and communication technologies (ICT) context, rather than from an urban context. The idea of ‘hacking’ an existing system - and CycleHack as initiative to do so in the city - seemed much more fun and engaging than ‘living labbing’. Even independent from my research: I wanted to get involved.

The way to get involved is by participating in or even organising a 48 hour CycleHack event in your own city during a weekend in June 2015, simultaneously with other cities across the world. Manchester was already listed as one out of many cities having joined the ‘global movement’, but I could not find a link to a website nor contact details. I have been co-organising a number of workshops and international conferences as part of my previous professional work. Still, I did not feel I could set this event up based on my own initiative. I attended many cycling community events in Manchester, but CycleHack seemed rather different. So I started to regularly follow the website for updates, hoping to join an existing team. Finally, I got lucky and found a contact via Twitter. The first contact was established through the community manager of a co-working space in Manchester’s Northern Quarter, were the event was about to take place in two months’ time. I have sent below email on Tuesday evening, 14th April 2015 at 06:08pm, which illustrates my positionality as researcher and co-organiser, my interest in the themes of the digital economy as well as the fact that I was only able to join the initiative via digital media:
On Tue, Apr 14, 2015 at 6:08 PM, Gabriele Schliwa <gabriele.schliwa@postgrad.manchester.ac.uk> wrote:

Dear [name of Manchester co-working space] team,

I hope my email finds you well! We just tweeted about the Cycle Hack event and I would love to get involved organising it. I am PhD researcher and am managing the Manchester Cycling Lab project at the University of Manchester – just the other day I was looking into opportunities to host a Cycle Hack in Manchester, so great to find out it is already on the way.

How can I get involved and who is already part of your team?

I am quite experienced in organising events and my research on "Harnessing the Digital Economy for Sustainable Transport Transitions – The Case of Cycling" ideally suits the theme. Due to my previous work as part of the Manchester Cycling Lab I got in touch with many people interested in cycling and digital tools to support a modal shift. Earlier this year I co-organised PuBlìC as a Festival Lab at the Future Everything conference ([link]) , blog post here: [link]).

I can ask within my networks who else likes to get involved, either organising or attending, once I know a bit more about the current state.

Looking forward to hearing from you and happy to meet up over a coffee!

Best wishes,

Gabi

It only took half a day to receive a response to my inquiry in my inbox. It sounded enthused, personal and yet professional, concluding I would “be a great asset to the team and we’d love to have you on board as aniser” (response to above email on 15th April 2015). After exchanging a few more emails, I officially joined the CycleHack Manchester team which consisted of three people already.

This was the first instance of how I encountered CycleHack as cycling-interested Manchester resident as well as researcher interested in sustainable and smart cities. The way into the initiative for me went through online networks. If I was not a Twitter user, I would have possibly not found out how to contact the organisers. I was not particularly irritated by reading that I
would be ‘an asset’ to the team. None of the promotion material nor the website made it obvious to me that CycleHack was a design thinking initiative at that moment. It was however a designer who founded ‘CycleHack Manchester’ and who would turn out to become my closest collaborator throughout the active phase of my involvement and research. Before going into details with the motivations of local participants, the next sections will elaborate on the CycleHack co-founder’s rationality on why CycleHack was set up in the first place. While doing so, I will illustrate how this new rationality builds computational capacity in the city.

4.2.1 From activism to ‘actionable’ ideas: “Let’s do a hack!”

The idea for CycleHack started over a coffee in Glasgow, UK. The stories being told vary between a ‘simple idea’ that started over coffee and an idea that started over a ‘simple coffee’. One or the other way around, it was simple: A Glasgow-based service designer (from now on ‘CycleHack co-founder’) and an Edinburgh-based event organiser were talking about cycling. Cities across the globe are very car-centric and not cycle friendly - Glasgow and Edinburgh being no exception. This is why such conversations ever so often focus on poor infrastructure and end up being negative and conflict loaded. Current channels that try to improve cycling run mainly through cycling activist groups or public consultations, often providing little space for meaningful engagement for the majority of people interested in making a change in their city.

The pair wanted to bring new and moreover “positive” ways to the cycling world and change the way people think about it, concluding: “Let’s do a hack!” (6_Co-founder, 2016). Bringing ‘cycling’ and ‘hack’ together, the two co-founders decided to call it ‘CycleHack’. A passionate cyclist and designer from Vancouver joined the team at a slightly later stage. Together, the three believe that “through empowering individuals, organisations and governments to collaborate, share skills and prototype new ideas around cycling, we can build a healthier, more active and sustainable world”, as stated in their submission to a Design for Social Impact award (CycleHack, 2015).
To make this vision come true, the three founders initially set up a Kickstarter campaign to get support which explained what the idea of a CycleHack hackathon is all about:

Cyclehack is a 48 hour event aimed at making cities more cycle friendly. We believe in actionable ideas that will improve cycling in Scotland, not just marketing to promote it. Over a weekend in June, the Cyclehack event will bring together designers, developers, drivers, cyclists, pedestrians, planners and makers to problem solve barriers to cycling from everyone’s perspective. We want to generate solutions, no matter how small. (CycleHack, 2014b, emphasis added)

The Kickstarter campaign started comparatively small by concerning Scotland and not the world. The team launched it in March 2014 to raise funds, but also to communicate the idea to a wider audience and raise awareness and local support in Glasgow and beyond. Kickstarter is known as a platform for crowdfunding grassroots initiatives. Celebrated by some (“Imagine if public infrastructure was funded by the crowd!”) and dismissed for its inappropriateness for public concerns by others (“Some call that taxes.”- Twitter post), crowdfunding platforms have become meanwhile marketing tools for start-ups to raise awareness and test the potential of products and services.

Hackathons are traditionally associated with mass events in the tech industry, but have become gradually re-appropriated for social issues or challenges proposed by governments (Irani, 2015; Gregg, 2015; Perng et al., 2018). CycleHack appropriated the event format for a civic use in an urban context through a focus on cycling as an issue as opposed to focus on technology (Briscoe & Mulligan, 2014). Such a ‘civic’ hackathon describes in most cases an intense period of work over 48 hours that follows in most cases following steps: Friday evening starts with talks by people working in the relevant fields to inspire participants and help to frame the problems to be solved over the weekend. Participants are not only invited to passively listen, but instead to get creative and discuss their experience and ideas. By the end of the evening, ideally teams form around common interests and continue to work on their defined challenge over the weekend. Under the guidance of mentors and
facilitators, the teams set out to develop tangible low-key solutions - so called ‘hacks’ or ‘prototypes’ - to be able to communicate their idea and quickly test it in the city for continuous feedback and improvement throughout Saturday. On Sunday, they refine their ideas and present them in front of the audience or a panel of judges in a non-competitive way.

The stated main goal of CycleHack is to change the way people think about urban activism. As I shall argue in this and throughout the next chapters, this represents a new productive governmentality within computational dispositifs. The key idea is to “tool up” citizens with such governmentality to become creative and proactive agents in the city. To understand the ways in which a computational logic shapes political and urban processes, it is first of all necessary to point out the key limitations imposed by the approach and event format in the production of digitally enabled realities. It is precisely through these ‘bounding’ characteristics of a civic hackathon event and the design thinking approach that enable ‘empowering’ effects within computational domains to unfold. It was Herbert Simon who studied the relations between human and computational thinking, who introduced the term ‘bounded rationality’ (Simon 1957: 198) as a concept that describes the replacement of what was assumed to be the perfect rationality of homo economicus with a conception of rationality tailored to agents that are cognitively limited (Wheeler, 2018). As Simon suggests:

Broadly stated, the task is to replace the global rationality of economic man with the kind of rational behavior that is compatible with the access to information and the computational capacities that are actually possessed by organisms, including man, in the kinds of environments in which such organisms exist. (Simon, 1955: 99, emphasis added)

CycleHack Global Movement provides a framing and bounding by limiting available options to those solvable with the suggested approach, which it promotes as a "new form of activism" (Core 77, 2015). It does so by (1) choosing the civic hackathon format as governing space with limited time, by (2) limiting what would be political activism by suggesting to go “beyond infrastructure” and (3) by limiting urban space by suggesting to address issues
from the perspective of participating citizens rather than the city as a whole. This can be understood as a way to increase the computational capacity by creating a more limited, human-centred environment that is more conducive for rational choices my limiting the amount of information to process.

The design brief, which is the industry jargon to describe the job to be done, has hence already been pre-defined by CycleHack HQ before participants enter the event space through this particular framing of the initiative. As the CycleHack co-founders continue to emphasise “infrastructure is incredibly important”, however the initiative seeks to provide alternatives and complement “what is happening already” (interview from March 2016). This discourse can be seen as a part of a heterogeneous ensemble of rationalities that guides activities as part of a dispositif and are central to its functioning (Flyvbjerg, 2001; Callewaert, 2017; Raffnsøe et al 2014). The overall promise of CycleHack is to go beyond road infrastructure discussions and take a positive approach instead to develop solutions that would improve cycling already now. Despite suggesting this being an apolitical approach to urban activism, the politics are implicit since the problem has already been re-defined by CycleHack.

Problem definition is in the case of CycleHack different to decision making. The final problem definition during a CycleHack event becomes a result of a collective process on what is desirable and feasible within the given time. What further requires attention is the framing of the initiative to make a ‘positive’ - as opposed to ‘negative’ – change, which implies normativity about different ways citizens make a change in the city.

4.2.2 Reimagining the city: Human-centred urban interaction

The short and simple online version about CycleHack’s origins does not tell the full story. As one of the CycleHack co-founders explained in our first interview, ‘a couple of things came together’ prior to that coffee in August 2013. The other co-founder and Edinburgh-based event organiser met Mikael Colville-Andersen at the Edinburgh Festival of Cycling in June 2013, talking about challenges to cycling in the city. Colville-Andersen is known in the cycling
world as the CEO of Danish urban design consultancy Copenhagenize and started his consultancy and keynote speaker career after his fashion blog Copenhagen Cycle Chic became an international success from 2007 onwards. Ever since the previous filmmaker turned “Copenhagen’s most famous cycling ambassador” inspires various TEDx crowds as well as cycling- or sustainability-minded audiences. His talks include “Bicycle culture by design”, “Why we shouldn’t bike with a helmet” and “The Life-Sized City”. A key idea Colville-Andersen populates is the ‘desireline’ for cycling, based on the observational study The Bicycle Choreography of an Urban Intersection (Colville-Anderson et al., 2013), which supports his vision and mission that cities should be designed for people instead of engineered for cars.

This fits neatly with trends towards a ‘human’ perspective in design and contemporary urbanism more generally. Film director Andreas Dalsgaard realised his inspiring “The Human Scale” end of 2012. The documentary follows Jan Gehl’s practice as architect and urban designer in the pursuit to design ‘cities for people’ instead of cars. Not only Copenhagenize as cycling consultancy seems to be booming internationally, also Gehl Architects advanced to the internationally most recognised consultancy for cities. Having attended various conferences and events on sustainable urban mobility since 2013, I personally got to see presentations by Copenhagenize’s Mikael Colville-Andersen twice and staff of Gehl Architects four times. As much as this might be an indicator for the busy schedules of scaling ‘the human scale’ made in Denmark, it also indicates an emerging industry.

The translation of inspiring talks and consultancy visions into the urban fabric is a different story. The sponsor of Colville-Andersen’s talk at the Edinburgh Cycling Festival reflected about the impact and difficulties to re-design cities for people on bikes in a public blog post (Edinburgh Bicycle Co-operative, 2014):

It’s often the case that whilst events such as this talk can be inspiring, they often preach to the converted. It was therefore a pleasant surprise when City of Edinburgh Council’s transport convener, Lesley Hinds, was invited to say a few words after the Q & A session, and she pledged that she will do everything in her
power to improve our cycling infrastructure so that within 5 years, Edinburgh will appear in the Copenhagenize Index of the world’s top 20 bicycle friendly cities.

Commitment to improve cycling infrastructure is a first step to make the urban form more cycle friendly and structurally difficult to achieve. Funding for cycling at a national level is lacking in most countries and political leadership ever so often retreats when it comes to take decisions that are ‘anti-car’ - particularly in the UK and countries with a local car industry such as Germany or Sweden (14_NonParticipant, 2016). As a Manchester cycling advocate confirms “We navigated ourselves into a dead-end. We became dependent on the private car and it is very difficult to change dependencies” (32_ParticipantM, 2017).

The conversation between Mikael and the future Edinburgh-based CycleHack co-founder has possibly laid the foundation for the human scale ‘urban design’ and the human-centred design thinking discourse to meet in relation to cycling in the city. With the promise to create ‘desire-lines’ on the one hand and the intention to address ‘user-needs’ on the other, urban design and design thinking both appear similarly seductive. As the website under the section “Our Process” explains, the approach CycleHack mobilises for change is a tool for civic participation and puts ‘citizens’ at the core of urban development:

We see this way of working as a tool for civic participation, allowing citizens to re-imagine what their world looks like and how they interact with it and others they share it with. Our approach to solving the barriers to cycling connects citizens and allows them to be part of a positive change where they live. (CycleHack, 2017b, emphasis added)

The initial motivation behind CycleHack was a shared interest in cycling, which gradually broadened to be concerned with the city and notions of citizenship more widely. Returning back to the earliest days of CycleHack we find that the initial plan was to host one civic hackathon event in Glasgow and change cycling in the city “from everyone’s perspective” (CycleHack, 2014b). This rhetoric changed over time in favour of putting ‘citizens’ and more generalised notion of civic society centre stage.
The computational politics are implicit in the notion of going ‘beyond cycling infrastructure’ which is essential for the design thinking approach to function in an urban context, as it concerns activities that address immediate ‘user needs’ rather than what is needed as a city and solved in relation to the individual. A clear distinction between user and citizen in an urban context (Schliwa & McCormick, 2016) has not been made. The central displacement is hence a replacement of politics concerning the city with ‘citizen’-centred problem-solving, which can be understood as object-oriented programming (Alexander, 1996). The CycleHack co-founder illustrates this logic with an example of design thinking tools that originate from digital design industries:

There are really nice tools like personas, there are tools for a digital element as well. Like simply saying “As a...”. For example “As a cyclists is need... so I can cycle without getting hurt.” Or “As a taxi driver I need... a way to know when cyclists go pass by so I can drive.” etc. User cases and you articulate what all the different needs are in a system. I like systems thinking. It allows you to sit down and think how to translate it into an idea. (interview from 2016)

The idea of a ‘hack’ does hence not stand in relation to the city, but in relation to the self and the knowledge available to that self to provide a ‘quick fix’. The examples provided starting with “As a...” illustrate that logic with a cyclist who does not want to get hurt in dangerous traffic or a taxi driver who seeks not to have a collision with a cyclist. Both problems, narrated from a personal or ‘human-centred’ perspective, are determined by the urban form and the fact that physical infrastructural as well as regulation is missing that would decrease the likelihood for both individuals to collide.

The very idea of ‘human-centred design’ - that is predominantly promoted in a positive and normative way to be inherently good since it is ‘human’ as opposed to e.g. technological - forms a strong part in this conditioning discourse of ‘putting people first’. Putting the ‘human’, ‘people’ or the ‘citizen’ at the centre of urban development allows to distract from the city and focus on the participating individual instead. This raises two aspects: Who is the ‘citizen’ whose needs are being addressed through this ‘quick fix’, who is
missing in the room but might have major effect or would be affected, as well as how do these ideas translate into the city in the longer term.

4.2.3 Connection to urban computational dispositifs

Moving from the urban issue of cycling to the wider city context, CycleHack proofs to be connected to urban innovation and urban computational dispositifs as they were problematised in chapter two. Despite the appearance of an ‘accidental’ global movement from the outside, a closer look unveils CycleHack Global Movement to be a governance-beyond-the-state innovation (Swyngedouw, 2005) that was further incentivised by governmental organisations and funding bodies. This is not only limited to Glasgow, but points to a wider trend in the UK and beyond.

Based on existing contacts in the city that were looking into active travel, CycleHack got funding from the City of Glasgow under the city's 2-year Future Cities demonstrator, a £24 million project to make Glasgow a ‘future’ city (GOV.UK, 2013). Glasgow City Council as winner of this competitive bid was announced in January 2013. The project is funded by Innovate UK, which is the UK’s innovation agency that was previously known as Technology Strategy Board under the Department for Trade and Industry until its rebranding in August 2014. About half of Innovate UK’s funding (approx. £12,000,000) were spent on a central operations room with advanced CCTV surveillance for traffic management and crime detection across the city (see Figure 4.2-1, left).

Figure 4.2-1: Future Cities “Glasgow Operations Centre” and “Citizen Engagement”
Source: Glasgow City Council (2015a) and (2015b)
The initiative resembles previously build central operations centres or city dashboards, like the so-called COR in Rio de Janeiro, Brazil or the Dublin Dashboard, Ireland. The COR un-black boxes urban infrastructures and by doing so, raises public awareness of infrastructures (Luque-Ayala & Marvin, 2016). Similarly, the Dublin Dashboard creates public knowledge about urban data by using visual analytics (Kitchin, 2016). Glasgow is hence another prominent example of city-wide deployment of ‘smart’ technologies in the city.

From the remaining Future Cities funding, the City of Glasgow made about £5000 available to match the CycleHack Kickstarter campaign and enabled the idea to become reality (6_Co-founder, 2016; CycleHack, 2014b). One of the funders is responsible for sustainable education and suggested to host the event also internationally in other cities, since “it would be really good for Glasgow if [the CycleHack team] did” (6_Co-founder, 2016). Besides the support for CycleHack, Glasgow Future Cities dedicated resources for a project on citizen engagement, that investigated people’s visions for Glasgow under the headline ‘Designing A Future City’ (see Figure 4.2-1, right).

The City of Glasgow was recently identified as one of the most deprived cities in the UK. A study lead by Chris Lloyd, Professor of Quantitative Geography at the University of Liverpool, investigated deprivation in relation to housing conditions and employment based on census data from 1971-2011 (Lloyd et al., 2018). It highlighted the persistence of deprivation and spatial inequalities over time. The Futures Cities project appears however remote from these ongoing political and social realities. Promoting a ‘putting people first’ approach, a project for the City of Glasgow under the Future Cities theme Citizen Engagement was “looking at what needs citizens might have within the areas of road repair and waste management” (Glasgow City Council, 2015a). A colourful and elegantly designed 46 pages strong project report summarises the ideas identified and was published by the same design agency that was key in developing CycleHack at global scale (We Are Snook, 2014).

Considering this wider context, it appears more evident why “it would be really good for Glasgow” (6_Co-founder, 2016) if the city was able to promote
a positive approach internationally and why CycleHack turned ‘accidentally’ into a global movement. Both Foucault and Agamben highlighted the strategic function of a dispositif (Bussolini, 2010), which in the case of CycleHack can be understood through the link to wider urban strategies. Having unpacked the early days of the initiative and its initial funding does not reveal a direct causality between Innovate UK’s mission and the realisation of CycleHack. It does however exemplify that CycleHack is related to contemporary visions of the city of the future – both in its approach as well as actors involved. Similar to the shift from urban design to design thinking in the previous section, another shift redirects attention from operational technocratic management to ‘human-centred’ city design.

Future Cities are closely aligned with Smart Cities that Vanolo (2013) describes as a powerful discourse that can discipline actors. The funding split between £12,000,000 for a technocentric operations centre and £5000 in support of a people-centric urban vision is indicative of Future City priorities. Important here is to acknowledge that the CycleHack co-founders set the initial budget themselves, targeted towards the realisation of one event in Scotland and thereafter stressed the strategic lack of funding available to further ‘scale’ the initiative. The funding enabled the team to develop a “Hack Pack” toolkit for other cities to join the global movement “born in Glasgow” (We Are Sook, 2016) and host the event once a year at the same weekend. A reoccurring aspect of CycleHack is the provision of ‘simple’ tools that make it as easy as possible for other people to follow the example. Simplicity in design was subject to earlier debates that criticise design to be 99% invisible and therefore black box the underlying mechanisms. The focus on ‘problems’ and ‘solutions’ - or in the case of CycleHack on ‘barriers’ and ‘ideas’ - can be interpreted as one of such reductive simplicity that relates to computational problem-solving as will be detailed in chapter five.

Today, a small team forms the CycleHack Global Headquarter (‘CycleHack HQ’ from now on), from which professional designers and cycling enthusiasts coordinate the activities and provide support for people that want to run a CycleHack event locally. It is based in Glasgow, where one of the co-founders
is based and works too. Besides the organisational support, the funding was spent to provide a venue, food and ‘prototyping’ material and on top of that to host a professional website as well as to do an about 3 minutes long promotion video that documented this very first ‘global’ event (CycleHack, 2014a). It is this material that I encountered when I discovered CycleHack for the first time as detailed in section 4.2. About 30 ‘hacks’ were created in summer 2014 with the most popular one going viral: “Penny in Yo Pants” - a penny and a rubber band that makes women’s skirts ‘bikeable’ by not exposing a female cyclist when getting off her bike. The ‘hack’ hit the mainstream media with over 3.2 mio hits on online video portal Vimeo and became the iconic example for the success of CycleHack in the initiative’s promotional material (CycleHack, 2015). All ‘hacks’ or ‘prototypes’ created throughout the weekend from 2014 were uploaded to an open source catalogue to be shared under a Creative Commons licence.

Several TEDx talks inspire people to join what ‘accidentally’ turned into a global movement ‘born in Glasgow’, a repeated catchphrase that confirms the effectiveness of the initiative for city branding. As the co-founders narrated in two TEDx talks:

> So this past June, we launched CycleHack in Glasgow and accidentally in Beirut and in Melbourne - you are getting the theme of the story here (laughs). We had about a 150 people gather. (TEDx Talks, 2015b)

> In fact, accidentally (laughs briefly) this spread to 25 cities this year, that signed up to run a CycleHack this year. So we created a model, a platform, we designed it for other people to use. (TEDx Talks, 2015a)

The co-founders emphasised the accidental character of CycleHack Global Movement almost in an ironic tone, while the Kickstarter campaign page unveils that the funds raised through friends and initial supporters were minimal - showing good will rather than enabling a higher profile event to take place worldwide. Just like other projects and as problematised in my literature review, the techno-centric visions of future cities are responded to with a people-centric promise. CycleHack illustrates how a variety of actors in the city
support such vision and the ambition to ‘scale’ participation, which makes the dispositif mechanisms appear accidental.

In many ‘smart’ urban development projects, participation has already been institutionalised and is measured with key performance indicators (KPIs) (Kaika, 2017). CycleHack played into this process as a way for the city to contribute to the ‘citizen engagement’ aspect in the context of technomanagerial governing. The bike and cycling somewhat moved into the background, while the movement and ‘scale’ moved to the front. This suggests that a network of people is needed for the approach to function in the city. How and why such network is configured through CycleHack will be subject to the next section.

4.3 Network configuration: Citizens

[6, Co-founder, 2016]: And in Manchester, Amsterdam and Sydney you see a network evolving. And that is an outcome. That is really powerful. It is basically a proactive network of cyclists, of people interested in cycling. That is a really good outcome, really really powerful. And in fact, more powerful than the actual prototype. I think networks and relationships, stuff like that, is really good.

The overall aim of the CycleHack organisers is to create a network of citizens that act in their cities beyond traditional forms of democratic participation and activism. Following the ambition to “design a scalable model” (We Are Snook, 2016) from the start, the CycleHack founders asked their contacts and friends and succeeded to not only have an event in Glasgow, but to run simultaneous events in Beirut and Melbourne in summer 2014. Looking back into the promotion material from that time, about ten cities were advertised to run a CycleHack in 2014 already - an ambition that ‘scaled down’ again to three actually happening in 2014. As previous literature and project reports on citizen participation highlighted, it is difficult to build a community around a technology. Instead, “urban issues” such as air quality or damp housing are used to “orchestrate large scale citizen participation” (Balestrini et al., 2017). So more than just interest in the city or the ‘citizen’, it is the quantity of cities and people involved that move to the centre of attention. The co-founder
remembered how she “made a joke saying it would be funny if we got really big” (6_Co-founder, 2016). A few encounters - including the famous coffee - and just one year later, CycleHack went “accidentally” (TEDx Talks, 2015a) global with about 25 cities hosting a CycleHack event in 2015.

The focus on scale and numbers of cities participating in the ‘global movement’ based on PR material is however a continuous theme, with the actual numbers of participants being consistently overestimated or overstated by the event founders and organisers rather than representing accurate figures. A participants of CycleHack Amsterdam 2015 problematised this notion and promotional aspect saying “and you make it a big bigger, which makes complete sense” (8_ParticipantA, 2016) as a way to indicate the techniques of organisers to get more participants attending. It is at this point still unclear why CycleHack became increasingly obsessed with scale and quantification of participating cities and social media impressions as a way to express the success and value of the initiative. The following sections will therefore analyse how the network was created with particular attention to the actors and their interests to become part of CycleHack’s network.

4.3.1 Network hosts: Social entrepreneurs and digital designers

In relation to previous cycling initiatives, CycleHack shows a shift from cycling activists and community groups to designers and entrepreneurs that are occupied in setting the event up. Central to design thinking and the role of the ‘designer’ during a CycleHack event - or similar type of innovation workshop - is ‘facilitation’. As the following section will unveil, ‘design’ does not move from product to process. The ‘design’ we are concerned with and encountered in the field represents a different industry and historical as well as professional background.

As one of the CycleHack co-founders explained in our first interview, people that currently run a CycleHack locally “come from a certain type of background” (6_Co-founder, 2016). We were sitting in a combined café and bicycle workshop located in London’s Shoreditch area (see Figure 4.3-2). I observed fixie bikes as well as features of authentic consumption choices such
as “real coffee” and microbrews that Hubbard (2016) suggests are indicative of “hipster stores” and often found in gentrifying neighbourhoods (Hubbard, 2016). This was in March 2016, when CycleHack Manchester already ran the first CycleHack Global Event in 2015, with the 2016 edition in June in preparation. The same café was used for another CycleHack HQ event of short talks only a month later, which I also attended. I thought back to the 2015 Global Event and remembered my surprise about the attendance of so many new faces. Are all these people interested in cycling? I haven’t seen many of them at the monthly Critical Mass bike ride or other cycling community events across Manchester. Also a Manchester local authority commented on a CycleHack Social we organised in collaboration “It was a good event. Not only the usual suspects” (personal conversation in 2016). Manchester has different cycling communities that use the bike in creative ways to make a change – from bicycle dance shows to events in parks including social bike rides and bicycle repair workshops. The majority of them remained absent from CycleHack. What became clearer throughout the time I was involved in co-organising the event is that CycleHack does not attract a different crowd, it moreover is a different crowd.

‘Hello, I am a designer’ has become a very familiar introduction when meeting new people in this new milieu. Being suddenly surrounded by so many ‘designers’, it is necessary to make again explicit who is considered a designer today and “running this stuff already” (6_Co-founder, 2016). The type of designers - as there are many when we think of e.g. product designers, industrial designers or urban designers - that are attracted to CycleHack are in the first place service designers, digital designers, user experience designers or interface designers. Many of which work on the digital transformation of public or private services, which means in many cases the translation and improvement of interactions that have been previously done face-to-face between people into interactions between a person and a computer interface. This new industry is concerned with the digital economy and the digital transformation of public services (moving online what used to be human-
human interaction, see e.g. Kimbell & Bailey, 2017) or the creation of customer experiences through digital interface design (see e.g. Ash et al., 2018).

The co-founder further elaborated “people working within the social entrepreneurship and social design landscape” are the first followers since they are “already running this kind of stuff”, they are “attracted to it” and they “get it immediately” (6_Co-founder, 2016). The notion of ‘getting it’ is important as it suggests the CycleHack Movement diverts from other movements with a clear goal. Henri Lefebvre commented on the aims of the Dutch Provo movement in an interview, whose followers were particularly active in Amsterdam, and “wanted the city to be conserved and transformed, instead of being given over to traffic.” (Ross & Lefebvre, 1997). The movement - loosely organised and connected by their actions and ideas (Pas, 2008) - succeeded and enabled Amsterdam to become the cycling city it is today. In contrast to this direct action and goal, describing CycleHack’s activities with ‘getting it’ is further an important notion as it illustrates that design thinking is already normal within a milieu of social entrepreneurs and social designers. What we get to understand is that design thinking as a concept made implicit ways of working within creative districts explicit. This way, people outside of the milieu are able to understand and ‘get it’, to eventually adopt the same way of thinking, which will be detailed in chapter five.

In the case of Manchester, CycleHack has been successfully promoted within the user experience design (UX) community. A talk during a one-day conference for professionals called ‘Talk UX’ hosted at Manchester Town Hall in March 2015 encouraged a member of the audience to volunteer and host the CycleHack 2015 Global Event in Manchester. The member of the audience was my future team mate and closest collaborator and the presenter was a (within the industry) prominent service designer, who gave a talk titled “Guilty by association” (Talk UX, 2015). Still working within the corporate industry, the new spirit is to search for meaningful work with social ‘impact’. Dismissing old ways of creative work that reinforced unsustainable pathways and mass-consumption, today’s creative industry is dismissing marketing and follows ‘I am a designer’ and ‘I believe in good’ instead (Talk UX, 2015). CycleHack was
advertised at the end of the UX design presentation by pointing out that, even though this design conference is hosted in Manchester, there is still no CycleHack happening in the city. The UX designer and CycleHack Manchester founder remembered that a few people were interested to do so too. However he was “a bit worried” as it seemed they wanted to use CycleHack to promote their business, which is why he preferred rather not to work with them (personal conversation from 2016). He just moved to Manchester and saw in the event a nice opportunity to combine his passions around design and cycling, whilst contributing to sustainability.

This early moment in which someone with the intention to contribute to sustainability took on the event facilitation instead of an eventually more corporate oriented business indicates that intentionality counts when considering how a design thinking approach can become useful in the city. Considering McLuhan’s ‘the medium is the message’ (Mcluhan & Lapham, 1994) in understanding the functioning of a dispositif as ‘device’ or ‘medium’ however, we can be alert that it might in the end not matter who is hosting the event and what agenda is being followed, when the surrounding apparatus or dispositif remains the same.

4.3.2 Network support: Brands, NGOs and local authorities

![Figure 4.3-1: CycleHack sponsor logos from Wuppertal, Paris and Berlin.](source)


As the case of Manchester has shown, most substantial support is provided by the private digital design and tech sector. While this is common in civic hackathons generally (Irani, 2015; Perng et al., 2018), it is a relevant notion if we are to understand the interests and link to the wider urban computational dispositif. Some local transport authorities sponsored some of their time to
attend local meetings as well as provided merchandise or behaviour change PR material. One of the digital design agencies that sponsored CycleHack Manchester in 2015 interviewed the CycleHack co-founder ahead of the 2015 event - the blog post titled *Sponsoring CycleHack Manchester* ends with the words:

> With the vision to empower people, organisations and governments to collaborate and co-create in order to prototype and reimagine how we might build a healthier and sustainable world – it’s no wonder CycleHack has taken off at speed. They definitely have our full support! (Common Good, 2015)

As we find, many of the stated motivations from within the supportive community are generative of what CycleHack already states on their website such as ‘empower people’, ‘more accessible’, ‘co-create’, 'having fun', ‘prototype’, ‘sustainable world’ etc. These promises are apolitical as they are not challenging the hegemonic dominance of the car industry and, to emphasise this aspect again, repetitive of the promotion material provided by CycleHack HQ. As previously stated, the initiative provided 'simple' tools, of which language can be understood as one of them that gets repeated by its supporters. With respect to identifying ways in which power works, this suggests that the adaptation of a certain language from host to supporter and to participants henceforth, adds to the normalisation of terminologies such as ‘prototyping’ for example. What these terminologies mean will be subject to the experience of participating in the event and more detailed in chapter five.

Looking more closely into the operations of CycleHack, we identify a specific set of actors that play into contemporary visions of how to innovate cycling or the urban more generally - be it ‘smart’, ‘future’ or ‘sustainable’. The major funding or resources are provided by private sector institutions and brands within the emerging urban innovation, digital technology or cycling industry, complemented by local often ethically sourced food, smart of future city projects, code or open data communities. Figure 4.3-1 shows screenshots of CycleHack websites that featured the sponsor logos.

With respect to public funding, CycleHack is competing with a wide range of community events that all depend on volunteer work and a few hundred
pounds to promote and host community events. The most crucial support needed is a venue, followed by financial support to provide materials and food for a ‘fun’ weekend. Not only in Manchester, also in other cities such as Beirut and Melbourne, local ‘labs’ as well as creative and digital industries were essential in providing support. Considering hackathons as ‘co-option ritual’ as recently argued by Zukin & Papadantonakis (2017), we may assume an interest in exchange for that support. The main sponsor of the Manchester event space in 2016 reflects upon what their interest was to sponsor the venue:

[13_SupporterM, 2016]: We did not get much from it, except showing some support. We were branded as [brand name of co-working space] at that time and it is part to be a place where the community can come together. Innovation is the opportunity to mix up people that normally would not meet and share skills. (...) It is up to us to get value out of it. I had some conversations at the event and could follow up with some which was good. So yeah it was, it was... It was not hugely strategical or so. It was a good will to align to what we are trying to achieve. Looking forward, I am not sure.. (Pause) Say the same values are in play. It is important to me that the community knows that this is a place where they can come and for free meet to combine skills and ideas to create new innovative ideas. And therefore I like to support them again in the future if there is an opportunity, at least with the use of the space.

What this quote exemplifies is the logic of the spaces in which citizen participation is enabled to take place. The emphasis is - again - on creativity, ‘the community’, innovation and the generation of ideas through the combination of different people and skills. The co-working space has been part and hence indirectly sponsored by one of the major banks in the UK. As the co-working space manager emphasised, CycleHack is possibly not the type of event that is of strategic interest. He carefully elaborated further:

[Name of co-working space] is quite focused on FinTech (finance technology) and kind of drives to solve problems for banking or the bank (the bank brand is generally referred to as ‘the bank’). It doesn’t have to be bank service or products aligned with CycleHack... One of the core disruptive technologies that applies to [co-working space] and CycleHack is the Internet of Things. This is about connecting physical and virtual devices. Looking beyond [co-working space] as seen as a place where the
community can come together, I can see further value if there are new payment schemes or security schemes with new technology put in place to enable a better transport system, which has cycling involved. (Interview from May 2016)

What this further exemplifies is that the CycleHack community becomes an asset for potential future uses or applications that a bank or the financial sector could re-appropriate. It is particularly the notion and problem of appropriation and re-appropriation (of space, ideas and technologies) that provides ground for value creation and extraction. Moreover it raises concerns considering citizenship and informed consent about such re-appropriations of ideas developed within a cycling instead of in a banking context. Besides value (in terms of economic value), a further aspect raised were values (in terms of personal values). The mind-set people might encounter within such supportive milieus is illustrated by another member of staff from the same co-working space:

[22_SupporterM, 2016]: I cycle myself. I find cycling activists very boring, obnoxious individuals. They have a political agenda that isn’t necessarily geared around solutions. It is geared around promoting themselves. And I don’t have much patience for that. (...) And they are all boring, fundamentally boring people. But hey, the key thing about any kind of hackathon it that it appeals to people that have an itch, but they don’t know necessarily how to scratch it. A hackathon gets people in touch with each other, not being so icon-like “The council must put cycle lanes on every street” and dadadada and this and that - you know, the political aspect. It becomes about improving the ideas. It is about people there to improve ideas and solve the problem.

While the attitude against activists is not necessarily representative, a representative distinction between cycling activism and ‘CycleHacktivism’ is its focus on solutions and ideas, along with the repetitive rhetorical focus on ‘improving ideas’ and ‘solving problems’ that adds to or is sign of the normalisation of this approach within this milieu. Analysed from a sociology perspective, design thinking as phenomenon has recently been conceptualised as the new ‘spirit of capitalism’ as an innovation culture that seeks to solve the problems capitalism has created (Kimbell, 2011; Seitz, 2017). Considering the fact that CycleHack Manchester has been for two years in a row supported by a multi-national bank due to the ease of access based on initial contacts as well
as lack of public community spaces confirms this spirit. As the example of CycleHack has shown, it is less an introduction of design thinking into the urban, but instead the attraction of publicly concerned actors into the private sector and sphere. The quotes I used to illustrate CycleHack sponsors reflect mainly the sponsor of the event space. The event space sponsor is however the crucial enabler of an event and further determines the community and network of people involved in this ‘open’ environment and milieu. This can vary more widely across different cities. As Table 4.5-1 shows, CycleHack events were hosted in very similar milieus that were aligned with creative industries, maker spaces, and knowledge economies.

Leaving the local level aside, and reconsidering the ‘global’ level, we can also consider Glasgow City Council along with its Future Cities Demonstrator to be a supporter. Citizen participation is becoming funding requirement or at least a perceived duty to balance large scale technocratic projects such as the Glasgow central operations room. Sponsoring the CycleHack idea had potentially also an indirect strategic role at city level to accelerate the engagement of private actors in urban innovation through new collaborative formats.

4.3.3 Network expansion: Researchers, citizens and positivity

Moving on from those that facilitate and enable the event through sponsorship, this section is concerned with those that enter the CycleHack space to participate in the activities. It is particularly the followers, as opposed to initial facilitators and supporters, that expand the initial network and introduce the urban scale to CycleHack.

Referring to section 4.3.1., people working in the social design or entrepreneurial sector are ‘getting it’. As expressed earlier, I was not familiar with the new vocabulary that started to surround me this milieu including ‘prototyping’, ‘checking in and out’, ‘touch points’ or ‘user experience’ - along with the repetitive mantra of problem-solving when discussing ‘design’. I was not alone with this sensation as the CycleHack co-founder explained:
[6_Co-founder, 2016]: Now we see an expansion to people that haven't been involved in design before, maybe cycling or maybe smart cities or sustainable cities kind of landscape and they need more support to understand in what we mean by prototyping and designing, but they are getting it and it is really cool. And they are linking it to their programmes and implementation. So that is better for implementation. (emphasis added)

This observation was also what I found in the field across several CyceHack cities. This implies that a design thinking approach is normal within an entrepreneurial milieu and its logics closely aligned with the ways of working and thinking of smart and sustainable city actors. When I joined CycleHack Manchester, I remember a few changes to the team. In the end, a core team of four people was formed consisting of two designers, the ‘community manager’ of the event venue (who took on a position as ‘service designer’ elsewhere two years later) and a ‘smart city or sustainable city kind of landscape’ person, that is (eventually) ‘better for implementation’ - myself. I counted myself to the ‘smart cities or sustainable cities kind of landscape’ at that time and needed indeed a while to understand that all this terminology has its particular meanings. I was predominantly expecting CycleHack to be about cycling and the city, but remember how my perception of the initiative changed once I found out that a major share of people involved in the initiative were ‘designers’. In what way? I found it initially exciting, since I always had an interest in design and architecture. However, as it would turn out soon, my original conception of ‘design’ and ‘designer’ was very different from the one I encountered as section 4.3.1. elaborated.

I was impressed by the variety of online collaboration tools CycleHack introduced me, which helped to expand the network. One of our interviews was followed by an online Question and Answer session, during which CycleHack co-organisers from across the globe were able to discuss questions concerning CycleHack and the event facilitation in real time. I tweeted about my experience from the CycleHack Manchester Twitter handle (see Figure 4.3-2). Apart from Etherpad, which allows written real-time conversation (see Twitter image to the right), I previously started using the project management site Basecamp as well as Slack, an app whose founder has the ambition to make
emails obsolete. Basecamp is the central tool CycleHack HQ uses to communicate with local event facilitators like myself and my team colleague. It has a forum function for questions and answers as well as sections to share documents and CycleHack branding material. This way, also less design thinking savvy people became able to adapt and promote the approach more widely and received positive feedback by CycleHack HQ.

![Figure 4.3-2: Interview location in London followed by CycleHack HQ online Q&A. Source: Screenshot of author's own Tweet from 11th March 2016](image)

As we already discussed, the way the CycleHack founders envision change in the city is by organising a ‘hack’. It is the very idea of a ‘hack’ that adds hugely to the appeal of the CycleHack initiative. The associations a ‘hack’ or ‘hacking’ provokes stand in sharp contrast to more traditional alternatives in the realm of cycling - such as ‘public infrastructure consultation’ or ‘cycling campaign group meeting’. A Manchester cycling advocate remembered his first impression of CycleHack and motivation to take part:

> [18_ParticipantM, 2016]: It sounded really fun and really exciting, a bit less... it was a little bit... it sounded less stuffy. Some of the other campaign groups I have been involved in just seem to be a bit... While this was less about campaigning and it seemed more fun and engaging. And yeah, a bit avant-garde as well, which was exciting.” (Interview from June 2016, original emphasis)

‘Seem’, ‘sounded’ and ‘exciting’ relate in this case to the anticipation of a future experience. The sound and the appearance of an event are what makes its appeal to the audience. It determines whether an initiative has the potential to
mobilise and activate participants or not, based on existing and proposed desires. Through my relational research I came across a variety of labels for similar types of events: jams, lean start-up, hackathons, design sprint or design charrettes. These governing spaces have all different types of characteristics. Yet they represent in essence a focused period of time in which people work together in pursuit of a common goal. In short: a workshop. Besides the novelty of the format expressed through its label, it is of course the subject or common goal that matters, which is in our case improving cycling in the city in a ‘positive’ way.

I was by far not the only person that was interested in CycleHack for research purposes. Since I started this study several research reports were published that used CycleHack as a case study too. These include reflections about participatory design featuring “ghosts and idiots and ___ otherness” (Popplow, 2017), architectural case studies thematising “A little space for democracy” (Ramachandran, 2015) well as the results of testing “improvised ideation from humour constructs: A new method for collaborative divergence” (Hatcher et al., 2018). Asking CycleHack Amsterdam participants, who were also urban researchers, about how CycleHack might relate to the smart city, I encountered a new city discourse - namely the ‘FabCity’:

[10_ParticipantA, 2016]: I definitely have some opinions on that. I give presentations on Smart Cities as well. And a big criticism of smart cities is that it doesn’t involve citizens right? And what you see with the FabCity actually is that space. Instead of just IBM and Cisco telling government that they need sensor everywhere, that they need to be smart, leaving out the needs of the citizens. The FabCity puts the citizen in the middle and give the opportunity to produce. That is the other thing. In that sense a FabCity fits in with hackathons much better and much closer than the smart city does. And the FabCity actually you can see in Amsterdam, where the Smart City has been such a hype, and now there is lots of criticism about it. And the FabCity is emerging to fill that gap that the smart city was not able to deliver. That is the evolution. (...) The short answer is that the Fab City and CycleHack are much closer and much more complementary than the Smart City and CycleHack. But then you see.. There is definitely this.. I see it as an evolution right. And I see these people that are involved in app development and that community really making a contribution to the FabCity and to CycleHack. (Interview from April 2016)
As the above quote implies, this new strategy - which also aligns with the idea of a ‘hackable city’ - does not replace the smart city, but it is an evolution that ‘fills a gap’. The FabCity is a new city strategy that is underway among a network of scholars and technologists that seek to advance “digital fabrication” with citizens (Diez, 2012). The gap the FabCity and Hackable City appears to be filling is the democratic deficit of smart city projects. CycleHack can be hence understood as a space through which ‘citizens’ are made to overcome the criticism of the smart city. This does not occur by making the smart city more democratic, but by providing an alternative narrative and space in which people, that are aware and interested in CycleHack from an urban (as opposed to cycling) perspective, feel they are engaged and have a say in urban development. The ways in which this is ‘better for implementation’, can be seen when looking at the map of CycleHack locations. It indicates the places in which CycleHack is hosted, which are in most cases rather privileged and cultural districts in the city or close to university campuses.

It is not only sustainable, hackable, smart or fab city stakeholders that are following CycleHack as participants. However researchers concerned with urbanism as well as people interested in cycling are the major groups that make up the following and hence further define who counts as ‘citizen’ when promoting the event. As an Amsterdam entrepreneur said “I was lucky to be invited as I knew the organisers already” (interview from April 2016), which emphasises the self-selective character of the initiative.

4.4 Network error: People

The people that were just described are already part of ‘the global movement’ and count as ‘citizens’. As citizens they share ‘positive’ approaches to change, which is in the case of CycleHack understood as non-confrontational and solution-oriented. Those that are sharing or co-creating CycleHack’s vision are predominantly designers, smart and sustainable city researchers, technologists and people interested in cycling. This network expansion however does not proceed indefinitely. Network errors occur normally due to
poor connectivity to the internet. Despite optimistic visions of creating a global movement, the majority of a city’s inhabitants never became connected to CycleHack as initiative and event.

We now look into who is not joining the global movement and the reasons behind it. People that would not normally join the CycleHack Global Event, but attended parts of it or shorter CycleHack taster sessions, told me about their experiences and views. This investigation of non-participants of the global movement resulted in a range of groups I was able to talk to, some of which passionately disagree with what CycleHack is doing, others show themselves fairly indifferent to it. The below list is a summary of the groups of people that do not to join the event, because they

- are activists who see CycleHack as a distraction
- are not interested in cycling, sustainability, ‘design’ or ‘tech’
- do not want to solve problems in their free time
- would be interested, but cannot attend the event on a weekend
- would be interested, but forgot about it again
- did not find out about the event

Between CycleHacking citizens and non-CycleHacking people, we find a deep gap that is not visible when navigating within a milieu of likeminded people. Also, a decline of participants from one day or event to the next and the reasons for it are diverse and can range from lack of time in today’s busy mobile lives to silent disagreement with the approach. What now follows is an investigation into those people that are not (yet) ‘active hacking citizens’ under the CycleHack brand. A main concern is to identify who are the actors that are favoured and who are those that are eventually displaced or marginalised. To find out and overcome this bias within my research, I made continuous effort to talk with people that did not join the global movement. The elements that influenced non-participation were politics, computers and disconnection, as the next sections will detail.
4.4.1 Politics: “Changing deckchairs on the Titanic”

Politics is a central aspect that makes CycleHack attractive for some and not for others. For the wider analysis, it is of relevance to acknowledge the self-declared ‘apolitical’ character of CycleHack from the start, in order to better understand its underlying politics and power relations. It is the avoidance of political action that creates the tensions with cycling activists, as CycleHack seeks to ‘change the aesthetics of activism’. The change envisioned shall come about through a more positive mindset as CycleHack HQ members of staff suggest in some of their blog posts. The first excerpt below was written by the CycleHack co-founder and posted under the title “Why I CycleHack”. Ahead of the 2016 Global Event edition, she explains why she continues to host the event and encourages other people and cities to join in too. One of the reasons why she is cyclehacking is because it is “an A-political and positive approach to changing cycling” as the blog post further explains:

Let’s not beat around the bush, often change and cities can be full of unseen power, politics and negativity. In the CycleHack space, there is nothing but a positive atmosphere and if some of this can be taken, continued and implemented into organisations thereafter, that makes me feel positive we can start new ways of working. (CycleHack, 2016)

The interesting discourse is that she emphasises that “cities and change can be full of unseen power”, while CycleHack as a participatory space promises to empower – yet the power mechanisms remain unseen too. Compared to the initial motivations expressed by the founders, this framing has also the function to persuade people to join the event, in response to often negative perceived cycling activism or local authority spaces. What also only becomes more apparent seen from the outside of the CycleHack community is how people perceive the event based on its PR and communications. A Manchester based communications expert and attendee of a short CycleHack event explains:

[6_NonParticipant, 2016]: So I am possibly one person that you interview that normally would not come to this event. (...) I had a look at their promotion videos. Also there they said ‘...and we had our beers ready...’ I don’t need free beer. If I had seen the
event I would have probably thought: a lot of nice people with the heart at the right place, but really making a difference? Probably not. This is not for me. (Interview from 2016)

This example shows again the exclusiveness by design as having ‘beers and pizza’ attracts some people, while others are excluded based on their beliefs or personal experiences. The decision to say “This is not for me” (quote above) is quiet and in most cases not outspoken. In contrast, a number of people are actively against the initiative and therefore decided not to attend. These are predominantly cycling campaigners and activists with a political agenda and visions to change the city.

Manchester as well as UK wide cycling advocates I talked to elaborated CycleHack would be similar to “changing deckchairs on the Titanic” (21 NonParticipant, 2016). While the ship is being rearranged and improved its looks, the course towards the iceberg remains unchanged. Further discussing this notion, a cycling advocate draws on his year long experience in campaigning saying “The impression I got from CycleHack is that it is like a ‘hack’, a quick fix or solution. What we do at [cycling campaign group] is instead more like “CycleSlog” - slowly but surely steering the Titanic away from the iceberg” (personal conversation in 2016). At least three Manchester residents were pro-actively raising concerns against the initiative. They were experienced cycling advocates who worked for many years with and against governmental authorities in a politically engaged way to steer rather than decorate the Titanic.

As the CycleHack co-founder explained, the initiative received a lot of criticism online saying it was just a distraction. Not taking criticism from politically minded actors and activists seriously, the CycleHack co-founder emphasised the social aspects of CycleHack and its soft benefits, concluding critics should either experience the event themselves or “need to respect that and if they don’t, they are the wrong people.” (31 Co-founder, 2017). This mindset is also illustrated by one of the Manchester venue sponsors who uses the term ‘personality type’ to describe such disagreement:
[22_SupporterM, 2016]: Again, it is the personality type. The obsessive versus problem solver: Obsessive about issues. People that do politics are not problem solvers. They want to be heard, and hackathons are not places to be heard. They are places where you can be heard, you can present your solution, but they can be quite damaging on people’s egos if they are not prepared to accept: ‘Actually, your idea stinks, here is a better one!’ Some people cannot hear that. Their personality is geared around a particular subject relevant to them, but there is a better solution and it is not their solution.

This quote makes another shift and difference in rationality very explicit. Those that are part of Cyclehack and arguably the ‘global movement’ more widely are described as ‘problem-solvers’ which aligns with the notion design moving towards process. People that are actively opposing the initiative are described to be ‘obsessive about issues’. Such way of doing politics requires to take decisions on what it is that needs to be done, rather than focussing on how to do it through problem-solving. This approach is already implicit in rhetoric and will be made explicit in chapter five.

What this final discussion emphasises is that, despite the democratic aspirations as well as labelling people attending a CycleHack ‘citizens’, those that participate are part of a personal network of people predominantly connected through joint professional or personal interests. Criticism by those not attending is being cancelled out of the event space - either by not being visible on social media to a wider audience or by silently not attending the event. Active opposition is mostly directed towards the organiser, who does not communicate that criticism to those participating to keep up a ‘positive atmosphere’. Within these findings and interpretation we see Foucault’s description of the milieu conformed, that shifts the ‘good and the bad’, or in the case of CycleHack only attracts ‘the right people’ that are problem-solvers rather than focused on a particular issue.

4.4.2 Non-smartness: “I don’t really understand computers”

Computers appear to represent another key barrier to participation as well as confusion concerning what CycleHack is all about. A Manchester based cycling advocate told me “I came up to see what it is about, and what I saw: a guy in
front of a computer! That is not for me.” (personal conversation in 2016) and he left again. Yet, CycleHack promotion material states ‘we want to create solutions from everyone’s perspective’, which Manchester despite all effort did not achieve. This might be also a reason why social media impressions (which could be a person scrolling over a CycleHack video on Facebook) are more emphasised than actual attendance in PR material. The CycleHack Manchester Facebook page has 280 ‘likes’ and the Twitter account has 870 followers (following 1268; follower and following often turn out in a 1:2 ratio as people follow followers back). Shedding more light on why people are not coming to the event, another non-participant elaborated:

[16_NonParticipant, 2016]: It is also the word “hack”. Some people kind of get what it means, for other people it just sounds like... some will think that has to do with computers. They do. They do! ‘That's about computers. I don't really understand computers.’ They don’t understand that it is more about ideas. The idea of hacking and prototypes. Not everyone gets that, not everyone knows what that means. So it can be quite off-putting as a barrier of the event.

Meanwhile knowing that design thinking emerged from a computational logic, it is less surprising that the terms ‘hacking’ and ‘prototyping’ are still strongly associated with computer technology for some, while lost their technical connotation for others that focus on cycling as central concern of the initiative.

Prototyping is indeed ‘smart’ and computational as another example illustrates. CycleHack Manchester got invited to give a talk on the topic of ‘Rapid prototyping’ at a ‘TechForGood’ event. TechForGood is a volunteer run initiative that hosts talks and events to showcase work from within the creative industries how to do ‘good with tech’. The event took place on a rooftop in Manchester’s Northern Quarter, where it had pizza and beers ready. Free pizza and beers are part of this milieu’s culture and, in contrast to the CycleHack non-participant who emphasised he does not need free pizza and beer, are celebrated and staged as a desirable aspect of socialising. This was emphasised through a CycleHack Manchester 2016 attendee, who is part of this community, as she posted a photo of a beer can on Twitter as first action on arrival to praise the CycleHack event setting.
Attendees of the TechForGood event jokingly said they come along for dinner, some attend for an informal catch-up, others to network with potential future business partners. This illustrates again those that benefit from a network in their professional role are more likely to attend a social event after work. I have seen a few of the attendees within the community around Stevenson Square before as well as met people that joined CycleHack planning meetings too. As a rooftop space, that has been co-designed with the people working in that building, it was not suitable for people with disabilities and only accessible through a rusty ladder. Judging from a poster with mugshots of people using the co-working space CycleHack used in the 2015, people working in that building are predominantly male, in their 30ies, white and healthy. To counter that bias, the same community also hosts events such as ‘Ladies that UX’ or ‘She Says’, which are female targets events and that promote more female leadership in the user experience design (UX) as well as digital industries. Looking into the social media accounts of other CycleHack cities, we find a very similar bias towards young, white and male dominated event spaces. A notable exception is London, where a group of people hosted a CycleHack event that was targeted at female cycling in 2016.

4.4.3 Disconnected: The other 99% of citizens in a city

Disconnection is the final and most significant factor that determines participation and non-participation. As promotion efforts show, little feedback is possible to obtain on whether a ‘no show’ is based on a passive lack of interest, lack of awareness or active disagreement. So the practical as well as empirical issue with non-participants is that they do not participate. They are as a result often overlooked, ignored or underrepresented. They are un-governed, yet potentially effected. This is an important notion that I further address in the discussion of Chapter 6 Innovation by the people who ride. One crucial element in this context is awareness and knowledge about the initiative as it is not state governed.

The participating audience is hence strongly biased by the demographic, social milieu and professional interests of those facilitating the event. Major effort has been made to broaden participation - however also only within the already
participating milieus (cycling, design, UX and universities). People that were not direct contracts, but still attended the event had in the majority of cases been personal conversions with the co-organisers prior to it. The “opportunity to produce” (10_ParticipantA, 2016) is hence only given to those that are directly or indirectly linked to a professional network, while being labelled as ‘citizens’. The creation of a network is considered to be powerful. What this network of citizens is empowered to do through design thinking will be detailed in chapter five.

Table 4.4-1: Promotional activities for CycleHack Manchester between 2015 and 2016.

<table>
<thead>
<tr>
<th>Promotion medium</th>
<th>Promotion activity</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word of mouth</td>
<td>Personal conversation</td>
<td>Friends and colleagues</td>
</tr>
<tr>
<td>Annual Cycle Event 2015</td>
<td>Promo stall on campus</td>
<td>Cycling and university staff</td>
</tr>
<tr>
<td>Ladies that UX</td>
<td>Short public talk</td>
<td>User experience designers</td>
</tr>
<tr>
<td>SPIN Festival 2016</td>
<td>Public talk</td>
<td>Cyclists</td>
</tr>
<tr>
<td>Online magazine</td>
<td>Blog post</td>
<td>Designers</td>
</tr>
<tr>
<td>Newsletter</td>
<td>Email</td>
<td>Professional and cycling stakeholders</td>
</tr>
<tr>
<td>Manchester Climate</td>
<td>Project meeting</td>
<td>Sustainability stakeholders</td>
</tr>
<tr>
<td>Posters</td>
<td>Poster and flyer display</td>
<td>Campus, workplaces, cafes, bars</td>
</tr>
<tr>
<td>Annual Cycle Event 2016</td>
<td>Flyers</td>
<td>Cyclists and university</td>
</tr>
<tr>
<td>Social media (Twitter, Facebook, Instagram)</td>
<td>Invite and post</td>
<td>Online, Personal network, Followers of hashtag</td>
</tr>
</tbody>
</table>

Source: Author’s own.

CycleHack Manchester made several efforts to encourage people to attend the event, but only reached far less than 1% of the city’s population. Table 4.4-1 illustrates the PR measures throughout the active phase of CycleHack Manchester in promoting the event prior to the ‘global event’. Looking into the CycleHack Manchester event, the majority of attendees have been personal contacts (or contacts of contacts) or friends (or friends of friends). In 2015, the
city of Manchester had a population of about 530,300 people. With about 30 people actively attending the CycleHack Global Event 2015, about 0.005657% of Manchester’s ‘citizens’ attended CycleHack Manchester. In other words, CycleHack Manchester as a CycleHack city represents 0.005657% of Manchester as a city. Taking all CycleHack Manchester events together (three Global Events, three CycleHack Socials, and a few meet ups), we have a sum of about (30+20+10+40+35+10+5) 150 people, which leaves 530,150 people that were non-participants. Those that don’t find out about the initiative generally do not belong to the network of the organiser and are therefore unaware of the initiative happening.

4.5 Network integration: The community at disposition

The French term dispositif relates to the expression “être à la disposition de quelqu’un”, which translates into “to be at someone’s disposal” (Link, 2006 in Caborn, 2007). Compared to direct action, we understand that such type of participation is less concerned with the direct performed action, but participants as ‘citizens’ represent an immanent potential or asset to be mobilised in the right moment. This differentiates it from movements that represent often a spontaneous collective. Instead, CycleHackers are brought together as a strategic asset that is on hold until its deployment for a given challenge. Taking this notion as further point to understand community building and mechanisms of power, this can be considered as “power over somebody’s or something’s fate” (Link, 2006 in Caborn, 2007). To be at disposal for an urgent need is what had been previously associated with emergency response or the military. While army service is in many countries mandatory and part of state strategy, citizen participation in the city it is a voluntary process. In the case of CycleHack, voluntary engagement was incentivised by a fun appearance of the event, the sense of being part of ‘a global movement’ along with an interest in cycling and design more generally. The mission to grow a network and ‘scale a community’ has been purposefully designed. This is not only expressed through the ‘network perspective’ CycleHack is promoting and enabling, but also in the way the initiative is advertised and explains its approach within the design community as
“Designing movements like a service” (The Service Gazette, 2016). What the previous sections found, is that CycleHack is less a joint movement, but instead a designed network of likeminded people, connected through personal contracts, professional interests or interesting in cycling and the city. Echoing the title in a service design magazine “Designing movements like a service” opens up the critical question: A service for what or whom? Or participate in what?

To better understand for whom the movement and human network is designed, it is insightful to again consider the location in which CycleHack events a hosted. About 25 cities hosted a CycleHack event in 2015. The majority were hosted in the local ‘silicon valleys’ and creative districts in participating cities - for example London’s ‘Silicon Roundabout’ between Old Street and Shoreditch, the tech community around Stevenson Square in Manchester’s Northern Quarter or the area in and around ‘Pakhus de Zwijger’ and the temporary ‘FabCity’ in Amsterdam. These spaces are often connected to smart city projects or co-working spaces that sponsor their facilities to support the ‘community’. Discussing this finding, particularly co-working spaces, with a colleague he responds “We got these spaces in Copenhagen too. They feel a bit dirty don’t they? Very neoliberal...” (personal conversation 09/2015). While these places feel ideologically dirty for some, it is their physical cleanliness that is an expression of it.

The majority of CycleHack events were hosted in tidy indoor spaces as opposed to lively bike shops that might smell of chain oil. These clean environments are ‘open’ for everyone to come and use (13_SupporterM, 2016). Table 4.5-1 shows a range of different event spaces in which CycleHack was hosted between 2015 and 2017 and illustrates that most event spaces work within the creative or knowledge industries, rather than with cycling communities. The names of the event locations feature key terms such as ‘impact’, ‘creative’, ‘future’, ‘utopia’, ‘maker’ in relation to ‘hub’, ‘lab’ or ‘district’, which are predominantly linked to co-working spaces, universities or innovation labs. The selection is based on those CycleHack locations that were more actively promoted on social media. There, I identified the event
space location based on the link provided for potential participants to sign up for the global CycleHack event. The reason why I split it into name and description is to further illustrate the dominant logic (exemplified by ‘OPEN’, ‘innovation’, ‘design’ or ‘utopia’) as well as the link to a wider local creative or digital milieu (exemplified by ‘creative district’ or ‘Future Lab’).

Table 4.5-1: Selection of CycleHack event spaces between 2014 and 2017.

<table>
<thead>
<tr>
<th>Name of event space</th>
<th>Urban district / description</th>
<th>City and year of participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact Hub Bergen</td>
<td>City centre</td>
<td>Bergen (2015)</td>
</tr>
<tr>
<td>SpacePortX</td>
<td>Northern Quarter</td>
<td>Manchester (2015)</td>
</tr>
<tr>
<td>Nucléus</td>
<td>‘Creative Valley’</td>
<td>Paris (2016)</td>
</tr>
<tr>
<td>Urban Innovation Centre</td>
<td>‘Silicon Roundabout’</td>
<td>London</td>
</tr>
<tr>
<td>RMIT Design Hub</td>
<td>RMIT University</td>
<td>Melbourne (2015)</td>
</tr>
<tr>
<td>Timbuk2 Factory Store</td>
<td>Mission District</td>
<td>San Francisco (2017)</td>
</tr>
<tr>
<td>ATEA</td>
<td>Mexico City centre</td>
<td>Mexico City (2017)</td>
</tr>
<tr>
<td>Fuxblau</td>
<td>Consultancy</td>
<td>Berlin (2016)</td>
</tr>
<tr>
<td>The Whiskey Bond</td>
<td>‘Creative factory’</td>
<td>Glasgow (2015)</td>
</tr>
<tr>
<td>Rotondes</td>
<td>‘Cultural centre’</td>
<td>Luxembourg (2016)</td>
</tr>
<tr>
<td>Utopiastadt</td>
<td>‘Access to maker space’</td>
<td>Wuppertal (2015)</td>
</tr>
<tr>
<td>OPENmarx</td>
<td>‘Future lab’ by TU Wien</td>
<td>Vienna (2016)</td>
</tr>
</tbody>
</table>

Source: Author’s own based on social media and website analysis.

‘Activism’ that would normally happen in established cycling community groups or be directly targeted at public authorities is now moved to ‘open’ creative environments in form of an event. Not only does this make activity less accessible for people that are not part of the organiser’s network, it also enables to control the space. Michel Foucault (2007) expresses the relevance of the milieu as site of governing as he moved in his analysis to more contemporary forms of government (Gabrys, 2014). As such, the workshop as urban innovation event together with the organisations occupied in hosting,
promoting, facilitating and sponsoring it can be understood as a milieu “allowing circulations to take place, of controlling them, sifting the good and the bad... in such a way that the inherent dangers of this circulation are cancelled out” (Foucault 2007:65 in Evans & Reid, 2013). In order to understand the ways in which participation is governed through design thinking, I will continue to refer to the governing milieu as ‘open’ environment.

Cities worldwide see public space diminishing while so-called quasi-public spaces are on the rise (Pratt, 2017). Using the example of London’s Granary Square, Pratt (2017:2) argues that the “profound change that is set in motion is a loss of control of public space and its cultural uses in cities”. CycleHack event spaces can be considered as part of this change. While the creative co-working space that sponsored CycleHack Manchester in 2016 emphases that the community is always welcome to use the space for free, community spaces beyond the commercial or co-operative tech and design sector are rare. It was in-between considered to host the CycleHack event in a different location that is closer to the cycling community. However, based on existing contacts in the milieu it seemed more practical and easy to use the spaces already offered. At the time CycleHack Manchester was in its organising stage, a grassroots initiatives called Partisan Collective was for example able to secure a non-commercial community space that was also considered (Partisan Collective, 2018). The space was at that time however temporary and included poor conditions such as suffering from damp rooms as well as lack of internet access, since the space was located in a building that was about to be demolished. This means that the ‘open’ environment is not only offered by people in the milieu, but also preferred by local organisers predominately based on ease of access and lack of public alternatives.

While CycleHack events in the global North were dominated by ply-wood furnished event spaces, an example from the global South indicated a different environment. The official social media account of CycleHack particularly posted images of CycleHack Chennai in India, that used a temporary event space called Medai - the think and do space to host the event. A master thesis provided empirical detail from the perspective of the CycleHack Chennai
organisers about the experience of using this event space (Ramachandran, 2015). It clarified, in contrast to enthusiastic social media posts circulated by CycleHack HQ, that it has been at times challenging and that participants brought the space to its capacity (see Figure 4.5-1 to the left). CycleHack HQ awarded CycleHack Chennai as ‘Most Inspiring CycleHack Event’ (see Figure 4.5-1 to the right). This suggests rather than problematising a lack of public space and alternatives to commercially oriented event spaces, CycleHack HQ celebrates the creative coping with limited resources instead.

![Figure 4.5-1: Excerpt from a case study about CycleHack Chennai. Source: Ramachandran (2015)](image)

The framing of the CycleHack initiative as a community that responds to challenges aligns with smart city visions and can be seen as a further adaptation to the logic of “Smart Cities and Communities: Solving Urban Challenges” (Open Forum Events, 2018) as it becomes adapted by cities in the UK and beyond more widely. This reaffirms the notion that problematisation emerges out of practices (Bacchi, 2012; Foucault, 1984). In this case, the design thinking approach led to a problematisation of ‘the citizen’ and the subsequent mobilisation of actors into a community. It is useful to think through the conceptual lens of dispositif considering the emphasis on community. A dispositif can also be translated into ‘device’ or ‘apparatus’ that fulfils a certain
function in response to a need. In the case of CycleHack, it is the community that fulfils a specific function during the global event, which is to develop solutions in response to barriers to cycling.

4.6 Conclusion

This chapter identified the actors participating in urban innovation initiatives along with their rationalities to do so in order to effect change in their city. CycleHack promises to introduce a ‘new form of activism’ that supports a ‘positive’ way of working. By doing so it introduces a new logic into urban activism that was previously applied within user experience design and customer service design within creative as well as digital design industries. It made explicit how people are engaged, which in the case of CycleHack was through the staging of an urban issue - cycling. It found that CycleHack appeals least to people that care most about the issue of concern cycling. On the other hand, the initiative cares less about cycling and puts emphasis on ‘the community’ instead. Cycling can be understood as the subject that mobilises actors to participate and engage in affective labour.

Urban activists are opposing the ways in which CycleHack envisions change in the city. The approaches to change between CycleHack participants and cycling activists differ, while CycleHack presents itself as explicitly collaborative and apolitical as opposed to political and confrontational. This way of working is described by some as ‘changing deckchairs on the Titanic’ as a way to suggest the ineffectiveness of the initiative to effect genuine change of course. While activists target issues at a systemic level, CycleHack is predominantly concerned with the local – we can also say operational - level. Not challenging the dominant system and instead working within and with it aligns with recent conceptions of ‘design’ and design thinking as problem-solving activity under contemporary capitalism (Kimbell, 2011; Mareis, 2011; Seitz, 2017). This activity has been already widely normalised within the milieu and is therefore less explicit. It is hence ‘design thinking’ as a label that makes these previously implicit ways of thinking and acting - along associated ideas of effecting change - explicit for actors internal as well as
external to the milieu and thereby ‘accessible for the masses’ as part of a design thinking movement. Building on Seitz (2017) and Kimbell (2011) who framed design thinking as the ‘new spirit of capitalism’, it is not a ‘new’ spirit and way of working, but rather a (renewed) surfacing of existing neoliberal practice in today’s crisis driven socio-political climate.

In line with the ‘design thinking movement’, that has similarities with the design methods movement that emerged since the 1960s as chapter two unveiled, it is the major motivation of the initiative “to grow the community” (CycleHack co-founder). Less than focussing on specific issues with respect to the city, it is the predominant goal of CycleHack to ‘scale’ and ‘tool up’ as many people are possible through a design thinking approach. This suggests that in the process of designing urban citizenship, individuals are target of governing through the milieu, rather than the city. This implies that people are ought to become normalised, as a way to express homogenised, in the way in which they think about and respond to problems encountered in the city. It is this readiness of thought and action that enables CycleHackers to be at ‘disposition’ as part of urban computational dispositifs for future challenges. Urban citizenship and individual rights and responsibilities as citizen are rendered into a ‘community’ that is measured and valued based on different skills and knowledges. This asset becomes accessible through the CycleHack event and its milieu. The novelty here is the logic of positivity and notion of ‘new’ form of activism that suggests change. Rather than being pro-active, participating citizens become a latent resource that is responsive to future challenges. This new modality of action requires a certain readiness and willingness to do so. How such readiness to govern the city through the milieu is designed by means of ‘tooling up citizens’ will be subject to the next chapter.
5 Designing new thinking

System integration through normalisation

Over the weekend it felt like I was witnessing a new form of activism, one that is not merely confrontational and critical, but at its heart collaborative and inclusive. CycleHack showed how design can shape how people experience where they live, how it can create new communities that can collaborate and how it can empower them to make their city a better place.


5.1 Introduction

As the above quote illustrates, CycleHack is promoted as a new form of activism that is not confrontational but “at its heard collaborative and inclusive”. The previous chapter found that some people with long-time experience in cycling campaigning and urban activism are not only disinterested in participating in CycleHack, but also actively opposing the initiative. Taking these tensions as point of departure, this chapter goes beyond the design thinking discourse and network configuration by focussing on the innovation practices. The central question this chapter addresses is how citizens are being ‘tooled up’ to make cities more cycle friendly through design thinking.

Little is yet known about the specific techniques that design thinking as technology of government mobilises in an urban context and what type of impacts they achieve. This chapter analyses and illustrates how, during the civic hackathon event, an operational logic of computational problem-solving is being translated from its original computational spheres into the ways in which participants imagine and engage with urban space. Three elements are of relevance: the designer as medium and facilitator of these processes, the civic hackathon event as bounded space that signals start and finish of the process, and finally design thinking as a disciplinary as well as normalising device that makes participating citizens interoperative with urban computational dispositifs.
The CycleHack event is central for the deployment of design thinking as a device and this chapter central to understand the process of designing urban citizenship from a technical perspective. While chapter four was predominantly based on episteme, I ground the findings of this chapter predominantly on technical knowledge (techne). Particular focus will be put on the governing mechanisms that are underlying the facilitation of a CycleHack event. To do so, I analysed the facilitation of the CycleHack Global Event 2015 in Manchester as in-depth example, expanded by empirical insights from eight design thinking workshops I attended or co-organised in relation to CycleHack in the subsequent year as well as design thinking toolkit analysis to understand the instrumentality of the techniques encountered.

This chapter unfolds in four main sections. Section 5.2. elaborates on the central idea of ‘tooling up citizens’. It details what facilitation means in relation to contemporary understandings of ‘design’ in an urban context. Section 5.3. provides an overview of the facilitation of a CycleHack event and evidences the computational logic and processes that underline its participatory processes. Section 5.4. illustrates the mechanisms of design thinking as technology of government and instrumental device under urban computational dispositifs. It analyses how an operational logic of computational problem-solving is introduced into urban activism through disciplinary power and feedback mechanisms. Section 5.5. discusses the operational activities design thinking facilitates towards establishing interoperability of human thinking and behaviour with computational problem-solving. The conclusions will summarise the findings and link them to chapter 6, which will set the event into the wider context of the city and contemporary market dynamics.

### 5.2 The designer: Facilitating computational processes

The role of the designer in society appears to change and move from the iconic urban designer towards acting as facilitator of design thinking processes. To facilitate is loosely defined as making an activity or process easy or easier. As chapter two emphasised, these contemporary understandings and practices of ‘design’ do not happen on the drawing board, but instead moved to a workshop
space. Design thinking in particular follows certain processes, however it does not immediately relate to physical or urban space. Instead, design thinking divides space into a ‘problem space’ and a ‘solution space’ in relation to mental space. It is the role of the designer as design thinking facilitator to arrange this space.

As the introductory quote suggests, CyceHack is promoted as “a new form of activism” (Glasgow Future Cities in CycleHack, 2015). The role of the designer is no longer that of an actor who concentrates knowledge and acts upon it, but instead that of a facilitator of collaborative activity between people within a given timeframe. This remains often unnoticed by the workshop participants, as a smoothly running process causes little friction and facilitators often appear as normal participants despite their professional function, representing a leader who does not feature as a leader and blends into the group instead. The designer in this context becomes the instrumental medium through which different types of knowledges are re-combined and directed towards a common goal, prior to decision making and as a process of continuous improvement. This resonates with Norbert Wiener’s ideas of cybernetics research and systems thinking (Halpern, 2014:43ff) as well as Herbert Simon’s conception of design to be “concerned with how things ought to be, with artefacts to attain goals.” (Simon, 1996 in Mareis, 2011:135).

In accordance with Dean’s (1996) definition of technologies of government, this chapter will illustrate how design thinking seeks “to structure the field of possible actions” (ibd, 1996:60) by permitting “the concentration and composition of human mental and physical forces together with natural and technical resources (...) as a terminal of ‘power-transportation’ and ‘power-distribution’.” (ibd, 1996:60). Chapter four has conceptualised the community formed through CycleHack as a ‘standing reserve’ that is connected to a network and at disposition to respond to future challenges. Activating this standing reserve to the mechanisms of power distribution, the question arises: What is the field of possible actions oriented towards?
As I argue throughout this chapter, the possible actions introduced through design thinking are oriented towards the translation of an operational logic of computational problem-solving. This way, processes of data and information processing from a computational domain are being translated into the ways human thought and knowledge production become organised to solve problems in the city.

5.2.1 CycleHack Global: “Tooling up citizens” to solve problems

As my conceptual framework established, the normalisation of ways of thinking enables the interoperability of citizens as active participants within urban computational dispositifs. This process is obscured through CycleHack by stressing that ideas the CycleHack community produces shall be ‘actionable’ and ready for ‘implementation’. What ‘actionable’ ideas ready for ‘implementation’ however presume is the interoperability of human thought and activity with the system. In alignment with the concept of data set normalisation within computer sciences, as outlined by Edgar F. Codd (1970) and addressed in chapter two, CycleHack eliminates nonsimple domains in favour of turning them into simple domains. In the case of cycling, the nonsimple domain – or using common design thinking discourse “the complex problem” - can be understood as challenging the car system and physical urban infrastructure, since such political action is suggested not to be immediately actionable. How this looks like in practice will be illustrated particularly in section 5.4. To start with, this section elaborates first of all on the idea of ‘tooling up’ as way to manage and normalise human behaviour and thought to operate in simple domains.

Due to the multi-layered nature of the initiative CycleHack Global Movement, the roles between facilitator and participant (the manager of human behaviour and those that are being managed, or in other words, those that tool up and those that are being tooled up) are not obvious nor are they clear cut. ‘Citizens’ as part of the CycleHack initiative include three different types of participants: First, the CycleHack Global Movement co-founders and staff (also called “CycleHack HQ” for CycleHack headquarters), who have been in touch with
local organisers in a mentoring capacity and by providing design thinking toolkits. Second, CycleHack local organisers that take part in the movement (also called “CycleHack city” such as e.g. CycleHack Manchester or CycleHack Amsterdam), that represent the sandwich position between CycleHack HQ and local participants. Third, CycleHack participants that take part in the movement through the local initiative and are as such little in touch with CycleHack HQ (also called “CycleHackers”).

Despite the fact that CycleHack considers itself to be organised through a flat and networked hierarchy, there are clear power dynamics that determine what people can and cannot do, which is how CycleHack “structure[s] the field of possible actions” (Dean, 1996:60). CycleHack local organisers are in most cases “already doing this kind of stuff” or at least “attracted to it” (see interview in section 4.3.1), and hence already docile and willing to learn. This means that local event organisers use design thinking tools as a way to tool up participants, while they are also being tooled up in order to do so correctly as it is of primary interest for CycleHack HQ to “get the event right” (6_Co-founder, 2016). The network of the local organiser, and hence the milieu in which a local civic hackathon event is embedded in, drives who participates and how the event is facilitated. In the case of Manchester, I joined a team that was already part of the network of likeminded design thinking facilitators, which is why it provided an ideal case to study the techniques.

5.2.2 CycleHack Manchester: Supported by “Digital Harvard”

Getting the event right is more likely with people that are familiar with the designer way of thinking and working. CycleHack Manchester had throughout its active years in 2015, 2016 and 2017 support by students as well as alumni from Hyper Island, which is advertised as the “Digital Harvard” among business management schools (The Heureka, 2013). The school originates from Sweden and has been a catalyst for ‘design thinkers’ and ‘digital leaders’ across the world with further branches not only in Manchester, but also in Stockholm, Karlskrona, Singapore, New York City and São Paulo. CycleHack Manchester 2015 has been hosted in the same building as the Manchester branch of this
school and has therefore early on become part of the same governing milieu (see section 4.5.). Students and alumni of the master’s programmes would often join team meetings as well as help with the facilitation during the event, providing and testing what they learned during their course.

Figure 5.2-1: Hyper Island advert for ‘Process design and facilitation’ course.

Source: Suggested to me as sponsored advert via my personal Facebook account on 23rd June 2018 (author’s Facebook) and https://www.hyperisland.com/programs-and-courses

Alongside several full year applied master programmes, Hyper Island also offers short facilitation courses that I got suggested via my personal Facebook account as I was writing this chapter. Figure 5.2-1 displays the advert for a three-day course and summarises their promise and goal, and represents also a concise summary for the role of a CycleHack facilitator. Its promise to “get hands-on tools to manage human behaviour” is the starting point to further unpack the techniques as they get applied in an urban context through a CycleHack event. Making use of this targeted and personalised advertisement to support my argument does not mean that each facilitator of a CycleHack has taken such a professional course. Instead, what it exemplifies is the mindset and environment that CycleHack Manchester was embedded in with respect to how a CycleHack event was run - including its offers, discourses, events, practices, promises and toolkits that form part of a dispositif. More than that, it illustrates that the facilitation of ‘design’ workshops is an emerging professional skill that can be advertised and commodified. As a click to the
website shows, the 3 days x 9 hours course to “get hands-on tools to manage human behaviour” costs the individual 25,500 SEK (see Figure 5.2-1).

Looking into the background of Hyper Island, which was founded in Sweden in 1996, we find that the first school branch is not only based in an old military prison, but its methods are also based on Swedish army training. These are now being applied to the marketing and communications industry as following online blogs about the “Digital Harvard” suggest:

For those unfamiliar with Hyper Island, the program was developed in Sweden in the mid-90’s and uses unconventional teaching methods, based on Swedish Military training, in order to promote new ways of sharing information and building marketing and communications industry leaders. (The Next Web, 2010)

Swedish digital learning institute Hyper Island first opened its doors in 1996 in a former military prison on an island in Karlskrona. There, in the unorthodox educational setting, students practiced experiential learning and were challenged to solve real-world problems in a collaborative environment – rather than abide to the typical teacher-to-student or lecture methodology. Since then, the organisation has been dubbed the “digital Harvard” by TBWA/Worldwide’s Global Creative President Robert Schwartz, listed in Domus Magazine as one of the Top 100 Schools of Architecture and Design 2013. (The Heureka, 2013)

The insight that settles is that design thinking not only has its origins in computational problem-solving processes. Moreover, design thinking facilitation re-appropriates military leadership courses. This re-confirms the historical review in chapter two as well as architect Eyal Weizman’s argument that cities have always revealed the main military techniques of their time (Misselwitz & Weizman, 2003). Looking at the Hyper Island course portfolio we find e.g. the leadership programme “Understanding Group and Leader” (UGL), that has been used as a

(... basic leadership course within the Swedish Armed Forces for more than 20 years and in recent years became popular and widespread outside the Swedish Total Defence Establishment. A course that intensely looks into group dynamics and teaches how to give and receive feedback. (Hyper Island, 2018)
The rather abstract Hyper Island facilitation course description does not refer to eventual roots within army training nor was this explicit when working with students from Hyper Island as part of our work with CycleHack in Manchester. It however indicates several aspects in relation to understanding design thinking and its facilitation as an efficient and instrumental governing technology. The following are of particular interest in relation to urban citizenship: First, human behaviours are being managed which diverts from ideas of democratic engagement. Second this management of human behaviour is targeted at getting “the best out of every individual”, which implies that each individual is accounted for its ‘best’ rather than the totality of its contribution to the entire process. Fourth, this process happens in “supportive environments” (in form of design workshops such as CycleHack or meetings), which implies that governing takes place within a specific enabling environment. Fifth, these efforts are directed towards solving problems that matter to the facilitator (“you and your organization”).

Even though the manager of the co-working space CycleHack Manchester used in 2016 did not explicitly taking about design thinking, we remember similar vocabulary and rationalities for the reasons why CycleHack has been sponsored - namely innovation, the combination of skills and problem-solving, even though this was ‘not hugely strategic or so’ (see section 4.3.2.). This enhancement represents what design thinking as governing technology seeks to enable in order to ‘solve complex issues’ or ‘solve problems that matter’ to the host organisation. In the case of CycleHack, it is predominantly to enable people to ‘think like a designer’ and become responsive to future challenges. How this training looks like will be exemplified in the sext section.

5.3 The event: 48 hours to redesign cycling in the city

CycleHack HQ promotes the global event with “48 hours to re-design cycling in your city”. This catch phrase has been provided as a template by CycleHack HQ to advertise the event on posters and online. What appears like a provocative PR claim will be taken at face value throughout the following
pages. Previous civic hackathons predominantly concerned tech development and code. As Gregg (2015) elaborates on a civic hackathon case study:

Over the course of 48 hours, hundreds of ideas and thousands of lines of code are generated, debated and exchanged in synchronicity. A handful of winners are selected at each site, with media coverage, corporate seed funding, and a trip to the White House among the spoils. The language used across the weekend is one of problem solving through technical innovation. (Gregg, 2015:189)

In a very similar fashion, CycleHack promotes a problem-solving approach, but not in the name of technology, but instead in the name of the social and design. As one of the Hyper Island teachers and professional service designers explained in her inspiring and video-recorded opening talk at CycleHack Manchester 2015:

Tonight is not about being a cyclist. It is also not about cycling. It is about solving problems. (a2bicycle, 2015b)

The main purpose of this major section is to illustrate the overall framework for a civic hackathon event from the perspective of the local CycleHack facilitator. It makes tools and techniques explicit that enable the event to be “about solving problems” with particular attention to the underlying computational and efficiency logics as well as power mechanisms.

5.3.1 Event space: Steering cognitive activity towards productivity

Throughout the actual CycleHack event, an open environment (understood as governing milieu of networked people and places) turns into an enabling environment as productivity enabling event space. The mode of power necessary and productive to steer activity towards productivity is partially environmentally produced (Gabrys, 2014). It is the event space set up that enables e.g. uploading of digital content, but inhibits the development of physical ‘CycleHacks’ based on lack of physical material. In the following I will elaborate in more detail about the productivity enhancing features.
5.3.1.1 Physical workshop space: Co-working space

The physical event space set up serves different purposes throughout the 48 hour weekend. It is also the event space that a new participant encounters first, before engaging in any activity. As already emphasised by telling my first online impression of CycleHack in section 4.2., to my surprise very few bikes were visible in photographs from previous events and also during the actual event in Manchester (see Figure 5.3-1 left from CycleHack Manchester 2015).

![Figure 5.3-1: CycleHack Manchester event space in 2015. Source: CycleHack Manchester via Twitter account (accessed 13th September 2018).](image)

I identified three basic elements that enable design thinking productivity in its physical setting. The first element is a presentation space with projector and seats for an audience (see Figure 5.3-1 right from CycleHack Manchester 2016). This serves in the case of CycleHack to host initial inspiring talks that were also previously found to be a key feature of civic hackathons (see e.g. Richterich, 2017). The second element is social space for food and drinks in form of a kitchen or nearby café. The third element are break out spaces with sofas and round tables for more individual group work.

The three elements pointed out above support joint talks and presentations, group work and interaction as well as recovery in-between. This room set up is in most spaces already a given as I identified by having done online and image research on the CycleHack Global Event spaces listed in section 4.4., which are hosted in indoor co-working spaces in creative districts of a city.
The website of a retailer for workspace furniture uses the Stanford d.school as example to emphasise how the physical space - including furniture, tools, and technology - are integral to design thinking education. The furniture design and arrangement is intended to encourage students to display ideas in progress and "to promote behaviours critical to design thinking, such as empathy and experimentation." (Steelcase, 2018). The functionality of the room and its furniture hence also determines the behaviour encouraged through design thinking activity.

5.3.1.2 Mental workshop space: CycleHack Barrier and Idea cards
The so-called ‘washing line’ is the basic tool CycleHack HQ has developed for people to get introduced to a design thinking mindset. It is an actual line set up highly visible in the event space on which local organisers attach CycleHack Barrier and Idea cards with pecks. This is the most basic room set up of a CycleHack event and actively encouraged by CycleHack HQ by providing images indicating “What does it look like?” (see Figure 5.3-2). People entering the room often look at the washing line with initial hesitation, but then start to develop a conversation around a ‘barrier’ or ‘idea’ displayed or start to talk about their personal barriers to cycling with other participants.

CycleHack Idea and Barriers cards are used to organise the mental space of participants. They introduce a standardised way to think about the city and participants’ relation to it by dividing urban issues in the two main categories of a problem (barrier) and a solution (idea). These two categories, problems and solutions, are central for computational problem-solving activity. Moreover, the framing of a ‘problem’ as a ‘barrier’ further contributes to the simplification of a problem by implicitly relating it to the participant and hence changing the relation of the subject with the city.

CycleHack Manchester used CycleHack Barrier and Idea cards to collect barriers and ideas prior to the event and displayed them as suggested by Cyclehack HQ during the global event (see Figure 5.3-2). The main elements of a barrier card are 1) “What is a barrier to cycling”, 2) “What does this look like?” and 3) providing more details by answering “What are the components
of this barrier?”. The main elements of an idea card are 1) “What is your CycleHack Idea?”, 2) draw an image in response to the question “How does it work?”, 3) indicate “What type of idea is this?” by categorising the idea into either ‘physical’, ‘digital’, ‘event/campaign’, ‘policy’ or ‘local plan’. The CycleHack HQ also added a note “Peg Me Up!” on the top of the template to encourage organisers to display the cards visibly during the event.

Figure 5.3-2: Display of CycleHack Barrier and Idea cards and CycleHack Washing Line. 

In addition to the language used that influences and steers imagination and action, the effectiveness of urban computational dispositifs is based on very subtle environmental control, since CycleHack participants are not forced to approach the Barrier and Idea cards. Instead, images provided by CycleHack show how the tool is supposed to be used in promotional images and videos (see CycleHack, 2015b).

It is a seemingly ‘organic’ integration of the urban computational elements with the social, as people approach barrier and idea cards voluntary while
having conversations over beer and pizza. The social and the familiar - represented by the washing line, food and drinks – becomes this way synthesised with the technical and computational nature of design thinking through the event’s environmental setup. Food and drink are provided on Friday evening throughout the team building and represent an organic function as well as social activity that become associated with the design thinking approach. It is then not only the washing line as a display of problem-driven and solution-focused thinking, but also the social human encounter that becomes associated with design thinking.

5.3.1.3 Digital workshop space: Internet access and laptops

Internet access is important for local groups as a source of knowledge, to stay connected with the CycleHack HQ throughout the weekend and to upload what has been produced on Sunday. At the start of the event, all participants are required to sign up to the online platform so that CycleHack HQ knows who and how many people are participating and can stay in touch with all CycleHack cities (see Figure 5.3-3). At the end of the event all ideas that have been produced over the weekend have to be uploaded to an ‘Open Source Catalogue’ that is running under a ‘Creative Commons License’.

Figure 5.3-3: CycleHack Open Source Catalogue.
Internet access is not only necessary to share the CycleHack ideas online, local organisers are also encouraged to document what is happening via social media and photography as well as videography. While CycleHackers produce images and content that are reused throughout the CycleHack’s website, the Open Source Catalogue and its content is the only material that may be used and redistributed without CycleHack HQ’s prior consent according to the Terms and Conditions (CycleHack, 2017c). From the perspective of the CycleHack HQ, the event – and all tools provided - are hence a means to extract ideas as well as imagery under the temporary CycleHack brand license within 48 hours. How this is achieved will be detailed in the next section.

5.3.2 On-time delivery: Steering cognitive activity towards efficiency

Time is short. CycleHack as an event and governing space is extremely time bound and restricted. This is not only the case for CycleHack, but design thinking workshops more generally were found to suffer from ‘Zeitnot’ (Seitz, 2017), which translates into ‘lack of time’. It is precisely this manufactured lack of time and the subsequent ordering of different activities that enables the exercise of disciplinary power in the production of knowledge and ideas under the urban computational dispositif. Overall, the event analysed from the perspective of the facilitator follows predominantly an efficiency logic that follows a carefully crafted timeframe, which in practice turned out to be much more flexible and emergent.

Time, or rather the management of time for on-time delivery of ideas, has different dimensions and functions within CycleHack. It directly or indirectly impacts the modalities of citizenship that are designed through the initiative based on the efficiency logic that drives the event facilitation. In what ways, will be exemplified in the following, which I split into four: First, the real time element of hosting the event. Second, the time individual participants spend at the CycleHack event. Third, the relativity of time in relation to what is supposed to be achieved. Fourth, the management of desired human behaviour and thinking over time to achieve the three previous elements.
Overall, this section will give insight into the efficiency logics that design thinking as technology introduces into governing the urban.

The mode of power necessary and productive for efficiency is coercive power and feedback that subtly guides behaviour and thinking according to the given schedule. While Herbert Simon’s work enables us to explain the computational logics of design thinking through its overall ‘Double Diamond’ framework and its division of ways of thinking into the category of problems (or barriers) and solutions (or ideas) (A. Newell et al., 1959) it is Norbert Wiener’s work on cybernetics that helps us to understand how this is translated from a computational domain into human-human interaction through feedback mechanisms (Halpern, 2014). The next section will focus on the design thinking approach facilitated within this idea extracting timeframe, which is central to understand how knowledge is being co-produced to become interoperable with the approach.

5.3.2.1 First time dimension: Temporary license for real-time feedback

The first temporality concerns the use of the name ‘CycleHack’. The CycleHack brand licence is free when used during the designated time, which is in this case the weekend 19-21st June 2015 including preparation activity as well as afterwards for promotional purposes. Workshops or ‘challenges’ hosted under the name CycleHack outside this free license are to be paid for based on negotiations with CycleHack HQ. This re-confirms that process facilitation has become a service commodity.

Besides providing a time restricted licence for CycleHack as a process brand, this restriction enables the real-time character of the CycleHack Global Event and thereby the influence of CycleHack HQ to how people behave locally. All participating cities need to host the event at the same weekend so that CycleHack HQ can provide real-time support and guidance online. Not only, this also allows for real-time exchange of activity between cities online. It creates a sense of togetherness while also a sense of being watched without knowing if someone is watching. This effect mutual surveillance is aligned with the Jeremy Bentham’s “panopticon” model of a prison, which came to wider
prominence as a metaphor for modern surveillance by Foucault (1977). As Tufekci (2014) suggests:

While the observational aspect is similar, computational politics is currently exercised in a manner opposite of the panopticon. The panopticon operates by making very visible the act and possibility of observation, while hiding actual instances of observation, so that a prisoner never knows if she is being watched but is always aware that she could be. Modern social engineering operates by making surveillance as implicit, hidden and invisible as possible, without an observed person being aware of it (Tufekci, 2014).

The implicit surveillance operates in the case of CycleHack through the mediated nature, since CycleHack HQ influences the ways in which local organisers conduct the event, and thereby indirectly determine how CycleHackers ought to act and think. Social media activity plays therein a disciplinary function through providing feedback and subtle control of social activity. A social media analysis confirms that the majority of locally produced social media posts are liked or re-posted as soon as possible by the CycleHack HQ social media accounts as well as the private accounts of their members of staff. This is a form of disciplinary power through which power remains invisible and is only displayed by the behaviour of its subjects (Foucault, 1977). As such it feeds into ideas of “cybernetic citizenship”, which is shaped by communication and control (Zandbergen, 2018).

The co-founder reflected about the intense preparation time up to the Global Event and concluded “we need to remember to enjoy this. It is to enjoy it and the most important thing we can actually do is be on Facebook all the time. That is really it.” (6_Co-founder, 2016). Besides the mutual encouragement between cities, it is hence also CycleHack HQ that - similarly to an urban operation system known from Rio de Janeiro (Luque-Ayala & Marvin, 2016) - monitors citizens’ activity online and rewards good behaviour through immediate Facebook likes, sharing of images and retweets on Twitter.

What remains invisible for most participants is that social media activity is part of the Terms and Conditions that suggest “we expect local organisers to be active on social media in a positive way” (CycleHack, 2017c). This process
in return creates positive reinforcement for CycleHack HQ, as the human subjects behind the social media accounts predominantly see positive posts about the initiative and tend to ignore or dismiss negative posts or feedback.

5.3.2.2 Second time dimension: Participants’ time spent at the event

The second important time dimension is time spent at the event. Active hacking citizenship can only be enacted when having the time to participate. For the majority of participants, this meant to arrive late, leave early or participate for one day only - hence enabling a flexibility of time and more targeted contributions. To voluntarily give up a 48 hour weekend represents a large commitment for most people living in a city.

A CycleHack Manchester participant reflected about what success means in relation to the event and emphasised this aspect right at the start: “For me, it was successful. You had people all weekend, giving up their time, you know, time is precious” (23_ParticipantM, 2016). From co-organiser perspective, this has been an important aspect to highlight. Being in a position to voluntarily co-organise an event already means to see value in it. In my case, this value has also been derived from the fact that CycleHack is my PhD case study. However, what remains invisible at first are the conflicting and alternative ways for all other participants to spent that time.

5.3.2.3 Third time dimension: Time pressure and a sense of urgency

Time is not only precious, but also relative. The third time dimension considers preparatory time in relation to time spent at the event, but moreover the time given for the ambitious task at hand to make the world more sustainable. In early 2015, even prior to the first bigger ‘Global Event’, CycleHack won a prestigious Core 77 award in the category Design for Social Impact. The jury commented:

The platform enables a grassroots approach to innovation. It taps into a huge reservoir of latent social energy. Bottom line, we can see it making a real difference where a real difference needs to be made. (Core 77, 2015, emphasis added)
These awards are “from the design community, for the design community” and shall be therefore taken with a “pinch of salt” (30_ParticipantM, 2017). Yet taking the promise at face value to improve cycling in the city, under the overarching mission of “making the world more sustainable”, doing so in 48 hours appears suddenly highly efficient. During a brief joint reflection about the case study, a non-participant suggested: “Cycling is not urgent.” (personal conversation in May 2017). From this perspective, the CycleHack event imitates a shortage of time as if cycling in the city was suddenly an urgent endeavour as a response to an unsustainable world. Irani (2015) called this civic hackathon phenomenon “manufactured urgency”. Limiting the time for what is an ambitious task creates in the case of CycleHack a sense of intensity that supports to release “latent social energy”.

The preparatory time to enable to tap into this social energy during the intensified time of a hackathon however takes much longer. The overall schedule for the event has been provided by the CycleHack HQ as part of the CycleHack HackPack to all local organisers. It provides a detailed framework of how to host the event, including work periods as well as breaks. The entire preparation time for a 48 hour CycleHack Global event was suggested to take about six months based on volunteered time - starting from securing a venue, over to getting sponsorship and speakers, up to ordering food for during the event. In the case of Manchester, preparations started in April 2015, so taking about three months of preparatory meetings for a 48 hour event. The reflective interview with a CycleHack Amsterdam co-organiser and participant unveiled a very similar experience:

[9_Co-organiserA, 2016]: We were actually very disappointed. We really put a lot of energy into it, and we were super psyched when it started. And we had quite some applications of people that said they are gonna be there.

[10_ParticipantA, 2016]: I was one of them, haha!

[9_Co-organiserA, 2016]: Even on the Friday, we had a lot of badges. And then there were really much less people than we expected already on Friday. And Saturday even less. That morning, we were a bit like confused, because we were so disappointed. We were thinking there will be a lot of people and
we will make these teams, and moderate the event and much less people came. So we were regrouping ourselves on the spot. All super tired and confused. How are we gonna do this?

As the above conversation illustrates, the expectations raised through CycleHack HQ based on promotional material - for example in from of the video or images on social media - did not match reality. The urgency the event schedule suggests is not felt by the majority of people that have been aware of CycleHack or were already part of ‘the community’. As reasoned by the co-organisers this is due to timing as well as lack of interest of participants to ‘produce’ instead of to consume.

It is however still the pressure to submit ideas at the end, which arguably introduces a sense of urgency as if the hacking teams were in a situation of defense or emergency, that makes it productive and moreover efficient. A sense of urgency however supports ways of thinking that are more inclined to approach a problem differently. Research into experimental psychology suggests that individuals under time pressure decrease diagnostic hypothesis building and instead prioritise information and action (Alison et al, 2013). As Corso and Löbler (2011) summarise on the basis of experimental psychology research, time pressure reduces the performance of the decision maker. It closes the mind, which results in unsubstantiated perceptions and ultimately leads to worse decisions (Corso & Löbler, 2011:585). This is an important notion to keep in mind when analysing what decisions and ideas are being made in section 5.4. and 5.5.

5.3.2.4 Fourth time dimension: Steering cognitive activities over time
A popular design thinking framework populated within digital design and service design community is the UK Design Council’s ‘Double Diamond’ framework that divides ways of thinking and approaching issues into a ‘problem space’ and a ‘solution space’ (see Figure 5.3-4). What is implicit in the activity schedule provided for the CycleHack event is the imitation of exact the same steps as suggested by the Double Diamond framework. The UK Design Council is predominantly targeted at the development of commercial products and services and uses terminology “discover” and “define” to address the
problem space, and “develop” and “deliver” to address the solution space. The language used for the CycleHack event signals the same ‘divergent’ and ‘convergent’ activities but is in contrast more every day and highlights skill and idea showcasing, rather than the functional delivery of ideas.

Figure 5.3-4: Illustration of UK Design Council “Double Diamond”.


The event framework dedicates Friday to the problem exploration which CycleHack titles “Inspiration & Exploring Barriers”. The Saturday is dedicated to define the problem participants continue work on and further develop, which is titled “Design and Prototyping”. The Sunday is dedicated to the delivery of the solution, which CycleHack titles “Testing & Showcase of ideas from around the globe” (see “Our Process” in CycleHack, 2017b). The event can be therefore understood as an extractive process, with an emphasis on the productive process of extraction through design thinking, rather than what has been extracted in form of a conceptual idea or solution.

In the case of CycleHack Manchester the active phase of production - instead of Friday evening talks “consumption” (10_ParticipantA, 2016) - started officially on Saturday 20th June 2018 at 10:00. The co-production then went on for 9 hours with regular breaks for food, recreation and reflection. The co-production phase continued on Sunday at 10:00 for another 8 hours until
18:00. This represents the plan, while the actual event schedule was more fluid and flexible, with facilitators re-organising activities “on the spot”.

**Figure 5.3-5:** CycleHack Manchester 2015 event schedule with ‘check-ins’.

Source: CycleHack Manchester.

CycleHack Manchester has translated the time schedule for the actual event from the given template into a version tailored to the local branding and context (see Figure 5.3-5). Besides the timetable template - that local organisers tailor to their individual branding to increase a sense of ownership
- CycleHack HQ also compiled images that illustrate what happens over the event. Dispositif analysis requires to consider discursive elements, actions as well as objects in order to understand the relation between them (Bührmann & Schneider, 2007). The CycleHack timetable can be understood as a material object that embodies discursive elements - based on materials, practices and conversations - that become enacted through the facilitator during the event.

Figure 5.3-6: Handing over of squeezy Rubber Chickens as a time management tool.
Source: a2bicycle (2015b) via Youtube.

The way in which design facilitators keep track on time and this process is through so called ‘check-ins’ (see CycleHack Manchester schedule that was created by designers Figure 5.3-7). What sounds like a term normally used at the hotel reception or before taking a flight was used very frequently amongst designers. It is a way to check ‘in’ with the group, process, feelings and progress. By framing it ‘check-in’, the time control appears less controlled and friendly instead. This friendly appearance of time, process and progress control was also supported by another tool a professional service designer left with the CycleHackers - two ‘Rubber Chickens’ that made funny noises. These were handed over as a tool for human beings not to get too caught up in app development, to regain focus on human-interaction. Squeezing it is a way to indicate when people shall listen or assemble. The “check-in” with a chicken
then has a function to ensure that human-human as well as human-computer interaction keeps going and “the process works fine” (presentation at CycleHack Manchester opening evening, June 2015, see Figure 5.3-6).

This casual way of conditioning participants through sounds was further supported by “fun” things done with and to the rubber chickens over the weekend. “Humour” was tested as method to increase creativity and ideation during CycleHack Glasgow events as a recent study unveiled (Hatcher et al., 2018). This suggests that event facilitation is subject to ever more increasing sets of tools that increase the productivity and efficiency.

What is less obvious in the Hackers Pack, but a finding from other design thinking workshops is that facilitators do not only use ‘check-ins’ but also ‘check-outs’. Rather than controlling time or progress, ‘check-outs’ serve as time for reflection. Reflection is a slowing down of physical activity - such as ‘doing’ or ‘making’ - and turning inwards to mental activity instead. Reflection is a constant part of the process and by sharing how someone feels, what went wrong or well, enables again to steer the process for further improvement from the viewpoint of the facilitator. It is also, as an important finding and understanding as part of the process of designing urban citizenship, a way to self-facilitate the process through self-reflection. The participant turns into a facilitator, which can be seen as ultimate goal and the ‘tooling up’ process accomplished.

What looks at first sight as the schedule of an ordinary event or weekend-long festival still provided little insight how this might relate to a computational logic. The event schedule and its facilitation however implies a variety of codes and implicit functions that enable this logic to function outside of computer systems. This is why it is of importance to further complement the visual (episteme) information with technical knowledge (techne) about the intentionality of the process design, which will be illustrated in section 5.4. where I relate this extractive framework to a computational problem-solving process model based on Herbert Simon's research.
5.3.3 Completion of the event: ‘Actionable’ CycleHacks uploaded

The event is completed when the 48 hours have passed (a timed event) and all CycleHacks have been uploaded to the “Open Source Catalogue”. It was crucial for local facilitators to ensure that participants upload their ideas to the Open Source Catalogue by 4pm, which was also monitored by CycleHack HQ. This was the final push for the teams to finalise the documentation of their ideas as a requirement in accordance with the brand licence. This step can be interpreted as the final extraction of a "latent source of energy" (Core 77, 2015). What followed was an informal award ceremony for the best ideas with external independent judges attending the final presentations on Sunday evening. Some of the prices were indicative of developing the ideas further, which will be discussed in chapter six.

![Figure 5.3-7: Upload of CycleHack idea “Match my Route” incl. video and Github entry. Source: CycleHack Open Source Catalogue (accessed 13th September 2018 from http://catalogue.cyclehack.com/catalogue/) and YouTube.](image)

Figure 5.3-7 shows how the final digital upload of a conceptual idea looks like. In this case it is an app idea titled “Match My Route”, whose development will be taking as an example for my analysis in section 5.4. and 5.5. The CycleHack HQ website provides a template to document the solution and the problem it
addresses in a structured way. This includes also links to any source code or video material produced over the weekend, so that other people can access the idea and further develop it if time and resources are available.

On behalf of the CycleHack HQ, the majority of work with respect to supervision, feedback and guidance is as part of the free to use CycleHack event license is done once all data and imagery are shared online. The CycleHack HQ also posted an official sign the event is accomplished on social media titled “THAT'S A WRAP” with thanks to all local facilitators that took part in the global event. In computational terms, this can be understood as the signal for the completion of the process and the problem being solved.

### 5.4 System integration: Creativity instead of criticality

The previous section elaborated in-depth about the different space and time dimensions through which CycleHack as civic hackathon event operates to achieve its intended goal after 48 hours. The facilitation of activities within that given workshop space and timeframe is ordered into a problem space and a solution space, supported by subtle techniques to keep participants within that timeframe. This rather abstract description of the facilitation process from a facilitator’s perspective will now be illustrated through the case of cycling.

In the case of CycleHack, the stated goal is to “reduce barriers to cycling” (CycleHack, 2015a). However, cycling within CycleHack becomes means to engage people in design thinking and to adopt a design thinking mindset. A dispositif or a ‘device’ seeks to enable what has been not possible before and by doing so at the same time delimits previous ways of acting. Callewart, (2017) uses the example of a routine and type writer that started to deploy predetermined sentences in a hospital environment. In relation to previous ways of effecting change in the city, design thinking operates in and alongside the space of politics and promises to do so in an effective and moreover efficient way by producing “actionable ideas” (CycleHack, 2014b) - as opposed to direct action. The aspirations of CycleHack Manchester at the start of the event are illustrated through a little series of videoclips, filmed by a local TV
station, in which participants were asked to fill the sentence “Hack ____ “ as a way to express what it is that they want to 'hack' over the weekend (That’s Manchester TV, 2015):

“Hack space!”

“Hack car-culture!”

“Hack my wardrobe!”

“Hack road safety?”

“Hack society”

“Hack the internet!”

“Hack Manchester City Council.”

These imperatives indicate and articulate a progressive intention that partially implies political action. However, as I will argue throughout the next sections, the design thinking process and civic hackathons as milieu of governing depoliticises political issues as first step of the process. As I will illustrate throughout the next sections, “tooling up to real citizens” (6_Co-founder, 2016) displaces political thought and action with technical thought and activity. The computational element is that a political problem is becoming gradually reframed in a way so that it becomes technically solvable through knowledge sharing. In the case of computational problem-solving, this would be the identification of an optimal solution through information processing. This process is enabled by design thinking tools that support to remain within the previously explained time frame of 48 hours by means of creativity. It is hence a process of adapting ways of thinking to be suitable and operational within an operational logic of computational problem-solving. As disciplining (Foucault, 1977) first step, this can be understood as adaptation to a new norm (Foucault, 1995).

5.4.1 Human-centred problematisation: “Start with a barrier”

As CycleHack HQ emphasises when explaining the toolbox repertoire, the first step of a design thinking process is to start with a barrier (CycleHack, 2015b). By framing a problem as a barrier to overcome, it is already implicit in the
language that a problem is to be seen in relation to someone or something, thereby changing perspective on how to relate and engage with the city. With design thinking being understood as ‘problem-solving activity’ (Mareis 2011), also CycleHack states on their website “every design process starts with a barrier”. So before having given leadership away to local CycleHack cities, the approach has indirectly already defined what might count as a problem and what not - reducing the scope of action for urban citizenship. CycleHack HQ does so by framing a problem as a barrier to be overcome through the design thinking tools provided.

This step is supported by “very simple” Barrier and Idea Cards, which participants are encouraged to use in order to “sketch out their ideas” (personal conversations with facilitator) and hence also supported not only by the discursive, but also the physical set up of the CycleHack event space, as detailed in the previous section. To start with a barrier is hence made implicit through the environment as a form of environmentality (Gabrys 2014) and not questioned anymore by the vast majority of participants.

In the case of CycleHack, a problem is supposed to be approached in relation to the self (or a group of people external to the event space) - hence ‘human-centred design’. This approach does not only suggest solutions, it is dependent on problems and welcomes them as the CycleHack co-founder enthusiastically explained in our first interview:

[6_Co-founder, 2016]: I had a great conversation today: When the problem is complex it is great... I need to remember this, it was so good. I was live tweeting it: “The problem is so beautiful, it allows many ideas”. It was an architect talking about really good problems to solve that allow many ideas to evolve. Essentially the tools we design for CycleHack are based on design methodologies. So documenting what the barrier it is, so start with the problem. (interview from 2016)

The main barrier to cycling in Manchester is road safety for people that want to cycle based on a lack of well-designed and integrated cycling infrastructure (incl. dedicated cycle lanes, bike parking and smooth road surfaces etc.) and the car-minded culture that accompanies it. This major issue is followed by -
of course - the bad rainy Manchester weather. While hardly anyone can do something about the local - often unpredictable and uncertain - weather conditions, cycling infrastructure and road regulations are man-made and subject to change. It is hence in the first instance a political decision what kind of problem is being approached and framed to become solved over the weekend. What we can observe is being developed are quick technological fixes that do not require political change, despite initial aspirations to 'hack' road safety, Manchester City Council and car culture. So how does a depoliticised way of addressing an urban issue unfold?

5.4.2 Building computational capacity: “Re-frame the problem!”

The key technique to turn issues that would require political action and changing the existing configurations of a city is iteration based on feedback within the milieu. I will illustrate this with the CycleHack Manchester CycleHack idea “Match My Route”, which was developed throughout CycleHack 2015 event. The core idea is to have an app that matches more with less experienced cyclists to cycle together in order to increase confidence and knowledge about safe cycle routes in the city. I was active team member throughout the idea development, which provided me with detailed insights of the discussions, while I tried not to push the idea into a specific direction, but facilitate discussion among the team. One of the five team members explains the process of iterative problem re-framing in the final presentation of the idea:

It was very worthwhile thinking in-depth what the barriers are, so you can solve the right problem. Initially, we had an idea about identifying poor infrastructure on the road network. This is obviously a big barrier. But, realistically, if you got a strong community that can overcome infrastructural barriers (...). Infrastructure is never going to be perfect. It costs a lot of money to fix and it is slow to build, whereas community can snowball and grow very quickly. So that is what we are talking about. (CycleHack end presentation 2015, original emphasis)

The key words that point to the creative re-framing of a political problem, which is poor public infrastructure, are the “right” problem and “realistically” as well as “slow” and “quickly”. Within the dynamics of the event, it is no longer
assumed to be realistic to demand public funding for cycling infrastructure, while this is also perceived to be too time intense.

The difference between an artist’s creativity and a design thinker's creativity is illustrated by the following quote of one of the CycleHack HQ team members.

[6_Co-founder, 2016]: I am not an artist, I am a designer. I am not creatively making up stuff, I want to provide solutions. I think that is another art/design rant... but starting with a problem is a really good way of doing stuff. (Interview from 2016)

Artistic creation is fundamentally different from creativity in design thinking practices. CycleHack encourages creativity, but as a means to align with the status quo. This process has arguably enhancing capabilities at individual level in relation to skills and “creative confidence” (Kelley & Kelley, 2013) developed through design thinking workshops.

As previous studies confirm, “(b)y narrowing attention to issues that can be solved in a compressed timeframe, critical questions of priority and equity are left aside. Challenges are readjusted in real time to suit who and what is at hand (Lodato & DiSalvo, forthcoming in Gregg, 2015: 191). In this case, the attention is paid to 'the user' only. The following example provides further insights how this way of working is inherent to the design thinking process:

[6_Co-founder, 2016]: Double Diamond is a cool framework, you can overdo process as well, but it’s really simple: Do the research first, the user needs, and define what the problem is you try to solve, what the design brief is. Develop prototypes, then test test test test. Well, Double Diamond is confusing because it is linear but it should be cyclical, because you need to figure out the needs, design something and test it and do it again.

The double diamond became a popular and simple framework to communicate a design process and is said to be developed in 2005. The UK Design Council website explains today that “all creative processes a number of possible ideas are created (‘divergent thinking’) before refining and narrowing down to the best idea (‘convergent thinking’), and this can be represented by a diamond shape” (UK Design Council 2018).
How this aligns with a computational logic is best illustrated with Newell et al. (1959) illustration of the General Problem Solver Program for a Computer (A. Newell et al., 1959). The scheme for computational programming overlaps in its logic and function the overall CycleHack event process as well as the four stages of the UK Design Council Double Diamond framework when flipped 90 degrees clockwise (see Figure 5.4-1). The major differences between the GPS and the UK Design Councils popular tool lies within the terminology used with “Problem” being the “Command to achieve goal” and “Solution” being the “Goal achieved”. The process between commandment and achievement within computational problem-solving and the ‘discover’ and ‘deliver’ steps within the UK Design Council’s framework is characterised by iterative processes that is constraint by given system parameters. Within computational programmes it is the re-evaluation of goals and methods until a solution achieved. Considered as a form of decision making, Herbert Simon’s concept of ‘satisficing’ serves to illustrate an economic rational that aims to serve an immediate need rather than maximising the outcome (Brown, 2004).

Returning to the empirical case of 'Match my Route', the goal to enable people to cycle is hoped to be achieved by providing the digital infrastructure to overcome physical and regulatory infrastructural barriers with a mobile
phone app. Targeting users of an app is in this case understood to be a ‘satisficing’ solution, that shall address the goal to get more people on bikes more quickly than opposing restrictions on car traffic or building cycle lanes.

This change of mindset does not emerge automatically nor would everyone adapt to a quick solution for a political problem. While the environmental aspects - such as the room layout, the presence of barrier and idea cards and colourful post-it notes - enable creativity to unfold over time, I found that the less time is available, the more instrumental become the design thinking facilitation tools to adapt a design thinking mindset. A Manchester cycling advocate remembers such a situation during a two-hour CycleHack Social ‘taster’ event, which caused particularly friction with a cycling business owner who responded “What has that to do with cycling!?” The exercise was asking participants “What can you do with a belt?” and writing down as many answers as possible within one minute. Another participant explained the situation:

[18_ParticipantM, 2016]: I think people might be struggling slightly with the way we were working as well and that is not a negative thing, because you bring something new to the table. I think I can remember a few people struggling with the question ‘What can you use a belt for?’ to think in different ways and they were like ‘What does (CycleHack) have to do with cycling?!’ It was just to get people thinking other than what people are used to, try to do something different.

This quick brainstorming exercise at the beginning of a very short hackathon was intended to “get everyone silly”, “shut up the self-monitoring” and get creative ideas flowing instead (conversation with CycleHack Manchester facilitator in 2016). From a Foucauldian perspective, we can interpret this as a way to increase the docility of participants to ‘rethink’ the problem, with docility being the willingness to be taught (Foucault, 1977) within a shorter timeframe. It is hence the participants’ minds that are subject to coercive disciplinary as well as reward power. In other cities this first step was described as it is ok “to question the wheel” (facilitator from CycleHack Sydney in CycleHack 2015b). The conflict between activists and facilitators can be interpreted as evidence that illustrates the technological instead of political
nature of the approach, which has not been normalised from an activist point of view.

Figure 5.4-2: Barrier cards at CycleHack Manchester event 2015 on Friday evening incl. “Becoming paranoid that vehicles are going to knock me off” (left). Idea development after first iterations on Saturday incl. “Communication + knowledge sharing” (right). Source: CycleHack Manchester.

Another tool that works subconsciously during the innovation workshop are post-it notes. Colourful post-it notes. Figure 5.4-2 illustrates also how colourful post-it notes were used as part of the process. A regular critique of design thinking reduces it to the use of that material. What is however less discussed is the function the bright colours might have on participants. The use of post-it notes can be interpreted as the artificial enhancement of creativity through colours that imitate a psychedelic experience as section 2.3.2 suggested with reference to Harman, McKim, Mogar, Fadiman, & Stolaroff (1966). Their pilot study from 1966 created a “psychosocial milieu conducive to creative activity” and concluded that “psychedelic agents seem to facilitate creative problem-solving, particularly in the "illumination" phase.” (Harman, McKim, Mogar, Fadiman, & Stolaroff, 1966:211). In this case, the illumination was to focus on knowledge sharing about safe cycling routes to address barriers concerning road safety. Thereby, a nonsimple domain is turned into a simple domain (Codd, 1970) that can be addressed through digitally enabled devices (such as a mobile phone app) that increases confidence and reduces a sense of fear.

A majority of issues and barriers raised by participants are strongly linked to road safety. As another example shows this with a barrier to cycling that suggests “Becoming paranoid that vehicles are going to knock me off” (see
Figure 5.4-2). This barrier is not only a personal barrier and perception of the city, but a reality on Manchester's streets as a Manchester cycling advocate explains:

[32_ParticipantM, 2017] Most people don't cycle because it is not safe. They are scared. They are passed every few seconds by a vehicle that weight a couple of hundred, even a ton of metal. At speed. It is dangerous. You are a vulnerable person on a bicycle. I don't blame people for saying that they are truly scared for their life when they cycle and they only do it in the country side or go away off England instead. (Interview from 2017)

The new form of activism CycleHack enables is hence partially dependent on an increase of confidence as well as a neglect of human vulnerability. Participants are encouraged to ‘question the wheel’ and find different ways of approaching the problem of infrastructure and road safety. After having creatively re-framed the problem throughout Saturday morning - which can no longer be a lack of cycling infrastructure or the dominance of car-friendly policies, as this would require political action - CycleHackers addressed their 'lack of confidence’ or ‘lack of knowledge’ instead. This has been in most cases then been tried to be overcome with ideas that enable participants to share knowledge and increase their confidence on an unsafe road network.

5.4.3 Reinforcement through feedback from the milieu

Displacement of criticality with creativity is an outcome of discourses, environmental conditions and personal agendas - it evolved rather organically than having been imposed solely by the facilitator. This can be considered as a further intensified or modified form of environmentality based on Jennifer Gabrys (2014) conceptualisation of programming environments.

Citizens are not only rendered as entities that sense data through e.g. digital devices or perform certain actions. Instead they start to be selective to what is considered to be data and information through their way of re-framing issues based on feedback from their immediate environment. It is at this point in which design thinking as a concept and technology from an ICT context into an urban context imposes its computational logic onto the citizen. As Halpern
(2014) elaborates, feedback represents learning tool within human-machine loops. It has been predominantly Norbert Wiener who had major influence on the concept, which he described as ‘the property of being able to adjust future conduct by past performance’ (Halpern 2014:45). To do so, design thinking is not only reliant on positive and negative feedback by facilitators, but also draws on a variety to ‘simple’ prompts, such as predefined sentences starters like “How might we” (HMW) questions or templates to fill out to turn a problem into a solvable challenge.

The problem-solving logic becomes however also internalised through a filtering of information and knowledge that favours immediately actionable ideas. In the case of CycleHack Manchester, a participant e.g. originally framed the problem to be “the streets are not safe for cycling” (conversation from 2015). Two years later, the same participant (re-)framed the same problem as “I don’t know where the safest cycling routes are” (CycleHack Manchester final presentation from 2017). This also illustrates how participants become disciplined towards a depoliticised way of approaching a problem within the governing milieu. This way, the citizen adapts to the limitations of the approach, rather than directing agency towards the issue. It is precisely this rethinking and redirecting of human agency towards the self as opposed to the city and the political that I argue constitutes a designing of the social instead of for the social.

5.5 System operation: Interactivity instead of activism

The previous section elaborated about the problem space and the aspects that lead to problems becoming ‘creatively’ re-framed in order to become solvable through design thinking within the given time. The mode of power necessary and productive for system operation is normalising power, as a smooth-running process depends on the mental alignment of all participants. As Gregg (2015:192) outlined the experience of a civic hackathon

assumes the possibility of total devotion to the task for the period allotted, a world without interruptions or competing demands on attention. (....) Power relations and other questions of politics and hierarchy are downplayed through conditions designed to
maximise concentration, creativity and seamless ‘flow’ (Csikszentmihalyi, 1990).

This section will discuss the elements that are computational about design thinking as a new form of activism within the solution space. It will focus on 1) knowledge extraction and synthesis as a way to process urban data, 2) on the idea of testing as a way if scientific reasoning within the local environment and 3) the process of ‘further development’ that makes an existing solution subject to continuous loops relevant for solution development and implementation.

5.5.1 Knowledge extraction and synthesis: “Learning by making”

After a problem has been defined to be solved, facilitators ensure that participants “don’t get stuck”, but “start making” within the solution space (CycleHack facilitator). The emphasis on ‘making’ refers to the fact that cognitive labour in form of ideas and ways of thinking are being made visible, governable and extractable. This happens through post-it notes or ‘tangible’ card-board prototypes that can be tested and improved based on feedback.

The lack of public provision is replaced through access to information/knowledge in relation to a specific barrier (e.g. visualising blind spots at busses, sharing safe cycling routes), which leads to a better individual ‘designed’ experience. These types of experiences and knowledges however delimit the power/knowledge of the ‘citizen’ who operates within the dispositif as they are taken out of a historical context and tend to concern the contemporary condition only. Instead the individual is ‘empowered’ to navigate and survive in these conditions with an improved ‘experience’ of the city.

The process of ‘tooling-up’ is not limited to existing design thinking tools, but instead subject to an ever-expanding set of techniques that improve knowledge synthesis and the efficiency during the event. After the 2015 Global Event, CycleHack HQ expanded simple tools for example with badges that people can use to categorise themselves according to their preferred function. These functions include ‘Techy/Code’, “Visualiser”, “3D Maker”, “Film / Photo” or “Ideas Person” (CycleHack HQ Facebook page, post from 14. November
2015). Instead of counting as a person or citizen with equal rights and responsibilities, CycleHack encourages to reduce the options and contributions based on knowledge and skill they are best able to provide toward a complementary whole.

This is a notion that Ian Hacking called ‘Making up People’ as a way to express how a person can be limited by what other people imagine them to be (Hacking, 1986). What the badges further illustrate is the immaterial and apolitical nature of these categories that is targeted at making ideas and knowledge visible and hence governable. Skill sharing has been emphasised in civic hackathon literature (Irani, 2015; Gregg, 2015). While this can be seen as a desirable outcome, suggests the sharing of skills, becoming skilled in one specific category (such as idea generation or visualising) and skill learning to be a key goal (interview with co-founder). In this respect it is the development of techne, here understood as adapting a technical mindset, that makes participants interopertational with design thinking processes and resulting solutions within urban computational environments.

5.5.2 Systems thinking and scientific reasoning

After the participant has been introduced to the idea of design thinking and ‘human-centred’ action, it is further the idea of systems thinking that is a reoccurring notion. As the CycleHack co-founder emphasises in our interview:

[6_Co-founder, 2016]: I am excited that people get inspired to make stuff happen. I think there is a lot apathy when dealing with a big problem. And cycling is a big problem, we just don’t do it for various reasons. (...) But I think we live in a system and you can design many small interventions and you can become tangibly part of making that an actual reality. It really empowers people to actually do that. It is a holistic model. that is how my brain works. I am a systems thinker, all at once through the lens of a bike.

In a computer context, ‘data normalisation’ enables data set or sets of knowledge and information to run smoothly within a system or network (Codd, 1970). It is not only design thinking that gets introduced as idea, but also ‘systems thinking’. The testing occurs within the system boundaries of the
existing bicycle system, while not challenging the dominant car-system. It is at this point that the link between design thinking and systems thinking becomes evident, which creates a bounded rationality in accordance with the solutions developed (Simon, 1955).

In the case of CycleHack the system becomes in an extreme case limited to the self in relation to the urban environment, resulting in individual coping through apps. Developing solutions based on knowledge with impact across the city would assume that all relevant people are part of the process and will have the legitimacy to translate their combined knowledge into the urban form and regulation. This is an important aspect to understand throughout the further analysis of the process of designing urban citizenship.

The reason why activists oppose CycleHack is not only rooted in a different mind-set but in its very logic and effect. Design thinking in an urban context introduced a computational logic which is based on ‘interaction with’ the city as an accepted system. As the examples of ‘actionable’ CycleHack ideas show, the majority of ideas is based on behavioural change as well as ICT enabled solutions such as improved way finding or visualisation of dangerous zones, such as blind spots on a bus. What this kind of activism however entails is a new way of thinking to produce ‘actionable ideas’ in response to challenges instead of direct action as a way to challenge current configurations and politics. As a response to needs, the impact design thinking has is hence maintenance and repair of the current system instead of genuine change. Ideas are predominately based on knowledge sharing and hence information and communication.

**5.5.3 Further developing instead of decision making**

What CycleHack as initiative does not account for is that the approach supports to actively normalise a technical mind-set that might have been previously politically minded. It is therefore not complementary, but displacing political thought with computational thought and action within a milieu of social entrepreneurs, service designers and creative tech start-ups. Looking back to the problem space and solution space as introduced earlier,
the clear focus lies on the solution space. Considering the Double Diamond framework, design thinking does not treat each of those two ‘diamonds’ equally in an urban context, but puts emphasis on the second diamond by taking a solution focus. The mental capacity with respect to time as well as the focus dedicated to deal with the problem space is hence being radically reduced.

Less interested in the actual solutions and ideas developed, what became evident during and after the event is that the focus was put on thinking differently and the learning experience was considered to be more important than what was created. This shift in attention and ambition is also reflected in the way participants remember the event. The following quotes provide insight into participants experience working with this approach throughout the weekend. The quotes are taken from different participants interviewed almost a year after CycleHack 2015, in April 2016, and are aligned in a chronological order, starting from Saturday morning.

[11_ParticipantA, 2016]: I joined Saturday morning and I participated in the brainstorming and I also met the team. The guys did the whole thing and I wanted to help them. I saw there is a big gap between the makers ability and how to market that, how to get to the market. How to actually make that happen, because it wasn’t enough. Their ability to create stuff was not enough to solve the problem. So I really wanted to solve the problem, so therefore my abilities in marketing and in business were complementing their skills.

[8_ParticipantA, 2016]: I wasn’t part of a team, because I was also hosting, I didn’t feel comfortable with it. I looked around what people were going, so I had an own idea that I developed, you could also do that. Everything was very anarchistic in a way in the same time. So I chose to do that. And then actually with a friend who dropped by to see what was going on and I was stuck with it and he really helped me to push it through. (...) Without him I would not have finished it. (Laughs) I was, I don’t know. “I am tired, I stayed here all night” and he was: “I join you, yeah yeah yeah, lets do it!” And we had a lot of fun that night.

[9_Co-organiserA, 2016]: On Saturday we created these different projects. And it was still quite vague. But on Sunday people started to work on these projects, and it actually ended up with, present your solution and there was energy. In the end we got
involved ourselves, we had few people so we ended up participating in these discussions. Also the people from the maker space became very excited and started to work on it as well. So then it ended up to be different... The presentations were good actually. There was a lot of work done on Sunday and it ended up being quite impressive. Much more came out then we expected from the show up. People came and go over the course of the weekend. It was different, but it was a very productive experience.

[8_ParticipantA, 2016]: We were really... not forced but pushed, asked to make a prototype. Or at least a presentation. But a prototype would be best, that was kind of the goal to achieve. Yeah. You had to make something, you cannot go on and draw and think forever, which is good as you start building... that is also where teams become very different. Because some don't really get to it and some struggle and some are very good at it. You don't know what is going to happen.

What is striking when reading through and reconstructing the narrative of the event in Amsterdam is the fact that few of the interviewees emphasised their actual idea, solution or problem in more detail. The idea became a side aspect, while the centre of attention and memory was the process of participating and the overall experience as a fun and productive experience. This is however individually very different and lasting associating with the event vary across different urban contexts.

Discussing the findings of this chapter, I like to draw again attention to the so far under explored aspect of disciplinary power, which is normalisation (Pasquinelli, 2015). Design thinking draws on a variety of process toolkits and can therefore be seen as a more standardised way of doing things. The fact that the discourse that leads to action is found repetitively with the governing milieu indicates that this way of doing things in a standardised way has been normalised within the milieu. The functional management of behaviour and synthesis of knowledge it represents aligns with Richard Buchanan’s understandings of design thinking as a ‘new liberal arts of technological culture’ (Buchanan, 1992) as it is a technological or procedural management. Design thinking understood under the logic of “medium design” (Easterling, 2018), the facilitator or ‘designer’ within this technological culture can be understood as the medium to normalise that enabling medium.
Double Diamond framework represents an extractive process, as knowledge is being uploaded at the end of the CycleHack weekend. The dominant logic of “learning by doing” applied throughout the weekend is iterative and moreover endless. This is illustrated by many other design thinking logos and process illustrations like e.g. “Society in the Loop” in Robinson (2018) and IBM “The Loop” (IBM, 2018) as well as the logo of the design agency behind CycleHack. In the case of Manchester, the extraction of ideas happened at the end of the weekend, but the implementation remains open ended and is subject to yet another iteration of attempts to combine existing skills and resources to develop the idea further.

A Manchester CycleHack participant reflected about the overall event and emphasised how it made him more aware of him as a cyclist in Manchester:

[23_ParticipantM, 2016]: It definitely got me thinking in a much deeper way about cycling and I did start to see... I started to develop political ideas about cycling.’ (…) And I liked the guy who came the first day and gave a presentation. Very entertaining, how he refuses to wear lycra. And that sends a nice message to everyone. You don’t have to buy special clothes, you don’t have to make a special effort. Just come in your own gear. (interview from 2016)

This further emphasises how also the curation of the initial inspiration phase on Friday evening has relevance for the further development of the event and opens up other spaces of possibility. More than that it also indicates how smaller actions, like for example not wearing lycra and by that means normalising cycling in the city or using a ‘normal bike’ instead of an expensive road bike, can have political significance for people. These however have less to do with design thinking, but instead with an interest in cycling and its meaning in relation to themselves and society.

What we start to discover is a discrepancy between design thinking as process tool as well as cycling as tool for change and urban issue, which are both present in CycleHack. Participants focus on cycling in the city, while focus on the process to develop ideas. While this process was found helpful for people to better understand cycling issues in their city, a major question remains to
which extend this has helped to get more people cycling after the event. With design thinking being promoted as a new form of activism, it is yet to be identified if ‘actionable’ can be placed at a same level when intending to achieve change.

The major impact of design thinking is considered as having the skills to be a design thinker in order to be able “to do stuff”. ‘Impact’, ‘change’ and ‘stuff’ are however barely further defined. The ambition of CycleHack meanwhile - in its 5th year of hosting the Global Event - has scaled down and it can be hosted much more flexibly. Local participants are allowed to host social CycleHack events in case they put a CycleHack logo upon their social online and offline activity. Social activity therefore becomes a branded experience as well as a means of legitimising the approach based on the acceptance and validation of participants.

The co-founder emphasises how for her design as a method for “innovation or evolution or improvement” is “really really powerful” (31_Co-founder, 2017). The example used to illustrate the empowering effect is the excitement participants showed while seeing their skills evolving. Some participants attended CycleHack two years in a row and “saw the skills are valuable to do stuff.” (31_Co-founder, 2017). These skills are as the previous section illustrated, heavily dependent on the context in which they are being used. Instead of defining and evidencing ‘impact’, the process becomes a matter of improvement and the next iteration.

Discussing the encountered limitations of the approach with the CycleHack co-founder during a reflective conversation she emphasises that the team is critical about their own model and knows there are limitations with it. Defending the approach she emphasises “But we cannot do everything. That is my answer, we can’t be everything” comparing the approach as complementary to cycling advocacy as it happens already. Instead CycleHack is proving “a very welcoming space” for conversations about “what might be ideas.” (31_Co-founder, 2017). This is reflected in practices of speculative design, where hackers create “new imaginative instantiations of what might
be” (DiSalvo, 2012: 111 in Gregg 2015). And as Gregg (2015) contextualises this imaginary within the limiting since artificially heightened tempo of the hackathon that “necessarily curtails these possibilities” (Gregg, 2015:192).

To conclude this section, I would like to bring the findings back to considerations of urban citizenship. The overall sensation of a productive experience was not least guided by the fact that people attending were, through discourses and perceptions, categorised into different roles to ‘get the best out of every individual’ as the Hyper Island course reminds. As stated initially, the major categorisation made between people coming to an event is facilitator and participant, which however blurred throughout the weekend as also facilitators started to participate and participants started to develop facilitation skills. This means that the notion of ‘hacking’ is not a way to ‘hack the system’, but instead to ‘hack into the system’, to become absorbed by it and become interoperable part of it. With design thinking understood as a governing technology, the promise of ‘re-design cycling in the city’ represents in fact the attempt to re-design the citizen in relation to the city. The promise of designing for the social, un masks itself as a designing of the social.

5.6 Conclusion

This chapter analysed the process of ‘tooling up’ citizens with design thinking through the urban innovation initiative CycleHack Global Movement. The event is advertised as a way to redesign cycling in the city in just 48 hours. What the analysis of design thinking practices found is that it is not cycling or the city that is being redesigned, but the participating citizen instead. Subject of analysis was a 48-hour event that promises to catalyse a ‘new form of activism’ that is not confrontational, but collaborative. The chapter finds that the event facilitation is central for the ways in which new forms of urban citizenship are not only imagined and put into practice by disciplining participants to develop ideas and knowledge that are interoperable with an operational logic of computational problem-solving by displacing political thought and action with technical thought and action. This type of activity
produces ‘actionable’ ideas for extraction and implementation instead of direct action.

Introduced into the city through a new set of actors such as design agencies, consultancies and smart and sustainable city practitioners, design thinking displaces critical decision making with an operational process. The annual CycleHack event is less targeted at the production of ideas to improve cycling, but dedicated to change the way participants think about problems. The most important finding of this chapter is not only what it enables, but moreover what a design thinking approach to urban change displaces. Design thinking displaces power-knowledge (Foucault, 1980) - grounded in history, context, understanding and long-term experience (the German term is “Erfahrung”) - with technical knowledge that can be operationalised. Such technical knowledge (techne) is grounded in the intelligence gathered in the immediate environment to contribute to an improved local immediate experience (“Erlebnis”) in case the solution comes to market.

CycleHack is promoting the initiative as complementary to what is already happening with respect to political change and activism in the city. However, the process during the event disciplines participants to adapt to a computational logic that is ultimately depoliticising. In a first step, creativity techniques encourage to re-frame problems so they become technically solvable. In the second step, synthesised knowledges in form of co-produced ideas are extracted and considered to be ‘actionable’ as they do not require political change. The overall process is solution focused and depoliticization occurs at the start of the process by re-framing the problem. In the case of CycleHack as initiative, the limitations of the approach are incorporated in its promise to ‘go beyond infrastructure discussions’. In this context, urban citizenship is reduced to the sharing of knowledge to enable cycling in current urban conditions. It is the event, along with the milieu within which it is hosted, that enables this displacement to unfold and hence to merge the social (participating citizens) with the technical (design thinking) as governing technology.
The direct outputs of this process are ideas in form of prototypes that represent in the majority of cases information technology (IT) solutions that are developed to be ready for implementation within the ‘smart’ city. The indirect outcome of such efficiency logic within a 48 event might be the adaptation of such efficient way of governing as a new norm that subverts future activism. CycleHack co-founder emphasises the relevance of systems thinking, but does this way of thinking apply to the city and will the city as a system respond accordingly? The next chapter will take the ideas from the event into the city by analysing what happened after the 48-hour event – both in relation to the city as well as in relation to participants.
6 Designing urban experiences
Interoperability with the digital economy

[8_ParticipantA, 2016]: Yes, the idea is very much around as if neo-hippies with beard are gonna - in garages, with computers - are gonna solve all of our problems. And there is just a few people and it is just a bit too much. I don’t know. It can be like that. But I feel like, I wanna be part of it somehow, but it works only so far. (…)

It feels we are on this new wave of technology and innovation, but it is not like that. It feels like it, but it is not enough. It is not big enough. And there are still the big problems of... environment, food and... peace basically, to make things really sustainable.

6.1 Introduction

Chapter five analysed the design thinking logic in relation to cycling in the city. It focused on the normalising mechanisms through which CycleHack designs and re-designs ideas and knowledge to become interoperable with governing processes of computational problem-solving. To better understand the political implications and wider context of my study, this chapter expands the scope of analysis beyond the technical processes of the 48-hour event.

It is central subject to this chapter to interrogate the types of change designing urban citizenship as modality of governing achieves. The chapter draws on personal experience and experiential knowledge of people participating in CycleHack, combined with my longer-term experience as cycling stakeholder in Manchester. This is expanded with contextual analysis of promotion and video material about the initiative directed towards different audiences as well as reflective interviews with CycleHack participants in Amsterdam and Manchester. The knowledge of research participants with more experience in hosting and trying to govern change in the city is given more weight in the analysis, since it contrasts experiential knowledge (immediate experience of an event, “Erlebnis”) against experience over time (“Erfahrung” – knowledge accumulated through experiences, see chapter three) and is therefore more
suited to project current trends through intuitive judgement. The experiential is co-constructed through techne (instrumental technical knowledge based on design thinking) and manifests itself in episteme. It was therefore phronesis (experience or practical wisdom) that enabled me to disentangle the discursive from the non-discursive, and thereby separate the short-lived realities resulting from design thinking initiatives emerging from my fieldwork.

The next section foregrounds the economic drivers behind design thinking as a new technology of government. It analyses the CycleHack outputs and effects of urban experience design for a sense of urban citizenship. I conceptualise experiential knowledge as target of this new governing rationality under cognitive and computational capitalism, as these new market forces drive affective labour and steer ways of thinking in relation to the city. Section 6.3. follows the direct outputs of the CycleHack Global Event and processes of implementation in the city. Section 6.4. discusses key implications of mobilising design thinking discourses and practices as technology of government. The problematics of governing the city through experiential knowledge will be outlined as ‘dark patterns’, which represent a central concern of this thesis. Section 6.5 suggests future research and concludes this last empirical chapter.

**6.2 A new economy of urban experiences**

Design thinking is a central device to connect the digital economy with the emerging experience economy. It does so by making experiential knowledge extractable, governable and ultimately ready to be commercialised through the creation of conceptual prototypes. Previous research on civic hackathons highlighted the event format as a “training ground for the grunt work of the knowledge economy” (Gregg, 2015:193). At the same time, hackathons have been argued to provide “temporary exercises in speculative citizenship” (DiSalvo et al., 2014). As such, they reconfigure the relationship between citizens, the state and capital (Gregg, 2015). Design thinking as governing
rationality enables us to understand and explain how this new relationship is co-designed within an urban innovation milieu.

CycleHack suggests to “improve the cycling experience” more often than to “make cities more cycle friendly”. Throughout the CycleHack event, the citizen enters an experience of empowered citizenship, in exchange for knowledge that might be utilised for products and services in response to expressed needs. In this changing economic activity, it is no longer the product and marketing that are at the core of activity, but individualised customer experiences - which are in the case of CycleHack urban experiences. The source of value and subject to exchange is no longer a physical good, but experiential knowledge which drives urban development together with its productive stakeholders as part of the urban computational dispositif.

In the process of designing urban citizenship, citizens and the city are rendered into a modality of urban citizenship that is governed through immediate experiences. Urban experiences in this context represent the immediate surface a citizen encounters when cycling in the city at the individual level. Urban experience also relates to the participation in an event that seeks relevance for the city. This co-constructive relation with urban space, the urban as new experiential marketplace and urban citizenship as experiential reward for its creation, will be unpacked in the next sections.

6.2.1 The urban as marketplace for interactive experiences

CycleHack as urban innovation initiative plays into the emerging market of improving smooth urban experiences. Emerging imaginings of citizenship therein render the city and life into an urban environment that citizens ‘transact’ or ‘interact’ with. Personal contacts with the urban fabric turn into ‘touch points’. The CycleHack co-founder summarises this logic and ‘opportunity’ of conceiving of the city as an experiential environment that citizen build individualised customer relationships with:

[6_Co-founder, 2016]: So with CycleHack, we are using these tools, we use personas, thinking about joining maps, end-to-end journeys. Because again, thinking about service design, you always think of the full customer experience. And it is just like a
story right, of chaining the things that happen and the transactions that happen. (...) The same applies to cycling. You are transacting with the city and you are building a relationship for the assets and touch points around you. And it is an end-to-end journey, which is not what happens on the road. It is when you go to the vet, and you check what the weather is. It is when you have your breakfast and you decide to take the bike or not, the train, the car, the tram. It is a whole journey, it is not just being on the roads. And with CycleHack, that is part of your first questions, that is also what we wanted to do as well. So there is more opportunity to think about creating bikeable cities and spaces than just products for a bike.

This illustrated how citizens’ relation to urban space is supposed to turn into “end-to-end journeys” based on the prediction of possible actions. CycleHack HQ further highlights “there are still barriers to cycling” (CycleHack HQ, 2017), indicating the vastness of a design thinking approach to keep overcoming problems. This logic resonates with Orit Halpern’s understanding of the smart city as a playfield of endless opportunities (Halpern, 2014 in Marvin & Luque-Ayala 2017).

The human scale imagined and promoted through this approach is not defined by the physical proportions of for example Le Corbusier’s l’homme moyen the city or form can be designed for (Le Corbusier, 1955; Krivý & Ma, 2018). Instead, human-centred design responds to human affect, experience and feedback through the local physical and digital environment, and thereby effecting relations with the human mind rather than relations between the urban form and the human body. This aspect has been discussed in military operations research as it compares ‘civilian’ with military design methods in which “sense making with the environment also takes place” (Zweibelson, 2017). The relevant aspect to highlight is that both, ‘military’ and ‘civilian’ design methods do utilise a computational process in doing so in an optimised way. The emphasis lies on local knowledge and very specific knowledge in a geographical context. According to CycleHack these are ‘micro-barriers’. An Amsterdam CycleHack participant and entrepreneur also emphasises:

[Participant 3A]: Now what I see is that the global initiative has very well-structured strategies to get this implemented locally. But then again, it is very much the local context that drives the
way in which the process is going to happen. (...) So you come up with different solutions to any local context. Every local community has its own needs, that is why people organising a CycleHack need to think about the local context.”

This creation of endless market opportunities through the urban is particularly strong in the local context of Manchester, which is currently not a very bikeable city compared to for example Amsterdam. A local authority describes the city as “a very inventive and innovative place” with a lot of arts and design students as well as lots of art and design industry with “people on bikes that are thoughtful about it” (33_Supporter M, 2017). Illustrating a sharp contrast to Amsterdam, he suggests:

[33_Supporter M, 2017]: They are quite a small group of people really that are choosing to be survivors and thrivers within quite a hostile environment, compared to other places. When you are a cyclist in Manchester you need to be constantly aware of issues that you would not need to be aware of in other places because the facilities are so much better. (interview from 2017)

The quick technical solutions CycleHack develops through design thinking imagine to support both, the improved experience of the city as well as the navigation within a hostile environment. However, the app ideas developed through CycleHack Manchester in 2015 and 2016 remained in prototype stage. Thereby, representing a potentiality and asset to the mobilised in the future by market or volunteering actors.

Cycling is no longer just a means of transport - and never was considering the various literatures on cycling and society (Aldred, 2010; Cox et al., 2012). Today, cycling becomes increasingly a means to regulate feelings and emotions in and for a city, as well as a tool to regulate the wellbeing of the ‘citizen’. As a CycleHack Amsterdam organiser explains:

[9_Co-organiser A, 2016]: How people in cities experience the city in bikes and not in cars, makes a difference then how they are as citizens. In a car you are just a visitor to your city, and when you cycle you feel more like you own the city. They feel like the city is really theirs, they tend to be more involved.
This can have empowering effects through cycling itself, based on cycling’s positive effects on mental and physical health for the cycling individual. Projecting the image of a healthy and active citizen to the city, it also becomes a signifier for a well governed city that is attractive to visit and live in. Examples that reflect this trend in recent literature are ideas of the “Happy City” (Montgomery, 2013) or a new book series titled as *Cycling Cities: The [name of city] Experience* (Odenziel, Emanuel, Albert de la Bruhèze, & Veraart, 2016). It is a notion Aldred (2010) described as ‘cycling citizenship’ to express how the “practice of cycling might affect perceptions of the self in relation to natural and social environments” (Aldred, 2010:35).

Previous research on civic hackathons suggested that “participants act as sensors, by sharing and providing feedback on data sets to the government data custodians.” (Robinson & Johnson, 2016:69). Using design thinking as a governing technology, the ‘device’ is no longer a technological hardware or data set in from of e.g. an Arduino board used for the ‘Smart Citizen’ kit (see Figure 6.2-1, left). Instead, sensing and responding to the environment transcends into the very ‘software’ in form of body and mind of participating citizens who translate their urban experience of the city. Feelings and sensations such as fear, anxiety, ease, worry, alertness or confidence were named and problematised during CycleHack Manchester 2015 and drivers to work on potential solutions to address these sensations. These feelings and sensations can be recorded through ‘Barrier Cards’ and further processed during the CycleHack event and online (Figure 6.2-1, right). This is also why CycleHack suggests to work on very local barriers, since these represent the touch points and points of friction that are ought to be overcome through knowledge sharing.

Citizen-driven or human-centric innovation equals problem-solving-driven innovation. Previous citizen sensing initiatives used sensing devices, with the classic smart city example being meanwhile the ‘Smart Citizen Kit’ and other similar devices to measure environmental data and air quality (Nolde, 2018; Belestrini, 2017). Just like the major goal of CycleHack is to grow and scale the networked community, the major goal of the smart citizen kit has been to scale the
sensor network (Balestrini et al., 2017). The community, as a way to expand sensing across the city and different local contexts, becomes the asset or device that can be deployed in order to address an urgent need or sense problems that can be commercially addressed. These ‘smart’ devices are used to tell the ‘good story’ as a way to promote smart city technologies while neglecting the failures undermining them. The citizen entangled within a network of devices and feedback loops has been framed as ‘cybernetic citizenship’ (Zandbergen, 2018). In the case of design thinking, the citizen engages in what is described as ‘citizen sensing’ (Gabrys, 2014), but in a bodily and experiential way in relation to the self, not in relation to the wider city.

Figure 6.2-1: Digital transmission of environmental data and urban experiences.
Smart Citizen sensing device connected to a laptop for air quality data transmission (left) and CycleHackers working on laptops (right).

Cycling represents a special case and emerging market opportunity for sensing the city through design thinking and its resulting technological fixes. Popan (2018) analysed the social and sensory aspects of cycling, concluding:

While attention to the senses and sociabilities has offered an invaluable insight into why cycling has such a great appeal amongst some people, but not others, I have gradually understood that these experiences and practices will continue to remain niches within the greater socio-technical landscape produced by the automobile. Only a system or a mode of organization that challenges the system of automobility (Urry, 2005) could enable cycling to become a more common activity. The senses and sociabilities have indicated how such a bicycle system might feel and what sorts of human relations it would require and make possible, but its specific architecture is virtually missing. (Popan, 2018:32)
Two aspects raised are central to understand design thinking applied to cycling in an urban context. The first aspect is the strong appeal cycling has for people that already cycle based on their sensual and social experience of it. The passion and appeal for cycling feeds what Tsogas (2012) summarises as the “immaterial and affective labour relations under cognitive capitalism” (Tsogas, 2012:385). Immaterial labour represents processes that are central to design thinking such as problem-solving and ideas production (Lazzarato, 1996). Based on Spinoza’s notion of affect, affective labour can be defined as “labour that produces or manipulates affects such as feeling easy, well-being, satisfaction, excitement, or passion” (Hard & Negri; 2005:108 in Tsogas, 2012:385). Affective labour can be understood as the driver behind the problem-solving and idea production activity CycleHack induces. The second aspect is the realisation that such experiences of satisfaction, excitement and well-being remain niche when the dominant system – in this case the system of automobility - is not being challenged. CycleHack as the combination of cycling and a design thinking approach considers predominantly the bicycle systems as it suggests to ‘go beyond infrastructure’ discussions. Hence, it re-enforces a niche and ‘designs’ citizens as operational component within that niche through a reconfigured relationship and interaction with the urban.

6.2.2 Urban citizenship as an experience

I was learning from what I saw and applying it to my own life, lyrically. I’m not trying to tell other people’s stories. We’re just trying to allow an experience to change you.

Win Butler,

about producing the Arcade Fire record Reflektor in Doyle (2013)

The majority of approaches applied within and in relation to CycleHack represent tools taken from a user experience design (UX) context. Translating principles of user and customer experience into the urban context becomes easier through digital technologies. They enable to gain almost real-time feedback as well as enhance or augment existing urban form or experience via information and communication though interface design (Ash et al., 2018). In
the case of Arcade Fire front singer Win Butler, it was a visit to disaster affected Haiti that changed his outlook on life, which he tried to translate into the music of his band. His quote is taken from an interview with the Rolling Stone magazine about the production of their 2013 album *Reflektor*. While it has been an authentic experience that inspired Arcade Fire’s artwork and music production, I suggest it is a synthesised and designed experience that makes CycleHack an “inspiring” (10_ParticipantA, 2016) event.

As Gregg (2015) elaborates on the downsides of this approach within civic hackathons as opposed to non-designed events, the wins people gain are only theoretical and often exploitative of labour. Such a mediated “experience of work and of politics is growing distant from the models for self- and civic governance enjoyed in earlier times” (Gregg, 2015:195). How the hidden architecture for the production of such designed experience looks like in the case of CycleHack is illustrated in Figure 6.2-2. It shows the means in which CycleHack facilitators and participants digitally and personally communicate with each other. My journey as CycleHack participants went from (1) – (8), starting from a link to the website via numerous meetings and instant digital communication channels to the facilitation of the CycleHack Global Event.

![Figure 6.2-2: CycleHack communication channels from non-participant to CycleHack HQ.](image)

Source: Author’s own based on personal experience in Manchester.
CycleHack provides a temporal experience of a more empowered citizenship through an event that gets soon forgotten by some, while leaving a more lasting impression on others. The way in which this can be mobilised as empowering experience can be best understood through IDEO’s David Kelley’s concept of ‘creative confidence’ in relation to design thinking, which he promotes through books and courses (Kelley & Kelley, 2015). In relation to cycling, this can also have the development of political ideas as a result - which however relates to the issue of common concern ‘cycling’, not to ‘design thinking’. The immediate empowerment to make the city more cycle friendly remains at a concept and idea stage or sense of empowerment - which can be mobilised in multiple ways thereafter.

For some participants, CycleHack was an experience that was empowering as it made them more reflective about what cycling means to them and the city. The following is a short except of a reflective interview in which I asked my interviewee about his view on how CycleHack relates to citizenship:

[23_ParticipantM, 2016]: Yes that would fit in, if you can fit in something about the weakness of Manchester City Council to deliver on that kind of thing. And the reason why is because it is this kind of one-party system for the last 100 years. Or is it because the [Manchester City Council] leader - the ex-leader between 1984–1996 Graham Stringer - was a traditionalist, a diehard, cynical traditionalist. He never dreamed of getting the city to be cycle friendly or closing paths of the city and roads down.

Me: Do you think it is a match? How do you relate CycleHack to citizenship? Also in relation to capitalism and consumerism?

[23_ParticipantM, 2016]: It definitely got me thinking in a much deeper way about cycling and I did start to see... I started to develop political ideas about cycling.

This little excerpt exemplifies that the participant predominantly associates CycleHack with cycling, not with a design thinking approach. Moreover, he would position CycleHack as a means to deliver what public officials fail to deliver, which aligns with Giband and Siino (2013), who argue that urban citizenship changes the engagement with urban space. It is the positive experience of participating that makes the development of political ideas a
more lasting one as he further elaborated as it “stayed with me ever since” (23_ParticipantM, 2016). In this case, it was for example to cycle in normal clothes, rather than specialist cycling gear – as it is widely the case in the UK and leaves the impression cycling was sport and dangerous. Discussing more critical views that CycleHack might not change anything, the participant insisted ‘Tell them no!’ to emphasise the positive impact the event had for him with respect to the social experience and the ways it made him think about cycling. These notions of citizenship and the development of a political community relate more to what Rachel Aldred framed cycling citizenship (Aldred, 2010). This is different to urban citizenship as induced by CycleHack, as this participant focused on the issue of concern (cycling, focus-centred) and not the tool (design thinking, tech-centred).

A CycleHack Amsterdam participant reported to have had a lot of fun, however comes to a more critical conclusion about that experience during our interview - based on his year long experience working with similar formats in Amsterdam. Our conversation took place about a year after he participated in the CycleHack global event in 2015. He was one of the winning participants who - despite getting some prize money to further develop his idea – did not pursue to do and admitted “I forgot about the whole CycleHack thing almost until you contacted me” (Participant1A). About 45 minutes into our conversion - I was not asking a question, but instead questioning how CycleHack might be understood as an alternative to previous ways of change in the city - he responds:

[Participant1A]: Yes, because nothing is forced upon you, I mean during the workshop. Nobody tells you what to do in a way and you largely organise yourself. It is facilitated, bringing people together that haven’t met before, and get the most out of that. But the way events like this are promoted and have to be promoted is ... of course... pretty ... Happy (laughs) and it needs to be. Because it should be fun. But maybe sometimes it is also when you look at it more critically (pauses) - you could also do that - you could say: “Yeah you are right, you gonna solve the problems of the world or whatever.”

Me: What do you mean by that?
[Participant1A]: I think... I don’t know where I was going. Events like this, there are so many of them nowadays of these hacks, hackathons. It is also sort of a trend. As if: That is the solution! Yeah, it is not. It is a good supplement to the organisational and political, the official. But I don’t think it can really replace it, because it is just playing around a bit. And maybe, if you are very lucky, something happens. But yeah. That thing will be probably way more original than what professionals and politicians come up with after years of chewing on a problem. But it doesn’t solve the big problems.

A major critique is the way in which the event is promoted and staged, along with the promises it makes such as suggesting a world-wide positive impact, while never specifying what that impact might be. The revealing of authentic as opposed to ‘designed’ experiences and opinions was a challenge during the conversations. More critical accounts of those that participated were hesitant, while CycleHack social media and website impressions display groups of citizens that perform enthusiasm and empowerment. I decided not to display the images here, but examples of such performativity can be found for example in a Guardian article about CycleHack using imagery of CycleHack Tokyo (Guardian, 2018) or on the CycleHack Events website using imagery of CycleHack Bergen (CycleHack, 2017a).

A similar, and very brief, comment was made by a CycleHack Manchester participant as we left the venue after a workshop that was intended to further develop one of the winning ideas of CycleHack 2016: “Yay, world saved!” In the words of the Amsterdam participant, this sensation was expressed by calling it ‘false honesty’:

[Participant1A]: You have to promote it overenthusiastically and you have to make it a bit bigger. It makes total sense. But there is some false honesty about it. Can I say it?

As read through the conversations, the personal experience of the event signposts to the ‘hidden architecture’ of the event and unveils it as a designed experience towards a certain goal by referring to a ‘false honesty’. An event space for 48 hours is more controllable to enable this experience to unfold. As another design professional working in the CycleHack Manchester milieu commented “You know how it feels to attend a CycleHack”, referring to it as a
brand experience (personal conversation in 2016). This brand experience is carefully crafted in the way in which CycleHack HQ 'tools up' local CycleHack hosts to facilitate the event, including branded 'Barrier and Idea cards', logos and social media activity.

These examples illustrate how the process of designing urban citizenship represents a shift from citizenship based on rights and responsibilities within democratic institutions and public administration to a sense of citizenship through the engagement with the city enabled by informal urban innovation initiatives like CycleHack. However, and more importantly, this new relation is played out within the constraints of the human-centred and time-condensed event format and not through direct action in relation to the city, which enables interested actors to extract value from it. Rather than exposing this hidden architecture from the perspective of facilitators, this section focused on the experience of it from the perspective of participating citizens. What CycleHack attempts as urban innovation initiative and winner of a Core 77 Design for Social Impact award (Core 77, 2015) is to translate the experience of more empowered citizenship into the city and everyday activities more widely. By doing so, it generates an exercise of 'speculative citizenship' (DiSalvo et al., 2014). What this section illustrated from the perspective of participating citizens is that the design thinking industry incentivises and economises this feeling as part of a commercial brand.

### 6.3 Implementation within computational dispositifs

The driver behind the staging of the urban as experiential field as well as urban citizenship as experience are contemporary market developments within the digital technology and user experiences design industries. The commodification of knowledge through design processes has been recently highlighted (Julier, 2017) and now reaches a different level through the new economy of experiential knowledge in relation to the urban. By understanding human urban experience and experiential knowledge as the source of production as well as rationality of governing as outlined in the previous
section, this section advances understandings of the ways in which power and market dynamics work within urban computational dispositifs.

6.3.1 **Hopeful marketisation of social and political issues**

To improve the way in which the city can be experienced by bike, CycleHack Global Movement facilitates workshops through which citizens develop solutions “no matter how small” (CycleHack, 2014b). As the previous chapter has shown, CycleHack enables people to join and leave an event at any time, based on the knowledge, expertise or time they are able to offer. Such knowledge input and synthesis based on actual needs within the local context promises conceptual ideas that are ready for implementation in the urban. This process of new market development relates to business innovation literature in chapter two, that suggested design thinking does not serve markets, it creates new markets (Verganti, 2009). Design agencies that promote and invest resources in CycleHack increase their chances for commissioned work in relation to cycling as emerging market for urban products and services.

This way of working has been previously framed as “co-option ritual” in relation to hackathons (Zukin & Papadantonakis, 2017). In the case of CycleHack, as it promises to concern the city, the dominant discourse focuses on complementing needs and collaboration. Communities and entrepreneurs are supposed to be empowered to take the place of those “normally in charge” (CycleHack promotional tweet). By doing so however, CycleHack enables the marketisation of social and political issues that local government is not addressing sufficiently. Marketisation refers to “any changes that amount to the introduction of market elements in the provision of public services” (Hermann & Verhoest, 2012:9). Over the past few decades, liberalisation, privatisation and marketisation of public services have been fuelled previously by New Public Management (NPM) strategies in the promise of increased efficiency and quality. A Manchester local authority explains the appeal of CycleHack for those that support the initiative:
[33_SupporterM, 2017]: People are out of budgets. Having things that can be done cheaply through partnerships and collaborations between individuals and small businesses is great, because there is a stream of ideas, some of them are great, some of them are moderate, some of them are poor. But you hope through that structure of CycleHack the best ones are able to be picked up and brought to market. Or market might be wrong, because people have a free open source kind of attitude. But in some cases, there is nothing wrong with the market and something becoming a product that has its costs. There is nothing wrong with that. In fact that is sometimes the only way that some things get to a critical mass of adaptation. (interview from 2017)

This quote exemplifies that the underlying logic CycleHack feeds into is an increase in efficiency of public service delivery. Moreover, this mode of governance is also reflected in the shift from NPM to New Public Governance, which acknowledges the increasingly uncertain and fragmented nature of public management (Osborne, 2006). The emphasis on the private sector suggests a trend towards further privatisation of what used to be delivered by the public sector through the involvement of citizens in the process of market development.

In the Manchester context, budget cuts under austerity government have put further constraints on local authorities to deliver sustainable transport. This led to place-based experiments with urban cycling infrastructures in adaptation to these conditions, rather than shaping national policy agendas (Hodson et al., 2018). These are fiscal decisions made by elected governments. Gregg (2015) highlights the “parasitic nature” of civic hackathons in this process, as they give citizens “an opportunity to believe that enough self-motivated individuals can stave off the consequences” (Gregg, 2015:188). Not only do local authorities put their hopes into ‘the market’ for mass-adaptation of services that used to be provided by the public sector. Also cycling advocates join the “collective imaginary for fictional expectations of innovation that benefits all” (Zukin & Papadantonakis, 2017:157) and start to place their hope into the free market instead. A Manchester based CycleHack participant considers:

[18_ParticipantM, 2016]: Look at Kickstarter and that way of going about stuff. If it is some kind of app, and it doesn’t have to
go through TfGM but go through that kind of - I hate say - but the free market way of doing things, you know what I mean. It can probably have a lot more success than if TfGM start try to do it. (interview from 2016)

Manchester and other cities however provide ample experiences with failed implementations of what were supposed to be ‘actionable’ ideas. Despite renewed attempt to link CycleHack ideas to ongoing developments in the city, the actual realisation remained open-ended or unfulfilled – predominantly based on lack of time, lack of ownership and funding. CycleHack was invited to present the outcomes of the event at the Manchester Cycle Forum, a forum hosted by Manchester City Council to discuss main updates and developments on cycling in the city. Despite the explicit invitation to present outcomes that were “hopefully nothing controversial” (personal communication with local authority), none of the key stakeholders engaged proactively to further develop them. A similar example, which has been widely populated by CycleHack HQ in their promotion material, is a meeting of CycleHack Brussels with the transport minister. Despite an effective photo circulating on social media, no commitment was provided to develop the ideas as Brussels had already its own plans and the CycleHackers that were involved in the concept development moved to another city soon thereafter (conversation with CycleHack Brussels participant in 2016).

With public authorities being out of budgets and counting on the market, design thinking in the urban further facilitates a shift from public to private provision and a further privatisation of state functions. Despite the lack of successful implementation and the lack of public funding or political commitment to realise citizen’s ideas, CycleHack continues to feature them as successful examples of how citizens can participate in city making. This image is particularly promoted by UK agencies that promote innovation. Therein the initiative is presented as successful example under the category ‘radical thinkers’. The rationality and rhetoric changed once again as CycleHack is no longer about grassroots empowerment, but now considered to be an initiative between citizens and “the state” (Nesta, 2018). The challenges facilitated by
CycleHack are targeted at markets. Is this the dawn of a compete retreat of the state in favour of “capitalist realism” (Fischer, 2009)?

Ideas that are not depoliticised, are titled as “nice to haves” (CycleHack Amsterdam participant and entrepreneur), which further shows the different conceptions of problems people have that work with the approach. CycleHack as initiative initially suggested to provide additional options for engagement, complementary to what is already happening in the political arena. The problem emerges when this ‘complementary to’ becomes the new normal and displaces the old ways of doing activism. In the case of CycleHack, the technological fix offered is not only cycling, but instead a new form of citizenship that applies this way of thinking not only towards speculative citizenship, but also towards the creation of speculative digital and experiential markets.

6.3.2 The ‘challenge’ as commodity in the experience economy

In the private sector, design thinking represents an approach to create customer experiences (Brown, 2008; Martin, 2009; Verganti, 2013). Subject to economic exchange is no longer a product, but lived time - in form of events or hours of experience of a branded time. The time spent and knowledge shared by a participant becomes part of a ‘challenge’ set by the organisers, other participants or future clients.

The commodity form within this new economic exchange is elusive, but can be described best as the ‘challenge’ set and paid for by the client. The challenge CycleHack addresses is to empower citizens, which turns in the case of the initiative into offering the experience of empowered citizenship in exchange for citizens’ experiential knowledge about cycling. The co-founder of CycleHack illustrates this process in a talk to a service design audience that is available online as “Anatomy of Design #006”. Presenting her design agency work and the economy behind CycleHack as initiative, she clarifies the reasons why she invested in facilitating events for ‘free’ and the role of ‘CycleHackers’ therein:
Why give so much stuff away? Because it becomes immensely valuable in the long run. Now with CycleHack - if I would have sat with CycleHack and [name of other co-founder] and we just had a coffee and we filled in a form to get some funding we had nothing to say. ‘We got this idea.’ Now I can fill in a form and say: I got 40 cities, I’ve got 1,000 CycleHackers around the globe, we have got a video that came out of it that got 3.2 mio hits. I can still monetise that as a business model, having given away. We got a memorandum of understanding with some of the CycleHack locations. There are certain things they can and can’t do. And if they breach that we would come down on them, but I don’t think any of them will because we are working really closely with them.

So I am seeking to monetise that model by charging corporate clients. It could be a car company that is interested in mobility and cycling. It could be Shimano, it could be Rebook, who want to set challenges to a demographic of cyclists that none of them can reach and we can reach. So we have got a value proposition for them there. (…) When you balance design thinking and business thinking you got something quite nice around there. I always like to make cash. But in a lovely social way and give a lot back to the community. (Anatomy of Design 2015, original emphasis)

The first important aspect that needs highlighting is the exchange between ‘giving away’ and the development of a value proposition. For the design agency behind CycleHack, the CycleHackers are the value proposition and knowledge asset. It is hence the combination of the design process facilitator capable to extract knowledge – in form of ideas and personal experiences - on demand together with access to that knowledge and experience, embodied in the networked community of Cyclehackers. It is therefore in the interest of the event organisers to make the event experience pleasurable in order to maintain access to that volunteered time and knowledge.

The publicly communicated rational not to set a challenge during a free global event suggests to maintain a friendly non-competitive atmosphere. The ‘challenge’ is thereby also protected to be commercialised under the brand by CycleHack HQ at any other time. CycleHackers participating in the initiative in their role as ‘citizens’ are mostly unaware of them representing an asset for corporate clients thereafter. It has been precisely the ‘new way of thinking’ about problems that makes this demographic of cyclists ready to respond to
challenges as the knowledge and ideas resulting become depoliticised and thereby valuable for cognitive and computational capital.

6.3.3 The ‘community’ as source of experiential knowledge

Design thinking in the city needs first of all a network or a community to function as chapter four detailed. This became already more evident by identifying rationalities and motivations for actors to engage, who seek to make a change by combining different knowledges and skills through the approach. As the CycleHack co-founder elaborated in a reflective conversation:

[31_Co-founder, 2017]: We want to be a network and community that responds to challenges. What we decided to do next is first to make some money. Second is to grow the community. Community comes first. Without the community, CycleHack is just an approach.

This quote details the connection between the challenge and the community. Design thinking is the device that makes community knowledge extractable and commodifiable during a hackathon or challenge. A CycleHack Amsterdam participant and maker space coordinator elaborates on knowledge sharing and the problem definition that represents the initial part of each hackathon and design thinking process:

[8_ParticipantA, 2016]: Hackathons are in that field because you share ideas, you share knowledge. It is part of the sharing economy. Because the inventor is trying to solve non-problems or problems encountered. And it’s hard to find people to collaborate with. It connects a lot of things, like also the ownership of the solutions for example, that is a thing that is shared. A solution that is shared is positive, but not necessarily in all cases for everyone, right?

The association with the sharing economy signalises that it is today knowledge on demand that represents a source of value within this new economy driven by challenges and problems. A further important aspect raised is the framing of those problems as “non-problems” or “problems encountered” (8_ParticipantA, 2016). This implies that the problems addressed have the tendency of not being meaningful enough in an urban or societal context or just represents those problems that were ‘encountered’, which gestures to the
limited scope of attention within a hackathon event. A participant of CycleHack Manchester 2015 event related his associations with CycleHack predominantly to the issue of common concern - cycling:

[1_ParticipantM, 2015]: So in relation to CycleHack, I think CycleHack, what I thought of it and what it eventually will prove to be is thinking about the bicycle as something that changes communities. That makes connections possible. As a result the idea that I proposed was how to make cycling and the bicycle contribute to this connection between people. Making it as a tool for conviviality as Ivan Illic says. (interview from 2015)

Similar to the previous example, this notion of citizenship relates to ‘cycling citizenship’ rather than design thinking. The interview took place in September 2015, two months after the first CycleHack in Manchester. About a year later, while analysing the interview, I annotated the part “what I thought of it” with ‘He also already uses the past tense. You start with an aspiration and expectation, what you then face is commodification.’ (personal comment during data analysis from 10/09/2016). My personal association of CycleHack with commodification was added about a year later, after I have co-organised the second global event in an attempt to make it more useful for the city. At that time it was a sense of commodification, without being clear yet what it is that is subject to commodification – it could be the design process, the CycleHack community or the knowledge shared during the event.

What service and user experience designers celebrate as a way to “invert the pyramid” to empower the grassroots level and civil society, represents in the case of CycleHack a disciplinary discourse that leads to a more autocratic than democratic form of governing. I was initially subject to this discourse as well, when my team colleague mentioned “we need to invert the pyramid” during one of our many CycleHack preparation meetings (personal conversation in May 2015). It was not until I discovered the image of an upside-down pyramid in various UX design presentations that I realised this imaginary is part of the design thinking repertoire and contributes to interoperability with the approach and the computational. Despite the staging of an empowered community through social media and inspiring presentations, there are things CycleHackers “can and can’t do” (Anatomy of Design, 2015) to protect the
value proposition that this very community embodies in form of their experiential knowledge about the urban. This code of conduct is defined by CycleHack Terms and Conditions. Further, CycleHack HQ applies the principles of customer journey mapping to the way they engage local CycleHack facilitators and thereby turn cycling activism into a customer experience of more empowered citizenship.

### 6.4 Dark patterns of urban design thinking

[12_ParticipantM]: It is depoliticising and ultimately distracting. So I think these things have always be held within the context of the larger... They gonna be context aware. And a lot of these things are not context aware. How to build context so people feel comfortable and people still feel able to operate within that environment, I don’t know. But yes, I think you are right. It can be. I think that is quite dangerous as well. Because you get people working on things with the best of intentions and finding out that what they are actually working on is not the thing they are working on. Co-option of endeavour. Right. (Pause) That is a bit dark that. (interview from 2016)

Dark patterns, on the other hand, are not mistakes. They’re carefully crafted with a solid understanding of human psychology, and they do not have the user’s interests in mind. The thing about dark patterns is that you design them from the exact same rulebooks that we use to enhance usability. (Brignull, 2013)

It is the purpose of this section to expand the argument on the Janus-face of governance innovation and the citizen (Swyngedouw, 2005) by discussing the dark patterns of urban design thinking. In this discussion we are no longer only concerned with the unintentional reinforcement or shifts in power relations, but with intentional effects that are inherent to design thinking as technology within urban computational dispositifs. At its core is the notion of appropriation as well as re-appropriation of cognitive labour and ways of thinking under cognitive and computational capitalism as well as the forms of urban citizenship that are being designed with or without the informed consent of those participating. What if design thinking determines the way we interact with each other when it comes to decision making in participatory
processes? What if politically motivated engagement turns into a seamless customer experience?

Design thinking approaches have the capacity to enhance the experience of a product, service or interaction through constant iterations based on user-testing and feedback. A labour-intense process that remains largely invisible to the end user. Design thinking suggests to start with the problem and iterate until a satisfactory solution is reached. Adding the notion of human-centred to the design-led process emphasises that it is not only the problem, but the human experience of that particular problem that is targeted. Just like governance-beyond-the-state has a flip side (Swyngedouw, 2005), a human-centred approach in design processes might have dark patterns that trick the participant in doing things that were not part of their initial intention.

6.4.1 Design thinking first, people second

[6_Co-founder]: The first one was very quick and fast and rubbish. The second one we designed as a stamp with like really intentionally as a brand, because we wanted to make a note and stamp to say “This is CycleHack” and it is the heart. We are so happy about it. We designed a network, intentionally, with really good, with the right values, the right approach, so the branding and all the assets with it. They are like tools of a big army. I did talk about CycleHack around “how to start a revolution”, using all these army and war methods. Your weapon is the HackPack, the uniform, your army uniform is the badge. You can tailor it to different regiments. We designed all of that with the intentional scalability of the model. It gives people a legitimacy to be part of something. But it gives people the opportunity to tailor it themselves. (interview from 2016)

CycleHack is a brand that governs experiences in the city through an event and branded design thinking approach. As chapter five elaborated, the time to use CycleHack as a brand is limited to one annual global event. This is to protect a commercial opportunity for the CycleHack founders to mobilise the approach for paying customers that want to expand their product and service portfolio into the world of cycling as the co-founder explained (Anatomy of Design, 2015). CycleHack as initiative, event and approach assumes that a semi-
commercial brand is able to incorporate the values of a technology. This further assumes the neutrality of a technology - in this case design thinking.

As the example of the CycleHack Manchester venues sponsors illustrates, ideas and innovations that would be of interest are e.g. Blockchain innovation for new payment systems. Re-appropriating innovation, ideas and ‘prototypes’ developed in a cycling context for a multi-national bank is not what current CycleHack participants have been signed up to, nor do some support that value system. However, the ‘open’ access rhetoric and activity makes activity targeted to the public good exploitable for the private sector, without the public necessarily benefitting from it. For many people it was in the first instance cycling that attracted them to attend the event. During a reflective interview with a Manchester cycling advocate I was contemplating where a certain appropriation or co-optation took place and was suggesting CycleHack co-opted a community. Deviating from this perception he concluded (26_NonParticipant):

“What you could say, CycleHack has co-opted cycling.”

This is a very important line of argument, in particular considering that CycleHack suggests to be both, a “focus-centric” (cycling) as well as “tech-centric” civic hackathon initiative. This means that the goal of improving cycling has lost priority in expense of making the technological device of design thinking the primary goal. This is also reflected in an initial statement by a service designer during the inspiring talks on the opening night of CycleHack Manchester 2015, who suggested: “Tonight is not about cycling. It is also not about being a cyclist. It is about solving problems” (see chapter five). CycleHack makes therefore problem-solving the primarily goal, with no reference to a population nor a specific goal to be achieved through design thinking.

This technological deterministic view on innovation is what CycleHack originally promised to overcome by suggesting a social and human-centred approach. However, design thinking as the new spirit of capitalism leads to an intensification of social and spatial inequalities as chapter five unveiled. This
approach is hence not necessarily in line with the values participants associate with cycling, such as enabling social equality and a “subtle capitalist critique” (23_ParticipantM, 2016). As another CycleHack Manchester participant and cycling activist reflected:

An activist life is a life that has to do a lot with managing frustration. (...) I think a lot of this is inequality. The fact that we haven’t even on the local level a true democracy, has to do with capitalism and the fact that the money is accumulated by different parts of society and some industries have too much of it. But all we allow these industries to grow. Intentionally. And that gives them too much power about how we live our lives.

Design thinking applied to the urban is about to dramatically reduce scope of thought and action available for people that intend to shape their city by introducing a mindset and relation to the urban that is ‘human-centred’. It presupposes an ontology based on systems thinking, which delimits political thought and action by suggesting to produce ‘actionable’ ideas and implying political ideas were not actionable. This technological device represents currently a key enabler for the exploitation of new markets under cognitive and computational capitalism, as it intertwines ways of thinking with new modes of production of digitally enabled customer experiences (Ash et al., 2018; Beller, 2018). Initiatives like CycleHack seek to alter state-citizen relationships in a way that undermines frustration and necessary conflict. Thereby design thinking initiatives inflects dramatically how lives are lived, not only that of those participating, but also that of those left unserved as valuable time and energy is spent on prototyping ideas.

As previously noted by the founders as well as participants, CycleHack is a good complement to what is already happening in the political sphere. It therefore has subverted a critique that would compare it to political action. While acknowledging the limits of an approach that works at the level of conceptual outputs only, the initiative suggests to achieve impact in the sphere of activism and policy. It is here where the prototype, an unfinished idea or product that suggests an ‘what if’, is spectacularly turned into an ‘as if’. Spectacular (Debord, 1970) appropriation of political thought and action does not only relate to the way speculative outcomes are externally communicated,
but also relates to the sphere of personal values as many people that participate in CycleHack disagree with the mechanisms inherent to design thinking. With respect to urban citizenship, it is more difficult to identify whose agenda is being served when the urban issue addressed, in this case cycling, embodies human (as opposed to computational) values such as equality.

6.4.2 Operational knowledge politics in the ‘smart’ city

As Marvin & Luque-Ayala (2017:100) point out “urban operating systems (Urban OS) embody important presumptions about what constitutes appropriate knowledge and forms of decision making”. This was exemplified my active involvement as CycleHack Manchester co-organiser as I made several attempts to collaborate with a Manchester smart city demonstrator project. The project manager of the local telecommunications provider was initially supportive and invited me to follow up workshops as it “It would be great to hear your thoughts on cyclehack and potential Airbnb style solutions” (email conversation from 15 April 2016). This interest points to the expansion of the digital economy into the urban through telecommunications providers and already by definition limited the scope for what types of knowledge and information would be accepted, as “Airbnb style solutions” were suggested.

This conversation took place about two months before the annual CycleHack event in 2016, when I was just in Amsterdam to conduct my fieldwork. It exemplifies my double identity as academic researcher of CycleHack in Amsterdam as well as design researcher in Manchester in an attempt to make the design thinking approach useful where I lived. No commitment to take ideas further, funding or input was provided by the telecommunications provider in the run up to the event beyond this email exchange. The overall management of the smart city project appeared to be challenging for most parties involved, as a representative of a small business explained (personal conversation in 2016). Independent from this project and based on existing contacts, the local transport authority kindly provided open cycling data just prior to the CycleHack event in June 2016. The teams that attended the event
were however not technologically savvy nor was I able to raise enough attention to directly make use of it, since most teams were only working on conceptual ideas.

Despite interest to hear my thoughts on “cyclehack and potential Airbnb style solutions” expressed in April 2016 (see email excerpt above), the Innovate UK funded smart city project hosted a separate transport hackathon instead, nearly at the end of the smart city project from 2-4th February 2018. In a small exchange in-between, I was offered to provide data for visualisation purposes of cycling data to which I responded with previous research done that questioned the very representativeness of cycling app data at city scale (Bell, Evans, Mason, & Schliwa, 2014). This was however not further acknowledged, while soon thereafter the Open Innovation Transport Hackathon was publicly announced two weeks before it happened, and advertised as follows:

This event, the first in a series of hackathons, will focus on the creation of new solutions using IoT technologies and data that address Travel & Transport challenges—specifically, ways we can use technology to encourage citizens to adopt cycling and buses as modes of transportation and improve the experience for existing users.

We’re making resources and expertise available to help you shape your IoT and smart cities solutions in a collaborative approach that will help enable better outcomes for citizens, businesses and communities, as part of our aim to foster open innovation. (MSP, 2018)

This left little space for meaningful engagement with citizens and was moreover too late to consider community ideas from the start. A meaningful collaboration between the smart city project and CycleHack Manchester failed based on different timescales, lack of continued engagement and interest to enable that knowledge exchange. My very attempt to collaborate raises ethical issues with respect to voluntary labour as well as representativeness. The rationality I adapted while being involved as CycleHack Manchester co-organiser and having previously influenced the IoT demonstrator Innovate UK bid to include cycling into the proposal as part of the Manchester Cycling Lab project (see chapter three), was to support cycling through smart city funding.
However, on reflection, this raises central concerns about the legitimisation of current funding streams as well as time and effort spent on privileging 'smart' solutions on expense for political engagement and education.

This example of a failed collaboration with a ‘smart’ city project draws attention to a few emerging tendencies in urban innovation: First, it is challenging to produce data that is ‘actionable’ and ready for implementation. Second, the private and public sector are selective with respect to the types of data and knowledge requested. And third, it raises the central question if it should be the role of a CycleHack community or transport academic to provide this data ‘on demand’, which appears to be the only mode in which civic hackathon output becomes effective in the city. Having previously attended several workshops and exchanged numerous emails in my role as sustainable transport researcher and CycleHack Manchester co-organiser, the only input I was supported to provide was data for a visualisation project. It remains open how such data visualisation might enable people to cycle that are currently not cycling. It is this type of data that I shall conceptualise as ‘operational knowledge’ as it serves an immediate need on demand. When proactively encouraged, it leaves an impression of meaningful contribution and sense of urban citizenship. If provided when not on demand, operational knowledge remains a speculative asset without politically decided closure of the process.

6.4.3 Social fragmentation for technological fixes

Innovative governing spaces become ever more fragmented and subvert shared experiences. As Gregg (2015) points out, while the DIY citizenship encouraged in urban innovation events has benefits at the individual level, the outcomes are “near-sighted to the extent that they do not stem the tide of decreased funding for civic services and infrastructure” (Gregg, 2015:194). Design thinking translates the principles of agile software development into urban politics. Instead of taking decisions that can be politically effective, a design thinking approach produces ideas that can be ‘further developed’.

It is precisely the principle of further development that increases a further fragmentation of shared experiences in and of the urban. This applies to the
experience of participating in civic hackathons and urban labs, that often converge around perceived issues rather than a population, as well as to the outcomes in and beyond the city. Software development changed over the past decades from the linear waterfall model to agile development and rapid prototyping to reduce costs as well as increase usability of the final product. It suggests that an idea or process is never finished, but remains subject to continuous improvement until solvable within existing conditions or when developed as a 'social' business.

A CycleHack Amsterdam participant with ample experience working in the innovation milieu summarises this problematic and encourages to hold two thoughts simultaneously in mind and deeply questions how inclusive and win-win a technological fix can be:

[8_ParticipantA]: But the tech in the city thing - I see suddenly meetings can happen that are fun and were not possible before. And that is good - nothing wrong. But on the contrary, it also became very easy to get a taxi to go everywhere. And to find a room to sleep everywhere and that is also great, for tourists, and I enjoy using it in other cities too. But when you think about it further, it also generates a lot of problems. Because in Amsterdam, it was already very hard to find a house for rent. (...) It solves problems, you think “Yeah we did it!” You made it faster, cheaper, etc. It is also dividing because Airbnb is also used, ok you can stay somewhere cheaper, it competes with hotels, but at the same time there is less housing and less social housing. The citizens... It is dividing in a sense, economically, the rich and the poor. (Pause) you can’t really... you can’t really foresee, it is not that easy. It actually has a bigger impact than you think. There is always a loser too. And are all those extra taxi rides really better than large investments in public transport for example? For the environment I don’t think so. Maybe also not for the city. I like people to think two thoughts like that. (Interview from 2016)

Acknowledging that there is always a looser too when offering a solution is largely neglected by positive events like CycleHack. This example compares CycleHack to the likes to Uber and Airbnb, that also started up as a ‘technological fix’ for a systemic problem - such as lack of public transport and affordable housing. The question of the competitor is relevant. In the case of Airbnb, direct competitors were the hotel lobby. But as local residents meanwhile get evicted by private landlords to commodify their homes, the
problem becomes more serious than considering a new competitor in the market. In the case of design thinking, the competitor can be considered to be a form of change that enables the problem to disappear.

The majority of CycleHack participants does not follow up on ideas uploaded to the Open Source catalogue. After two iterations of running a CycleHack global event and faced with the endlessness of continuous iterations, our CycleHack Manchester team reflected about the limits of a design thinking approach in the city - particularly when not facilitated on demand as done through the free to host CycleHack global event with. The conclusion within our team was that “we never questioned the approach enough” (personal conversation in 2016).

Discussing limitations and potential ways forward with CycleHack, one of the co-founders reveals a change in CycleHack's rationality. What used to be the initial promise of ‘empowering people’ and the production of ‘actionable’ ideas becomes reduced to a social event:

[6_Co-founder, 2016]: It is up to them to make ideas happen. We don’t say we take this forward. (...) People coming together to talk about cycling in a proactive way - what is wrong with that? And if CycleHack matures, and what we hope it will - you said the guys in Bergen, they are maturing as well - what can we take further to invest in this stuff. They need to respect that and if they don’t, they are the wrong people. (interview from 2016)

Less than being a limitation of design thinking in the city, the co-founder explains it is a matter of event optimisation and the maturity of participating CycleHackers. The logic CycleHack hosts adapted is that of further process optimisation. People that do not share that approach or show little respect for CycleHack's good intentions are considered “the wrong people”. This confirms Foucault's conception of the milieu that “shifts the good and bad to cancel dangers out” (Foucault, 2007:65). It exemplified the exclusionary and fragmenting character of an initiative that considers itself as socially empowering.
6.5 Innovation by the people who ride

[Participant7M]: You can't go in there and solve those deeper problems. It is just impossible. Look at where we are in the world! You know what I mean. It is impossible. And democracy and... I'm trying to contain this but... We got the conservatives in at the moment. And the thing is I hate them, but they were voted in. And some people align themselves to that. And that is democracy, they were voted in. (...) There is the opposite of light. You know it is kind of, that is how democracy works. It is about tackling those smaller things and letting that grow.

CycleHack started off with the promise and intention of “Making the world more sustainable by reducing barriers to cycling” (CycleHack landing website, 2014). What the process of design thinking in the city lead to after just two years is “Innovation by the people who ride” (CycleHack landing website, 2017). This is the way the taglines of the landing webpage of CycleHack.com changed over time before and after beginning of 2017 (based on screenshots taken, see chapter 3). More than a re-framing of ‘sustainability’, the rationale and effect are solutions and innovations offered and developed by those that are already riding, and hence in a position of privilege.

Considering the previous elaborations, we get to understand innovation activity as maintenance activity (Graham & Thrift, 2007). The citizen becomes therein central for the maintenance of operational urban functioning of imaginations of ‘smart’ urbanism, while the activist idea of ‘hacking’ only results into a hacking of ways of thinking in relation to the self, but not in the promised empowerment to take part in city making. Such maintenance does not repair infrastructure for the use of a wider community, but depends on private markets to turn the idea into a customised service or product and thereby improves the experience of customers, not citizens. Urban citizenship becomes in this context reduced to a logic of customer satisfaction with the urban offer. As state-citizen relations are mediated by private actors, those that are excluded from the process are being marginalised and remain unserved.

In contrast to CycleHack, which had little support or funding to realise their ideas, public programmes are underway that take a very similar approach to
urban innovation and governance. A Manchester local authority compares CycleHack to an initiative in Greater Manchester that is also build on the ‘free and cheap’ assets communities have:

[33_SupporterM]: Which is basically asking people what they want, what their needs are. This entails to ask to come up with particular ideas and services that are not dreamed up in Town Hall, and then try to meet those needs by whatever means available, including things that are quite free and cheap. That sort of natural assets that communities have. Including by redirecting investment interventions or public money. More closely address what people want. We have something similar in Manchester, we call it “Our Manchester” at the moment. It is just early days, it got budget, it got an ethos of co-producing services with citizens. I think there is an opportunity for designing stuff for the urban realm, for transport including CycleHack to ride that wave and try to get involved. It is quite locality based, rather than being city-wide thing, (interview from 2017)

This explanation exemplifies that under contemporary governance formations, it is no longer an urban population that is being governed, but the problems that enter the consciousness of public authorities in order to be solved (Enroth, 2014). Citizens or communities become operationalised as knowledge and resource assets as part of the urban computational dispositif (see previous chapter), serving a certain function or need on demand. In this case, the function is to increase the efficiently of addressing problems in a city under given resource constraints. The crucial question remains who is part of the community and hence able to raise a voice within this format. As chapter four has shown, the demographic CycleHack attracts is not representative for the city as a whole, nor does design thinking as technology of government enable ideas to emerge that would lead to more radical changes as chapter five unveiled.

As opposed to instable democratic systems, governing through design thinking does not enable radical shifts in power. The introductory interview excerpt exemplifies the sense of disempowerment many people have along with the rise of conservative governments worldwide. While tackling smaller things through formats like CycleHack gives hope to change the situation, a more critical voice questions the potential of innovation to enable change:
[NonParticipant1M]: Ok - what is actually, is genuinely, anywhere has something changed? (…) I struggle with CycleHack to see to get any ideas, really genuinely… I mean it is good fun…

As chapter five has evidenced, ‘deeper problems’ cannot be addressed with a ‘solution’ as outcome of a computational process based on feedback from the given situation. In the case of cycling, solutions offered suggest to navigate the city based on knowledge (e.g. through sharing knowledge of safe cycle routes) alongside car dominance. The car system is not being challenged, instead a modal shift enables the car system to run with less congestion. The potential problem with the rationality associated with CycleHack of “tackling those smaller things and letting that grow” [Participant7M] is the tendency that such micro-solutions are not political. Everyday proper politics (Temenos, 2017) or minimal politics (Marchart, 2011) within everyday actions might accumulate to wider change. In contrast, small scale solutions based on a design thinking logic lead to a new aesthetic of the given course, but not to a change of course. This is a tendency a cycling advocate called “changing deckchairs on the Titanic” while reflecting talking about CycleHack in relation to her long-term oriented mundane work to effect change (21_NonParticipant, 2016). Taking this argument into consideration in the process of designing urban citizenship towards solving small scale problems, the reinforcement of the status quo as well as the maintenance of current hegemonic conditions it enables raises essential concerns.

The concerns resulting from “innovation by the people who ride” are less referring to a maintenance and repair effect in the city (Graham & Thrift, 2007), but moreover because of the way ‘design’ is promoted as an agent of change. Deeper problems require decision making that “might be uncomfortable but necessary” [Participant8M]. The problem-solving tools developed over the past decades have brought about technological and infrastructural shifts, but did not change the course of rising inequalities and political alienation. A Manchester based cycling advocate explains how a cycle lane is a message that goes beyond just enabling cycling, as it makes the city accessible for people from all walks of life. He imagines how nice it would be if the city would allow the bike back on the street:
[Participant8M]: If you just arrived to Manchester and you haven't got anything, but you need to get around, so this is why we build it, you know. We build it because this is safe, so you don't have to worry about your... your health and life.

Severe congestion brought car traffic to a still and air quality to an intolerable peak in most major cities. At a city scale, cycling itself becomes a ‘solution’ in response to a lack of public transport and declining public health services. CycleHack caters for those that are already catered for and hence increases instead of decrease inequalities. Transferring this logic to the immediacy of a ‘need’ or urgency - e.g. to be able to cycle in current unsafe road conditions - requires to re-frame the problem to be solvable with that very condition. Despite the fact that CycleHack HQ suggests to go ‘beyond infrastructure’ which it describes as “high level discussion” (CycleHack website, 2018), many participants of local CycleHack events do discuss and try to tackle infrastructural issues in the city, which however remain at prototype stage.

CycleHack organisers meanwhile acknowledge the limitations that the approach predominately produces ideas while the ‘implementation’ remains challenging. What has however not been problematised or explicitly addressed is the way in which the ideas produced for extraction previously required a re-thinking and the change of mind-sets of participants. So rather than being complementary to political activity, the design thinking actively displaces political thought and activity within the milieu, resulting in knowledges that enable infrastructural shifts that are beneficial for the digital economy.

6.6 Conclusion

This chapter foregrounded the hidden architecture surrounding an innovation event targeted at improving the cycling experience by discussing the impacts of a hackathon event beyond its 48 hours in the city from the perspective of participants. CycleHack events technically synthesise the ways in which people are working together towards a common goal. Analysed from a citizen’s perspective, it highlighted experiential knowledge as key economic driver behind the exchange between CycleHack hosts and participants. CycleHack
started off with the promise and intention to “make the world more sustainable”. What the process of design thinking leads in “Innovation by the people who ride”. The idea of active ‘hacking’ citizenship became instead of an empowerment an improved experience for those that are already empowered.

The logic of implementing cycling experiences as a way to fill a need represents a problem-driven approach which responds to needs encountered by those that participate in the initiative. It corresponds hence with a systems thinking approach, tailored towards an efficiency increase within this ontology. The economic driver behind these developments are problem-driven business models. Therein, experiential knowledge is emerging as governing target and rationale within the emerging experience economy. Human experiences become subject of governing and value creation. Considering the previous elaboration we get to understand innovation activity as maintenance activity.

The manipulation of human experience along with the extraction of urban operational knowledges as source of economic value might feed economic and political agendas that are beyond the participant’s awareness. Despite the diverging values and the maintenance of existing configurations design thinking reinforces, the governing of experiences contributes to the adaptation and normalisation of the approach within the governing milieu. The incorporation of values and mechanism for change represent the limits of applying design thinking as technology to govern the city, as these are inscribed in the very software of computational problem-solving as mechanism of system maintenance.
7 Conclusions

We were like, that’s what it is. It’s a military robot. It’s got artificial intelligence. It can problem solve. It’s completely autonomous. That’s terrifying. There we go.

David Slade,
director of Black Mirror episode “Metalhead” in Green (2018)

7.1 Introduction

My research set out to understand the ways in which urban innovation initiatives empower people to take part in city making from the perspective of participating citizens. I raised critical attention to two parallel trends in governance innovation to consider their underlying rationalities and implications in the context of changing urban discourses, with particular attention to the ‘smart’ city (Cowley & Caprotti, 2017; Gabrys, 2014; Kitchin, 2014; Klausur et al., 2014; Luque-Ayala & Marvin, 2016; Marvin & Luque-Ayala, 2017; Vanolo, 2013; Wiig & Wyly, 2016). The first and more pronounced trend is the call for citizens to actively participate in ‘smart’ urban innovation (Cardullo & Kitchin 2017; Gabrys 2014; Schliwa & McCormick 2016). The second, and more implicit yet relevant, trend is the shift from solution to problem-solving oriented modes of governance, in which design thinking practices are mobilised to facilitate such citizen participation in urban development and policy making (Armstrong et al., 2014; Bason, 2014; Ernoth, 2014; Julier, 2017; Kimbell, 2011; Kimbell & Bailey, 2017). This thesis posed the questions:

1. What is the role of the citizen in (smart) governance innovation and how do innovation initiatives design new modes of urban citizenship?

2. How can we conceptualise design thinking to understand its mechanisms of power and political implications in the (smart) city?

To address these questions, I immersed myself in Manchester’s smart city and urban innovation milieu with the goal to improve cycling in Manchester.
Central to my analysis is CycleHack Global Movement, an initiative that promises a new form of activism by mobilising design thinking as a human-centred approach to make cities more cycle friendly. It does so by ‘tooling up’ citizens to host so-called civic hackathon events in cities worldwide. The initiative thereby introduces a new logic into urban activism that was previously applied within ICT development, user experience design and customer service design within creative as well as digital design industries. My research study was based on four years of engaged ethnographic study in the context of urban innovation, including 18 months personal experiences of actively participating in and facilitating urban innovation events endeavouring to improve cycling in Manchester as part of the urban innovation initiative CycleHack Global Movement.

Having started my research and analysis from practice, I would like to mobilise my theoretical insights for academic as well as practical relevance. The notion of designing urban citizenship describes my personal experience of participating in CycleHack and related urban innovation initiatives. Focusing on the power mechanisms of design thinking practices and discourses in the city, this conclusion chapter revisits my research questions in order to provide a productive “way to critique modes of governance by imagining how it might be possible not to be governed quite so much—or in that way” (Foucault, 1997, 44–45 in Gabrys, 2014). To do so, I take the process of designing urban citizenship as a way to govern urban life - not to a conclusion - but rather to a speculative projection of this global trend in which “everybody designs” (Manzini, 2015) through design thinking. This will be followed by suggestions for future research.
7.2 Summary of main arguments and contributions

If we may define the normal state of a living being in terms of a normal relationship of adjustment to environments, we must not forget that the laboratory itself constitutes a new environment in which life certainly establishes norms whose extrapolation does not work without risk when removed from the conditions to which these norms relate.

Georges Canguilhem (1991:148-149)

In the following, I synthesise the main arguments and implications that emerged from my research questions. I will do so in reverse order to reflect the concern that problematisation emerge out of practices (Bacchi, 2012; Foucault, 1984). In my case, it is the process of the further proliferation of smart technologies in the city, that led to a problematisation of ‘the citizen’ therein. The first section foregrounds my theoretical and empirical contributions. The second section expands on these conclusions by discussing and theorising the political implications and project current trends in urban governance innovation in relation to the city. This section draws on my reflexive methodology in relation to the question of how urban innovation initiatives design new modes of urban citizenship.

7.2.1 Design thinking: Human interoperability with the ‘smart’ city

Designing urban citizenship represents the central notion and main argument that guided my analysis and understanding of urban innovation processes. This thesis laid the groundwork to understand the global emergence of design thinking in the context of the ‘smart’ city. Designing urban citizenship is the shorthand for my conceptualisation of design thinking as a technological device (chapter two) that enables the interoperability of human thought and knowledge production with computational problem-solving processes (chapters four and five). The historical perspective provided in chapter two illustrated how today’s widespread understanding of ‘design’ and design thinking as creative problem-solving processes are inherently computational in nature. This connection between ‘design’ and the ‘smart’ city enabled me to bring both to date largely disconnected urban practices and literatures together under the concept of urban computational dispositif (Gabrys, 2014).
As Michel Foucault highlighted, a dispositif represents a “response to an urgent need” and has to be seen as a “dispositif of”, hence in relation to a specific need (Callewaert, 2017). Popular discourses about citizen participation in the ‘smart’ city promise citizen-centered innovation to serve the need of participating citizens. The central question was therefore whether CycleHack as urban innovation initiative represents a progressive and emancipatory form of engagement, which is why my analysis focused on understanding in what ways citizens are being empowered to address their needs in the city through design thinking.

My empirical findings in chapter five revealed how design thinking shapes citizen participation and political processes following a computational logic outside of the computational domain from which the approach originates. On the basis of my findings, I conceptualised design thinking as technological device within urban computational dispositifs (Gabrys, 2014) that makes human thought and knowledge production interoperable with the needs and visions of ‘smart’ urbanism and processes of computational problem-solving. The computational logic is mediated through the designer in the role as facilitator (either experienced by profession or following design thinking toolkits), who arranges cognitive activity into problem space and solution space over time. As chapter five detailed, this involves an ever-expanding set of techniques to ensure that the process runs smoothly.

The civic hackathon event, analysed through the lens of design thinking, works for people new to the approach like a normalising device that introduces a depoliticised way of relating to the city in two steps. In a first step, creativity techniques and feedback from the urban innovation milieu encourage to rethink problems so they become technically solvable within a short timeframe. In computational terms, this represents a process of normalisation by translating a non-simple domain into a simple domain for the processing of data sets (Codd, 1970). CycleHack already took the initial political decision to turn non-simple domain into a simple domain, as it suggests to go “beyond infrastructure” discussions. It hence accepts a position of disempowerment to challenge the car system or political, fiscal and infrastructural decisions, which
is a common feature of civic hackathons (Gregg, 2015). During a CycleHack event, these non-simple domains become reframed into simple domains that are immediately solvable with support of digital technologies. In the second step, urban knowledges, personal experiences and ideas are synthesised and extracted in form of so-called prototypes. These purely conceptual ideas are considered to be ‘actionable’ as they do not require political change. The first stage is widely normalised within the milieu of creative districts, social entrepreneurs and social design practitioners as well as smart and sustainable city actors. Normalising power (Foucault, 1999; Pasquinelli, 2015) works here through feedback, the repetition of problem-solving discourses and language as well as normalised practices such as prototyping and the use of design thinking frameworks and toolkits targeted at problem-solving. It is design thinking as discourse and practice that makes this mode of governing explicit and enables design thinking facilitators to transfer depoliticised ways of thinking as skills to actors that are not yet part of the milieu through collaborative activity. This finding adds to understandings of disciplinary power (Vanolo, 2013), which in this case works beyond the discourse as it organises thought from the domain of the subconscious unthought (Beller, 2018) through interaction with design thinking facilitators.

Normalising human thought and the interoperability with computational processes is accomplished through social disciplining within the civic hackathon event format (which in other contexts equivalents so-called ‘jams’, ‘design sprints’, ‘lean start-up weekends’ or simply ‘labs’). Civic hackathons have been argued to manufacture urgency (Irani, 2015). Creativity enhancing design thinking techniques function therein as the means of depoliticisation by which political decision making is overcome with idea development in relation to participants instead of in relation to the city in order to become immediately solvable within existing conditions. Creativity techniques such as brainstorming and divergent thinking were previously developed in a military context and became re-appropriated for capitalist modes of production (Light, 2002; Halpern, 2014; Mareis, 2017). As cybernetician Norbert Wiener suggested, “human behavior could be mathematically modeled and predicted,
particularly under stress—thereby articulating a new belief that both machines and humans could speak the same language of mathematics” (Halpern 2004:289). The hackathon format puts time pressure on participants to produce actionable ideas, that are extracted in the end and supposed to be ready for implementation through policies or business ideas in the ‘smart’ city. Under time pressure, these are in most cases ideas that overcome political issues and infrastructure barriers with knowledge sharing and ICT (e.g. apps for way finding). This represents an infrastructural shift from physical to digital, from public to private as well as from political to social. It is hence time pressure, reflected in the “manufactured urgency” of civic hackathon events (Irani, 2015) and the real-time character of smart urbanism (Kitchin, 2014), that represents a key enabler towards interoperability of human thought with computational processes. Civic hackathon literature focused on the solutions developed and modes of citizenship created through visible ICT-enabled governing techniques (Gregg, 2015, Irani, 2015, Perng & Kitchin, 2015; Perng et al., 2018). My thesis, in particular the analysis in chapter five, complements these findings by having made invisible thought and problem-solving processes visible that ultimately lead to ‘smart’ solutions and depoliticized modes of citizenship.

Concluding the technical analysis of my thesis, design thinking in an urban context makes ways of thinking visible and governable by ordering thought process over time through disciplinary techniques and feedback. Self-reinforcement within the innovation milieu normalises an operational logic of computational problem-solving as a way of life, in which processes of continuous problem-solving becomes the ultimate goal. Rather than serving social needs in a pluralistic society, this process serves the needs of what Beller (2018) termed computational capital. As the proliferation of computerized process technologies proceed through the ‘hackable city’ (Ampatzidou et al., 2016; de Lange & de Waal, 2019), this form of ‘hacking thinking’ results in ideas and concepts can be implemented in the ‘smart’ city thereafter. Urban innovation through design thinking represents therefore a designing of the social instead of for the social.
7.2.2 Urban citizenship: A new economy of experiential knowledges

Design thinking as a process technology enables infrastructural shifts from public to private provision, from physical to digital urban infrastructures and from political to social engagement. As chapter five illustrated, these new infrastructural configurations represent potentially empowering shifts for those actively participating, but moreover create new or speculative experiential and digital markets through the urban. Under the contemporary dynamics of cognitive (Tsogas, 2014) and computational capitalism (Beller, 2018), such modes of production become ever more sophisticated. My empirical chapters unpacked how the urban innovation initiative CycleHack Global Movement redesigns how citizens relate to the city. This relation is mediated through design thinking toolkits and designers as facilitators of collaborative events between civic society, researchers, public and private actors. In this context, political citizenship moves towards privatised modes of urban citizenship through the economic exchange of urban knowledges.

Chapter six elucidated how the emerging design thinking and digital industries seek to capitalise on participating citizens (the ‘community’) for the development of customised products and services through the urban. Rather than being grounded in state-citizen relations with defined rules and responsibilities, such mode of urban citizenship enables ‘smart’ solution implementation through a designing of the social that adapts to computational problem-solving. Non-state actors thereby economise on the notion of citizenship, as the development of customer relationships and experiences in relation to the city become framed under the banner of citizen participation instead of under the banner of user-testing. Urban citizenship becomes this way rendered into a customer experience based on the economic exchange of experiential knowledge. Participants provide their knowledge of and relational to the urban in almost real-time in exchange for a fun event, that provides a sense of citizenship. Experiential knowledge represents in this context the economic resource for the expanding digital and experience economy. Experiential knowledge is moreover target for a new governing rationality that seeks to maintain access to that knowledge on demand by
providing a positive event experience for participants, which is reflected in the focus on ‘getting the event right’ (chapter five). This process strengthens the network connection between design thinking participants (design thinking as technological device) and wider urban innovation milieu (urban computational dispositif).

In the case of CycleHack, citizens are rendered into problem-sensors and source of experiential knowledge about cycling within urban innovation activity. Citizens’ bodily sensations and psychological concerns (such as pleasure, fear, anxiety, worry, sense of ease or “getting paranoid” to get kicked off their bike, see chapter five), represent the starting point for product and service development. This is implicit in CycleHack tools such as Barrier and Idea cards, that order thought into problems (barriers) and solutions (ideas).

The limitation of possible actions towards starting each process with a ‘barrier’ re-defines people’s relation to the city as self-referential, hence human-centred. This can be understood as a bounded rationality (Simon, 1955) as it reduces the complexity of the problem and hence increases computational capacity by reducing the information required to address the issue. The products and service developed respond to those sensations within the urban through UX design techniques such as “customer journey mapping” that remove friction through quick technological fixes. Design thinking represents the computational technology that enables the delivery of immediately actionable solutions in response to perceived problems, based on the synthesis of available knowledge and information.

I conceptualised knowledges that are co-produced in response to an immediate need as operational knowledges. Urban scholars problematised the ways in which computational processes in the city determine what counts as knowledge and what not (Gabrys, 2014; Marvin & Luque-Ayala, 2017). As my empirics in chapter five showed, design thinking is not only working during the civic hackathon, but introduced a computational rationality into urban activism that determines what counts as knowledge and what not. Operational knowledge as a concept shall therefore also help to distinguish from design knowledge, since it is co-produced in response to ‘challenges’ (e.g. read safety
in the case of cycling). It is the ‘challenge’ that represents the new market commodity and enables to extract latent operational knowledge on demand and the entity that is paid for by corporate clients of design agencies.

Chapter six illustrated how this activity leads to a normalisation of a depoliticised design thinking mindset within the urban innovation milieu. Design thinking as a technology of government is dependent on the normalisation of the approach within the milieu to remain a productive approach within the urban computational dispositifs. As Lemke emphasised, political analysis needs to identify how political rule are linked to economic exploitation (Lemke, 2002). In the context of design thinking, this process needs to be understood as the product of a normalising dispositif which links design thinking rationality to economic exchange through positive personal experiences. This is done through feedback, which improves the experience of people participating through mutual reinforcement. As Halpern (2014) elaborates, feedback represents learning tool within human-machine loops. It has been predominantly Norbert Wiener who had major influence on the concept, which he described as ‘the property of being able to adjust future conduct by past performance’ (Halpern 2014:45). The empirics over time have shown how participants started to adopt a problem-solving mindset within the milieu by starting to be selective about what they consider to be valid data, ideas and information (e.g. conceiving of political ideas as “nice to haves” as an Amsterdam participant noted, or addressing confidence instead of road safety in the case of Manchester). It is at this point in which design thinking as a concept and technology from an ICT context into an urban context imposes its computational logic onto the citizen by becoming internal to ways of thinking.

Promoters of design thinking as technology of government suggest that problem-solving activity creates systems change, which can be understood as part of its disciplining discourse. What CycleHack promotes as new form of urban activism turns into ongoing activity towards system maintenance and repair (Graham & Thrift, 2007) of existing political configurations. As my research found, local authorities provide no or little funding for CycleHack and instead hope that ideas will be taken further by the market. The reality
presented on social media and promotional material camouflage the actual impact that in most cases still remains at conceptual idea or prototype stage due to lack of time, funding and political will. In the Manchester context, budget cuts under austerity government have put further constraints on local authorities to deliver sustainable transport. This led to place-based experiments with urban cycling infrastructures in adaptation to these conditions, rather than shaping national policy agendas (Hodson et al., 2018). Not only do local authorities put their hopes into ‘the market’ for mass-adaptation of services that used to be provided by the public sector. Also cycling advocates join the “collective imaginary for fictional expectations of innovation that benefits all” (Zukin & Papadantonakis, 2017:157) and start to place their hope into the free market instead. The potential realisation remains speculative and open ended. Moreover, the initial stated goal of ‘making the world more sustainable’ has been reduced to ‘innovation by the people who ride’. This new mode of designed urban citizenship therefore runs danger to reinforce spatial and social inequalities, since valuable time and effort of people that seek to change the city is spend on prototyping ideas.

The development of quick technological fixes towards the exploitation of experiential markets further deepens social fragmentation, as only those with access to ‘smart’ (in forms of digitally enabled apps or by reframing the political problems encountered) are being served. Such form of urban human-centred innovation improves individual customer experiences in the city, which feels empowering, while maintaining existing urban dispositions. The tendency to present an idealised reality of the approach is driven by private sector interests to exploit new markets through the urban, but also by the hope for design thinking as simple and easy process for change to be effective. The collaboration within existing parameters without challenging for example fiscal decision making at political level, aligns with recent conceptions of ‘design’ and design thinking as problem-solving activity under contemporary capitalism (Kimbell, 2011; Mareis, 2011; Seitz, 2017). The dominant point of reference remains the design thinking process, rather than specific social, environmental or political goals or urban populations.
As chapter four as well as six evidenced, this operational logic aligns with trends in governance that moves from care for a population towards solving-problems (Enroth, 2014). The disciplining and depoliticising effects design thinking has on participating citizens was in particular visible through the tensions between CycleHackers and urban cycling activists. Cycling activists conceive of CycleHack as an initiative that “changes the deckchairs on the Titanic” without change of course. On the other hand, people working within a design thinking milieu consider activism to be “negative” and criticise non-willingness to engage in problem-solving. People that disrespect the approach do not engage or are considered to be “the wrong people” (6_Co-founder, 2016), which illustrates the self-selective character of governance-beyond-the-state (Swyngedouw, 2005) as well as the dominance of design thinking as technology of government over the social. The tensions between CycleHack and cycling activists are however not visible for participants of the civic hackathon event. Despite these practical limitations and democratic deficit, the CycleHack initiative suggests meanwhile to have state relevance by expressing the intention “to design a platform that allows the state to work with citizens to look more holistically at the end-to-end experience of cycling” (Nesta, 2018). This imagined citizen-state relation would require facilitation by design agencies, which expands markets for problem-solving facilitation. The governing milieu represents here “no longer that of fixing and demarking the territory, but of allowing circulations to take place, of controlling them, sifting the good and the bad… in such a way that the inherent dangers of this circulation are cancelled out” (Foucault 2007:65 in Evans 2013). In the case of CycleHack, the dangers would be to reduce the capacity for the production of operational knowledge.

These conclusions would not have become tangible without immersing myself in the field and experiencing the governing techniques of CycleHack personally. Moreover, the mere reliance on epistemic knowledge would not have been able to understand power relations, that are shaped by techne (technical knowledge) and effect ways of thinking and relating to the urban. It is not only my own experience, but the experience of other people that I
considered to be able to draw better informed conclusions. My methodological advancements and contribution respond to the need to analyse power relations that are constructed through design thinking (technical) knowledge. As my research found, design thinking develops technical knowledge and shapes new epistemic realities. A major distinction I made is the difference between experience over time and the experiential knowledge gained through more short-term research or engagement. It is therefore necessary to disentangle the effects of technically mediated experiences (Erlebnis) and longer term experience over time (Erfahrung). My reflexive research methodology accounted for the production of different types of knowledges from different positionalities – moving from within the urban computational dispositif to its boundaries. I have triangulated epistemic knowledge, technical knowledge as well as knowledge based on experience (phronesis) by giving more significance to interviewees that have more experience over time (experience as 'Erfahrung') to make power relations explicit. Having unpacked a 48-hour event and its effects on participants over the timeframe of 4 years can be understood as a slow ethnography of changing ways of thinking. This way, I have rendered more explicit what counts as operational knowledge targeted at problem-solving and what as academic knowledge targeted at understanding.

7.3 Design and the city: a new research agenda

Ideas improve. The meaning of words plays a role in that improvement. Plagiarism is necessary. Progress depends on it. It sticks close to an author's phrasing, exploits his expressions, deletes a false idea, replaces it with the right one.

Guy Debord (1994, thesis #207)

Throughout my thesis I purposefully wrote ‘design’ when referring to operational ‘design’ processes, and design when referring to arts and crafts. Emerging from within processes of digital transformation, operational design is becoming part of our internal culture with eventually devastating longer term consequences for natural resources and what is political in society. The inherent problem of designing urban citizenship as a way to govern the 21st
A qualitative study in the field of political economy compares the types of design thinking initiatives and their fields of application in order to unpack the new rationalities of feedback-based governing. Expanding from the perspective of the citizen, this investigation would focus on design agency work and facilitators of collaborative projects. Central in this study is to further investigate the mobilisation of operational knowledge, design knowledge and academic knowledge in context to identify if they suit the purpose (urban innovation for the operational maintenance or change for transformation of urban infrastructures). This might also require research into legal frameworks, ethics and transparency in relation to manipulative techniques that manufacture consent.

The psychological effects of design thinking were only available to me at the surface level through a discursive analysis of people embedded in the governing milieu, signified by the practical and rhetorical focus on problem-solving. A psychologically informed study needs to investigate the cognitive effects of design thinking as technology of government within urban computational dispositifs. This includes research with people taking part in design thinking workshops, such as hackathons, boot camps and educational programmes to understand how design thinking – both as discourse and practice - impact on ways of thinking, acting and personal experience in the longer term. This research could consider a Lacanian analysis in conjunction with a historical analysis of post-war research laboratories to understand experiential knowledge as target of governing and the psychological mechanisms underlying today’s innovation labs and civic hackathon formats as modern-day research laboratories.
My analysis of operational logic in the context of urban innovation was limited to the subject of cycling. *Historical and theoretical work* is needed to investigate the co-evolution of military and civilian design thinking and the further implications of this trend for the ways we organise ourselves politically. According to Weizman "cities have always reflected the dominant military techniques of their times" (Misselwitz & Weizman, 2003). Research is needed how such new security apparatus intervenes with civilian urban politics. This will focus on notions of biopolitics, immunopolitics and the politics of normalization. Qualitative work requires expanding this notion to wider security apparatus, while further theoretical work is needed to understand intersecting dispositifs in conjunction.

My research has been very time intensive due to its slow and reflexive methodology. The concept of dispositif was useful to account for heterogeneity and render rationalities explicit in the analysis of power. The dispositif as a conceptual tool might however also limit scholarly scope and attention by overemphasising certain rationalities and functions within a case study or phenomenon. *Methodological work* is needed to further explore ways to clearly distinguish between knowledges that contribute to mechanisms of urban computational problem-solving, design knowledge, and academic knowledge. This will require accounting more explicitly for different types of knowledges though reflexivity and the positionality of the researcher. This work will link methodology and dispositif analysis for theoretical work with practical relevance, problematizing inside/outside perspectives within evolving dispositifs.

Governing the experiences of a selected few through quick technological fixes represents a loss of time and human agency. This set of research supports to counteract current tendencies of a designing 'of the social' in favour of designing for the social. Rather than celebrating quick fixes and solutions as innovation, the wider issues associated with the social necessity to develop such innovations need to be foregrounded as well as radical social exclusion addressed. Going beyond 'satisficing' solutions (Simon in Brown, 2004), emerging ways of governing can be for example viewed through the double
logic of “designing politics | politicising design” (Schliwa & Usher, 2018). The politicisation starts with awareness about the limits of design thinking approaches and moreover, the widening of the problem definitions beyond experiences in and of the urban.

What is required today is to profoundly re-think how to design for the social. Questioning how urban life is lived and engaging politically with the notion of urban citizenship are a crucial endeavor in the face of increasing social fragmentation. The trends towards urban autonomy (Bulkeley et al., 2018) and processes of voluntary as well as forced mass migration demand transformative knowledges. Such knowledges are multiple and varied, but certainly require to go beyond the creation of human-centred experiences that reduce a sense of urban citizenship to a short-lived experience and people to data sensing and processing subjects. The global movement towards design thinking needs social and political exit strategies if operational processes of computational problem-solving were not to become a constant condition and way of urban life. This requires a collective effort that may not be left to design thinking to define, mediate or manipulate. Did the government think it was that easy to dissolve the people and design another?
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