

Of Hackers and Cities: How Selfbuilders in the Buiksloterham Are Making Their City



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Abstract How can citizens become active city-makers alongside design professionals, local government institutions and others, by creatively using digital technologies in collaborative processes of urban planning and management? This challenge is particularly daunting in the Buiksloterham, a brownfield area in Amsterdam North, that is assigned as an urban laboratory destined to grow from 200 inhabitants to over 10,000 people. The area was opened to selfbuilders: private individuals and households who build their own home, and collectives of about 15–50 people who build a shared apartment together. The research is based on ethnographic research carried out in the area. It provides a theoretical foundation for understanding the connection between bottom-up city-making processes and institutionalisation. It also proposes a research and design narrative about people-centric hackable smart cities. This contribution results from a long-running research project called *The Hackable City* (<http://thehackablecity.nl>), which between 2012 and 2017 in multiple separately funded iterations, investigated new modes of city-making through the notion of ‘hackability’. The project was a collaboration between academics, an architecture and urban design office, and various organisations in the domains of policy, urban services and the cultural field.

Keywords Smart cities · Smart citizens · Hacking culture · Urban planning City-making

1 Selfbuilders and Hackable City-Making

How do new media and digital culture shape today’s practices and logics of city-making, and what does this mean for the role of citizens? Principles and practices of hackable city-making can be seen at work in the recent resurgence of selfbuilding in Amsterdam, the Netherlands. In the period after the financial crisis, selfbuilding

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M. de Lange and M. de Waal (eds.), *The Hackable City*,
https://doi.org/10.1007/978-981-13-2694-3_15

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emerged or re-emerged to be more precise, as an alternative way to develop the Buiksloterham brownfield area in the northern part of Amsterdam, from approximately 200 inhabitants to 10,000 people. Selfbuilding entails a range of practices and operates on different scales. I differentiate between private individuals and individual households who build their own home, and building arrangements organised on a collective scale. In the Buiksloterham area, the latter usually comprises of groups of about 15–50 people who join forces to build a shared apartment building together. In some cases, non-experts themselves are at the wheel, collectively hiring architects, constructors, consultants and so on. More often, however, it is urban professionals like architects or consultants who initiate such a project, allowing for varying degrees of consultation and customisation to selfbuilding groups.

In this contribution, I attempt to draw productive parallels between selfbuilders and hacker culture, in order to better understand how new media and digital culture shape the future of city-making. In general terms, hacking refers to processes of clever or playful appropriation of existing technologies or infrastructures and bending the operation of a particular system beyond its intended purposes or restrictions to serve personal or communal goals. The term ‘hacker’ originates from computer culture and refers to playful cleverness in opening up the ‘blackbox’ of complex systems, and a do-it-yourself spirit and collective practice driven by openness. As is argued in this volume, there are striking parallels between hackers, as computer hobbyists who write their own software for existing machines and shared that among each other and with the world, and current city makers who similarly contribute to their city by innovating with limited means. Like hackers, today’s city-makers use digital media to bend around, innovate upon and change existing urban infrastructures, systems and services. The notion of a ‘hackable city’ then, I argue, productively connects parallel yet oftentimes disparate developments in how cities today are being shaped by a variety of sometimes conflicting forces. City municipalities worldwide embark on smart city policies with tech businesses and knowledge institutions. They deploy digital technologies and big data to optimise services like traffic, energy, environment, governance and health. Yet at the same time, a wealth of bottom-up citizen initiatives is blossoming. These can equally be called ‘smart’ but are more people-centric. Such initiatives consist of networked groups who engage in issues like area development, neighbourhood liveability, community formation, cultural programming, taking care of their own energy provisioning or measuring and generating environmental data. Oftentimes, people employ sensor technologies, use open data or utilise social media to organise themselves around a shared ‘matter of concern’ (Latour 2005: 114–120). In an attempt to better connect these worlds, many cities have assigned specific areas as urban laboratories, or ‘living laboratories’, for studying and experimenting with new ways of city-making (Almirall et al. 2012; Bergvall-Kåreborn et al. 2015; van der Graaf and Veeckman 2015).

A comprehensive vision that is ‘productive’ in the sense of being both critical and affirmative towards these developments is lacking. The notion of the ‘hackable city’ is an attempt to do just that (see Ampatzidou et al. 2015; Gardner 2014; Mattern 2014; Townsend 2013). As we state in our introduction to this volume, the ‘hackable city’ functions, among others, as a heuristic lens to investigate how new media

technologies enable people to become active shapers of their urban environment, how urban institutions and infrastructures as ‘closed platforms’ can be opened up to systemic change by other than the usual suspects, and—crucially—to highlight the struggles this may involve. The notion of ‘hackable city-making’ is urgent and relevant from an academic point of view and from a societal perspective. First, a hotly debated topic in academia is how digital media technologies become increasingly important shapers of urban life and culture. Most notably, the ‘smart city’ as a phenomenon and discourse has attracted huge attention from various academic disciplines. This has also spurred questions about how to foster more citizen-centric smart cities (e.g., Albino et al. 2015; Allwinkle and Cruickshank 2011; Calzada and Cobo 2015; Caragliu et al. 2011; Diez and Posada 2013; Foth et al. 2016; Hollands 2008, 2015; Kitchin 2014; de Lange and de Waal 2013; McFarlane and Söderström 2017; Ratti and Townsend 2011; Sadowski and Pasquale 2015; Söderström et al. 2014; Townsend 2013). Second, researchers point to a crisis in expert knowledge systems like urban design and study how this waning of professional legitimacy shapes the work of professionals and the role of institutions.¹ Less attention however is given to the question how these professionals adapt, reshape and reinvent their professional practice to accommodate to such shifts (for a recent example that includes the voice of an architecture professional; see de Waal et al. 2017). Third, governments across the world are adopting ‘participatory’ policy agendas in an attempt to harness a purported do-it-yourself civic attitude for expenditure reduction and legitimising policy. However, critical voices argue that this often entails pseudo-participation or that it exploits people’s free labour cloaked behind hip-sounding labels like ‘co-creation’ or ‘sharing economy’ (Fast et al. 2016; Scholz 2013; Terranova 2000). Fourth, a variety of factors—ongoing rapid urbanisation in our ‘urban age’, climate change and natural disasters, the monetary crisis—have exposed the need to build resilient cities. The question is how this can be done in a way that respects public and democratic values. Put differently, how to steer away from the solutionist deployment of smart tech and instead develop a strong set of human-centred narratives for truly smart cities? With this contribution, I attempt to sketch the contours of this ongoing endeavour.

2 From Computer Culture to Selfbuilders

In order to turn the notion of hackable city-making into a productive term for understanding shifts in contemporary city-making, I turn to a small selection of key works of the literature about hacking as a cultural phenomenon. The discussion helps to extract and define three aspects that are relevant for our ensuing discussion of selfbuilders as city-makers, namely the particular *principles*, *ethics* and *practices* asso-

¹Arguably, among the first to attack urban planning as a ‘science’ was Jane Jacobs, in her famous book *The death and life of great American cities* from 1961 (Jacobs 1992). Today, the emerging field of ‘science of cities’ attempts to rationalise what it deems the ‘pseudo-science’ of planning through the use of mathematics, data and modelling (e.g. Batty 2013, Bettencourt 2014).

ciated with hacking. Steven Levy in his book *Hackers: heroes of the computer revolution* (originally published in 1985) describes the rise of various subcultures based around computers, like MIT-based software hackers and Californian garage hardware hackers (Levy 2010). Theodore Roszak in *The cult of information: The folklore of computers and the true art of thinking* (1986) describes the rise of an ideologically driven counterculture of ‘guerilla hackers’ based around the democratic potential of computers (Roszak 1986: 158–162). In these two early accounts, hackers figure as active makers and shakers of computer innovations, and the relationships mediated through them (Levy 2010; Roszak 1986: 158–173). Levy describes how a group of students at MIT—driven by curiosity—successfully obtained access to very expensive early computers. Initially, such machines could only be operated by a select caste of specially trained people, dubbed the ‘Priesthood’ (Levy 2010: 5). This ran counter to the spirit of openness these students had in common through their shared love of electric model trains. Hence, they soon began to find ways to gain access to these room-sized machines and started experimenting to make it do all kinds of other things and to control it. These selfproclaimed ‘hackers’ became the vanguard of a new ‘symbiosis between man and machine’ (Levy 2010: 27).

Thus arose a new kind of hacker culture that is based, first, on a set of *principles*. According to Levy, these principles include: freedom of information (all information should be free); decentralised organisation (and mistrust of authority); fundamental meritocracy (judgement of each other is solely based on quality); aesthetics (code and computing can be a source of art and beauty); computing as change agent (believing that computers can change life for the better) (Levy 2010: 28–34). Below, we will see similar principles at work in how the making of cities has been claimed by non-professionals without (much) expert knowledge, in a spirit of openness and sharing of information.

Second, this set of principles is accompanied by a specific *ethic*: a shared attitude of finding intrinsic pleasure in tinkering, of balancing between pragmatic problem-solving and curiosity-driven problem-seeking, and considering messiness as a potential strength instead of a threat. According to Pekka Himanen in his book *The hacker ethic, and the spirit of the information age*, the hacker ethic consists of several values (Himanen 2001: ix–x, 139). The hacker ethic stands in opposition to Max Weber’s classical idea of the ‘Protestant work ethic’, in which work is seen as a duty and end in itself. By contrast, hackers assume an intrinsically motivated and selfdetermined stance towards their work. They are driven by passion and freedom (Himanen 2001: 18–19, 33, 140). Hacking is also opposed to the exclusive ownership of information on which making money in capitalism is premised (Himanen 2001: 45). For many hackers, money is only a means towards greater individual freedom. Real value derives from social currencies like peer recognition, social worth and openness (Himanen 2001: 51–55, 140; Raymond 2000). Himanen furthermore argues that hackers embrace key values of Manuel Castells’ ‘network society’, like privacy, freedom of speech and selfdetermination (Himanen 2001: 89, 106, 109, 113). This ‘hacker ethic’ is predicated on unobstructed access to information (in the form of code) and the freedom to build upon other people’s work. Today, we can see a similar selfmotivated and selfprogrammed ethics in many of the selforganised city-making

efforts. As is described in more detail further below, selfbuilders invest a lot of time and resources in their work, driven primarily by an intrinsic motivation to solve individual challenges and in the process combine ‘selfishness’ with lofty social ideals of sharing these solutions with the collective.

Third, hacking also is a *praxis*: a way of doing things by passionately engaging in an activity that is ‘intrinsically interesting, inspiring, and joyous’ (Himanen 2001: 6). For the hacker, things only are meaningful if you find out how they work and master them (Levy 2010: 3, 6–7). The *way* of doing something matters: a proper ‘hack’ shows artistry by being imbued with innovation, style and virtuosity (Levy 2010: 10). At the same time, hackers frequently operate with reused or repurposed generic instruments and without any grand design. Hackers are interested in understanding the complexity of systems and being able gain mastery over them, playfully tinkering with the resources available at hand. In the words of Richard Stallman, open-source hacker and founder of the free software foundation, ‘playfully doing something difficult, whether useful or not, that is hacking’.² Again, as we will see there are clear parallels with selfbuilding, which more often than not requires people to cleverly influence and gain control over the complex amalgam of physical resources, digital information, rules and institutions, while balancing individual and collective aims. Despite the fact that selfbuilding sometimes appears to be more a matter of ‘painfully doing something difficult’, we shall see that people derive satisfaction and pride from dealing with the challenges.

Hacking reconfigures the relationship between individual and collective interests. It serves to scratch people’s very personal itch (‘I don’t like the way something works so I’ll modify it according to my wishes’), but it also has a social side to it (‘I’ve come up with something clever and this could also benefit others’). This social element can be competitive in an attempt to impress and gain respect among peers (Levy 2010: 12), but it can also be communal in the spirit of openness, share-alike and community-building (Himanen 2001: 59; von Hippel 2005: 97–98; Levy 2010: 46). Hence, as a mode of production hacking can be positioned between the capitalist free market economy in which competition and profit reign supreme, and communitarian ideals of collectivising and redistributing resources in an equal way. It oscillates between organising individual creativity and *communitas*. Himanen suggests that hacking establishes a kind of third way. Hackers challenge the idea that corporations are best suited to drive innovation and wellbeing and reject capitalist control of information. Hackers also see the collective interest best served by meritocratic achievement and are suspicious of centralised authority representing the community (Himanen 2001: 60–61). Hackers like to engage in communal open innovation *and* care deeply about individual reputation (Himanen 2001: 40). Hackerdom highlights tensions between the individual and the collective and between reputation-based competition and communitarian openness. As will become clear, these dimensions are central to understanding new practices of city-making.

Selfbuilding is as much a cultural practice as a spatial one. Indeed, as we shall see, it entails the formation of subjectivities and individual and group identities, which

²Source of the quote: <https://medium.com/backchannel/what-is-a-hacker-51257cad8b54>.

bear striking similarities to early hacker culture. Hackers tend to have a playful and curious world outlook. They want to know how stuff works by tinkering with it, not as engineer who designs according to a careful preconceived plan or blueprint but in an improvising go-along way. Seeing oneself as a hacker usually entails having a slightly subversive attitude. Hackers do not accept defaults ('as is') but are interested in imagining spaces of potential ('what if'). Understanding hacking as involving a form of subjectivity stresses how important it is to understand contemporary modes city-making as deeply ingrained in people's selfunderstanding and selfevaluation. To study 'hackable city-making', therefore, means to study people's mediated way of being in the world and their strong affective relationships to the urban environment. The city hacker is both a *homo faber* and a *homo ludens*.

3 Approach

The findings described here are based on intermittent and non-intensive ethnographic fieldworks done in the period between September 2014 and the end of 2015. The methods consisted of unstructured and semi-structured interviews with over 20 self-builders and other stakeholders, as well as participant observation during multiple public and closed meetings in, or about, the Buiksloterham area that were organised during this period on various locations. As a new actor in the area, a designated 'urban laboratory', members of The Hackable City project team were regularly asked to present our work in progress and contribute to public or closed discussions about the development of the area. Hence, we ourselves became one of the visible actors and stakeholders in the area. In addition to participating in shaping the future of the area, these sessions allowed us to observe other actors and become attuned to their motivations, ideas, stakes and actions. Other occasions and settings for 'presence', a hallmark of doing ethnography, proved to be somewhat problematic since there area itself was still fairly undeveloped. Especially in the beginning of the project, there was not yet a real community physically 'present' on site with whom to engage. Questions that guided the initial explorative phase of the investigation were aimed to get a better understanding of what drives the people involved in selfbuilding, what structural issues they encounter, how they deal with them, how they balance between individual stakes and efforts and collective processes and how they deal with institutional stakeholders. The underlying assumption was that selfbuilding is as much a cultural practice as it is a spatial practice. Building your own home, I assumed, is not just about a goal-oriented habitation but constitutes a mode for selfexpression, identity construction and collective meaning-making. I attempted to capture as much of people's own *emic* terms and expressions, that is, the vocabulary that people use to describe their own actions, experiences and interpretations. These were quickly transcribed, further analysed and interpreted, with the aim of finding out whether and how this can be called a kind of hackable city-making and, by extension, what that could teach us about the role of digital media technologies in people-centric city-making. Through this prolonged involvement and various interpretative cycles, com-

mon narratives started to emerge. These, following anthropologist Clifford Geertz, are taken as stories people tell themselves about themselves. Although hacking itself was rarely if ever used in *emic* self-descriptions, it did provide a productive *etic* frame (i.e. external to the group under study) to capture the zest of many of these emerging narratives. This approach contributed to the inductive development of the hackable city model described below and in the introduction to this edited volume (see also de Lange 2016; de Lange and de Waal 2016; de Waal et al. 2017).

4 Stories About the Challenges of Hackable Selfbuilding

Many shades of grey exist when it comes to the financial and organisational constructions under which collective selfbuilding happens. Some individuals or households are at the wheel themselves. They might also hire architects, constructors, consultants and so on, at certain stages. Notably, a majority of collective selfbuilding projects are initiated by architects, who create new procedures that allow for varying degrees of consultation and customisation. The stories that individual selfbuilders recount at times sound like adventure quests. Like hackers, selfbuilders are invariably driven by strong motivation and emotional commitment. Many respondents emphasise that only thanks to their own cleverness, stamina and the sharing of resources, they were able to overcome the many obstacles and hardship they faced in the complex maze of an unknown terrain. For example, in fall 2015, dozens of households camped out in the rain, cold and mud for 3 weeks, just to acquire a plot of land for building their own home. They did attempt to make the best of it, gladly providing the intrepid researcher on a soggy fieldwork visit with coffee and tea, and indeed seemed to assume a kind of casual pride to be able to endure these primitive circumstances in order to realise their desires.³ Selfbuilders depart from an ideal, use their imagination and venture into open spaces. Sometimes that comes at a steep price. The initiator of Schoonschip, a project to realise a housing neighbourhood of 30 water arks,⁴ tells:

For my work I visited the autarkic geWoonboot. Then I thought: hey, that's what I want too. I immediately envisioned an ideal of sustainable living on a real housing boat. That's the plan I started working on. I went looking for a group of people who share my ideals. Next, we searched for a good location. What I liked in the Buiksloterham was that there weren't too many rules and restrictions. I was really drawn to that openness. Initially, the council of the borough Amsterdam North did not want to lease out the waterfront for area development. They said: 'first we want to do the mainland'. Then we directly approached Alderman Maarten van Poelgeest, who is a fan of both sustainability projects and citizen initiatives. So he had to support us. We managed to get him to write a letter to the council. After that, a tender was being put out for that specific waterfront location, which was exactly what we needed. All this cost me a tremendous amount of time and energy. But I persevered. I even had to stop working for four months because I was on the verge of a burnout. In the end, it gives me a lot of energy and satisfaction to see that we, with our little group of

³See in Dutch <https://nos.nl/artikel/705682-weken-kamperen-voor-een-kavel.html>.

⁴See <https://twitter.com/SchoonschipAdam>.

selfbuilders, have become part of a much larger movement in the Buiksloterham. Things are really happening in a visible way and on a scale that matters.⁵

From the above quote, we also see that successful selfbuilders are capable of mobilising key figures or institutions in an early phase of the project. This suggests, as a more theoretical point, that we should nuance crude top-down versus bottom-up framings of civic participation and instead look at the capacity for strategic mobilisation (or ‘middle out’ as Fredericks et al. argue elsewhere in this volume). In this case, the embryonic group of people was able to present themselves as a collective to the Alderman. In this sense alone, doing things together is crucial. According to many of the people we talked to, new city-making is all about group formation and identities: shaping the identity of the neighbourhood and of the people living there. How do groups construct a feeling of togetherness and what makes them recognisable as a group, which allows them to ‘mobilise’ this collective identity and get investors and other parties to become interested in doing business with them? Such questions also play a role at the level of new services. Do you arrange services like water and energy provisioning individually, collectively or publicly? And how do groups manage trust and risks among themselves?

Obstacles and opponents come from all directions. Sometimes it is the big vested parties who, after the financial crisis, aim to continue in old ways by developing the city at a grand scale. Sometimes it is the municipality that is perceived as giving selfbuilders not enough or too much freedom, to provide insufficient guidance and support, or to superimpose rules and procedures that are either unnecessary or too ambiguous. One respondent talks freely about some of the challenges that selfbuilders face:

A requirement for acquiring plots of land is that selfbuilders submit a realistic plan and get good marks on a sustainability score chart. According to the municipality, we must solve questions of energy provisioning at the level of our individual plots. But this is often expensive. So we tried to tackle this by making complementary arrangements between neighbours: one does green energy, another does water retention, another one separate flows, and so on. That too did not pan out because municipality only looks at individual submissions. A third challenge is that collective investments in large infrastructures is hampered because everyone moves in different temporal cycle. Some have to decide tomorrow while others are still in the orientation phase. The list goes on and on: when collective selfbuilders for example want modular electric patch cabinets, to accommodate future investments in solar or wind energy, energy company Aliander says it's impossible. If a building group wants to invest in heat-cold storage, the rules prescribe there have to be three units while one is obviously much cheaper.⁶

Sometimes quarrels arise from within or between competing selfbuilding groups. Many selfbuilders share variations of stories about the messy and frequently conflict-ridden dynamics of building collectives. Problems will inevitably arise, many confide. As soon as you have eight or more people together in a group, one will be a troublemaker. Moreover, frictions between neighbouring selfbuilding groups occur, even

⁵Source: personal interview on 11 March 2015.

⁶Source: personal interview on 12 December 2014.

between professionals. In one case, the initiator of a collective apartment building found out that the new neighbouring building collective on the south side wanted to increase the altitude of the building, thus blocking view and sun. ‘The rules to which we have to conform are ambiguous. I was lucky to find out in time that the neighbouring group followed a different interpretation of the rules and went up higher. This unexpected occurrence sparked a chain reaction in the whole block, in which everyone had to change their plans to accommodate. With digital tools we could have engaged in dialogue much earlier’.⁷

Nonetheless, by engaging ‘adversaries’ in the right way, they can become allies. In the end such parties may become partners for scaling up and institutionalising this new way of city-making. Another selfbuilder, building an individual house, tells:

Institutions like the municipality, Waternet [public water company], Liander [energy network company] are large and unwieldy. My future house lies at the south-side of the plot that I bought. There is this rule that the water and energy meters have to be installed within three meters from the front door. In my case that would mean in my living room! I had to negotiate with the water and energy companies. Fortunately, I found people inside these organisations who were helpful, so I managed to get these meters in my garage at the backside of the house. Of course, I shared all of this information with my neighbours, so they could benefit too. There are only a few idiots like me who want to find out everything for themselves.⁸

In the end, such parties may become partners for scaling up and institutionalising this new way of city-making. Selfbuilders perceive a momentum. This was fostered through community activities in ‘living laboratory’ Buiksloterham.⁹ During such regular meetups, selfbuilders meet people in organisations, whether municipalities or (semi-public) businesses. Frequently, these people would have similar visions of a more participatory and sustainable way of city-making. A number of public and private organisations joined a consortium of Buiksloterham stakeholders, which eventually led to the signing of a declaration of intention for a Manifesto Circular Buiksloterham. Despite the fact that there were hackers ‘on the inside’ too, these institutions faced thorny issues like balancing an impetus towards rapid innovation and following transparent and just procedures. As one of them noted during a conversation: ‘although we’d like to see government moving along more rapidly, this should not lead to Berlusconi-practices’.

A major challenge for many novices in selfbuilding is the availability and transfer of knowledge. Selfbuilders all face steep learning curves. ‘To some degree we all reinvent the wheel’, many acknowledged with a shrug. Synchronisation of knowledge is extremely hard because everyone begins at different moments in time and faces their own peculiar hurdles. At the time of the research, selfbuilders were sharing information and knowledge via a variety of platforms, including Facebook, WhatsApp, various websites, face-to-face conversations and public or closed meetups. This often made it difficult for other people to find existing information and

⁷Source: personal interview 9 Dec. 2014.

⁸Source: personal interview on 21 May 2015.

⁹These were organised by a specially appointed ‘area trailblazer’ Frank Alsema, who was later joined by Saskia Muller and Peter Dortwegt. See website <http://buiksloterham.nl>.

build upon this knowledge. Moreover, individual experiments and innovations are often not properly documented and non-transferrable (a known weakness of many Free/Libre/Open-Source Software projects). We found that several knowledge gaps exist. One is between advanced and beginning selfbuilders. Another is between selfbuilders and (semi-)professionals who have the vocabulary and understand the processes but who have rarely actually built a home from scratch themselves. A third gap exists between selfbuilders who engage in experiments and institutions who also experiment, like the municipal ‘team selfbuilding’ or public service companies.

5 From Alternative Narrative to Hackable City Model

Hackers are characters who speak to the imagination. They figure as protagonists in a quest-like storyline about urbanites who use their cunning—sometimes against all odds—to make their own city using tools available at hand. As we have outlined elsewhere (Ampatzidou et al. 2015), the notion also bears the suggestion of provocation and friction. Some people will associate hacking with disruptive or even illegal activities. Others will think of a libertarian Silicon Valley ethics of selfgovernance, own responsibility and technological solutionism. However, many authors have pointed out that hackers often like to work in groups and share their efforts, thus contributing to the common good. The notion of hacking employed here is one that deliberately uses these tensions to hone the discussions about the future of our cities. Who have the right to make the city? Instead of being a hermetic narrative that offers a singular solution to complex challenges, the story and the model are open to be ‘hacked’. It ties together multiple levels of individual hacker attitude, collective hacker practices and institutional hackability. It provides a frame to address the complex interplay between economic challenges (how do we build resilient cities after the financial crisis, and what are new business models), spatial and social questions (how do we deal with cooperative area planning, demographic shifts, new types of communities), cultural changes (how do we leverage contemporary do-it-yourself culture, the reshuffling of roles between professionals and amateurs) and governance issues (how can we shape the participatory society, what roles are there for institutions, and what public values do we want to sustain or strengthen). In the hackable city urban designers, institutions and citizens together build the city of the future in participatory, innovative and sustainable ways.

Based in part on the outcomes of this limited ethnographic research, we inductively constructed a model for hackable city-making, which has been described on more detail elsewhere (see de Lange 2016; de Lange and de Waal 2016; de Waal et al. 2017; de Waal et al. 2018). That happened in an inductive grounded theory-like way; that is, we combined empirical observations and conceptual reflections to form a theoretical model that could be further tested. The model captures in a simplified manner the complex dynamics between city stakeholders at three basic levels and scales:



Fig. 1 Hackable city-making dynamics

- (1) An individual *hacker attitude* fuelled by a do-it-yourself ethics and professional amateurism (doing something very well ‘for the love of it’, being intrinsically motivated);
- (2) A collective set of *hacking practices*, including open innovation, collaboration and sharing of knowledge and resources;
- (3) The *hackability* of institutions, that is, the structural affordances at the level of organisations, rules and public governance to be open to systemic change from within or outside (Fig. 1).

This model is neither purely descriptive nor prescriptive. It acts as a heuristic that allows us to investigate how the city can be made ‘hackable’, that is, opened up to other people to shape the future of their cities. As we have seen, selfbuilding in Buiksloterham spans across these different levels. The individual level is made up of selfbuilders who each acquire their own piece of land and start building their own home. The collective level consists of group activities and events that transcend the individual plot. Connections between the individual level and the collective level are forged when people start sharing resources like generic information and specific knowledge about, for instance, dealing with infrastructure companies, to collaboratively start working on public green spaces. When enough people keep sharing, benefits can be reaped individually while still strengthening the commons. The institutional level is composed of the various parties and regulations responsible for shaping the conditions for selfbuilding and providing the infrastructures. The collective level, as we have seen, is a crucial hinge for getting individuals and systems to move.

6 Reflections: Hackable City-Making?

Failures, so we are told, teach valuable lessons. Let me then conclude by way of the confession of failure, to hopefully arrive at a number of productive take aways. The Hackable City project team used the ethnographic data and the model to develop a design probe that sought to intervene and test how hackable city-making might

work in practice using digital technologies. As was mentioned above, we identified several knowledge gaps. To bridge the information gap and lower the barrier to entry, we attempted to build a Wiki for selfbuilders. This was to become an open-source, community-driven writable platform for selfbuilders to share their insights.¹⁰ Disappointingly, it was not met with raging enthusiasm by anyone, and at some point, we decided to abandon the idea altogether. We assumed that it was not useful enough, because of technical glitches, time constraints and the fairly high level of literacy required to work with wiki software. In hindsight, I now feel that the problem of this design probe was actually the complete opposite. Instead of being not functional enough, it was too functional. It was primarily utilitarian and goal-oriented, instead of matching the autotelic identity-based motivations of selfbuilders. There was no ‘community curation’ (Wyatt 2011) and sense of ownership from the outset. Instead, it was erected for them by a third party. If I had to do it again, I might have suggested a platform or tool to tell meaningful stories instead of sharing chunks of information.¹¹

A second failure is of a more structural nature. The tragic turn in our narrative of heroic hacker/city-makers is that in the end the pioneers, the innovators, were superseded by business-as-usual city-making. Midway during the project, around 2015, markets had crawled back up and project developers and builders awoke from their dormancy. Amsterdam municipality happily embraced the restored ‘normal situation’ of doing business with fewer but larger developers, instead of an unruly and quarrelsome bunch of loosely organised civic hackers. Initiators of midsize collective selfbuilding apartments complained they could no longer get their foot in the door with the larger stakeholders. Apparently, the narrative of selfbuilders as hackers resonates in a time of crisis but is not compelling enough to last.

A third failure, if you could call it that, is the ease with which the ‘hacking’ terminology falls prey to blurry metaphorical parlance. It is important to distinguish between various kinds of ‘civic hacking’ and use the notion with some conceptual rigour. The kind of hacking discussed in this chapter differs from hackathons, appathons, hackspaces and so on, which usually involve just coders or hardware tinkerers. While the ‘civic hacking’ discourse partially overlaps, we look at actual city-makers, people shaping the city. Oftentimes, criticisms of the ‘civic hacker’ phenomenon point to barely disguised underlying neoliberal forms of exploitation. For example, in a recent publication about precarious labour, well-known critical urban sociologist Sharon Zukin criticises hackathons for being a form of labour extraction and exploitation (Zukin and Papadantonakis 2017), echoing similar arguments made by others (e.g. Gregg 2015; Terranova 2000). Likewise, Evgeny Morozov and Francesca Bria state that ‘neoliberalism 2.0’ casts citizens as ‘hackers’, people who are able to do more with less in the context of austerity of public service expenditure (Morozov and Bria 2018: 20). While these certainly are valid points from a political

¹⁰Project intern Melvin Sidarta invested a considerable amount of his time to actually build this wiki.

¹¹In fact, at a later stage in the project newly joined team member Tara Karpinski developed a much more interesting app for selfbuilders to recount testimonials and success stories. See the report here: <http://thehackablecity.nl/2016/12/13/designing-and-testing-the-internationale-bouwtentoonstelling-app-2/>.

economy perspective, I want to push back a little, using two arguments. As a more general first point, such criticism neglects to give a voice to the variegated 'emic' perspectives, that is, the range of possible motivations of people themselves. Seen from the outside, civic hacking activities may appear as precarious or exploitative. Indeed, as was mentioned, selfbuilders in the Buiksloterham might be seen as guinea pigs that were only given leeway while the crisis lasted. To participants themselves, however, it can feel tremendously gratifying and well worth the contribution. Second, and more important for my point here, 'hacking' can act as a critical term that highlights these and other frictions and allows us to raise thorny questions. Hence, I propose that the concept of 'hacking' entails a form of criticality (Rogoff 2003) or 'critical making' (Herz 2012; Ratto 2011; Ratto and Boler 2014).

Hackable city-making as discussed here entails a selfreflexive criticality of the tools used, of the range of city-making practices and of the institutional protocols and governance. It also critiques the prevailing narrative of city-making as the prerogative of professionally trained experts, while refraining from claiming that these alternative practices are the definitive 'solutions' to question of resilient future-proof and participatory city-making. It questions instead of answers: who can build the city? In this sense, I argue that the value of 'hackable city-making' as a concept is that it reinserts political dimensions into new 'smart' ways of city-making, highlighting negotiation, friction, subversion and questions of in/exclusion (see also Perng and Kitchin 2018). A hack means a quick and often somewhat messy but working *makeshift solution* to a problem. 'An ugly hack' is a common phrase for something fixed in a haphazard make-do way. While this does not necessarily lead to the most high-quality or sustainable result, this way of working offers a perspective on city-making not as endeavours for eternity but as perpetually unfinished enterprises that are by nature always open to modifications and are deeply reliant on the factor time (for this fundamentally temporal reimagining of the practices of architecture and urbanism, see Bergevoet and van Tuijl 2013). The term thus is critical of itself: it acknowledges its own make-do and imperfect nature and understands itself as the product of friction. There is, then, a lesson to be learned by designers and policy-makers from hackers in terms of accepting 'messiness' as a given and daring to relinquish control. The terms 'hackability' and 'hackable' point to an affordance of systems, the condition of being open to modification or systemic change from within or from the outside by anyone willing to invest effort. To call city-making 'hackable,' then, means to take subversive and countercultural city-making practices seriously.

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