

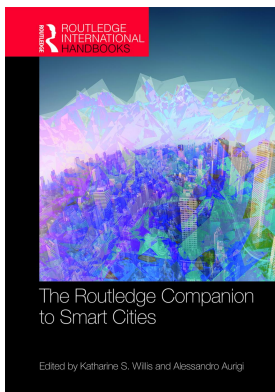
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The hackable city

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The hackable city

Exploring collaborative citymaking in a network society

Martijn de Waal, Michiel de Lange and Matthijs Bouw

Introduction

In this chapter, we introduce the hackable city as a heuristic model to explore new modes of collaborative citymaking that have arisen in our current network or platform society (Castells, 2010; van Dijck *et al.*, 2018). The model is closely related to debates about smart cities and smart citizens (Hollands, 2008; Allwinkle and Cruickshank, 2011; Caragliu *et al.*, 2011; Nam and Pardo, 2011; Chourabi *et al.*, 2012; Brynskov *et al.*, 2014; Kitchin, 2014; de Waal and Dignum, 2017; Cardullo and Kitchin, 2017; Hemment and Townsend, 2013; Niederer and Priester, 2016), yet it takes a more relational approach, exploring ethics of citymaking and citizenship, concrete practices for collaborative citymaking as well as affordances of systems for innovation, adaptation and social change. With the lens of the hackable city, we want to highlight a vision of the city as a site of both collaboration as well as struggle and conflicts of interests. In this account, new media technologies enable citizens to organise, mobilise, innovate and collaborate towards commonly defined goals. Yet the hackable city also recognises the messiness of such a process, the conflicts of interest at play and the continuous struggle between the alignment of private goals, collective hacks and public interests. As an alternative imaginary, the hackable city is not a progressive alternative panacea to a neoliberal smart city that will by itself bring out a harmonious, inclusive resilient city, if only citizens would start using the right technological tools and governments would be willing to listen to them. Rather, as a lens, the hackable city aims to bring out the underlying dynamics and (sometimes conflicting) values at stake in citymaking, as well as the concrete practices through which they are enacted. It revolves around using the affordances of digital technologies to find new ways to organise civic initiatives and align these with processes of democratic governance and accountability in a society that is increasingly technologically mediated.

Hacking and citymaking

We – two university researchers and a practicing architect – started exploring this notion of the hackable city in 2012 in a workshop organised by the Dutch Delta Metropolis Association.

Workshop participants were asked to draw up a new vision for the future city: which themes should dominate the urban agenda in the coming decade? What should the next “big visionary project” look like? And how could this be applied to a number of city-regions in the Netherlands?

During the workshop, after discussing various current trends in urban planning, we found ourselves turning those original questions around. When we began exploring what this big vision, masterplan or investment project could look like, we found numerous citymaking initiatives that – in a spirit reminiscent of online hacker cultures – had just started to change things in the city that in their eyes needed improving. We found energy collectives producing and distributing renewable energy; projects that turned empty office space into co-working or housing spaces; and loosely organised citizens using social media to improve the livability of their neighbourhoods through collective action. Sometimes these collectives were organised by informal groups of neighbourhood residents; more often they were initiated by designers, architects or other professionals who were embracing a new approach to their profession. Rather than waiting for new masterplans to appear, they organised collectives of various stakeholders around the issues they deemed urgent.

Their impromptu character does not mean that these initiatives are not visionary. Like many hacker cultures, many of these citymaking initiatives are searching for alternative value systems that could underlie urban planning. Some are actively seeking to catalyse societal transformations, for instance in the domain of renewable energy. Others centre on the notion of the commons: the city as a set of resources that are collaboratively owned and managed. In a world where public services and resources have been increasingly privatised, they seek to bring these resources back into the public domain, reclaiming a citizen-based “ownership” of the city (Franke *et al.*, 2013, 2015a).

Could, we found ourselves arguing, the sum of all these initiatives make up the next visionary project? Taken together, they could potentially make the city more resilient, innovative, livable and social. Rather than approaching the city as a tabula rasa, these initiatives are interested in continuously improving the current city. Local initiatives could quickly identify local issues to address; small-scale initiatives could test out new approaches and technologies and scale them up when proven successful. And their collective and collaborative approach could also bring ownership of the city partly back to the citizenry.

So, at the end of the workshop we formulated our vision, or “urban imaginary”, of the hackable city: a city in which new media technologies are employed to open up urban institutions and infrastructures, to improve upon them in the public interest, in practices of collaborative citymaking.

We weren’t at that time the first or the last to point out the resemblances between a hacker culture and emerging instances of collaborative citymaking. The term hacking originated in the world of computer science, information and communication technology (ICT) and media technologies. From radio amateurs in the early twentieth century to the US west-coast computer culture that gave rise to first personal computers in the 1970s and the rise of the free/libre and open-source software (FLOSS) movement in the following decades, users have been figured as active creators, shapers and benders of media technologies and the relationships mediated through them (Roszak, 1986; Levy, 2001; von Hippel, 2005; Söderberg, 2010). In general, hacking refers to the process of clever or playful appropriation of existing technologies or infrastructures or bending the logic of a particular system beyond its intended purposes or restrictions to serve one’s personal, communal or activism goals.

Where the term was mainly used to refer to practices in the sphere of computer hardware and software, more recently “hacking” has been used to refer to creative practices and ideals

of citymaking: spanning across spatial, social, cultural and institutional domains, various practices of “city hacking” can be seen in urban planning, city management and examples of tactical urbanism and DIY/DIWO urban interventions. Various authors have by now described the rise of “civic hackers” (Crabtree, 2007; Townsend, 2013; Schrock, 2016), where citizens are cast in the role of tech-savvy agents of urban change, usually working towards the public good. For instance, in the guise of monitorial citizens (Schudson, 1998) that make use of open data to hold governments accountable (Schrock, 2016); or as coders that take part in programs like Code for America to create apps or websites that can help solve problems posed by local authorities (Townsend, 2013); or alternatively, as participants in hackathons that code more speculative prototypes to spark discussions around issues of concern (Lodato and Disalvo, 2016).

Furthermore, moving beyond the application of technology to civic life, the ethos and spirit of various hacker movements have been invoked to describe new forms of bottom-up, grassroots and collaborative city making. Lydon and Garcia (2015) connect their tactical urbanism paradigm to the iterative, learning-by-doing approach of the hacker movement. Caldwell and Foth (2014) describe the emergence of DIY-placemaking communities around the world, partly inspired by hacking cultures and their ethos of shaping, bending and extending technologies to their needs, often beyond their intended use. In professional circles, Gardner (2015) sees a similar shift in the profession of architecture at large. Architects are moving from the position of “the self-conscious designers of modernism, with its unassailable belief in social engineering” to an ethos of hacking, projecting their imaginations of better futures onto the “full and buzzing activities and structures” of the existing world.

The articulation of civic hacking is especially interesting in this regard. Hacking in these examples refers to the inspiration found in the playful, exploratory, collaborative and sometimes transgressive modes of operation found in various hacker cultures, constructively applied in the context of civics and politics. At the same time, it also connotes the centrality of digital media technologies as tools for mobilisation, communication and civic organisation. As Saad-Sulonen and Horelli (2010) point out, many self-organising civic groups rely on extensive ecologies of digital artefacts, even if their activities themselves are not centred around technology. In addition, the adjective of civic denotes that these activities not only concern societal issues, but should also be understood as taking on a less adversarial position than “regular” activists (or some hacker cultures for that matter) (Hunsinger and Schrock, 2016; Schrock, 2016). Civic hackers are seen as working with – or trying to reform – governments and other institutional actors to address societal issues, such as inequality, community representation, housing affordability and sustainability. The civic hacker, Schrock (2016) writes, seeks “to ease societal suffering by bringing the hidden workings of abstract systems to light and improve their functioning”.

The hackable city: a model for collaborative citymaking in a networked society

It were these “civic hacking” initiatives and the role of digital media technologies and their practices that we further sought to understand in a research project we started after the Deltametropool workshop. In a year-long research trajectory situated in the Amsterdam-based urban living-lab and brownfield redevelopment site of Buiksloterham, we further explored the opportunities as well as the challenges presented by the rise of new media technologies for an open, democratic, collaborative citymaking process. We explored these themes through observations and interviews with stakeholders, workshops, the introduction of

a number of “design probes”, by taking part in various local meetings about the development of the area, as well as through literature study and conceptual explorations. Using a grounded theory approach, we combined the insights gathered through these processes in a “hackable city model”. This model is neither purely descriptive nor prescriptive. It acts as a heuristic that allows us to investigate the dynamics at work in processes of collaborative citymaking, and explore these both constructively (how can they be understood as exemplaries, providing directions for design, policy and practices) as well as critically (what new tensions, conflicts and dilemma’s arise from these new ways of organising citymaking).

The main point we want to underline with our model (Figure 24.1) is that “bottom up” and “top down” should not be regarded as two conflicting modes of citymaking. Nor can the process of citymaking be reduced to just two actors: top-down institutions and bottom-up self-organising citizens. We have found it productive to bring out the level of “collectives” (van Den Berg, 2013). This level consists of groups of citizens and other stakeholders who have organised themselves or are mobilised by a third party that acts on their behalf around a particular theme or issue. It is on the level of the collective that issues are framed, narratives built, agendas set, actions planned and (sometimes) lobbies staged for institutional approval and resources.

Professionals often play a key role at the collective level as initiators and organisers. They have taken on new roles in the process of citymaking as intermediaries, “community orchestrators” (Balestrini *et al.*, 2017) or “urban curators” (Beer *et al.*, 2015). In our mind this involvement doesn’t disqualify these collectives as “faux-bottom-up” or “fake citizen initiatives”. On the contrary, professional involvement and the development of a sustainable value model at the collective level can be a key factor in the success of these initiatives.

Hackable citymaking revolves around the organisation of individuals into collectives, often through or with the aid of digital media platforms. Individuals contribute resources, such as knowledge, time, information or money, and at the same time reap some form of reward, be it social, economic or political, on an individual or communal level.

Our model also shows that these collectives do not operate in a social or legal vacuum. They generally act within legal and democratic frameworks, and often make use of the resources or infrastructure provided by institutions such as local governments or housing

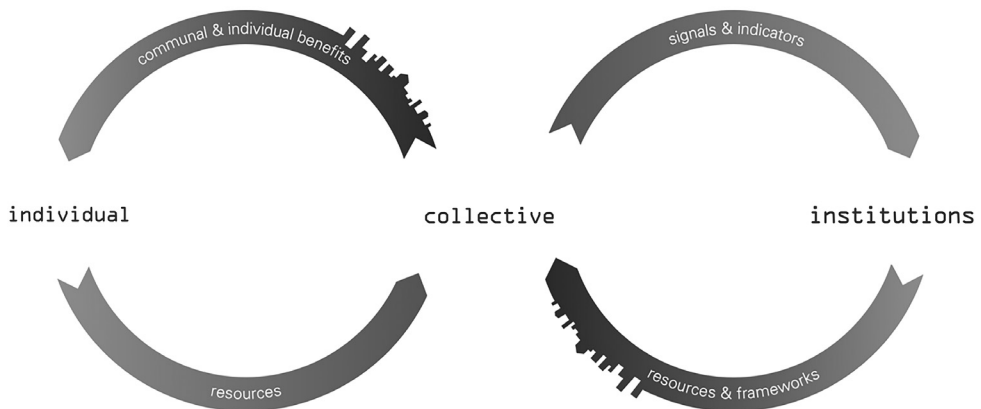


Figure 24.1 The hackable city model for collaborative citymaking

Source: Chapter author(s)

corporations. Often, the goal is to “hack” these infrastructures: to appropriate existing rules or regulations, and to extend or improve upon them.

This raises the issue of the representativeness and legitimacy of these collectives (Tonkens *et al.*, 2015). Collectives will want to argue that their initiatives or “hacks” are justified, for instance by claiming their “rights to the city” or by outlining the public value they produce. Sometimes they will find themselves working in cooperation with these institutions; at other times they may oppose them. Other initiatives may choose to ignore such institutions as much as they can, preferring to build their collectives around alternative social or economic regimes.

From an institutional point of view, within a democratic system the claims of collectives can only be legitimised in a political process in which democratically elected politicians representing the citizenry at large set policy goals and weigh collective and public values against each other. Actors at the institutional level have the responsibility to ensure that hacks serve the public interest, and that essential public services remain inclusive for the public at large. Hackable citymaking makes this relationship between collectives and institutions interactive. How can the city’s governing and administrative institutions learn from these collectives’ initiatives, and when they contribute to public value, adjust their frameworks accordingly? And how can institutions encourage collectives that underwrite the policy goals they have set?

The perspective of individuals: hacking as an ethos

Citizens play an important role in processes of hackable citymaking. Many initiatives are started by citizens, and many projects revolve around the collaboration of citizens in practices of citymaking. In these projects, citizens contribute their skills, insights and resources. In return they can learn new skills, gain access to collective resources, gain social recognition, or receive financial rewards for their contributions.

It is usually a small core group of active citizens or professionals that propel hackable citymaking projects. They are supported by broader groups and networks who make up the larger collective on whose behalf the core group operates. The core group often includes citizens with professional backgrounds related to the theme itself (e.g. energy) or with a background in design, management or communication. These core organisers usually involve larger groups of citizens, and organise various activities to include them in the process, for instance through co-design sessions or other capacity-building activities. Both in our own research as well as in the literature we have seen many initiatives set up knowledge communities in the form of mailing lists, social media groups, wikis or informal meet-ups. Similarly we have encountered various practices that contribute to capacity-building, including co-creation sessions, workshops, design journeys, storytelling or role-playing. Persuasive or serious games can also play a role here (van Den Berg, 2013).

Individual citizens can also be represented by these collectives. Some citizens may support a particular issue, but do not have the time, resources or energy to actually participate. For instance, a local energy collective may take the initiative to collaboratively develop a solar energy plant on the roof of a local school. Not all members need to actively participate in this process, as it will usually take quite an effort and specific technological, financial and legal skills to get the idea off the ground. Some aspects can be outsourced or taken on by a small group of initiators, backed with the (financial) support of a larger group of stakeholders.

The rise of these collaborative citymaking practices can be understood in relation to shifts in the perception of citizenship, that has been summarised as a shift from “dutified” to

“actualising” citizenship (Bennett and Segerberg, 2013; Gordon and Mihailidis, 2016). The former refers to the collective enlistment of citizens in organisations such as churches and unions; the latter can be understood as the organisation of citizens in collectives around issues they are intrinsically motivated for (Levine, 2016). Traditional ways of local community-based organisation of citizens and social capital have given way to the emergence of networked publics (Varnelis, 2008), assemblages of networked individuals (Wellman, 2001) around issues of concern (Foth *et al.*, 2016; de Waal and Dignum, 2017; de Waal *et al.*, 2017). According to Franke *et al.* (2015a), this development should be understood as a reaction to the privatisation of the public domain. As traditional public and civil society organisations have become bureaucratized and more and more market-oriented, citizens try to reclaim the lost ground through commons-based self-organisation around themes such as health, education or public space (Franke *et al.*, 2015a). Faehnle *et al.* (2017) speak of a “self-organisation turn”, in which “active citizens adopt new roles and increasingly ‘shape and make’ their cities through new self-organised forms of action, powered by the internet and social media networking”.

The collectives in our model can be understood as vehicles for this process of what Bennett (Bennett and Segerberg, 2013) has called actualisation: citizens and professionals organising themselves around issues which they are intrinsically motivated to address. Many have pointed out that this form of organising also makes it hard to maintain a sharp distinction between citizens and professionals, as in many cases citizens bring their professional knowledge and skills to their cause, or professionals engage laypeople actively in the process (Boyte and Fretz, 2010).

Simon Franke, Bart Lammers and Arnold Reijndorp (2015a) have shown that many examples of collaborative citymaking can be understood in terms of such a framework of shifting citizenship. Many collectives, they argue, aim to recover ground that was lost in the privatisation of the public domain. As such they can be considered a new addition to a civil society that is taking on a new shape. Civil society itself used to consist of collective activities aimed at emancipation or citizen empowerment in the fields of education, housing or health. Many of these organisations have since become privatised or have become less relevant. Many of the collectives in our model can be understood as new attempts to address these issues in the era of the networked society.

Taken together, and seen through our lens of hackable citymaking, we can frame these shifts as the emergence of a “hacker ethos”: an attitude that is fuelled by do-it-yourself ethics and professional-amateurism in which citizens exchange knowledge – some bring in their professional skills, others their practical everyday life knowledge. They pool resources, exchange knowledge and collaborate towards a commonly defined goal. These activities are further grounded in the motivation to do something “for the love of it”, and/or based on the sensing of an opportunity for public value creation, or a societal need in combination with a sense of responsibility towards an issue of communal concern. This “hacker” ethos can manifest itself at individual and collective levels, and consists of a sense of agency or “ownership” in relation to a particular issue.

The perspective of collectives: hacking as a set of practices

Collaborative citymaking takes shape at the level of the collective. These collectives consist of networked groups of citizens and/or other stakeholders organised around an issue. At the level of the collective, narratives and agendas that propel the project are constructed. Action takes place at this level, and on behalf of the collective, negotiations

with institutional parties are carried out. As such the collective could be understood as a new type of actor, or perhaps better defined as a set of roles that need to be coordinated in order to be effective.

These collectives exist in many forms. Many are started by groups of local citizens. As Mariska van Den Berg (2013) found in her study of citymaking collectives in the Netherlands and Germany, once they have identified an opportunity or an urgent issue, these citizens simply start to organise themselves informally, generally without waiting for formal recognition or approval. Over time such a group can take on a more formal character, or develop into a legal body such as a foundation.

In many cases it is professionals such as designers, architects or researchers who start a hackable city project. This corresponds to a shift in the practices of architects and designers that several authors have signalled. For these offices, design is about the identification of pressing urban issues and the organisation of coalitions around these issues. Ole Bouman (2008) has named this shift the emergence of an “unsolicited architecture”. In many of these projects, architects and designers have started to include citizens and other stakeholders. In her book *Reactivate!* Indira van’t Klooster (2013) has shown how a series of young architectural offices have started to design new procedures of campaigning, crowd-sourcing and crowd-funding to approach citizens as co-creators. According to Edwin Gardner (2015), in such an approach, design practice is focused on programming rather than the design of the built environment. The work of these offices “is almost always proactive and escapes the client-contractor relationship that has traditionally formed the basis of the design practice. They inhabit the overlapping space of the cultural entrepreneur, programmer and designer”. Practitioners in this field have called themselves “community orchestrators” (Balestrini *et al.*, 2017) or “urban curators” (Beer *et al.*, 2015). For instance, Saskia Beer, Sabrina Lindemann and Emilie Vlieger have described themselves as “developers without property”. They see it as their role to explore the potential of urban transition areas, and to engage communities of local stakeholders around the opportunities they have collaboratively identified.

Design researchers Liesbeth Huybrechts and her co-authors (2017) have argued that this shift is related to broader developments, especially the emergence of a so-called “post-Fordist economy”. This term refers to the increasingly flexible and complex relations between various actors and spheres in contemporary society. For instance, work is no longer organised mostly through hierarchical companies that offer jobs for life, with workers organising themselves through unions to act in their interests. Citizens may hold a temporary contract; they may work through an agency; they may find employment as dependent contractors through online platforms; or they may act as freelance entrepreneurs in networks. They may work in an office, but also from home, or in a third place such as local café or co-working space. They will keep their skills updated through courses offered through various organisations, and organise (or fail to organise!) their pensions and health insurance through others. This means that the improvement of working conditions is no longer something that can be promoted simply through the actions of an institution such as a union that can set demands to an employer or to central government. Instead, specific coalitions need to be forged, bringing various stakeholders together around a specific issue in order to address it. In other words, in this vision, many of today’s issues can only be addressed in collectives that are (temporarily) organised around issues.

Seen from the perspective of citizens or of the professionals orchestrating such collectives, we have identified a series of “hackable citymaking” practices and roles. Overall, we have started to use the term “dramaturgy” (Hajer, 2005) to describe the design of local settings and stories and the orchestration of events by which collective action is organised in time

and place. This concerns the design of a compelling and attractive setting that allows various stakeholders to come together and start collaborating and exchanging knowledge and resources in a meaningful way. It is about building a platform (whether online or offline) on which members of the collective can represent themselves and interact with each other.

In the interaction with citizens and other individual stakeholders (on the left-hand side of the scheme), two main roles are of importance. The first is the activation of these parties around the theme and their inclusion in, for instance, trajectories of co-creation. The second is a role we have called “design integration”. This is where professionals can contribute value by adding their specific domain and design expertise; for instance, by integrating ideas that have been brought into a co-creation trajectory in a design that is technologically sound and aesthetically interesting.

The right-hand side of our hackable city model scheme represents interactions between collectives and institutions. On the one hand, collectives will typically engage in activities such as lobbying and assembling evidence for the contributions they are making to the creation of public value. Many hackable city initiatives may engage in activities that aim to bring about a transition in society, for instance in the domain of renewable energy. However, their application may be in a legal grey area, or may even be illegal according to standing legislation. In that sense their activities can literally be understood as hacks: a temporary appropriation of a system beyond its intended use, with the goal of systematic change. This means that their urgency and legitimacy needs to be explained to institutions, as well as being demonstrated by defining indicators and collecting both qualitative and quantitative evidence that their hacks are producing public value.

These consist of practices that Huybrechts *et al.* (2017) have called “institutioning”: collective activities take place in various forms of collaboration with, and in opposition to, existing institutional frameworks. Neither the collectives nor these institutions are stable entities, and their purposes and logic may shift or be remade through these interactions. In the course of these interactions, the actions of collectives may actively change the institutions and their frameworks. It should however be noted that not all hackable city initiatives are particularly interested in maintaining relations with traditional institutions. Some of them present themselves as autonomous, and strive to build alternative economic and social models that are not compatible with dominant regimes.

Finally, these collectives need a value or business model in order to thrive. Various options are available: institutional subsidies in exchange for public value creation, crowd-funding, or the design of exchange platforms that administer contributions of various kinds as well as the consumption of collective resources. Some projects are just temporary “hacks” and dissolve after a while. Others would want to adopt a strategy of either “formatising” or “formalising”. “Formatising” means that they aim to translate the lessons learned into a “format” or “toolbox” that other organisations could apply to comparable situations in other localities. “Formalising” means that projects will try to find ways to sustain themselves over time by institutionalising themselves, either as independent organisations or as spin-offs that could be adapted by an existing institution. Here, project initiators need to think of themselves as “social” or “civic entrepreneurs” who are inventing new business models around collective action; alternatively, institutions can make funding available to collectives that contribute to public value creation. Both directions have proved hard to get off the ground (Franke *et al.*, 2015a)

For hackable citymaking to be sustainable over time, new financial arrangements for the production of public value are clearly needed. How should civic hacks that contribute to public value be rewarded? If citizens or professionals take initiatives on behalf of a larger group of citizens, and in the interest of the public at large, can we devise new models to remunerate these

efforts? A commons-based or public value approach to citymaking does not mean that everyone should work for free, and that there is no business model; rather, in a hackable city, reward systems and value models exist that foster contributions to public value and stimulate stewardship of the commons. The search for sustainable business models that produce both social and economic value is key to the instantiation of hackable citymaking.

The institutional perspective: the “hackability” of the city

Various institutions at national and local levels have – at least on paper – shown an interest in engaging with hackable citymaking collectives, and there are various ways to describe the perspectives of institutions. First of all, institutions can play a role as the initiators of collaborative citymaking projects. So far, most of our attention has been devoted to citizens – often also bringing in their professional backgrounds – who initiate collective projects. But there are also many examples of institutions that have themselves taken the initiative for collective action. Governments around the world have organised open calls around set issues that were opened up to collectives, and cultural institutions in particular have a long track record of organising “dramaturgies” that activate citizens in collectives around particular issues (Knoop and Schwarz, 2017). Likewise, institutions have always functioned as centres of expertise, with professional experts working as civil servants in various departments as well as in specialised institutions such as libraries, archives and institutes for education and research. The expertise and resources they have can be extremely useful in processes of hackable citymaking. Conversely, new opportunities have also emerged for these institutions to capture or further operationalise the knowledge produced in hackable citymaking collectives. When proven successful or urgent, particular collective initiatives can also be incorporated into institutional frameworks.

Over the last few years a number of actors have set out to construct visions and frameworks that allow the further theorisation or shaping of the interaction between traditional institutions and the more volatile, informal, interdisciplinary network-shaped field of collectives we have described here (Foth, 2017a). How can these two fields, each with its own logic, formal responsibilities, rules and ways of doing and thinking, be better aligned? How could collectives play a more active role in public value creation, and how could traditional institutions become more responsive to them?

The frameworks of the “energetic society” (Hajer, 2011) and the “spontaneous city” (Buitelaar *et al.*, 2012), for instance, have explored this direction, arguing for a local or national government that sets the larger policy frameworks, for instance working towards an energy transition. To realise this agenda it is argued, it should make use of the “energy” found in the various collectives already dealing with this theme, and provide frameworks and resources for them to contribute to these goals. Likewise, in a “spontaneous city” urban areas should be developed “spontaneously”, where again the government sets up the overall frameworks while various collectives play a role in the actual development of a neighbourhood. It is cities’ capacity for innovation that could be extremely useful in the search for solutions to the serious problems, large and small, we are to address, contributing to the resilience of cities. To illustrate this point Potjer *et al.* (2018) refer to a study by Bulkeley and Cástan Broto (2013). Their research showed that at the strategic level of urban policy, they found hardly any comprehensive plans to address climate problems. However, when they explored local initiatives in 100 cities across the world, they found 637 different experiments addressing the challenge. Cities would do well to foster these experiments, find ways to recognise the successful ones and help them to become more successful. In his book *Veranderstad* (2015), Gert-Joost Peek makes a similar argument. In order

to increase the capacity of social, economic and ecological systems to adapt to sudden stresses or gradual shifts in trends, it is imperative to involve local communities and their capacities for innovation and self-organisation at the centre of urban development.

In our scheme, this means that governments should set out a vision and translate that vision into infrastructures and frameworks that invite and enable collectives to operate on them. This vision identifies a strong role for national and local institutions as the actors that define societal visions and establish which public values should be put on the agenda. Similarly, these institutions should develop tools to closely monitor and understand the goals, directions and values at stake in the collectives, and use these tools to inform visions, their translation into policies and the execution of policy frameworks. A more participatory society in this vision does not necessarily mean a government that retreats, but rather one that redefines its role in relation to other societal actors.

A related vision is found in *The Responsive City*. In this book, Goldsmith and Crawford (2014) argue that governments need to change the ways they work. The authors challenge them to start making use of digital media and data technologies to become more responsive to the needs of society. For example, governments could make use of all kinds of data to monitor citizens' collectives and anticipate or capitalise on their efforts if they match up with policy goals. Such an approach, the authors claim, could help to bring about an institutional shift away from compliance and towards a focus on results, giving civic servants leeway to deviate from standard procedures when an argument could be made that a particular intervention would contribute to public value creation or to the realisation of policy goals. Governments themselves could also build tools and platforms that allowed citizens and collectives to interact with them in new ways. Governments could also make available various resources that collectives could use in their own projects. The provision of open data could be an example of this, although the authors argue that simply making data available is usually not enough. Data need to be offered in ways that make it understandable and actionable.

To a large extent, a hackable city perspective is congruent with these views, albeit that a responsive city framework could be critiqued for its, at times, overtly rationalist and positivist trust in technology and data as enablers of better relations between citizens, collectives and institutions. Having said that, it can be understood as a call for legitimate institutions to develop a vision for the city or nation at large, and to open up the formation and realisation of these visions to hackable citymaking collectives. On the one hand, the activities of these collectives can inform policy; on the other, institutions should use these frameworks to support the activities of the collectives.

In practice, the transition to such a hackable city model has proven difficult. One of the reasons for this is that institutions and collectives do not always share the same agenda. In their rhetoric surrounding participatory societies, institutions at times express a vision that revolves around activating citizens to carry out their policy goals, or to take over some of their tasks. The real-world dynamic between citizens and institutions is clearly more complicated than this. As we have explained above, citizens do not necessarily act out of a sense of duty, but rather from an intrinsic motivation. This means that citizens are not always interested in taking over the goals and tasks set out by local institutions. Rather, they are looking for ways in which local institutions can help them to realise their own goals (van Den Berg, 2013).

Another issue is the mismatch between the logic of institutions and the modes of operation of collectives. Many civic initiatives spring from what we have called a "hacker's ethos". They just start to address the issues they care about in a DIY approach, and are not very interested in engaging in extensive procurement processes (Beunderman, 2015). Governments often find it difficult to deal with the open-ended approach of many hackable city initiatives. Governments

are also looking for processes that are risk averse, with steady and predictable outcomes. There is an obvious rationale for this: governments need to protect their citizens and act as reliable partners. However, the learning-by-doing approach of hackable citymaking is not a good match with the formal working methods of many institutions. This is why Goldsmith and Crawford (2014) argue that procurement procedures need to change. Rather than the high level of detail required in current calls that narrowly describe all facets of a particular product or process, governments should state the desired outcomes and leave the exact execution process more open.

Research by Joost Beunderman (2015) has also shown that regulation around the big society ideal in the United Kingdom has not produced many opportunities for hackable citymaking collectives. Opportunities such as the right to challenge or the right to bid – regulations that in theory allow citizen groups to challenge or bid on government provisions and propose alternative models for the organisation of public services – have mainly been seized by private outsourcing companies rather than civic initiatives. One of the reasons for this is that governments find it easier to deal with large subcontractors rather than with a broad variety of local initiatives.

In a similar vein, Mariska van Den Berg (2013) has shown that the instruments that governments do possess seem to be poorly adjusted to collectives. Firstly, many of these collectives get their finances from funding in arts, culture and design. Budget cuts in these domains make it harder for professionals to apply for this form of funding to sustain hackable citymaking practices. At the same time, the funding that is available for community projects is often targeted at hyper-local short-term interventions such as the organisation of neighbourhood barbecues. It would appear that governments have so far not fully recognised collectives as a new type of actor. Once professionals are involved, however, these initiatives are no longer considered as being “bottom up”. What is needed here, according to Van den Berg, is a new approach that could be called “public-collective partnerships”. Local governments should recognise collectives for their innovative capacity and potential to create public value, and look for new ways to engage them.

Looking at these issues at the institutional level through our lens of the hackable city, the notion of “hackability” is a useful one. Whereas a hacker’s ethos and praxis describe the will, capacity and actual activities through which various actors have engaged in examples of collaborative citymaking, the notion of “hackability” shifts attention to the system that is to be hacked. To what extent are local institutions, their procedures and informal ways of operating, welcoming or even inviting to contributions from (citizen’s) collectives? Cities can be ecosystems for innovation, yet the extent to which this potential is actually realised is partly influenced by institutional policy. City governments may or may not set all kinds of legal rules that either facilitate or prohibit the appropriation of urban infrastructures.

Is it possible to experiment with alternative energy systems at a collective level? Is this encouraged through policies and/or resources? Or is it actually very difficult to navigate the legal procedures that protect established order? In effect, as our evaluation above shows, institutions need to find new ways to interact with the open-ended “messiness” of hackable city initiatives in a process of continual exchange, yet at the same time they need to safeguard public values. This has so far proven a difficult proposition. Although there is no lack of vision on how to make cities more “hackable” and on why it might be important to do so, there is still little experience or knowledge about how exactly this could be achieved. As we have seen, to embrace the ideal of the hackable city, much more experimenting and learning are needed at the institutional level and at the interface between the institutional and the collective levels.

Hacking as a critical lens

The hackable city model can thus be used to map dynamics and conflicts between various players and their logics. It can also be used to identify concrete practices – dramaturgies – and new roles and relationships that emerge. At the same time, the notion of the hackable city could also be used to take a critical view on some of the developments described above. Various criticisms have pointed out that there is also a risk involved in the rhetoric of participation at the heart of the hacker's ethos: the risk of “responsibilisation” (Iverson, 2011), befitting a broader neoliberal trend of the dismantlement of the welfare state. Rather than making societies more democratic, it could lead to a situation in which governments step back from their duties to safeguard public values, outsourcing the management and responsibility of essential public provisions to civic initiatives (Thomas *et al.*, 2016), whereas the citizens that are most apt to take on these challenges are those that are highly educated and already well connected with local institutions (Tonkens *et al.*, 2015). Similarly, in a recent publication about precarious labour, well-known critical urban sociologist Sharon Zukin criticises hackathons – a format through which citizens are enlisted for collective action, sometimes by institutions – for being a form of labour extraction and exploitation (Zukin and Papadantonakis, 2017), echoing similar arguments made by others (e.g. Terranova, 2000; Gregg, 2015). 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).

In addition, one could question the legitimacy of these civic initiatives. As Hill (2016) has posed, they may be social, but are they democratic? These collectives may claim their “rights to the city”, (Lefebvre, 1996; Mitchell, 2003; Harvey, 2008; Foth *et al.*, 2015) but whose rights are they exercising exactly? After all, Thomas *et al.* argue that the right to the city is a collective one, rather than an individual one, that should be incorporated in “the collective exercising of power in the processes of urbanization” (Thomas *et al.*, 2016). Furthermore, various authors have argued that it would be naïve to expect that self-organisation would automatically lead to positive outcomes. On the contrary, open systems, Rantanen and Faehnle (2007) write, are always vulnerable to misconduct and manipulation.

What these valuable criticisms demonstrate is the conflation of two discussions and fields of study around civic hacking. On the one hand, hacking as we have described it here is both a practice and set of affordances that can be studied empirically and critically as “community of practices”. On the other hand, the notion of a hackable city brings out a normative debate about democratic governance and civil society in the network or platform society, producing imaginaries that have become performative in social organisation, political debates and policy.

Research into the hackable city has started to combine these formerly separate domains. As Kitchin (2016) has argued, the risk of normative debates is that academics maintain their ivory tower positions, referring to the perils of dominant smart city imaginaries while these work their ways into society at high speed. “Critical scholars”, he argues, “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”. That does not mean that critique is not valuable.

On the contrary, as Morozov and Bria (2018) state, constant ideological and intellectual work is needed to think through the application of new technologies in society in relation to power and their implications for democratic governance. Yet, being critical is not enough. The rapid application of technologies in society requires that researchers put their

principles into action and contribute to their translation “into practical and political outcomes” (Kitchin, 2016). In this line of thinking, Foth and Brynskov have suggested “participatory action research” as an “indispensable component in the journey to develop new governance infrastructures and practices for civic engagement” (Foth and Brynskov, 2016). The lens of the hackable city can serve as a critical reminder for these methods. It underpins both ethos and praxis: normative discussions about principles and value systems of urban governance, as well as practices to discuss and shape these principles in collaborative ways and take on a learning-by-doing and iterative approach in their implementation, including cycles of critical appraisal to see whether indeed these interventions live up to the goals and expectations.

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