Unpacking the Smart City Through the Lens of the Right to the City: A Taxonomy as a Way Forward in Participatory City-Making

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Abstract Henri Lefebvre's urgent utopia of right to the city to achieve a new form of urban governance that moves beyond both capitalism and state bureaucracy seems timely with the increasing critiques of how techno-centric, top-down and corporate-driven smart cities are ill-equipped to deliver their promised civic, economic and political benefits. The exploration of the smart city through Lefebvre's lens enables the reconceptualisation of the emerging notion of participatory city-making as a translation of the right to the city into practice. This chapter seeks, thus, to further unpack the concept of participatory city-making and, by linking it to operational concepts and proposing a taxonomy for the classification of initiatives that shape the city, clear a path forward towards systemic change.

Keywords Participatory city-making · Right to the city
Participatory action research · Hacker ethic · Civic engagement · Smart city
Human smart city · Urban informatics

1 Introduction

At a time when voices are increasingly raised on how the techno-centric, top-down smart city vision is flawed and cannot deliver the civic or economic benefits promised, partly also because it is driven by large corporations not attuned to the "messy, disruptive way people use technology" (Hemment and Townsend 2013), revisiting Lefebvre's radical concept on the right to the city to achieve a new form of urban governance that moves beyond both capitalism and the state seems timely.

The exploration of the smart city through Lefebvre's lens enables the reconceptualisation of the emerging notion of participatory city-making as a translation of the right to the city into practice. This chapter seeks thus to further unpack the concept of

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participatory city-making and, by linking it to operational concepts and proposing a taxonomy for the classification of initiatives that shape the city, clear a path forward towards systemic change.

It first presents a critique of the smart city discourse and its evolution towards embracing people-centricity. Along the way, it highlights key prerequisites for the emergence of a new sense of ownership of a city where its residents are active agents of change, before turning to using Lefebvre's (1996) *right to the city* as a key concept to understand and elaborate on the notion of *participatory city-making*. Subsequently, it further unpacks this notion, proposing understanding it as a participatory process governed by procedural and essential principles, that are also discussed in depth. It then turns to the more practical requirements and tools that can assist in implementing participatory city-making. Finally, it draws upon previous reviews of relevant initiatives to propose a taxonomy of participatory city-making initiatives, which not only allows for a snapshot of the city-making ecosystem and the extraction of best practices for a way forward, but also for the observation of its evolution over time and identification of trends and their coherence with Lefebvre's transformative idea.

2 From Smart City to Human Smart City

In academic literature, one of the earliest usages of the term *smart city* describes a city where urban planning and development turns towards technology, innovation and globalisation (Gibson et al. 1992). Coining of the term came about in the context of the emerging information or knowledge economy and the exploration of the role of metropolitan areas within it. With predecessors and contemporaries such as the *information city* (Hepworth 1987), the *technopolis* (Smilor et al. 1989) and the *intelligent city* (Heng and Low 1993), in essence these city concepts revolved around interactively linking "technology commercialisation with the public and private sectors to spur economic development and promote technology diversification" (Smilor et al. 1989, p. xiii), where local governments would strategically deploy the emerging networking and data transmission and storage technologies towards this goal (Hepworth 1987). Singapore has been an early adopter of the technopolis strategy (Heng and Low 1993).

An aspect that has been traditionally neglected in favour of understanding technology and policy aspects, despite being crucial, is the topic of people and communities in smart cities. This includes addressing digital divides, accessibility, participation and partnership, education and quality of life (Chourabi et al. 2012). While designing smart cities to benefit people, rather than abstract concepts like economic growth is a step forward, scholars highlight the missed opportunity of making precisely these people part of the solution to the challenges faced. People with agency are the "smart" in the human social or sociable city (Foth et al. 2011; Ratti and Townsend 2011; de Lange and de Waal 2013; Oliveira and Campolargo 2015; Mulder 2014).

Beyond the criticism related to the weakening of privacy protection and evolution towards total surveillance—the *panoptic city*, as Kitchin (2014) puts it, further

significant concerns have been raised. As Hollands (2008) summarises, these range from difficulties with the definition and actual components of "smart" cities, to social divide, inequality and the challenge of balancing sustainability and business goals. Specifically criticising the u-City (Hwang 2009), de Waal (2011) notes that personalised and context-aware systems address citizens as individual customers, when modern technology should treat them as citizens. He warns of a potential shift of the relations between citizens and city, leading to people becoming consumers indifferent to their civic rights or duties, and ultimately also altering the relationship they have with each other. This risk of passivity increases through what Crang and Graham call *anticipatory technologies* that provide users with a predefined set of alternative actions, or even create "delegated agency" to "pacify" the user (Crang and Graham 2007).

The discourse around top-down, centralised smart cities has not only begun to shift on a scholarly level, but increasingly we find initiatives of local governments taking a step forward to open up the aptly coined "city in a box" (Shepard and Simeti 2013). Cities such as members of the international Open and Agile Smart Cities network commit to develop and implement open standards and open access to city data driven by implementation, by concrete use cases. Open standards and open access create opportunities for bottom-up and grassroots initiatives, such as not-for-profits and individuals, to plug their own technologies into the city. This places the *smart citizen* centre stage, as Breuer et al. (2014) argue, and Capdevila and Zarlenga (2015) eloquently illustrate with concrete examples from Barcelona.

Although also containing the marketing-loaded word "smart" (Nam and Pardo 2011), and in spite of being inclusive of approaches that heavily rely on the skilful use of open data and digital technologies (e.g. smartphones, prototyping platforms such as Arduino or Raspberry Pi), the smart citizen movement goes beyond. It is rather about people engaging with their local environment, urban planning, policy and development processes (Shepard and Simeti 2013). Technology then takes on not only the role of means to an end to relieve social, economic, educational and other imbalances as well as other forms of malfunctioning that grassroots initiatives traditionally try to tackle but can be deployed towards the higher level of reshaping the process of addressing these challenges itself.

Achieving fundamental change in the way urban issues are tackled, de Lange (2013) suggests, can only occur when we rethink how technology integrates with the social fabric. He currently sees it deployed as "plugins" for "the continuation of normalcy and sameness". It should, instead of blending in with everyday life, be profoundly political and move people, and, in turn, enable them to move others. As also suggested by Greenfield (2013), the same technologies can be deployed to go beyond providing "sterile 'solutions'" to pose questions and raise issues of equity, power and access.

De Lange and de Waal (2012) point out that achieving what they call the *social city* is essentially about redefining the ownership of the city to "a sense of responsibility for shared issues and […] taking action on these matters"—an inclusive, collective and participatory ownership, not its proprietary sibling inherent to top-down governance.

This new kind of ownership of the city has two dimensions: first, the *willingness* to act upon an issue that affects the collective, and second, the *right* to do so. The right to act requires changes in regulation towards policies that do not force citizens to operate in grey areas or even within the sphere of the illegal. Ito argues that, in the developed world, the barrier to urban innovation is not lack of funding, but the lack of permission, suggesting local governments either be supportive, or reduce their level of control (Tischler 2013). The willingness to act is strongly tied to motivation. In his framework, the *affective smart city*, de Lange (2013) proposes to build smart city interventions around "people's emotional attachment, or lack thereof, to shared urban issues". By directly addressing issues that move urban residents and acknowledging these feelings, such interventions nurture citizens' willingness to act.

However, in order to be able to exercise the rights that come with this ownership, a *third* dimension seems crucial: the *ability* to act upon an issue. Without having the necessary resources, obtaining tangible results is difficult, no matter how motivated the citizen is and that the law grants him permission. Particularly in a context where aspects of urban life are increasingly permeated by technology, lack of digital literacy can be considered a key factor leading to exclusion from the process of active engagement. Chourabi et al. (2012) identify "digital divide(s)" as one of the key factors related to people and community that must be addressed by smart cities, based on their review of existing smart city definitions.

Grassroots movements fuelled by this new kind of ownership of the city not only face challenges in terms of scalability and achieving longevity and bigger impact (Breuer et al. 2014), but are commonly treated as a nuisance (Hollands 2008) and initiators perceived as a threat or trouble-makers by local government, as their goals may conflict with wider city strategies or even be illegal. Models of governance of zero tolerance towards minor infractions manage to stifle and overcriminalise this kind of interventions. Douglas (2014) provides a notable overview of the discourse on DIY urban design in academic literature, highlighting that even in the academic discourse these individuals are met with scepticism.

This makes evident their power struggle not only with government, but with the capitalist system, the commodification of urban life and the marginalisation and displacement it inherently brings with it. At its core, what we are witnessing through these initiatives is citizens claiming their *right to the city*, what Lefebvre (1996) describes as the "demand…[for] a transformed and renewed access to urban life". Harvey (2008) criticises that this right, defined not only by individual access to public resources, but rather as the right to collectively reshape the process of urbanisation itself, is currently reserved for a small political and economic elite, who can at will shape the city to its own benefit. He argues that the right to the city is "one of the most precious yet most neglected of our human rights", as it ultimately gives us the freedom to change ourselves by changing the city. Our experience from interacting with its tangible and intangible environment have a deep effect on shaping who we are, as well as the web of social relations in which we are embedded.

3 The Smart City Through the Lens of Lefebvre's Right to the City

In one of the last essays before his death, Lefebvre (2014) criticises the increasingly technocratic and bureaucratic approaches to shaping the city. He laments the deterioration of social relations, as well as of the urban as conceived and lived social practice.

The year 2016 has seen significant social and political polarisation. This is a powerful reminder of those who have been left behind in the frantic competition for innovation and economic growth. As of 2018, inequality is one of the four most dangerous global risk factors according to the World Economic Forum (2018). Voorheis et al. (2015) demonstrate how rising inequality increases political polarisation and leads to rightward shifts in political governance.

The rise of the creative class and the competition to innovate between cities has led to an urban crisis (Florida 2017), a global and regional struggle of the have-not cities to compete with the ones perpetually attracting wealth and people in a self-reinforcing loop. What Lefebvre lamented in this essay is arguably exacerbated in today's cities, not lastly through their hyperconnected nature, a network of both people and "things" as part of the Internet of things.

As argued by Hollands (2008) and Kitchin (2014), there is further need to deconstruct the term smart city towards an understanding that addresses deep-rooted structural problems with a prospect of systemic change.

The smart city seen through a Lefebvrian lens could serve as a deconstruction of the smart city, where technology and information is used and produced by its residents as a tool to exert their right to the city and/or is the product of these rights having been exercised. This discourse is people-centric, embracing the idea that citizens hold valuable tacit knowledge about their physical and social space collected from their lived experiences (Foth and Brynskov 2016), legitimising the right to self-management, a right that is inextricably embedded in the right to the city (Purcell 2014).

Lefebvre's concept is calling for two fundamental rights: the right to *appropriate* urban space and more importantly the right to *shape the process* of urbanisation itself (Lefebvre 1996; Harvey 2008). As part of applying this lens, Purcell (2016) stresses, it is crucial to understand it in its original, radical form, deeply rooted in Marxist humanism. Over time, the concept has been dilated to mean "everything and nothing" (Purcell 2014). While Purcell recognises the need of multiple formulations, he also emphasises that these formulations require specificity, as well as transparent political content. The striking contrast that emerges from comparing Purcell's (2014) exemplary liberal-democratic interpretation of the right to the city to the comprehensive one he situates within Lefebvre's larger body of work stands testimony to how strongly contemporary interpretations have drifted away from the most defining pillars of the original concept: self-management and self-organisation under conditions of prioritising use value over exchange value and the rejection of the notion of property rights (Purcell 2014). This implies a restructuring of urban space and

processes in response to the social, economic and cultural needs of people, rather than according to the needs of capital (Smith 1979).

Lefebvre conceptualised the right to the city not as mere addition to existing liberal-democratic rights. Instead, the concept is geared towards what might be labelled a form of "gradual revolution", a wider political struggle to "move *beyond* both [the institution of] the state and capitalism" (Purcell 2014) and radically change not only cities, but society as a whole. This gradual revolution would be fuelled by self-management, by the city's inhabitants increasingly actively and voluntarily taking over decisions and tasks traditionally reserved to the urban elite. Instead of exclusively relying on confrontation, as city-related tasks would increasingly be taken over by the majority of city inhabitants, the political-economic apparatus, its structures and its representatives would become redundant and gradually dissolve into the broader citizenship (Purcell 2014). Yet this kind of citizenship would require a radical redefinition that re-associates the act of inhabiting the city with citizenship, two entities currently dissociated (Lefebvre 2014) as a consequence of the narrow definition of citizenship as appurtenance to a country in a globalised world.

What could this citizenship that would allow the citizen a right to the city then look like, and thus whose right would it be? The key to a possible reconceptualisation may lie in exploring Lefebvre's call to revive grassroots democracy and the more philosophical associative life—la *vie associative* (Lefebvre 2014). Grassroots democracy places as much decision-making authority as practical on the lowest geographical and social levels of the group, while at the same time creating the prerequisites for the ability of all individuals to participate. The associative life describes the voluntary coming together of individuals or groups to serve a common purpose, requiring the willingness and the motivation to associate. Citizenship (and the right to the city) then would become something one voluntarily claims. However, the level of influence is weighed in reverse-hierarchical social and geographical order, placing the power in the hands of the people of the lowest social level as well as of those living geographically closest. A definition of citizenship thus reconnects the individual with the geographic proximity and their belonging to the broad mass of the population of that given geographic location. Such a definition transcends nationality, origin, cultural background, gender and a myriad of other factors of diversity, encouraging exchange, learning and mutual exploration. And it lies at the core of Lefebvre's vision of reviving the urban as a lived collective social experience as part of the right to the city.

In the context of the smart city or digital city, Lefebvre's idea is not confined to the right to simply access the smart city, information, its data, the right to use services or technology, but as the right to both produce, manage, and *own* all of these as part of an act of political and economic empowerment that is geared primarily towards the collective benefit and the strengthening of social relations.

In today's cities, where technology increasingly permeates cities both through physical deployment, for instance of IoT (Internet of things) devices, as well as by being linked conceptually to their virtual, abstract representations, such as online digital maps, the right to appropriate urban space evolves to include the appropriation of the hybrid space, and implicitly of the digital space included in it. Inadvertently, this

includes the access and manipulation of the information underpinning these hybrid and digital spaces, Lefebvre's complementary call for the "right to information" (Lefebvre 1990; Shaw and Graham 2017). Shaw and Graham (2017) explore the reproduction of power through code, content and control of urban information by informational monopolies that produce abstract space through their technologies, taking the example of Google. They conclude that Lefebvre's original separation of the right to the city and the right to information is rendered problematic by the dependence of virtual urban spaces on the flow of digital information.

The struggles required for the reconfiguration of power dynamics in cities, previously primarily involving citizens and governments, have now expanded to include global IT corporations. Power is even more concentrated when governments employ soft- and hardware from global technology purveyors, such as IBMs for city management, where obscure, protected algorithms are consulted by city officials to inform decisions on how infrastructure, space and services are to be designed and delivered. To whose advantage or detriment? Who makes this decision in the first place? "Technology is never neutral, it has the potential and capacity to be used socially and politically for quite different purposes" (Williams 1983; Calzada and Cobo 2015). Lefebvre's now unified right to the city and right to information go well beyond the simple right to access the information—or results—produced by these systems. They not only require transparency about the algorithms themselves, and, with the increasing usage of machine learning, about the kind of information used to train these new technologies. Instead, they imply that citizens should be in charge of their conceptualisation and the decision-making processes involved.

On the smart city level, Lefebvre's revolutionary idea includes the gradual reclaiming of urban technology from corporations to shared ownership by citizens, taking over the production and management of these technologies and thus incrementally working towards the withering away of technology monopolies.

In this new light, how does systemic change—the process through which the current system becomes a different system—connect with Lefebvre's right to the city? The right to the city is an open, ongoing project that fosters self-management and striving beyond the commodification of all aspects of urban life, yet whose outcomes cannot be fully known. Instead, it can be seen as a cascade of outcomes, each triggering the creation of a new outcome, closer to an alternative form of urban life, a form that itself is under constant reimagination. It is an ongoing democratic project of being "willing to imagine and demand a possible world, even if that world is impossible under the conditions that exist now" (Purcell 2014).

How might we go about putting this democratic project into practice? What would the mechanism underpinning it look like, and what existing tools can we rely on? And last but not least, where might the roles and opportunities for technology herein lie?

The emerging notion of *participatory city-making* seems suitable to be further shaped towards a mechanism consisting of methods, tools and principles that implements the right to the city and grounds it in practice.

4 Participatory City-Making as the Right to the City in Practice

The first logical connections between the term "participatory" and city-making appear to have emerged in 2014 in the Netherlands in the field of urban design, with the similarly new terminology of "collective city-making" as an intermediary (Tan 2014). Tan (2014) discusses citizen participation in the context of self-organising cities, elaborating on the evolution and nature of towns that had concrete outcomes with regards to moving towards Lefebvre's concept: Gulensu in Turkey and the Dutch town Almere Haven. Further on, she proposes a set of properties of a new method for self-organising urban processes: multi-agency, open communication, collaboration, simple dynamic rules, incremental evolution, constant learning and a generative character. Finally, she proposes gaming—structured forms of playing—as a method for collaborative city-making (Tan 2014). A direct continuation of this idea can be identified together with one of the first occurrences of participatory city-making as a concatenation of the two terms in de Lange's exploration of the playful smart city (de Lange 2015). While it does create an explicit link between participatory city-making and the smart citizen, it makes no explicit reference to a particular mode of governance. In the same year, Mulder calls for a "new paradigm in city-making, which combines top-down public management with bottom-up social innovation to reach meaningful design", which she further distils into participatory city-making in the context of a sociable smart city (Mulder 2015a, b). Thus, these three early conceptualisations can be placed along a spectrum ranging from self-governance to multi-purpose and finally to a progress of negotiating power between the parties within the existing system and structures.

It may appear of no surprise that participatory city-making emerged within the urban design field, as the preceding *participatory design* is a well-suited point of departure. It describes a design process and research methodology, grounded in *action research* that originated in Scandinavia in the 1970s. It attempts to actively involve all relevant stakeholders in order to obtain a result that best meets the needs of its users (Spinuzzi 2005; Schuler and Namioka 1993). The clear distinction from *user-centred design* consists in research and design conducted *with* stakeholders, as opposed to *on behalf* of them (Iivari 2004). Participatory design attempts to tap into the "traditional, tacit and often invisible" types of knowledge of *knowing by doing* (Spinuzzi 2005). In this context, participatory city-making seems a legitimate approach, considering the "wealth of knowledge, wisdom and experiences collectively and privately held by each urbanite (Foth and Brynskov 2016).

Participatory design is coordinated by a superior entity, such as a researcher, an institution or a company that guides the process according to its methods (Spinuzzi 2005; Schuler and Namioka 1993). This line cannot clearly be drawn for participatory city-making, as there is no formal answer with regard to coordination yet—mediated stakeholder negotiation that includes the current bureaucratic structures, as Lefebvre would call them, or self-organisation?

In concordance with the initial aim of exploring the smart city through Lefebvre's lens, participatory city-making is inextricably linked with self-organisation, or what Lefebvre would call "autogestion". Participatory city-making as a form of power negotiation within the current structures would defy Lefebvre's radical idea, instead acting only as an incremental addition to liberal-democratic rights rather than a pathway to an inherently different system.

Purcell's (2014) conclusion that the right to the city is not an ideal utopianism and thus not describing a desired final state to be achieved, but rather sits in between ideal utopianism and reality as an urgent utopia provides a basis to further unpack a Lefebvrian participatory city-making, coherent with Tan's (2014) ideas. Lefebvre describes the urgent utopia as a "rigorous form of utopian thinking that demands constant feedback between its ideals and empirical observations" (Purcell 2014; Lefebvre 1996). This translates into a necessity for it to be governed by strong principles, both procedural and essential, that ensure the permeability of the process for new contributors and contributions on the one hand, and a coherent way forward on the other.

Foth and Brynskov (2016) propose *participatory action research* for civic engagement as an "indispensable component in the journey to develop new governance infrastructures and practices for civic engagement". This cyclic method, organised around phases of *planning*, *acting*, *observing* and *reflecting* and reinforcing a *collective* inquiry in all phases, can not only be used to gather insights to develop such final outcomes, but, applied continuously, to direct an ongoing process. It thus seems to provide appropriate procedural principles for participatory city-making, offering the necessary theories and methods (Chevalier and Buckles 2013) to systematise the process and ensure the rigour Lefebvre expects incorporated in an urgent utopia. We would then see a multitude of these cycles coexisting, each in its own phase, due to the decentralised nature of participatory city-making.

With the increase of prominence of the commons (Ostrom 2015; Cox 1985; Feeny et al. 1990), open licensing models, open-source software as well as open standards, data and interfaces, we observe a current that embraces the so-called hacker ethic, a set of moral values and the philosophy of individuals seeking to overcome the limitations of computer systems in playful, explorative and meaningful ways. These principles are built around *sharing*, *openness*, *decentralisation*, *free access to computers* and *world improvement* (Levy 2010). The core ideas, subject to continuous revision through the procedural principles delivered by participatory action research, could well function as the essential principles of participatory city-making. While the hacker movement's claims of strong influence from Weber's (2002) writing on the protestant work ethic and the spirit of capitalism (Himanen et al. 2001) may appear as a fundamental contradiction to Lefebvre's vision of going *beyond* capitalism, a more thorough examination reveals that there actually are significant consistencies, arguably more than with Weber's ideas. As Torvalds outlines in his prologue as Linus's Law and the book proceeds to further elaborate, the hacker movement is about survival, social life and entertainment, a sequence that describes progress. Ultimately, hacking is meant to be a joyous undertaking (Himanen et al. 2001) This is in perfect harmony with the revitalisation of social relations and the city as

oeuvre, as a masterpiece of playful and enjoyable interactions that Lefebvre (1996) envisions. Similarly, sharing, free access and world improvement are nothing less than a concrete articulation of prioritising use value over exchange value, and quite contradictory to notions of capitalism.

Due to the decentralised nature of participatory city-making, the reinforcement and application of these procedural and essential principles would be the product of participatory city-making itself. As its contributors join the movement entirely voluntarily, by conviction that it is the desirable way forward, they implement these principles within themselves and keep other contributors accountable, while themselves being held responsible by others.

5 Tools for Participatory City-Making

With a conceptual framework of participatory city-making at hand, the question arises of what concrete tools can be used to support it. We can attempt to identify an initial set by returning to the three prerequisites of a collective ownership of the city outlined at the beginning—citizen's *willingness*, *ability* and *right* to act, which are also fundamental to the translation of Lefebvre's right to the city into practice.

5.1 The Willingness to Act and the Associative Life

The willingness to act is strongly tied to motivation and its manifestation results in *civic engagement*, where the individual, the citizen, is the primary actor. Civic engagement refers to the attempt to "make a difference in the civic life of our communities and developing the combination of knowledge, skills, values and motivation to make that difference. It means promoting the quality of life in a community, through both political and non-political processes" (Ehrlich 2000). Notably, it is not only actions such as being members of a community association, voting or going to city council meetings that civic engagement consists of, but also educating oneself on how to best carry out these actions.

This is the arena where technology, particularly digital technologies such as websites, apps, videos, interactive visualisations, digital art installations, media architecture, photography can be used to raise the profound questions Greenfield (2013) calls for, implementing de Lange's (2013) proposal towards technology that is profoundly political and appeals to emotions. Combined with, e.g. social media, these achieve the technologies of scale-making Dourish (2010) sees as catalysts for social and political action.

5.2 The Ability to Act

The ability to act requires a horizon for action. This may involve access to particular resources, e.g. financial resources, material resources or access to city infrastructure, but also necessary skills, ranging from particular theoretical domain knowledge, to execution experience, to media literacy and technical affinity. With regard to skills, there are two distinct threads that can be identified: the social thread, that encourages exchange between people, for instance in co-working, hacker or makerspaces; and the experiential thread, that emphasises learning through immersion and/or immersion into the subject that is to be learnt, whether it is a concrete technology or a knowledge domain. Civic engagement or voluntary association becomes then the enabler for both oneself, as well as for other citizens to become active, as it supports both individual learning as well as exchange with the community.

5.3 The Right to Act

The right to act is the most difficult to achieve component, as it involves a struggle for power. In the current system, the various power dynamics are manifested through citizen and community engagement, where the degree of participation is decided by the initiator of the engagement process, usually the power holder, currently represented by government and increasingly by IT corporations.

Citizen and community engagement mainly refer to initiatives that should be pursued by an institution, e.g. the government, in order to foster collaboration when addressing issues of public concern. While the first focuses on engaging individuals, the latter targets groups of individuals. Citizen engagement is "based on a two way interaction, conversation or dialogue. Citizen engagement emphasises the sharing of power, information, and a mutual respect between government and citizens" (Sheedy et al. 2008). *Community engagement* is "a planned process with the specific purpose of working with identified groups of people, whether they are connected by geographic location, special interest, or affiliation or identify to address issues affecting their well-being […] shifting the focus from the individual to the collective, with the associated implications for inclusiveness' (Davies et al. 2011).

Citizen and community engagement are conceived as an outreach of inclusion initiated by the power holder, as opposed to voluntary and self-initiated *civic* engagement. Examined under Lefebvre's lens, they fundamentally contradict the principles of voluntary, intentional and motivated participation. However, they serve as valuable tools to assess the evolution of the withering of the bureaucracy and technical monopolies: as participation levels reach the highest rungs, official's tasks and decisions have been taken over by citizens and further increasing the redundancy of the state.

Although exposed to criticism, e.g. by Tritter and McCallum (2006), Collins and Ison (2009), Arnstein's *ladder of participation* (1969) is still the de facto framework

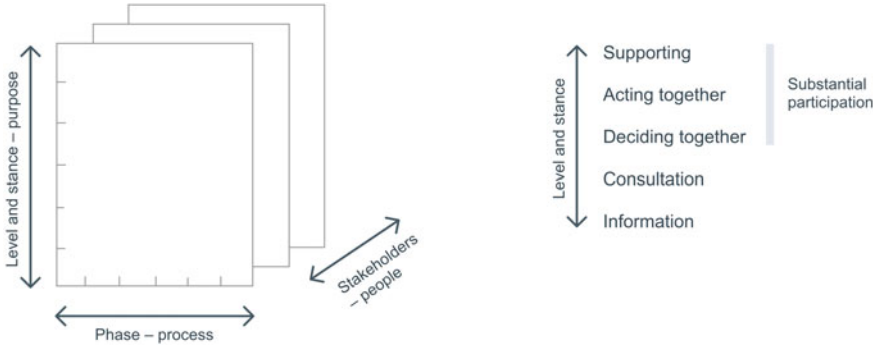

Fig. 1 Three dimensions of Wilcox' framework for participation (**left**); stances of participation (**right**)

to critique, design, implement and evaluate participation in both academia and policy practice (Collins and Ison 2009) and has significantly influenced approaches to governance and policy making, including urban planning (Schroeter 2012).

It outlines participation as a constant struggle for power between institutions and citizens. Similarly, re-works and alternatives, see Connor, Potapchuk or Choguill (Potapchuk 1991; Choguill 1996; Connor 1988), also look at participation in relation to governments and, as Collins et al. point out, imply that "meaningful participation occurs only in relation to the decisions, activities and power of state organizations or similar authority" (Collins and Ison 2009). This subsequently would erroneously reduce participatory city-making initiatives to being irrelevant—a fundamental contradiction to Lefebvre's radical ideas around self-management.

Wilcox' (1994) framework for participation, as shown in Fig. 1, is more appropriate for participatory city-making as it accommodates for complexity by taking a more nuanced standing with regard to power. Instead of the topmost stance always being considered the most desirable outcome, it acknowledges that different people may aim or fight for a different level of involvement depending on the purpose to be achieved. This is clearly embedded through the inclusion of a second dimension called "stakeholders", which need to be understood not as representatives of authority, but rather as the diversity of a Lefebvrian citizenship. Finally, it reflects the fluid nature of participatory city-making through the third dimension, "Phase", acknowledging that during this process, different levels of participation are claimed, necessary or desired.

Technology then can be deployed towards various aims. It can be used to reduce the access barrier, increase the quantity of participation, improve the quality of participation as well as the quality of the outcome of participation, and finally be either (a part of) the outcome itself or support the crafting of the outcome. For example, a 3D printer may have been used to generate elements to be incorporated in an interactive street art installation that raises awareness of a certain societal issue and was developed as part of a participatory and open process. Using such a participation

framework more systematically within each individual participatory city-making initiative, combined with other frameworks, would provide a basis for the wider phase of planning within the participatory action research cycle.

However, in order to clear the way forward, it is not only necessary to conceptualise the goal and identify the principles and mechanisms of implementation, items discussed in detail above. It is also necessary to develop a deep understanding of the status-quo, identify whether the evolution is consistent with fundamental notions of the right to the city, and extract the best practices of how these mechanisms are used in order to replicate, reappropriate and amplify them.

6 Identifying the Way Forward Through a Taxonomy

Initiatives that contribute to the city in one way or another are diverse and numerous, and discussing them is difficult, as it seems that there is no taxonomy and attached vocabulary to organise and describe them. Yet the ability to deconstruct them into key traits and understand how the different combinations of the representations of these key characteristics reflect the nature of these initiatives and implicitly the level of pervasion of participatory city-making, as a mechanism for systemic change beyond capitalism and the state, appear crucial in deciding where to invest our efforts next.

6.1 Taxonomy Development Methodology

The taxonomy to be outlined seeks to be an initial means to develop this ability. It evolved in three steps: first, a broad review of initiatives that contribute to the city and subsequently revisiting the emerging traits from the first step; second, linking them back to a moderate, liberal-democratic interpretation of Lefebvre towards participatory city-making to create a refined set of traits; and third, a last re-evaluation of the traits under the radical interpretation of the right to the city outlined earlier.

6.2 Step One: A Broad Review as the Initial Step in Taxonomy Development

The first step involved generating an initial set of traits based on the review of over fifty initiatives that contribute to the city, following the methodology of taxonomy development that allows the taxonomist to "make a more or less sound selection [of the characters] on the basis of an intuitive model of the organism, which is again determined by current knowledge and hypotheses" (de Hoog 1981). The implicit

research question of how participatory city-making with the aid of technology works in practice acted as the equivalent of the intuitive model of the organism.

The review included projects from both an academic and a non-academic background identified in previous related research, as well as an additional search on the Internet and in scholarly directories. The inclusion criterion was that the initiative had to make use of technology in some form, no matter whether to present itself on the Internet, to organise itself, as a direct result of the initiative, etc. The additional search was carried out with terms such as "civic engagement", "citizen engagement", "participatory", "city", "city-making", "urban development", etc., and combinations thereof in different languages. Some initiatives were found as they were cross-referenced by the ones already identified. Included in this set are, for example, the *MakeCity* festival in Berlin (2017), the online consultation platform *Neighborland* (2017), the collective visioning platform *NextHamburg* (2017), matchmaking platform synAthina (2017) in Athens connecting volunteers with funders, the crowdfunding platform *SpaceHive* (2017) focusing on civic projects, and the innovation unit of Boston's city council called *New Urban Mechanics* (2017).

The goal at this stage was solely to capture the breadth of what potentially could fit under the umbrella of participatory city-making. This also means *not* using prioritisation of exchange value over use value as an exclusion criterion—commercial organisations were included; similarly, initiatives developed in partnership with government.

Four broad areas emerged as relevant aspects to explore within the identified initiatives selected:

1. relation to technology;
2. relation to civic/citizen engagement;
3. contribution to city-making; and
4. degree to which they are participatory.

By reviewing them at medium depth, various salient characteristics emerged, again following the principles outlined by de Hoog (1981), where the researcher is free to choose the optimal criterion, as long as it is consistent with logical reasoning. The taxonomist's intuition not only is present at the beginning, but also evolves during the entire data collection process. The data collection process, in turn, empirically is interwoven with the classificatory process, and thus, the ordering is equally intuitive.

The review leads to a total of six traits:

Participation stance it facilitates based on Wilcox' framework of participation;
Form that can vary but is not restricted to being a blog/online magazine, a community or crowdsourcing platform, collaboration network, company or research institution;
Direction refers to the direction of the initiation; if initiated by an official body, the project is considered "top-down", otherwise "bottom-up", unless they're not actively involved in the activity and act as a coordinator, which qualifies them as "mediator";
Focus describes the area relevant to city-making, e.g. mobility, economy, design of urban space;
Potential for impact on policy making to enable citizens' right to act upon issues;

Potential for impact on citizen motivation highly important for the development of the participatory sense of ownership.

Further, a set of questions related to how participatory city-making can be understood emerged:

Who are the stakeholders? On a metalevel they may include government entities, businesses, universities, individual citizens but also collectives. On a smaller scale, it could be residents of a certain area, workers, shop owners and passers-by in general.
Which level does participatory city-making occupy? Referring to whether it is oriented inwards, ensuring the initiative itself respects participatory principles and had a dedicated coordinator, similar to participatory design, or whether it is a networked, distributed set of initiatives of various stakeholders and that constituting the participatory element.
At which scale does participatory city-making operate? Referring to small-scale grassroots initiatives, large-scale top-down initiatives, initiatives that bridge the two or the possibility of the sum of all three.

6.3 Step Two: Taxonomy Re-Evaluation Based on a Moderate Reconceptualisation of Participatory City-Making

The second step consisted of revisiting this set of open questions and further fleshing out the notion of participatory city-making to a moderate interpretation of the right to the city as an increment to the current liberal-democratic rights system, including thinking of it in more operational terms. These new insights and the deeper understanding achieved were then distilled into the eight traits highlighted below through the following process:

(1) Inward Participation Level and **(2) Outward Participation Level**: Considering the new distributed and networked understanding of participatory city-making that emerged from this moderate interpretation of Lefebvre, the trait *Participation Stance* had been split up into *Inward Participation Level* and *Outward Participation Level*, reflecting the governance model within the initiative (inward) and the collaboration model between initiatives (outward).
(3) Organisational Form, (4) Technologies and **(5) Purpose**: *Form* lacked a clear distinction between organisational/legal form, technological form and purpose. In consequence, *Form* was renamed to *Organisational Form* and supplemented by *Technologies* and *Purpose*.
Direction became obsolete with the new, distributed view of participatory city-making as the sum of all initiatives.
With the introduction of *Purpose* partially overlapping with the initial usage of *Focus*, the latter has been removed, particularly because *Purpose* covers the broader city aspects such as economy, culture, sustainability, mobility on a more granular level.

(6) Relation to Government: The *Potential for impact on policy making* is difficult to quantify, and results can come with a long delay, as methods for success assessment of academic research based on policy impact show (Donovan 2007, 2011). For this reason, *Relation to Government* was used as a proxy, as a partnership or funding relationship with a governmental institution increases both access to policymakers, as well as the probability of recommendations made to be considered.
(7) Participation Incentives: *Potential for impact on citizen motivation* suffered from a similar problem and was replaced with *Participation Incentives*, which could be of political, affective or hyperlocal nature, and more.
(8) Success: Finally, in order to leverage the potential of the taxonomy to identify the optimal representations of the above traits, a crucial trait to be added was *Success*, and substantive work is required to identify criteria and approaches to incorporate into success assessment.

6.4 Step Three: Participatory City-Making as a Radical Interpretation of the Right to the City

The final taxonomy, building on the results from the second step, was informed by two research questions:

- How well can the taxonomy asses the level of consistency of a given initiative with Lefebvre's radical interpretation of the right to the city, and the resulting understanding of participatory city-making?
- How does technology contribute towards this consistency?

7 A Taxonomy for the Classification of Participatory City-Making Initiatives

The proposed final taxonomy developed through the methodology described above consists of six traits:

1. **Inward participation level**

Based on the stances of participation in Wilcox' (1994) framework of participation, this trait seeks to identify the dominant stance the initiative adopts within itself, meaning amongst its own members. The stances can be *Information*, *Consultation*, *Deciding Together*, *Acting Together* and *Support*. It gives thus insights on the approach to governance the initiative takes in direct juxtaposition to the grassroots democracy Lefebvre calls for.

2. **Outward participation level**

Based on the same participation model, this trait focuses on the dominant stance the initiative seeks with other initiatives This can give an indicator of the nature of

partnerships and their outcomes. For each partner, a stance can be assigned. The stronger, more numerous and more the ties to government or corporations, in comparison to those to civil society, the less consistent the initiative is with participatory city-making as seen through Lefebvre's lens.

3. **Organisational form: profit versus common good**

This trait can take multitude of representations, such as an individual, an informal collective, a cooperative, a not-for-profit organisation, a small business, a company, an institutional subdivision, etc. The more profit-oriented the initiative is without generating social and public value in return, the less it is in concordance with Lefebvre's idea of use value above exchange value. It must, nonetheless, be added that the legal form is not always an accurate representation of organisational practice.

4. **Activities: constructive versus adversarial**

Lefebvre's idea is built on generative and constructive principles, assuming people come together to take over tasks and decision-making, and make alternative visions happen. The initiatives activities should reflect this constructive spirit, instead of being *exclusively* adversarial.

5. **Role of technologies**

This trait maps a specific type of technology to its role, such as to inform, educate, enable collaboration, as a direct product of participatory city-making in order to develop a comprehensive matrix of its overall contribution to the initiative.

6. **Consistency**

By combining the levels of consistency of all previous traits into one overall indicator, indicator, the taxonomy provides a mechanism to rank initiatives based on their adherence to right to the city principles, quantify how many are converging towards these principles as well as identify trends based on regular application of the taxonomy to the participatory city-making ecosystem.

7.1 The Role of the Taxonomy in Status-Quo Assessment and Tracking the Evolution of Participatory City-Making

By revisiting the understanding of participatory city-making as an open-ended democratic project, as a process unfolding in cycles, the taxonomy can serve as an instrument in the evaluation phase of the participatory action research that underpins this process as a method. The development of the taxonomy serves as the necessary delimitation of what is, and what is not a participatory city-making initiative. The application of the taxonomy on the existing initiatives allows for the assessment of the status-quo, as well as identifying trends in respect to progressing towards Lefebvre's vision of grassroots democracy and the prevalence of use value over exchange value by it being periodically applied to the city's ecosystem. Thus, the taxonomy

development achieved more clarity through the framing of participatory city-making within the larger theoretical frame of reference of Lefebvre's (1996) right to the city.

8 Conclusion

Framed by Lefebvre's concept of the right to city, that addresses the structure of life in the city itself, rather than more operational aspects such as within the frame of collaboration to produce a specific urban space, participatory city-making can be elevated from a mere mechanism to incrementally amend the existing system to one that radically empowers citizens to fundamentally reshape urban life, envision an entirely different system and gradually make it happen. This exploration has produced a conceptualisation of participatory city-making as a framework that relies on procedural and effective principles based on the hacker ethic and participatory action research, as well as concrete methods, of which the taxonomy is part of.

While the proposed framework is a step towards an enhanced conceptualisation of participatory city-making, the challenging nature of the radical transformation it implies requires a whole range of additional tools, methods, and more refined principles, as well as further theoretical exploration. Additionally, it would benefit from its systematic application in the context of developing technologies with emerging and existing initiatives towards a shared ownership of the city and its urban processes.

In the future, the messiness inherent to its distributed nature will prove challenging for participatory city-making, while at the same time it is exactly this feature that allows for openness, randomness and serendipity—"everything that makes a city great" (Lindsay 2011). It is in these spaces of messiness that "cityness", as opposed to "urban agglomeration" can emerge, it is there that the act of making takes place (Sassen 2005). For this messiness inherent to the right to the city can be considered a "space for encounter, connection, play, learning, difference, surprise, and novelty," a space to "overcome their separation, come to learn about each other, and deliberate together about the meaning and future of the city" (Purcell 2014).

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