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Uncovering the 'Cracks'? Bringing Feminist Urban Research Into Smart City Research

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Abstract

Several urban scholars have stressed the difficulties of locating and capturing the smart city, while at the same time smart city initiatives are becoming normalized and integrated in urban policy and practice. Besides the focus on technological innovations within information and communication technology, artificial intelligence, internet of things, new infrastructures and Big Data, smart cities are also about economic, sociocultural, architectural, ecological and political changes. As Engelbert et al. (2018) argue, citizens represent different interests and needs that are rarely stated in smart city discourse. According to Sangiuliano (2014), smart cities are generally not attentive to gender inequalities and, as Rose (2016) has pointed out, smart city conferences – both academic and professional – are dominated by men. Feminist urban scholars, scrutinizing patriarchal urban development, raise questions of how to develop an inclusive smart city and whether it is possible to claim the concept of smart cities for a more inclusive city. In this article, adding to earlier feminist urban theorists and intersectional approaches, we want to turn to the methodological challenges on how to investigate and 'unpack' power relations within smart city visions and materializations. We argue that there is a need for an increased methodological awareness within the smart city research in order to include social difference.

Keywords

Smart city, gender inequality, feminist urban theory, Sidewalk Lab

Introduction

For decades, feminist urban scholars have been scrutinizing (patriarchal) urban development and raising questions about how to develop an inclusive city. In the past few years, the smart city narrative has become subject to similar debates of social inequalities (Cardullo et al. 2019; Datta 2015; Greenfield 2013; Rose et al. 2021). Smart city narratives rarely address the different interests and needs of citizens (Engelbert et al. 2018), and they are generally not attentive to gender inequalities (Sangiuliano 2014). Likewise, smart city conferences, both academic and professional, are dominated by men (Rose 2016). The emerging field of research on smart cities raises questions about whether smart city design leads to more inclusive cities or builds upon, or even reinforces, exclusionary power relations. While the major focus of smart city activities is technological innovation, smart cities also involve socio-political changes. Shelton et al. (2015) call for greater attention to what they call the 'actually existing' smart city because much attention has already been given to the most extraordinary examples, such as Masdar in UAE and Songdo in South Korea. Following this call, Shelton and Lodato (2019) explore the 'making' of the smart city through studying the role of citizens in smart city decision- and policymaking. This article similarly addresses smart cities in the making and focuses on practices of experimentation during early decision-making. We find that there is a lack of social diversity and publicly debated norms and visions in the smart city narrative, and that this is visible in the early stages of planning and experimentation. Through two case studies in Toronto, Canada, and Copenhagen, Denmark, we argue that the lack of diversity is partially because the actual doing of the smart city mostly takes place in and through highly informal spaces and practices. The article contributes to an increased methodological awareness within smart city research by demonstrating how thinking intersectionally might be a way to address the dilemma of exclusivity in smart urban planning and how it might be applied in research, to answer questions like: who is leading the debates, and who is talking to whom? Who is invited to the smart city future making? Who is criticizing and resisting, and who is being listened to? How are gender, ethnicity, and class acted out within this process? What are the pre-defined categories and ideas?

In presenting our experiences from conducting research on two contemporary cases, Sidewalk Toronto and Copenhagen Solutions Lab, we call for a better understanding of power relations through empirical research. The article begins by bringing in feminist urban critique and relating it to smart city research. Our analytical approach is based on an intersectional 'feminist partial political economy of place' (Parker 2016, 1338), and we argue for finding the 'cracks' in smart city programs, representation, and knowledge as this is where the intrinsic power relations become visible. Through 'making visible the cracks and fissures of dominant discourses and the contradictory detail of the everyday' (Gannon and Davies 2012, 85), researchers can create opportunities for alternative discourses. Established 'truths' are challenged, and other forms of knowledge can be produced.

Feminist Urban Critique

A feminist urban critique of the gender-blind planning grew strong in the 1980s and 1990s (Fainstein and Servon 2005). In the seminal article 'What Would a Non-Sexist City be Like?', Hayden (1980) connects the unequal division of domestic labour with how cities are planned, arguing that city planning reduced the mobility of women and their possibilities to enter the labour market. Moreover, this research recognizes the role of planning in relation to the organization of everyday life when combining work life and family life (Friberg 1990; Markusen 1980; Parker 2011). Researchers also critique the lack of human scale in city design due to car-dominated planning, for example, through pointing to people who do not have access to cars feeling un-safe and experiencing fear of sexual assault in isolated parts of the city, where they are compelled to walk (Listerborn 2002; Pain 2001). The core of this critique is aimed at the simplistic understanding of the urban, everyday life and the priority given to car dependency – an issue which was already raised in the early 1960s by Jane Jacobs (1961). Townsend (2013) argues

that this turn to the car which reshaped most of our cities around the globe from the 1930s and onwards shows similarities to the ubiquity of the smart-tech vision. Thus, this early feminist urban critique represents a useful entry point to analyse contemporary urban tech trends.

Theoretically, feminist perspectives offer a deepened understanding of the (gendered) construction and control of space, both in social and material terms. New technology may alter the urban, while social norms are left un-touched. In Discrimination by Design: A Feminist Critique of the Man-made Environment, Weisman (1994) reads the imaginaries of the future smart cities and uses examples from tech visions. An article in Science Digest from 1983 describes a future domestic scene of an average family in the year 2000 where the family's everyday tasks are done through the computer. The journalist states, 'by the year 2000 the result will be a world profoundly different from the one we find today' (cited in Weisman 1994, 161). However, what has not changed, Weisman argues, are the gender roles. The father is working from home, while the mother is organizing the shopping and the children's monthly physicals on the computer. Weisman (1994, 161) notes,

> I have selected examples written in the 1980s that already seem dated, as with the predicted dramatic impact of the home computer on domestic life, while other scenarios written by feminists in the early 1970s, describing dwellings designed on the principles of equality of human worth and individual autonomy, still seem like radically distant dreams.

She draws the conclusion that 'The robot, home computer, and "smart house" will do little more for women's liberation than the vacuum cleaner and television have done' (163). Her analysis points at the continuation of social differentials and inequalities within futurist technological visions.

New smart technology affects energy consumption, which in turn potentially affects gendered everyday practices at home. In a recent study, Mechlenborg and Gram-Hanssen (2020) show the implications of new technologies on energy consumption and their impact on homes in Western (mainly white) middle-class households, where energy consumption rates are highest. They explain how the increased political attention to carbon neutrality has convinced many households to acquire energy-producing technology of their own (like solar cells or a windmill). However, in the efforts to align the households' energy consumption with their production, there is a risk that the technologies will miss their purpose of adding to the green transition if they do not take into account the social division of labour in the individual home. As it were, the tasks of monitoring consumption data, reading off meters, and keeping track of energy prices are mainly undertaken by men, whereas the actual practices of laundry and dishwashing continue to be mainly performed by women. Mechlenborg and Gram-Hanssen (2020) warn, 'if communication, sales materials, and policy measures for new technologies are unconsciously written for male recipients, whereas women pre-dominantly undertake many of the related everyday practices, this could be a major communication failure' (1). There is a long way between installing a meter and making substantial changes to everyday routines that fit all members of the household.

Today, the lack of attention to gendered and racial inequalities remains widespread even in the tech industry more broadly (Chang 2018; Perez 2019). When women do occur as the target group of a new technology, the focus is often on safety, such as the new safety apps to support women by reporting about broken streetlights and informing about un-safe parts of the city or the public transport. Certainly, fear of sexual assault is one of the most serious problems, but as Rose puts it in her blog, 'there's something profoundly depressing – and disempowering – when the most frequent way women appear in smart cities is as the victims of violence' (2016). Rather than dealing with the root of the problem, 'smart' safety-solutions merely represent yet another commodity (Listerborn 2016). An example of ignoring gendered differences is Google's speech recognition software, which is reported to be 70 per cent more

likely to accurately recognize male speech than female speech (Perez 2019). In addition, an example that involve bias of both gender and race is face recognition algorithms; they have proved to be significantly more likely to mix up black women's faces than those of white women and black men's faces than those of white men, having the highest accuracy with white men's faces (Simonite 2019). This outcome is perhaps not surprising for an industry that is mainly dominated by white and Asian men. In the United States, only 26 per cent of the computing jobs are held by women, black women hold 3 per cent of computing jobs, and Latina women hold 2 per cent; moreover, 50 per cent of women said they have experienced gender discrimination at work (Daley 2021; see also Chang 2018). As the tech industry is a major economic force, this imbalance affects the economic gap between men and women and between white men and ethnic minorities. The composition of members in the informal spaces influences decisions of which new technologies are considered useful and worth investing in (Perez 2019). Similar gaps are found in the user end – often referred to as the 'digital divide' (Gilbert 2010). Obviously, if new everyday technologies are based on (white) male bias, they will not work for everybody; further, if there is not a broad composition in the industry, innovation and technology will be limited in scope and will reproduce exclusionary power relations.

This gender-bias is not based on a natural order of things. In 1984, women represented 37 per cent of computer science graduates, but two decades later – when the tech-industry was booming – the number of female computer science graduates went down to 12 per cent (Slate 2015). The gender-blind tech culture has been reinforcing itself, even though there is an emerging awareness about the problem. Stereotypes have been flourishing in an enclosed social environment, and ideas that challenge gender norms are difficult to gain support for. There is a downward spiral because there are too few women role models in tech at universities and in the industry (Chang 2018; Misa 2010). The 'data gap' (Perez 2019) and 'gender gap' (Misa 2010) are also matters of representation within knowledge production, which we will return to.

Cities, even smart ones, are inherently produced by and productive of social relations and, therefore, also intersecting power relations (like gender, class, ethnicity and age). In this article, adding to earlier feminist urban theorists and intersectional approaches, we want to 'unpack' some of the power relations within smart city visions and their beginning materializations in Toronto and Copenhagen. Below, we introduce our methodological and theoretical approach to uncover cracks within the empirical work, and then we present the two cases.

An Intersectional and Context-Sensitive Approach

The empirical site in Toronto called Sidewalk Toronto is an urban laboratory located in the harbour area close to downtown Toronto. In Copenhagen, the empirical site is called Copenhagen Solutions Lab, and it is also located near downtown and the city's harbour front. The latter is also a type of urban laboratory, but it is also the working space for a joint agglomeration of urban planners. The empirical material consists of texts and visual representations from the websites of the two empirical sites, our field notes from visiting and being given a tour of the sites, and the recordings (in the cases we were allowed to record) and transcripts from qualitative interviews. The interviews were conducted with representatives from the two sites as well as with members of city council, board members, associated urban planners, and city officials.

Overall, the way smart city development takes place in Toronto and Copenhagen happens mainly in and through proposals, urban labs, test beds, and a variety of public-private networks and partnerships. In this respect, the study delves into some of the possible pitfalls of a phenomenon that is still under way – and of which much activity will never be realized. Therefore, 'locating' the practices of the study has been done by putting together the available digital visual representations and pervasive written discourses

and debates of the smart city visions in the two cities, combining this with visits to their key laboratory settings, and conducting qualitative interviews with key-actors at these sites. The research in the field in Toronto was conducted during one week in 2018 and a second week in 2019, and in between, the case was followed on-line. In 2020, it was announced that Sidewalk Labs would pull out from the project in Toronto – a not wholly unexpected turn of events, which we will come back to. Altogether, 16 interviews have been conducted along with visits to exhibition halls and meetings. In Copenhagen, 10 interviews with key persons and repeated visits to Copenhagen Solutions Lab took place during 2018 and 2019. Copenhagen and Toronto are both cities that aim to position themselves as digital forerunners, but the two 'laboratory' activities we focus on here differ. Sidewalk Toronto aims at an entirely new development, whereas Copenhagen Solutions Lab aims at technologies that are retrofitted into the existing city.

To avoid an over-simplification of describing smart cities and to learn how cities meet and mitigate the travelling smart city idioms, we focus on local variations and contexts (Karvonen et al. 2019) – what Aurigi and Odendaal (2021) call getting out from 'the smart city in a box'. In the shaping of discourses and visual representations, the smart city manifests as a very homogeneous perspective of 'ideal' (mainly white) subjects living a smooth, frictionless urban everyday life. To direct the empirical approach and analytical focus, we have delved extensively into how we might develop an analytical framework that enables us to flesh out the minority perspectives that are potentially overheard and the structural inequalities that are potentially (re-)produced in this on-going and not-manifestly-located smart city process.

Our analytical approach essentially builds on two central aspects of urban feminist scholarship: the concern for power relations in social categorization and the emphasis on particularity and context. As regards the aspect of categorization, we particularly draw on contributions from feminist studies of intersectionality. The concept of intersectionality appeared as a way to understand the interplay between gender and other social differentiations (Collins 1993, 1998; Crenshaw 1991) in an American context of structural racism.[1] The term addresses how, in order to understand systems of discrimination and disadvantage, it is necessary to recognize the interconnected and overlapping nature of social categorizations. In the 2000s, the notion was taken up in the United Kingdom (Squires 2007; Yuval-Davis 2006) and Scandinavia (De los Reyes et al. 2002; Gressgård 2008; Staunæs 2003; Staunæs and Søndergaard 2006) in the humanities and social sciences (for a review of some of the recent critiques of the concept of intersectionality, see Christensen and Jensen 2012.) As of yet, there are no clear testimonies of any 'tidy' intersecting patterns, and there are no physical superstructures or manifest technologies to direct attention to. Nevertheless, the entire discourse brings about a precariousness to the normativity of the urban performances at stake. The potential inequalities at stake will impact our urban environments; therefore, any analysis must be attentive to 'forms of othering and oppression missed in a purely sociocultural understanding of intersectionality' (Parks 2020, 112). This is a critique of reproducing 'static' identities while social relations are constantly in transformation. Thus, through analysing cracks, such openings for change are made visible.

Therefore, the recognition of intersectionality in this work needs some adaption in order to address the empirical shortcoming of actually existing minority experiences in the two case cities. What we do have, as mentioned above, are the idealized and normative visions. In all their homogeneity, these majority visions speak of a certain white middle-class urban living, and we question whether they do not

[1] In the majority of the literature, Crenshaw is credited as the one who coined the phrase 'intersectionality'. However, as Gines (2011) shows, the work by Black feminists dating back to the nineteenth century is also exemplary of intersectional analysis.

also, even if indirectly, speak of other lives – heterogeneous and place-specific lives, lives not counted in the smart city discourse. According to Hollands (2015), smart cities are driven by motives of profit by global high-tech companies, and with urban 'governance being wedded to a competitive form of "urban entrepreneurialism", [this] has left little room for ordinary people to participate in the smart city' (61). As several feminist scholars have argued, the neoliberal urban planning paradigm is highly gendered and racialized (Listerborn 2020; Parker 2017); therefore, we see the urgency of bringing in an intersectional analysis already in the pre-phases of smart interventions.

In order to adapt to this context, we have drawn on recent work on intersectionality and the debate around social categorization. It has been argued that intersectional analysis could benefit from including the majority perspective (Yuval-Davis 2011). The minority perspective becomes visible in relation to the majority perspective, which we argue is useful to understand how power relations are formed within smart cities. Choo and Ferree (2010: 138) mention how the 'cultural logics' of the mainstream risks being naturalized and homogenized in the attempt to represent the voiceless and that including such categories as whiteness and masculinity could help produce richer knowledge. Staunæs (2003) suggests what she calls a 'majority-inclusive' principle in order to avoid leaving the normality of the majority unquestioned. As Christensen and Jensen (2012: 112) emphasize, there are certainly important differences in terms of power and privilege that must be taken into account, but the advantage is that intersectionality also creates nuanced understanding of the majority groups. In developing the analytical approach in this work, we have taken inspiration from this 'majority-inclusive' understanding of intersectionality to make the cracks visible.

The second central aspect in our analytical approach is the sustained emphasis on particularity and context. Even if the main existing empirical manifestations are of the majority perspective, the smart city did not arrive at some point zero but in historical and geographical contexts. As Kitchin (2015) argues, critique of the smart city is largely based on corporate or government documents rather than interviews, ethnographies, or genealogies that would add insight to new aspects, including the effect on populations. This is where smart cities research still has much to do in situating the smart city in its multiple and diverse geographical and historical contexts. We echo the observations that smart city discourses and visual representations are heavily decontextualized and placeless (Aurigi and Odendaal 2021; Datta and Odendaal 2019; Karvonen et al. 2019). They appear to be produced with the intent to send a message of how 'on size fits all'; at the same time, the implementation of smart city discourse is anything but placeless. Indeed, it is when vision meets the ground that friction begins. Therefore, even if it might seem banal, the second major aspect in our analytical approach is to (re-)insist on geographical particularity, history, and experience.

In applying the notion of particularity, the analytical approach of a feminist partial political economy of place by Parker (2016, 2017) has been a key inspiration. The approach is partial as solutions or analyses cannot be copied from one city to another but must be based on empirical research. At the same time, we must go beyond each particular context to be able to trace similar patterns and structures. Neoliberalism, heteronormativity, patriarchy, and racism shape urban life in similar ways, but with particular variations. As Parker (2016) puts it, experiences and power relations are repeated in 'multiple elsewheres' (1348). Comparison is a useful strategy, and making it explicit and a mode of thought (McFarlane 2010) helps us to understand how tech companies and municipal governance act in relation to different local contexts. This is important because much focus in urban studies is on an Anglo-American context, ignoring differences *within* a Western context. According to McFarlane (2010), this approach implies an openness to uncertainties and occurrence of translations.

Drawing from these inspirations, our intersectional approach to existing majority representations is balanced with existing feminist knowledge of urban inequalities on the one hand and the empirical case-work on the other. Geographically, we are able to compare the two cases and uncover different

trajectories from within their different contexts. Inspired by Robinson (2014, 2016), we understand the comparative approach as drawing on dissimilar contexts and the diversity of urban outcomes. We have chosen the two cases because they speak well to each other: they represent differences but also share similarities, which allows the different cases to 'open up' each other. The Toronto project is brand new, whereas the Copenhagen one works to improve the existing environment. In Toronto, Sidewalk Lab's proposal for the harbour area has been met with loud public critique. In Copenhagen, there is no public debate. At the same time, both cities frequently figure on top-10 lists of the world's most smart cities with similar visions of sustainable, digital futures. The two cities also share participatory urban planning principles of transparency and public debate.

The analysis is based on the empirical study of document analysis and stakeholder interviews in combination with the 'ethnographic' impressions of the researchers' experiences in the field. As it turned out, visiting Sidewalk Lab in Toronto was a surprising endeavour. We had made an agreement that we would get about an hour with several representatives, but once we arrived, the visit was limited to eight minutes with one person (who drew in a colleague on the way) and we were not allowed to record the interview. At our second visit to Toronto, we were not granted a meeting at all. Less dramatic, but intriguing all the same, the visit to Copenhagen Solutions Lab also offered surprise. The shared workspace the lab resides in was a lot less formal than anticipated, and the relationship to the technical industrial environment a lot closer. Consequently, questions of positionality (including our own as researchers) became very present during the research process. The way we applied intersectional thinking involved identifying key characteristics of the majority perspective's social context in the two cases. In our analysis, we have focused on dissonances between these and our prior expectations – between these social contexts 'as found' and the established urban planning norms of transparency, participation, and public debate. Through thematic readings of the material – comparatively and separately – dissonances, conflictual situations, and the disregard of conflicts have come to the fore. This provide an identification of (some of) the 'cracks' in the majority perspective and serves to argue, that there is more to be explored.

In sum, the intersectional approach outlined in this article explores the majority perspective while continuously comparing and relating it to historical and temporary minority perspectives across different times and spaces in order to uncover, systematically, where the 'cracks' in the smart city appear in its contextual and power laden spectrum.

Sidewalk Toronto

In 2017, Waterfront Toronto (a federal, provincial, and municipal partnership) set up a framework agreement with Sidewalk Lab to develop the Quayside, a waterfront area in Toronto. Sidewalk Lab is a sister company to Google, and both are owned by the US company Alphabet Inc. Subsequently, Toronto became the host for the tech giant's first venture into urban development and infrastructure, with the aim to become a pilot-case of how smart cities can be developed from scratch; namely, it was meant to show a future of smart, connected cities – 'a sensor-laden community that would collect data from the citizens living and moving within it to make the city living easier, in large part by developing new technologies from that data' (O'Kane 2018). Sidewalk Lab promised 'better public transport, less pollution, plentiful parks, safer biking paths, affordable housing and more' (Donovan 2018). The initial plan was for 12 acres (4.8 hectares) on Quayside, which is owned by Waterfront Toronto, as a pilot (a test bed) that could possibly grow into the whole Eastern Waterfront on 800 acres (324 hectares). The first part was planned for approximately 5,000 residents. The coalition between Waterfront Toronto and Sidewalk Lab was called Sidewalk Toronto. In June 2019, Sidewalk Toronto delivered a 1,500 pages document called *Toronto Tomorrow: A New Approach for Inclusive Growth* (https://www.sidewalktoronto.ca/) to Canadian officials, which was decided upon in October 2019. This plan was for the larger part of the Eastern Waterfront.

The debates that followed the initial, rather positive reception of Sidewalk Toronto can be described along the following lines. On the one side, advocates for the development, like Richard Florida, argued that Toronto needs to compete with 'the best of the best' (2019), following the dominant urban discourse, and let Sidewalk Toronto be an anchor for a new generation of start-up companies. Florida stressed how urban tech investments cover a fifth of global venture capital investment, which is considerably more than that of biotech or AI. A report commissioned by Sidewalk Toronto predicted that by 2040 Sidewalk Toronto could lead to 90,000 new jobs in property technology and mobility innovation. It argued that tech-companies attract, employ, and retain talent (Toronto Life 2019). Foreign firms bring in new possibilities for investments, so the competition between cities is harsh. If Toronto were to decline the offer, the fear was that some other city would become the host for Google. The general claim was that innovation will always bring elements of disruption, risk, and uncertainty with it, but that the digital world is the future. These disruptions were not described in terms of reshaping power relations; rather, they followed the already inscribed ideas of whom the city wants to attract.

Among other advocates was the architect Alexander Josephson, who stated that 'without risks, Toronto will continue to be a footnote in the age of urbanism' (2019), and the Tory politician Robert Prichard, who argued how no more obstacles were needed as he expected the partners would sort out the problems along the way: 'Let's get on with it', he wrote (Prichard 2019). Further, some saw the lab of urban innovation as a way to secure sustainability and affordable housing, and Sidewalk Toronto discussed the idea of setting up a public data trust to safeguard the public good.

On the other side of the debate, the critique pointed to the inequalities and denial of differences. During the consultation process, a number of public representatives resigned. Developer Julie Di Lorenzo resigned from the board of Waterfront Toronto after learning about previously leaked details of the Sidewalk Labs project. As she told the Canadian press, 'every time Sidewalk shows us a map, the land area they "need" gets bigger' (CTV News 2019). Ann Cavoukian, the former privacy commissioner of Ontario, also resigned as she 'imagined us creating a Smart City of Privacy, as opposed to a Smart City of Surveillance' (Cecco 2019), and she feared that Toronto risked becoming a new Shanghai or Dubai. Saadia Muzaffar, member of Waterfront Toronto's digital strategy advisory panel and founder of TechGirls Canada, questioned the role of Waterfront Toronto in the Sidewalk Lab project. She blamed it for not being transparent and for not prioritizing the interests of the public in the process: 'In the last eleven months of the (now) approximately fifteen months consultation period, Waterfront Toronto's apathy and utter lack of leadership regarding shaky public trust and social license has been astounding' (Donovan 2018). In addition, Bianca Wylie, an open government advocate and co-founder of the advocacy group Tech Reset Canada, called for the project's complete cancelation. She stated that Sidewalk Toronto was a 'Hubristic, Insulting, Incoherent Civic Tragedy'. She also stated,

> they're pushing full-steam ahead on their work to make sure cities, Toronto and elsewhere, are compliant with their quantified worldview. Sidewalk Labs has done several things in the pursuit of this goal. And it's done in the Google way. Cheerful, young, faux-progressive, hip, making this all seem fun and harmless. And attracting a range of stakeholders to make complicit in its work and ideology. (Wylie 2019)

The 'Google way' indicates a type of masculinity that ignores their shortcomings of gendered and racialized awareness, which is attractive for the majority (mainly white, mainly men) perspective that dominates the smart city discourse.

Critique was also voiced among citizens. The concern over lack of transparency and democracy drove a group of 30 Torontonians to set up the Block Sidewalk campaign (www.blocksidewalk.ca). Their agenda was to promote urban planning based on public interest, for the benefits and needs of the diverse population of Toronto, and to ensure that the development prioritizes the city's needs first, not the needs

and interests of a private corporation. The latter was a major concern for the project's critics, raising several questions: What happens when profit is the main driver of the city? Who is responsible for the maintenance and support of the installations? Why is the amount of surveillance needed at all? Who will be surveyed? Bianca Wylie refers to previous experiences of Uber, where the control over pricing, congestion, climate, and labour were given to the company, and to how Google and Facebook tend to control the distribution of news, which effects public trust. These were not foreseen consequences of the innovation (2019). How can a private company guarantee that the collected data will be used according to agreements if other partners take over or get involved in the project? Can such things be anticipated? There was a clash between fast business practice and slow democratic planning procedures, and the question remained, what does Google want from Toronto? Critics have pointed out that Canada lacks an effective privacy regulation, which makes it interesting for data investors (Toronto Life 2019). In 2019, Roger McNamee – an early investor in Facebook and Google and the co-founder of Silver Lake Partners, which is one of the world's largest technology investors – stated in *The Guardian*, 'No matter what Google is offering, the value to Toronto cannot possibly approach the value your city is giving up … It is a dystopian vision that has no place in a democratic society' (Cecco 2019). This outspoken quote illustrates the cracks in the Sidewalk plans, where the shortcomings in the majority perspectives become visible and the need to listen to the minority perspectives for a more transparent democratic planning process is articulated.

Meanwhile, in 2020 Sidewalk Labs redrew from the controversial project in the Quayside area in Toronto's waterfront and from the collaboration with Waterfront Toronto, which brought an end to the Sidewalk Toronto project. The reasons behind this decision are still debated, but according to Sidewalk Labs' CEO, Don Doctoroff, the delays due to COVID-19 and economic uncertainties globally and in the Toronto real estate market led Sidewalk Labs to the conclusion that it would be 'too difficult to make the project financially viable without sacrificing core parts of its plan' (*CityNews* 2020). However, it is likely that the whole process of critique and controversy during the period 2017–2020 was also (or even the major) part of the reason.

Even though the project has now been abandoned, it perfectly illustrates tech companies' ongoing pursuit of urban development. Even in its early stages of experimentation and decision-making, the project contributed to changing our understanding of what a city is and by which norms and visions urban planning gets affected and implicated. As such, the experiences from Toronto are exemplary of some the 'cracks' that testify to the lack of concern for social diversity. During our first round of interviews in 2018, we had a meeting with Sidewalk Toronto. During the interview, we asked if they had any urban planners in their staff. The spokesperson answered that they do not and explained this with how they want to build the city of *tomorrow* (her emphasis). Accordingly, we concluded that urban planners as public representatives are considered unfit for this task. It became clear when talking to Sidewalk Labs representatives that much of the existing knowledge and collaborative practices were neglected during the process and that the experience from the field of urban planning was best left aside. This impression was supported in most of the interviews. In *Huff Post*, Bianca Wylie (2018) writes,

> Rather than share a plan, or even a draft plan, both Waterfront Toronto and Sidewalk Labs continue to chant that this project is an 'experiment'. At both public meetings so far, project representatives have been unable to articulate a business model. They did poll the community for thoughts on mobility and affordable housing, and talked about energy studies that have recently been commissioned by their team. At 50 per cent of the way into the consultation, the lack of detail on any semblance of a plan has gone from sounding somewhat surprising to negligent.

In our interview, she develops her critique and the connection between Sidewalk Labs and Google further:

> And for me this is this question, if this [the new data collecting technique] becomes your source for planning the cities, it's a proprietary product full of technology that you don't understand. I don't like that. But that product exists, and they are in Toronto saying we're not sure what we're doing here, we don't know what the business model is, […]... so I don't like this kind of lack of direct, you know, honesty about the work, and those are, that stuff comes from a Google level of technology. That is not Sidewalk Labs by itself. (Interview with Wylie, 13/09/2018)

Furthermore, the plan for affordable housing promised by Sidewalk Toronto, with rents set below market rates, was still not affordable for most people. This puts question marks around what and whom should be prioritized on municipal land. Moreover, there was already an existing plan for the area that was then put aside. As Wylie mentions, the lack of detail and transparency in any plan or usual format is possible because the project is circumscribed within some mythology, almost, of the 'experiment'.

Copenhagen Solutions Lab

Moving on to the case of Copenhagen, our work focuses on the Copenhagen Solutions Lab. This is where the most extensive smart city activities are presently taking place and what the most 'flagship' discourse in the city concentrates on. Contrary to Toronto, the smart city activities in Copenhagen are happening as a retrofit into the existing city and not as brown field development. Copenhagen Solutions Lab is part of the Technical and Environmental Administration in Copenhagen Municipality. It is located in a large new building called BLOXHUB[2], which is branded as an innovation and growth hub for architecture, design, construction, and urban development in Copenhagen. According to its web page, Copenhagen Solutions Lab identifies and coordinates smart city needs in the municipality's departments and matches them with existing knowledge and solutions on the market. It establishes collaborations between research and market, including all types of actors from small-scale start-ups to large-scale businesses. So far, the areas where the lab has gained the most experience are IoT sensors, smart lighting (enabling connectivity in lighting in preparation for future developments), and an urban data platform.

BLOXHUB was founded in 2016 by the City of Copenhagen, the Ministry of Industry, Business and Financial Affairs, and the major private fund Realdania. It is a non-profit member association for companies, research institutions, organizations, and municipalities, and it comprises two types of members: those who reside in the co-working space and those who are part of the community.

> BLOXHUB aspires to bridge architecture, design, construction and digitization and to connect companies, researchers and organizations to help create solutions for a good city life and ultimately reach the UN Development Goal 11: to make cities inclusive, safe, resilient and sustainable. By creating an eco-system of stakeholders within urbanization, we provide what we believe is the best conditions for connecting, sharing and scaling businesses that create cities for people. (BLOXHUB 2019)

When we visited the building for interviews, stepping into the shared workspace gave us quite an impression. The idea of the building's interior organization is to facilitate new collaborations within the shared space, and getting into the place – finding the informant, getting coffee, and searching for the

[2] BLOXHUB. 2019. "About". Accessed September 5, 2019. https://bloxhub.org/about/

right meeting room – provided us with interesting observations of the type of culture there. From a glimpse, the people working at BLOXHUB all resembled those of a cultural, creative, academic middle-class with good communicative and networking skills and tech-savvy professional lives. This resemblance of the majority ideal was similar to that in Toronto. There were both men and women, but in other ways, the social diversity did not seem very complex – keeping in mind that access to the collective workspace is based on membership. During the interview with a representative from the Copenhagen Solutions Lab, we asked about his experiences in the collective workspace and the co-location of staff from the municipality and actors from the tech industry. The response to this inquiry was vague, which might be due to the relative newness of the whole place. He did not provide any reflection about sitting next to people from the industry, but he did report very positively on how there was 'a lot of innovation in the organization' itself. The everyday interaction with the tech companies in the building was regarded as a positive formation of the public sector; similar to the Toronto case, this indicates that planners from the public sector are not regarded as sufficiently up for the task.

Regarding the urban data platform, we interviewed one of the persons who has been close to its development. Indeed, he first took part in preparing the invitation to tender for the platform together with a business partner that was co-funded by Realdania. When HITACHI won the tender, he was hired by them to implement the platform. A year and a half later, the platform was shut down after experiencing so many difficulties and very limited interest. At that point, our informant was hired by Copenhagen Solutions Lab as an external consultant to write the report on what happened. He now runs a consultancy of his own. As we understand from the interview, this is a success story, and our informant is considered one of the experts in the field. The story adds to the picture of 'innovation in the organization' mentioned above. It gives an impression of a community that is not really open to including 'new' or 'other' voices – even if its discourse is all about sharing and finding new ways. Indeed, the example of the many different roles that our informant performed around the platform, and the fact that this is held in esteem by the community, gives an impression of a somewhat closed circuit of the already existing influential members. The closed circuit of competence within the Copenhagen case – and the lack of public critique – leaves little opportunity for cracks for minority perspectives.

Trajectories of Intersecting Power Relations

The scale and the degree of innovation differ between these two experiments, as well as the particularities of the different contexts. In Toronto, different actors were resigning and protesting publicly, whereas in Copenhagen there is hardly any debate. The similarities we have found concern how, in both cases, 'experimentation', 'disruption', and 'innovation in the organization' (see Cugurullo 2018) are articulated as instances that legitimate a recurrent lack of transparency. Luque-Ayala and Marvin (2015) argue that 'smart urbanism discourses are deeply rooted in seductive and normative visions of the future where digital technology stands as the primary driver for change' (2105), which is highly applicable to both Toronto and Copenhagen. However, the relation to existing planning is not unproblematic. Based on experiences from the United Kingdom, Cowley and Caprotti (2019) point to smart cities' disruptive character towards established planning norms and technologies. They use the label 'anti-planning' to refer to the problematic relation of the smart city to a municipality's intentions of shaping a more equitable future and where 'smart city experimentation performatively excludes a structural understanding of social and environmental problems' (442). Smart city initiatives and disruption was initially supported by the municipality of Toronto, but along the process, the social and environmental aspects in particular came into the core of the conflict. In Copenhagen, the relation between traditional planning and new smart initiatives seems more malleable.

In the following section, we try to uncover the inherent social norms and moral assumptions in the 'majority' perspective of smart city planning, which also includes an intersectional approach. Something that is missing in previous studies.

Trust in Technological Solutions

Our first finding concerns the trust in data and technological solutions to contemporary urban challenges that both cases represent. In the work of Sidewalk Toronto, their master plans are detached from original plans and lack engagement with existing plans, and the rest of the city and the municipality were not involved in developing new urban infrastructures. The tech-driven way of building a city recalls previous rationalistic, 'objective', and 'neutral' planning paradigms and ignores the actual needs amongst the citizens, which recalls the feminist urban critique from earlier decades (Fainstein and Servon 2005; Hayden 1980). Tech visions are produced in a different context than the everyday life (Weisman 1994). Sidewalk Toronto's shortcomings in addressing issues that concern the public reveal a crack in the majority discourse and open up for other (intersectional) perspectives.

In the Copenhagen case, the discourse of the Copenhagen Solutions Lab also entails a belief in rational choices and tech-driven development that is based in the traditional masculinity majority discourse pointed out by feminist urban scholars. Unlike the modernist planner Robert Moses, the new urban 'planners' are young, cool, and hip Silicon Valley-types in pursuit of technical solutions to contemporary urban challenges. This 'Google way' (Wylie 2019) fits the white male neoliberal subject and does not change existing power relations (Parker 2017). In broad terms, the examples tell a story of a particular way of handling and developing technology that is linked with normative notions of rational choice – a trust in how there is a rational answer to urban challenges and how the advent of Big Data has made such answers possible. The power relations or gendered norms seem to be unchallenged.

Support of Risk and Experimentation

The second finding concerns the seeming infatuation with 'experimentation' and 'innovation' and how this links to certain normative assumptions. In the spoken examples from proponents of the Sidewalk Toronto project, we saw an understanding of how innovation always comes with risk, disruption, and uncertainty and how, without taking risks, Toronto will likely be reduced to a 'footnote in the age of urbanism'. This raises questions about who is allowed to take risks and for which purposes? In Copenhagen, the co-location of the municipality and the industry in the BLOXHUB is accompanied by a seeming disregard for transparency in the relation between public and private interests, and when we asked about this relationship, the informant linked it to 'innovation in the organization'. Furthermore, in Copenhagen, we were never given an answer to whether it has indeed been cheaper or smarter to replace working garbage collectors with smart garbage bins; indeed, the informant was unsure whether such calculation exists. Further, when we asked about participatory planning principles, we were told something general about how a lot of people want participation in a lot of things, ignoring social differences. The point we want to make is that in the setting of 'experimentation' and 'innovation', we are struggling with finding a terrain for asking about social diversity. While experimentation and innovation are at the centre, the impression we get when asking about social difference, participation, and transparency is that we are missing the bigger picture. In reflection, this experimentation and innovation carry an inherent norm of how innovation can and may happen at any cost. It is as if we are at the advent of something so new that existing knowledge and know-how and previous norms and values – like concerns for social diversity, public participation, and transparency – are legitimately left at the threshold.

The criticisms that grew in Toronto focused precisely on these issues. The critique made the majority perspective visible along with the lack of intersectional considerations by the proponents of the project. Taken together, the above-mentioned re-invention of rationality and the infatuation with risk and experimentation represent a particular constitution of norms that treat social and political concerns like

casualties of an imperative event. Issues of democracy, diversity, sexism, racism, and possibilities to enter the labour market as well as issues of affordable housing are left untouched, echoing the one sidedness of the tech industry (Chang 2018; Perez 2019).

Actually Existing Practices

Finally, the analysis reveals something intriguing about the immediate difference between the two cases when it comes to the public debate and negotiation of the smart city and which voices are being heard. In the case of Toronto, the resignation from committees and the organization of public protest are manifest and illustrate the cracks in the trust of the project. In contrast, the activities of Copenhagen Solutions Lab have hardly met any debate at all. Together the cases represent a contrast between the large-scale prospective Sidewalk Toronto project facing substantial public critique and the small-scale test bed projects that are up and running and have made their way into the existing urban fabric in Copenhagen silently and unnoticed. In the case of Toronto, the debate can be witnessed in newspapers and blogs, but the case of Copenhagen required a different approach. From our interviews in BLOXHUB, we have found how the power relations can be observed in the everyday relations and small talk in the shared workspace that reinforces bonds and collaborations of influence. When it comes to urban development, the configuration of a shared workspace is a double-edged sword. The fundamental idea is to facilitate informal meetings and exchange of ideas to the benefit of (new) industrial relations and innovation. Meanwhile, the high degree of informality challenges the participatory norms of transparency and public debate. To understand these relations further, a closer ethnographic approach is more suitable. The challenge is, then, to get access to these rooms of informal discussions, not least the important coffee room talks. The cracks within the discourse may be revealed through listening more closely to the norms, ideals, and visions.

What stands out from these examples is the need for a more sustained awareness of the practices and norms that surround the smart city in the making. As it were, the actually existing technologies are still not sufficiently developed; indeed, the Quayside area in Toronto was just a prospect, but the financing, consultation boards and partnerships, the rhetoric, and the day-to-day collaboration are what dominated empirically. It is in the *doing* of the smart city, one could say, that the mechanisms of power, social dynamics, and social difference are played out.

These three outcomes of the research – trust in technological solutions, support of risk and experimentation, and confidence in informal spaces of negotiation – point at cultural, taken-for-granted norms in the majority perspective of the developments in the two examples, which sets social difference aside. Even if these norms make sense from a business perspective, they represent a serious challenge for the incorporation of minority perspectives and social diversity. In feminist politics, the way to inclusion involves repeated insistence on transparency and politization, and as outlined above, the scope of technological solutions to structural, unequal divisions of labour has so far been limited.

In analysing the sociality of the tech industry, Chang (2018) stresses the impact of 'homosociality', which is likely to be relevant for the implementation of smart solutions and decision-making. Homosociality describes a bond between persons of the same sex, and it is most frequently used in studies on men and masculinities, where it describes mechanisms and social dynamics that explain the maintenance of hegemonic masculinities (Hammarén and Johansson 2014). In this context, one very notable observation is how, in Toronto, the critical response largely comes from female professionals. The prevalence of feminist critique in Toronto prompts an exploration of what the silence is about in Copenhagen. Is it just that the projects are smaller and less visible, or is it a matter of a certain (masculinist) culture thriving at BLOXHUB where, as Bourdieu (1977) pointed out, what is essential goes without saying because tradition is silent? For critical smart city scholars, this is an important

epistemological and methodological challenge which still needs much further investigation if the issue of social difference is to be taken seriously.

Conclusions

This article adds to the field by focusing on the *social contexts* of the actors involved in bringing new and acclaimed urban-tech developments into being. Through case studies in Toronto and Copenhagen, the article demonstrates how trust in technological solutions, willingness to take risks for the sake of experimentation, and the urban lab's tricky spatial constitution as being both open to the public and membership only are some key specificities of these social contexts. Drawing on feminist research, the article has re-capped the historical exclusivity of white, masculine norms and practices and the critical influence these have had on urban planning and technology in everyday life. Against this backdrop, the article argues that without an intersectional perspective, smart urban planning will reflect the stereotypes instead of contributing the creation of just and diverse urban environment.

If the normative aim for urban planning is to be based on a democratic, transparent, inclusive, and knowledge-based process, the ways in which the smart city is implemented in Toronto and Copenhagen present a challenge. We have outlined our observations and findings from exploring the status of participatory planning and regard for social difference based on earlier feminist planning critique and drawing on the concept of intersectionality to inform our understanding of the intricacy of power relations. In our analytical approach, we have drawn on Parker's (2016) notion of a 'feminist partial political economy of place' in bringing together experiences from two different places, representing different smart city approaches and activities, in order to search for overarching questions that may take the analysis of the smart city further. Through empirical examples, we have presented some analytical reflections that flesh out some of the normative assumptions that the two cases represent. The cases show a renewed trust in rational planning and an emphasis on experimentation and innovation that seemingly sidesteps existing planning ideals of inclusion and transparency. As discussed, asking questions about the possible social consequences has proved to be a methodological challenge. If we are now confronted with a new standard for urban development in the twenty-first century, which is meant to be sustainable and inclusive, we need to broaden the scope of research and develop strong feminist approaches to the smart city phenomenon. Finally, we have argued how a further path to searching for and uncovering the 'cracks' where intrinsic and intersecting power relations become visible is to focus attention on the tacit, everyday practices of the experimental/collaborative public/private planners/coordinators. As the intersectional feminist perspective has long spelled out, everyday practices connect the personal experience with larger social and political structures. When experimentation and innovation are for 'members only', the coffee room may be the most informative place to look.

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