Abstract

Smart city technologies are proliferating in our urban environments. The latest iteration of the urban techno-fix, cities on a global level have begun piloting and plugging into a range of “smart” infrastructure and IoT, resulting in granular and even enactments of “the actually existing smart city.” Rather than evoking once promised vision of the totalizing smart city, the adoption of these technologies draws attention to the fractured, varied, and layered characteristics of these systems. This paper draws on research into GeoPal, an asset management platform used mainly by business improvement areas (BIAs)—in order to ground our theoretical discussion of oligoptic geospatial surveillance.

Smart Cities, Platform Urbanism, and Surveillance

In the naïve period of internet optimism from the 1990s, a faulty techno-determinist reasoning presented the internet and associated digital communication technologies as presaging the end of cities and, indeed, the end of geographical distinctions and the effacing of space. However, the 2000s saw the end of this period and a renewed focus on cities. In our current era of disruptive neoliberal entrepreneurial solutionism (Morozov 2013), the city has been re-centered as a potential site for more intensive technological intervention, exploitation, and accumulation.

The particular form of this intervention is to be found in the concept of smart technologies, the Internet of Things, and Big Data, which are presented in various combinations as a pre-packaged answer to urban problems. This package has most recently been dubbed the “smart city,” although it has multiple precursors in the now ghostly concepts of the “digital city,” the “cyber city,” and so on, which continue to haunt the currently fashionable label. This has caught the attention of municipal governments and other urban management organisations as it promises effective ways to monitor, manage, and control the city (Kitchin 2014). Although some privacy advocates still believe that privacy-by-design (PbD) and other such built-in solutions could prevent smart cities from becoming surveillance cities (Jackson 2018), because this relies on the gathering and processing of as much data as possible for the purposes of urban management, the smart city is, at its very foundation, a system of surveillance. This was first pointed out by only a few researchers (cf. Murakami Wood 2015) and has now become a more mainstream understanding (see e.g., Saifuddin and Marlow 2018).
Smart cities have been imagined and developed in many different ways. The most encompassing model, and the most unusual, is that of the tabula rasa upon which a completely new city can be built from below the ground, up. This is a neoliberal Silicon Valley revisioning of the mid-20th century utopian modernist mode that led to such experimental creations as Chandigarh in India, Brasilia in Brazil, and Canberra in Australia. Often-cited examples include South Korea’s Songdo (Halpern et al. 2013), Dubai’s Masdar, Saudi Arabia’s massive Neom project, and India’s “100 Smart Cities” plan (Datta 2018). It is perhaps no accident that such plans are to be found primarily in highly stratified and hierarchical if not entirely authoritarian polities. Another model is the proposed retrofitting of existing cities with everything from ubiquitous sensors to urban operating systems and control rooms, as in Rio de Janeiro or Chicago. This type of development seems to draw more on the legacy of the introduction of public space video surveillance in the 1990s. Widely touted examples—like Singapore, the winner of the 2018 Smart City of the Year award (Smart City Expo World Congress 2018)—fall somewhere in between the tabula rasa and the retrofitting model. Like many Asian cities and nations in which the construction industry is a primary driver of the economy, Singapore’s urbanism is presaged on continuous top-down restructuring: destruction and rebuilding. Another model is the creation of new smart districts or neighbourhoods that have much to do with the more conventional urban restructuring that is motivated by popular governmental ideas about the concentration of urban entrepreneurs and Richard Florida’s “creative class” (Florida 2005) into particular places, for example New York’s Hudson Yards (Mattern 2016), or the plans for the Toronto Quayside, both of which involve the Google spin-off company Sidewalk Labs.

There are many other models and their scalar, spatial, social, governance, and technological variety indicate that perhaps terms like “smart urban environments,” “smart urban projects,” or “smart- or technovenue” might be better than a term like “smart cities,” which contains the assumption of a totalizing project or whole-city approach. Here, however, we adopt another compatible language that has emerged from the intersection of computing with both design (see e.g., Bratton 2014) and political economy (see e.g., Srniceck 2017), and we consider the smart-city project as a form of “platform urbanism.” The concept of the platform here is not simply a technological term but a new form of sociopolitical organisation that could potentially supplement or replace all other existing organisational forms, such as the corporation, or the nation-state. Platform urbanism, then, is the application of such an organisational form to the management of cities. It is no coincidence that many of the entities that promote smart cities are US platform corporations, organisations that have built their success on being the underpinning technology, or the infrastructure, for many other activities. These include Cisco, IBM, Microsoft, SAP, and Amazon Web Services. Many others are technology manufacturers in the broad sense that, by combining their different technologies, can create a shared platform, for example China’s Huawei. Others still have pivoted their business from a previous form that is treated as either an analogy or a foundation for smart city expertise, for example the German company Schneider Electric, which is attempting to parlay its expertise in electrical infrastructure and supply into a smart city offer.

However, new solutions do not easily map onto older ones. As Luque-Ayala and Marvin (2015) observe, most attempts to introduce smart cities come up against decades or centuries of previous urban restructurings: cities are complex, multi-layered entities with their own histories. Galdon-Clavell (2013) noted in the case of Barcelona that smart-city technology, itself, is accelerating so rapidly that its own redundancy will very soon add to this landscape of abandoned and (re)appropriated utopian projects. The “actually existing smart city” (Shelton et al. 2015) is therefore not something one can read off from the “sociotechnical imaginaries” (Jasanoff and Kim 2015) of corporate brochures and city planning documents.

By considering smart cities as urban surveillance platforms, we aim to highlight the inevitable incompleteness of such schemes. Part of a bigger project (see Mackinnon and Murakami Wood forthcoming), we consider the use of particular smart technology in Toronto. This city is an instructive site for several reasons. First, it is a prominent global city, one of the most linguistically and culturally diverse in the world. Second, it is where the pre-eminent neoliberal model of urban management, the Business Improvement District / Area (BID / BIA), began. Third, it has undergone and continues to undergo
substantial urban restructuring in the downtown core and beyond, with massive condominium and office projects. And finally, it has won awards as an “intelligent city”\(^1\) and is promoting itself explicitly as a site for disruptive urban entrepreneurialism and Silicon Valley giants’ branch offices alike, as a finalist in the farcical Amazon HQ2 debacle, and is attracting companies like Cisco and Microsoft to relocate their Canadian operations to the city.

We aim to illustrate the limitations of platforms or indeed the platform metaphor for urban surveillance. Drawing on post-panoptic theory in surveillance studies, we argue that in the case of Toronto, platform urbanism is not a panoptic form of surveillance, which in fact or in aspiration contains the entirety of the city within (what is felt to be) a comprehensive and centralized form of institutional monitoring, rather that it is oligoptic (Latour 2005). Building on previous reconsiderations of oligopticism by Murakami Wood (2013), we consider the incompleteness of surveillance to be not just the intense but limited vertical view Latour considered but also broad and diffuse horizontal views, neither of which have any necessary connection to the other. In this paper, we primarily draw on an example of the latter view, in the example of a particular geospatial app GeoPal which is used for asset management across large areas of the downtown. However, we also note that the arrival of an example of the former type, the proposal by Alphabet’s (Google) Sidewalk Labs for a new neighbourhood on Toronto’s ex-industrial waterfront, has accentuated the divides between the partial present and some complete future. We argue that while these are both examples of platform urbanism, when deploying surveillance and generating data for multiple purposes these are not panoptic, total platforms but partial platforms that are limited in their purposes, range, and views. The question then is what and who is “seen,” and how and why.

**GeoPal in Toronto**

Urban management bodies have turned increasingly to data-driven initiatives and smart urban technologies, such as social media metrics, pedestrian counters, i-beacons, CCTV, and geospatial apps. These applications, primarily based on Customer-Relationship Management (CRM) models, offer BIAs sophisticated spatial and locative capabilities, including online mapping tools, user-generated databases, dashboards, and interfaces (Kitchin et al. 2017).

Amongst the leaders in this field is GeoPal, which was being used by all three of the BIAs in Toronto that are included in the wider study of which this paper is part, although in different ways. Put simply, GeoPal is a cloud-based mobile workforce-management platform that offers a range of functions, such as location tracking, GIS and heat maps, job scheduling and dispatch, asset management, and mobile data capture. While initially developed for large enterprise field operations, the platform has been adopted and customized by BIAs for (smarter) urban asset management (e.g., Internet of Things [IoT], sensor integration, remote monitoring, automation and real-time updates).

Security and clean teams patrol the area with a GPS-enabled smartphone and the GeoPal mobile app, filling out mobile forms, issuing calls and reports for service, and capturing and updating information, such as: text, photos, GPS location, asset details, barcodes, and RFID scans. The information captured on the phone is synced with the GeoPal web management system. Managers and executive directors are then able to locate employees and assets on a map, schedule jobs, edit and configure mobile forms, and review, process, and analyse data collected for field reporting.

Primarily, GeoPal is used to tag “assets” on a GIS map, to create a spatial database, and to automate reporting and calls for service to 311 and other agencies responsible for maintenance in the public realm. Dialing 311 connects to a call-centre-based reporting service that is designed to divert calls about non-emergency issues away from 911, which is for emergency services. However, the BIAs also used GeoPal to tag particular spaces as “hot spots,” echoing the language of predictive policing but really here not

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\(^1\) There is no fundamental difference between the terms “smart city” and “intelligent city.” The proliferation of the former over the latter appears to be merely a matter of contingency and fashion.
referring to activities in legal grey areas, notably panhandling and street vending. Sometimes this does involve tagging human beings; not the workers envisaged by the original design of the system but rather homeless people, who appear to be treated as a cleanliness issue in the public realm on a par with graffiti or posters. However, it is claimed (with some justification in one of the case-study BIAs) that this tagging has a positive social purpose in helping to get people experiencing homelessness into shelters.

GeoPal’s role in automating the recording process is only the first part of the story. What is considered central is the generation of multiple data. The tagging process creates metadata that can lead to records that give information on both the assets themselves and on the responses to problems. Based on the interviews, it is clear that this concentration on data has led to an expansion of surveillance activities to whatever can be recorded, tagged, and monitored. The entire space covered by the BIA becomes a series of assets with specific values and risks attached to them, as stated by one chief operating officer and executive:

We monitor everything, let’s put it that way. We monitor everything. I know how long it takes to rent out a 1,000 square foot space on Yonge street versus a 10,000 square foot [space]. From that data, I can tell you that anything from 1,000 to 3,000 square feet will be gone in three months, once it becomes available. And, I know that anything 10,000 square feet and above will take six months to a year to lease. We monitor everything in our area, so we understand what are we up against here.

These geospatial overlays are more than mere representation; they serve to shape places (Graham, De Sabbata, and Zook 2015). Facilitated in part through these new spatial technologies, this production of space also reframes social interactions, providing new ways of knowing and navigating the city (Leszczynski 2015).

In this sense, GeoPal has become a tool for entrepreneurial governance, with the data generated finding new uses that can serve both specific fundamental objectives that were envisaged by the developers and open new possibilities for extending those objectives, a process which has benefitted both the BIAs and GeoPal. GeoPal is not so much a total platform that offers to manage an entire city, in the same way Microsoft’s Smart-City ecology or IBM’s Smarter Cities program might be. Rather, it offers a partial platform, one that does not require the commitment to a full “urban operating system,” rather something that is the equivalent of a plug-and-play set of apps, as a GeoPal representative commented in an interview:

Not as an all-in platform, but very much a kind of, “You know what? We’ve got a couple of things we want to do in this and it’s so easy to use that we’re going to leverage that. Maybe do it for six months because we’re under pressure on a particular start or something, and we are going to really get to the bottom of this using smart technology and reporting tools, which they would otherwise maybe try and develop it. Let’s see if we can improve those stats, maybe count them differently.”

GeoPal in particular is specifically not designed to be a totalizing smart-city solution. But GeoPal’s limitations are in fact a strength as the system is simple. It is mobile and flexible and requires neither huge cost outlays, major organisational restructuring, nor bespoke solutions. BIAs are in any case not large organisations. Like the innovation of the BIA—supplementing, extending, and ultimately privatizing/replacing, various municipal services—the use and extension of this asset management platform has allowed these BIAs to play with “smart” city technologies in order to leverage data and piece together partial existing urban solutions.

Ultimately, this may not be satisfactory for the city as a whole, and the city government, as reported by the Chief Transformation Officer, is pushing for a full open data platform:
The city needs to become a platform for data. It needs to be open. It needs to be real time. It needs to be accurate. It needs to be useful. So we really need to get serious about this. And we are doing stuff again. We have our open data platform, and we are getting going on that.

The current situation is a long way from this vision. Our interviews showed that those involved are not even clear how many BIAs there are in the city, coordination is limited and based on reporting and, in terms of data-sharing, none of the BIA managers really share information outside of the area for which they are responsible. But for GeoPal and other tech companies, any particular city is not ultimately some complete and independent political entity or even predominantly a place where people live; rather, it is a laboratory. In an unconscious echo of Halpern et al. (2013), a GeoPal representative concluded that “Toronto is a fantastic test bed.”

Nevertheless, the arrival of Sidewalk Labs in Toronto threatens to accentuate the divide between the partial present and the envisaged complete smart future. Unlike GeoPal, Sidewalk Labs presents itself overtly as a totalizing urban experiment. From the name of the corporation down, its Quayside site seeks to both encompass all aspects of urban living and to highlight its experimentalism as a feature and present it as an exciting, future-oriented condition of living, albeit limited to a section of the old industrial waterfront. For the city of Toronto, this is the beginning, not so much as the apotheosis of single platform urbanism but rather a signal for a plethora of possible platforms. As one senior Toronto official argued in an interview, “we are going to have lots of Quaysides. Quayside is 12 acres, we are excited, and it will be a great learning experience, but we need to make a whole bunch of projects smarter, and we need to do it on a grander scale.”

Oligopticism

The adoption of smart technologies by business improvement areas is incomplete and temporary. Partly this is deliberate strategy: BIA managers see that other, more encompassing approaches are coming and wish to deploy relatively cheap and flexible implementations that are focused on specific targets. Contingency and circumstances have therefore enabled GeoPal to be seen as a convenient temporary, partial, and experimental solution to address particular issues in what remains otherwise, from a technological development point-of-view, the “legacy city,” the predominantly pre-smart technology city.

What this means in practice is that there is no obvious and encompassing “smart city” in Toronto—no “everyware” (Greenfield 2006)—but there are particular somewhat smarter urban environments within the city. From a surveillance theory perspective, after Latour, we might refer to these environments as “oligoptic” rather than adopt the often limited version of Foucault’s pantopticism that has long been something of a cliché in urban and surveillance studies (see e.g., Haggerty 2006; Murakami Wood 2007). Where Foucault’s reading of Bentham’s Panopticon reformatory design posited a modern world of social institutions with totalizing views, Bruno Latour argued that in fact most systems of surveillance are indeed intense but also highly limited, partial, and narrow. Sticking with the Ancient Greek roots of Bentham’s coinage, he called these systems “oligoptica.” In a previous paper (Murakami Wood 2013), one of us argued for an expansion of this concept to include other systems that are also limited; but rather than being narrow and intense, they offer broad and relatively unfocused views. In either case, in the oligoptic city, there is no one total view or even necessarily views that add up; rather, some elements of the urban collective or assemblage (people, places, things, times, feelings, etc.) are subject to intense surveillance, but other elements much less so or even not at all.

In addition, the ways in which different elements are seen are not the same. For example, in a recent article on surveillance and the contemporary city, Lorraine Chuen (2018) argued for attention being paid

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2 The Sidewalk Website is a typically slick corporate presentation that imagines its future as already certain: [https://sidewalktoronto.ca/](https://sidewalktoronto.ca/).
Conclusions

There are many problems with the contingent and partial approach adopted by and through BIDs / BIAs, which exacerbates the effects of BIAs in neoliberal urbanism. One of these is that of an intensification of the fragmentation of infrastructure as noted by Graham and Marvin’s ground-breaking work back in 2001. Different parts of the city are now frequently supported by particular (and incompatible) proprietary types of smart infrastructure. Therefore, it remains to be seen how partial platforms like GeoPal will play out in longer-term practice.

Our study would indicate that in terms of everyday urban governance in Toronto, these platforms seem to add up to very little at present. The totalism of Sidewalk Labs’ Quayside development, albeit on an initially small site, to some extent threatens the kind of limited protection for privacy and data rights offered by a fragmented governance situation and the localized and oligoptic surveillance model of partial platforms. This has even caused the resignation of the project’s privacy advisor, the former Ontario Privacy Commissioner, Ann Cavoukian (O’Kane 2018), and proliferating critiques from activists and academics. However, whatever the data and privacy issues, perhaps even more significant is that surveillance-saturated whole-neighbourhood projects like Sidewalk Toronto are likely to accentuate an exclusive and heterotopic enclavism, with smart technology building the digital divide into the non-digital legacy fabric of Toronto, thereby creating material and affective exclusion zones. In a contemporary situation of fundamentally unequal recognition, platform urbanism threatens to obscure the situation of inequality itself by treating objects and flows that are equally important to humans. In that sense, the homeless person tagged in a GeoPal database is just a precursor, the metaphorical canary in the coalmine of data dehumanization offered by visions like those of Sidewalk Labs.

These partial platforms offer myopic and hyperopic sightlines of the city, affording both narrow and detailed as well as blurry and expansive refractive views. We argue that rather than reinforcing the refractive power of these platforms, both more precise theorizing of oligopticism and further empirical scrutiny of projects in practice need to be carried out to shed light on what and whom is/are, can, and should be watched and seen.

References


3 See the Toronto Open Smart Cities Forum (TOSCF) for a growing collection: https://cfe.ryerson.ca/toscf and in particular the work of Bianca Wylie: https://medium.com/@biancawylie.


Mackinnon, Debra, and David Murakami Wood. Forthcoming. Partial Platforms: Business Improvement Areas and Smart Technologies in the Neoliberal City.


