

**This is the introductory paper for the special issue: ‘The pandemic smart city’, forthcoming in *Urban Geography*.**

Title:

The three modes of existence of the pandemic smart city

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**Abstract:**

Working on the provincialisation of the smart city in South Africa and India, the members of our research team recently witnessed, as the Covid-19 pandemic spread across the five countries in which we live and work, the emergence of a pandemic smart city. Technologies, institutions, organisations and people we were observing and working with were repurposed, reshaped or reoriented in efforts to manage and mitigate the public health crisis. This introductory piece and the articles in this special issue argue that the management of the pandemic is closely intertwined with different layers of the smart city. This paper reflects on the three modes of existence of the smart city, which are both revealed and reshaped in current pandemic times. Drawing on work on ontological pluralism and ontological politics, on the one hand, and on postcolonial urban studies, on the other, it delineates the articulation of the state-led, corporate-led and citizen-led smart city in cities of the Global South during the pandemic.

**Keywords:**

Smart cities, technologies, governmentality, pandemic, Covid-19, Global South, India, South Africa, Singapore, postcolonialism, ontology

## **The emergence of the pandemic smart city**

The texts composing this special issue on the pandemic smart city originate in discussions within our research team which has been working for two years on the provincialisation of the smart city in South Africa and India<sup>1</sup>. Our research analyses the ‘smart city effect’ in those two contexts as the intertwining of different processes: the roll-out of the smart city narrative nationwide since 2000, and its relation to previous urban policies; its integration in municipal agendas and investment priorities; and its reformulation by civil society organisations and citizens. The members of our team<sup>2</sup> are scattered across different countries (South Africa, Singapore, India, UK and Switzerland). The pandemic and the different forms of lockdown that ensued arrived where we work and live like a wave at different moments in time. Lockdown happened first in Singapore and Switzerland because of their proximity respectively to China and Italy. The UK, due to the erratic crisis management by its government, came last. After lockdown, we (all nine of us) worked from home for weeks observing day by day how the response to the pandemic was closely intertwined with different layers of the smart city. At the time of writing this paper we are in this same situation. Institutions, organisations and people we are working with have in recent weeks stopped, reshaped or reoriented their activities. The technologies, infrastructures, data and initiatives in which they are involved have been re-

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<sup>1</sup> [www.provsmartcities.com/](http://www.provsmartcities.com/)

<sup>2</sup> Ayona Datta in the UK, Nancy Odendaal and Evan Blake in South Africa, Diganta Das in Singapore, Arunima Ghoshal, Arya Thomas, Anwesha Aditi, Yogesh Mishra in India, and myself in Switzerland.

engineered in the context of the pandemic and its governance. A pandemic smart city has emerged under our eyes.

Quite spectacularly, in many Indian cities the Integrated Command and Control Centers (ICCCs) have for instance been turned into COVID-19 war rooms (Datta, 2020a). However, this is just one part of a 'smart' management of the public health crisis, which also involves private companies, civil society organisations and ordinary citizens. The argument of this introductory paper is that, in order to grasp the issues related to the mobilisation of data and technology in cities and to be able to critically intervene on the inequalities produced and reinforced by the pandemic, we need to pay attention to how different modes of existence of the smart city coexist and are articulated. In particular, we need to highlight the vital work of the smart city from below in cities of the Global South.

To get there, the paper first draws on literature on ontological plurality, on one hand, and postcolonial urban studies, on the other hand, to clarify the meaning given to the term 'modes of existence' in the context of smart city studies. It then briefly elaborates on three main modes of existence of the smart city: State-led data- and technology-driven strategies of urban development; corporate-led forms of platform urbanism; citizen- and civil society-led data- and technology-enabled urban interventions. In the final section, drawing on our fieldwork in South Africa, India and Singapore, the paper briefly discusses the emergence of the pandemic smart city and introduces the other papers in this special issue.

## **Ontological conversations and the smart city**

As bibliometric analysis shows, discussions regarding ontology (i.e. on what beings are), which was previously a distinctive philosophical hobbyhorse, began to proliferate in the social sciences in the 1990s (Van Heur, Leydesdorff, & Wyatt, 2013). Thus, in recent decades, propositions regarding the world as being ontologically plural (William James), or a pluriverse (Alfred North Whitehead), have left the quiet armchairs of philosophers to become subject of various forms of empirical investigation. To put it simply, this movement or 'ontological turn' (Escobar, 2007) in the social sciences has shifted reflexions on observed differences in the world from being cast as epistemological questions - regarding difference in worldviews, social representations or cultures - to being cast as ontological reflexions on a reality composed of a plurality of worlds. This pluriverse may be investigated in different ways: ecologically as the plurality of worlds of different organisms (say from the virus to the elephant), anthropologically as historical and geographical variations regarding for instance ways of distinguishing between humans and non-humans (Descola, 2013) or as differences in modern Western societies' various truth regimes (Latour, 2013).

Within these ontological conversations, Latour's work on modern modes of existence is the most relevant for an understanding of how smart cities assume different ways of being. In an interesting video-recorded biographical interview (Bourmeau, 2018), Latour explains that he carefully chooses a writing style adapted to each of his works. Stylistically, *An inquiry into modes of existence* (Latour, 2013) is hardly his most successful choice. Repetitive

and overly staged, his inquiry is nevertheless a bold attempt to identify a series of worlds we inhabit, populated by different entities and regulated by different truth regimes. Influenced by the work of the philosopher Etienne Souriau (2016, or. ed. 1943), the aim of his inquiry is twofold: first to enrich an ontology of modernity too often restricted for Latour to the Cartesian subject-object binary and, thereby, second to help us avoid ‘category mistakes’, leading us for instance to search for scientific forms of truth in the political world.

The results of his investigation are summarised in a table at the end of his thick volume which lists 15 modes of existence, such as ‘politics’, ‘religion’, ‘law’, ‘fiction’ and ‘technology’. Relevant to our investigation is the method he uses to establish what is for him a provisional list. Unsurprisingly for those familiar with actor-network theory, Latour’s inquiry follows socio-technical networks which associate entities into various modes of existence but in ways that are not always expected. For instance, in science ‘everything is not scientific’ (p. 51 of the French version) as researchers associate variegated elements (pictures, diagrams, tables, microbes) to produce scientific evidence. In other words, modes of existence are not defined by a series of core elements but by relations between elements we generally consider heterogeneous. Hence, concerning ‘technology’, a mode of existence which is central to smart cities: ‘One will never find the technological mode of existence in the object itself. You always have to look beside it: first, between it and the still enigmatic movement of which it is only the trace; then, inside it, between the different components of which it only is a momentary

assemblage' (page 225 of the French version, my translation). In this sense, Latour's inquiry adds to the famous work of Gilbert Simondon (2016) on the mode of existence of technical objects. While Simondon invites us to democratise and open the black box of technology, Latour invites us to look at the movements through which technology is assembled in different ways. However, as Datta et al show in their contribution to this special issue, Simondon usefully draws our attention to the historical trajectory of technical objects.

How are these ontological conversations relevant to an understanding of smart cities in pandemic times? As argued elsewhere (McFarlane & Söderström, 2017; Söderström, Klauser, & Paasche, 2014) smart city initiatives and discourses are characterised by struggles over definitions. Corporations, States, NGOs define what they are in various ways. These struggles are not only about epistemological matters where Cisco and the city of Barcelona would simply have different representations of what smart cities are: they are, seen in this perspective, about the elements composing the various modes of existence of smart cities: different types of data, technologies, users and relations between them. ICCCs can be an essential component of a mode of existence of the smart city or not. In that sense debates around smart cities are involved in 'ontological politics' (Pickering, 2011): in questions regarding what constitutes the mode of existence of the smart city and who defines it. Of course, the categories of modernity on which Latour investigates are much broader than these distinctions between different forms of smart cities. But a similar analytical lens can be used to

think about how data, technologies and humans – constitutive of any smart city discourse and initiative – are differently associated. A systematic inquiry into the modes of existence of the smart city goes beyond the purpose of this brief paper. However, in what follows, drawing on existing literature, I provisionally hypothesise three modes of existence of the smart city relating to States, corporations and citizens.

Additionally, and in line with a research project in which we seek to provincialise the smart city, I also argue that these modes of existence differ and are articulated differently in the Global North and in the Global South. Provincialisation can be understood in (at least) two ways: first as significant differences in which generic themes and processes related to smart cities are approached in the Global South and the Global North or, second, as emergent phenomena or processes; or in other words aspects of smart cities that do not appear elsewhere or are specific to the Global South (Chakrabarty, 2000; Jazeel, 2019; Sheppard, Leitner, & Maringanti, 2013). The first corresponds to a post-colonial and the second to a de-colonial understanding of the idea of provincialisation. An example of the former is the question of safety and surveillance, which is a quasi-ubiquitous aspect of smart cities. Whereas the implementation of safety and surveillance technologies would be generally framed in the Global North by civil society organisations as raising questions of privacy and political freedom, civil society organisations in Cape Town for instance tend to see it primarily as a question of service delivery. They ask for more police forces in the poor neighbourhoods of the city arguing on the basis of enumeration work that

the ratio of police per inhabitant is much lower there than in affluent areas, despite the fact that crime rates are much higher.<sup>3</sup> Therefore, the context of an extremely segregated city like Cape Town combined with the presence of a very active civil society milieu gives the issue of safety and surveillance a quite specific colour. As an example of the latter: both South Africa and India have civil society organisations that use enumeration (of people, taps, toilets, etc.) in informal settlements to support rights claims in terms of service delivery.<sup>4</sup> This smart urbanism where information technologies enable or reinforce right claims is quite specific to cities in the Global South.

In sum then, this paper argues that there are three main modes of existence of the smart city that take different forms and are articulated differently in the Global South and in the Global North. Then it suggests that the Covid-19 pandemic in which smart urban technologies are intensively mobilised both reveals and reshapes these modes of existence of the smart city. In what follows, I briefly develop what the three modes of existence of the smart city and of its pandemic avatar consist of.

### **Three smart cities**

The Integrated Command and Control Centres which resemble (and often build upon) police surveillance centres have become the very icon of the smart city. Put in place by municipalities, often with private partnerships and governmental funding, ICCCs constitute the visible, material node of a

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<sup>3</sup> <https://sjc.org.za/campaigns/police-resources>

<sup>4</sup> See, for instance, the work of the Hyderabad Urban Lab: <https://hydlab.in>.

network of sensors, underground cables, wireless communications, softwares, algorithms and processes of data production, analysis and storing. If we get to the bones of what constitutes the ‘actually existing smart city’ (Shelton, Zook, & Wiig, 2015), we can define it as a data- and technology-intensive form of urban governance (Kitchin, 2016). Seen in this perspective, this state-organised form of smart city is only one of its different articulated modes of existence.

The present diversity of the smart city is related to a historical shift in the capacity to produce and manage large sets of data. States, which were ‘the primary site and scene of population data collection [...] for nearly four centuries’ (Ruppert, Isin, & Bigo, 2017, p. 4), have lost their monopoly over data and their management. This monopoly has been increasingly challenged in recent years both by private corporations and by citizens. Consequently, different types of data are part of different smart city assemblages. Digital platforms such as Airbnb, Uber, Deliveroo produce and process big urban data to manage their services, related among others to food, tourism and mobility. Their control over data and code – which makes them very difficult to regulate –, their attractiveness and our banal use of them in our everyday lives are constitutive of what tends now to be called ‘platform urbanism’ (Barns, 2018a; Leszczynski, 2019; Söderström & Mermet, 2020). Platform urbanism is a second mode of existence of the smart city, arguably more impactful than the first.

Finally, there is a third more subterranean form to the smart city, created by the myriads of data- and technology-based activities developed by citizens

and civil society organisations, which have an impact on how we self-govern ourselves in cities. It manifests itself for instance as network of sensors to measure air quality put in place by residents in a London neighbourhood exposed to pollutants (Houston, Gabrys, & Pritchard, 2019) or as NGOs organising the mapping of households and their access to services (electricity, toilets, water) in informal neighbourhoods in Cape Town or Delhi. In these examples, but not in all cases obviously, the third smart city is driven by data activism which produces and uses data – not produced or undisclosed by the State – to enable rights claims in the context of social or environmental injustice and public inaction (Beraldo & Milan, 2019). The present pandemic reveals the sometimes very problematic uses, the risks but also opportunities related to these three interrelated modes of existence of the smart city.

### **The actually existing pandemic smart city**

Asian countries were the first to use contact tracing to follow persons infected (or not) by the virus to manage the public health crisis and map the routes of transmission of Sars-Cov 2. Early on, Singapore designed and promoted the use of *TraceTogether*<sup>5</sup> an app to track by automatic smartphone exchanges via bluetooth past contacts with persons tested positive. South Korea also put in place at an early stage a tracking system combining images from their vast network of CCTVs, GPS coordinates from smartphones and traces left by credit card uses. In India ICCCs and drones

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<sup>5</sup> [www.tracetogogether.gov.sg/](http://www.tracetogogether.gov.sg/)

are used to identify, chase and punish persons not complying to the rule of the lockdown, while quarantine compliance is monitored via selfies and quarantine apps (Datta, 2020b). And there are many more examples of State action on all continents mobilising smart technologies (Kitchin, 2020). The differing articulation of scales of government is crucial to the statal architecture of the pandemic smart city in India and South Africa – but not, for obvious reasons, in the City-State of Singapore. In India, the technologies and administrative offices put in place through the Smart City Mission – a policy led by the central government – are instrumental to a top-down form of public health crisis management in a context where decentralisation remains largely on paper. In South Africa, the ambitious public health policy put in place by the Ramaphosa government on a national level is articulated quite differently in the country's major cities due to the inexistence of a unified smart city policy and to the political and financial autonomy of municipalities.

The second smart city is also heavily involved in the management of the pandemic as IT corporations collaborate with States in contact-tracing or launch their own initiative, like Facebook and its survey sent to the members of the community to identify those displaying symptoms of Covid-19.<sup>6</sup> Apple and Google have developed their own contact tracing system supposedly more protective of privacy and civil rights and also supposedly more compatible with less authoritarian political regimes. Governments like Singapore have also drawn on digital platform technologies to develop their

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<sup>6</sup> [www.wired.com/story/survey-data-facebook-google-map-covid-19-carnegie-mellon/](http://www.wired.com/story/survey-data-facebook-google-map-covid-19-carnegie-mellon/)

tech-based public health interventions (*TraceTogether* and *SafeEntry*, see Das and Zhang in this issue). This articulation of the first and second smart city raises important questions around privacy, civil rights, surveillance, social sorting and restrictions to mobility. The app of the Indian government called *Aarogya Setu*<sup>7</sup> (health bridge) – has for instance been developed together with pharmaceutical companies in rather opaque circumstances<sup>8</sup>. Central to the current debate are questions regarding the usefulness of these technology-enabled pandemic management strategies and to what extent the regimes of exception that are currently introduced can and will be discontinued after the end of the pandemic (Kitchin, 2020).

Here as well, the activities of the third smart city is less visible than the other two but it accomplishes crucial missions : it organises networks of solidarity, produces data on phenomena disregarded by States and corporations and resists State violence exerted on the most vulnerable population groups.

### **Ordinary urban smartness in the midst of the pandemic**

During the lockdown we all have developed a new normality in our daily lives which includes uncountable videocalls for work, to get news from our families, friends and lovers, to stay connected and to simply find distraction.

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<sup>7</sup> [www.mygov.in/aarogya-setu-app/](http://www.mygov.in/aarogya-setu-app/)

<sup>8</sup> <https://economictimes.indiatimes.com/tech/software/aarogya-setus-not-all-that-healthy-for-a-persons-privacy/articleshow/75112687.cms?from=mdr>

An on-line solidarity has also massively developed to help elderly people unknown to us in our buildings, neighbourhoods or cities; this, in particular, to organise for them to get food and other first necessity goods. These initiatives are of crucial importance in cities of the Global North. They are vital in the Global South. Today in South African and Indian cities, but also in many other contexts, actors of the third smart city use their data and knowledge on vulnerable groups and poor urban areas, which largely correspond to blank spots in stata maps and statistics, in order to provide support. In informal neighbourhoods, civil society organisations are those who know where people live, how many persons there are in a household, if they have access to toilets and water to wash their hands. While the State intervenes in South Africa to ‘dedensify’ slums and in India to chase internal migrants trying to reach their home region to survive after having lost their jobs and income, actors of the smart city from below often organise the conditions of survival for the poor. The association *Cape Town Together*<sup>9</sup> has for instance put in place some 150 Community Action Networks covering large parts of the city to mobilise through simple technological means (smartphones, social media) competencies of people in each neighbourhood for those most in need of support (see Odendaal in this issue).

Data activists also pursue their control of (and resistance to) State action. They criticise the failure of a crisis management using selective and incomplete data. Thus, many Indian citizens have no identity card and are not counted as victims of the pandemic (Datta, 2020a). NGOs also criticise

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<sup>9</sup> [www.facebook.com/groups/CapeTownTogether/](http://www.facebook.com/groups/CapeTownTogether/)

police surveillance and intervention against persons who cannot comply to the rules of the lockdown because they are homeless and have no resources. In Singapore, the second wave of the pandemic that started in migrant workers dormitories revealed how the technological scripts of the pandemic smart city had missed the conditions of existence of a population group which tends also to be absent from national imagery and consciousness. In mid-April the police of Cape Town used rubber bullets against homeless people who had been put in a containment tent and were trying to escape because they had not received enough food.<sup>10</sup>

Sometimes the three smart cities collaborate. The consultancy firm *SoulAce*<sup>11</sup> in India has developed an app helping NGOs to locate persons in need and organise their interventions. Most often though the third smart city, essential to the mitigation of the effects of the pandemic in cities of the Global South operates with very limited means. While the pandemic is only starting in many regions and might come in several waves, it is crucial that the third smart city gets visibility and support.

### **The articles in the special issue**

The articles in this special issue explore the articulations and tensions between these elements constituting the emerging pandemic smart city in India, South Africa and Singapore. While our common research focuses on India and South Africa, we decided to enrich our analysis in this special

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<sup>10</sup> [www.groundup.org.za/article/cape-towns-homeless-camp-some-answers-more-questions/](http://www.groundup.org.za/article/cape-towns-homeless-camp-some-answers-more-questions/)

<sup>11</sup> [www.business-standard.com/article/news-ani/soulace-extends-its-tech-platform-to-ngos-for-free-to-track-covid-relief-measures-120040900365\\_1.html](http://www.business-standard.com/article/news-ani/soulace-extends-its-tech-platform-to-ngos-for-free-to-track-covid-relief-measures-120040900365_1.html)

issue with a study of the pandemic smart city of Singapore, where one of the team members, Diganta Das (co-authoring here with J.J. Zhang), lives and works.

Ayona Datta and colleagues analyse the variety of COVtech put in place to manage the pandemic in Indian cities: from COVID19 War rooms to drones and quarantine apps. Drawing on Simondon (2016) they argue that these COVtechs relate to previous technologies of governmentality in India - such as early 20<sup>th</sup> c. plague cartography -, concretise these technologies differently in the context of the pandemic and announce coming forms of tech-enabled State action. In contrast to these statal optic war machines they point to the subaltern technologies used by civil society groups and citizens to make the subaltern visible and organise care and relief.

Nancy Odendaal also demonstrates, in the South African context, the necessity of a layered historical understanding of the pandemic smart city. She uses the concept of 'infrastructure of care' to show that the technologies rolled-out of to manage the pandemic inherit and rework material, institutional but also affective elements from the Apartheid era and previous post-Apartheid public health interventions. She focuses particularly on the efficient community action networks in Cape Town set up by civil society activists to cater for specific local needs in a highly fractured city.

Finally, Diganta Das and J.J. Zhang look at two modes of existence of the pandemic smart city in Singapore: the combination of a contact tracing app, robots and digital thermal-gantries put in place by the government to trace,

track and mitigate the early first wave of the pandemic, on the one hand, and, on the other hand, civil society involvements to manage the spread of the virus among the foreign workers living away from the shiny side of the City-State.

As a whole, the papers in this special issue show how enmeshed the management strategies of the Covid-19 pandemic are with smart city technologies in cities of the Global South. This enmeshment, we argue, is better understood if we operate a series of analytical moves: first, we need to disentangle different modes of existence of the smart city; second, we need to study their articulations and tensions; and third, we need to use a post/de-colonial lens to capture the specific geo-histories of the pandemic smart city. This is not to say that different social representations and technological imaginaries (Jasanoff & Kim, 2015) are irrelevant, quite the opposite: fantasies of biological and technological fix are very present in the management of the pandemic crisis. However, a focus on the modes of existence of the smart city brings into focus the different data, technologies and actors involved in urban governmentalities and more specifically in the urban management of the Covid-19 pandemic.

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