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SMART CITIES' ENVIRONMENTAL DREAMS AND THEIR DIRTY MATERIAL POLITICS

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This paper draws on a study that included two types of materials: firstly, visual and textual analysis of a selection of smart cities' websites: Bristol, London, Milton Keynes, Dubai, Beijing, Cape Town, and Moscow; and secondly, a review of published literature on smart cities and the environment. In both, a celebratory narrative of environmental efficiency is abundant, in various forms. Although ecology is usually not the primary focus of smart cities' self-promotion, their websites often tell a story of how smart cities would ultimately make the environment better. They would streamline the collection of waste by using smart bins; use smartphone-operated bike-rental schemes; monitor air pollution; control traffic via digital dashboards; and run paper-free e-government services. The literature about smart cities, similarly, talks about "sharing cities"; "green growth", "green infrastructure", "progressive urbanisation", "sustainable urbanism", "green technology innovation", "resilient cities", "smart future" and more.

However, despite the overwhelming rhetoric of being environmental saviours, smart cities pose multiple ecological threats, most of which are invisibilised, because they take place elsewhere: the ever-growing extraction of resources needed to produce the actual devices: from a range of smart sensors to the smartphones and computers themselves; the toxicity of their production process and of the e-waste left behind after their short lives, often made disposable by design; and the rapidly increasing energy demands of data farms, needed to sustain every air pollution sensor, every city dashboard, every smart bus stop, every 'smart' communication network. At the heart of my paper lies a troubling, yet crucial question: how to reconcile the rapid and expansive adoption of various smart technologies into environmentally driven initiatives and sustainability projects such as smart cities, with the extensive environmental damages brought on by the digitization itself? How, in other words, can we think about smart cities environmental promises, while taking into account their dirty material politics?

I argue that a celebratory approach to smart cities as environmental dreamlands of the future, resonates with a broader tendency within environmental sustainability literature, where techno-optimism currently dominates (Kuntsman and Rattle, 2019). The literature is not blind to the complexity of technological innovation. But even when warning

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against the environmental costs of manufacturing and operating digital devices and platforms, or when cautioning against improper disposal resulting in toxic e-waste, most research into environmental sustainability is not advocating to reduce the use, or to shift away from digital technologies. When concerns about the environmental damages of digital communication are raised, the responses still follow the circular logic of techno-optimism: the tools merely need to be improved; the users merely need to be educated to use them correctly; and more research or monitoring needs to take place – and those solutions, too, often require even more digital devices, platforms and networks.

This phenomenon can be understood as ‘digital solutionism’ (Morozov 2013; Kuntsman and Rattle, 2019;) an approach where digital technologies such as the Internet, Apps, tracking devices etc., are imagined as being both uniquely suited and unquestionably necessary tools for solving political, economic, and indeed environmental problems; while their dangers are rarely acknowledged. This as a form of paradigmatic myopia towards the material harms of digital dependency, a powerful and powerfully enforced blindness that persists despite a wealth of existing scholarly critique. The notion of paradigmatic myopia is crucial, for it is not the absence of evidence of environmental digital harms that is at stake (the fields of geography, environmental science, human health etc have them in abundance), but rather, the insistence on the immateriality of the digital, which prevails within the field of digital communication and media, and in particular within scholarship on smart/ digital cities.

I argue that in order to consider *Life* in smart cities as a just life, and a sustainable life, it is imperative that we focus on digital cities’ invisible materiality and on material accountability of digital data and communication and its unevenly distributed toxic effects. Such an approach would involve placing the analysis of digital harms geographically and historically (e.g. within the context of past and current colonialism or global inequalities); and being attentive not only to the environmental damages of the digital, but also to which technologies, and where, are inflicting harm on who. To do that, I propose the following steps:

Firstly, rather than approaching smart cities simply as infrastructures that link together computers, network flows of data, and various city functions (transport, air, water, energy, waste), we need to think of them as relational infrastructures, for example, by looking at the relations between each smart city and broader infrastructures in geographical proximity within and outside of city borders, as well as relations to the actual landscape of the city. In some cases the smart city initiative actually refers to only one area of the city. In some cases, like Dubai, it refers to the entire city which seem to exist in a complete detachment between the physical environment – sands, the desert, or the heat – and the digital happiness. In others, like Cape Town, smart cities are envisioned as part of a continental network. We need to ask: What is the environmental impact on the desert of the energy infrastructure needed to support such a city? What is the cost to the lives of construction workers – who are almost exclusively migrant workers -- building the smart city in unbearable heat and dying from heat strokes?

Secondly, we need to be attentive to the temporal dimension of smart cities: often, the infrastructures of devices and data are created as part of large funded project, only to disappear later, as is the case of Milton Keynes (UK) which had ambitions plans, data

available to all, a dashboard, a network of initiatives, but where no information can be found past 2018. Here, we need to ask: What are the hidden lives, the broken lives, and the afterlives of smart city infrastructures, such as the “internet of trash” created by discarded smart sensors; or the disfigured “smart” bikes, rotting in Manchester canal after the citizens refused to adopt them and hacked into their navigation systems instead?

Finally, it is crucial that we pay attention to the relations between each smart city’s digital infrastructures, and the global distribution of their environmental impacts. Where are the smart cities’ e-waste sites? Where are the data farms, used to hold the city’s data, located? What kind of cross-city politics of heat (Velkova, 2016) do they generate?

As the global digital economy grows at an unprecedented speed, the links between global environmental degradation and digital industries become more apparent. Yet the geography of material impacts of the digital is often deeply uneven, reflecting and reinforcing many other forms of global and local injustices, and it is that geography that calls for our urgent attention.

References

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