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DIGITAL CITIES

BIG DATA. PREDICTIVE POLICING. DIGITAL INTERMEDIATION. WHAT DOES THIS MEAN FOR OUR FUTURE?

Digital Cities

by Alex Greggery

The predominance of technology in our everyday life has rapidly increased over the past decade.

From smartphones to smart homes, spearheaded by products like Google Home and Amazon Alexa, Information and Communications Technologies (ICT) are beginning to look like an unavoidable part of modern life.

The predominance of ICT is not solely confined to the personal sphere. Governments and companies are also responsible for an ever-expanding digital infrastructure, particularly in cities. This "digital skin" is made up of millions of sensors which create vast amounts of data on everything from consumer habits to traffic patterns.

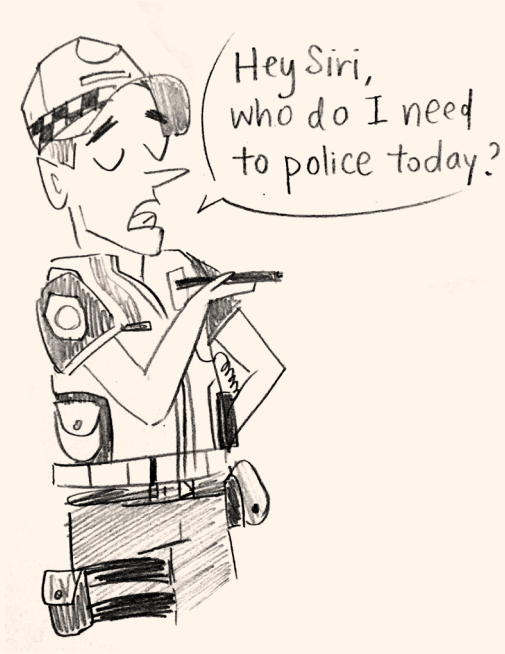
In this report, Secret Agent offers an outline of the digitisation of cities, and what the implications of this might be for the future. We primarily draw on a 2014 paper by Chirag Rabari and Michael Storper, but also bring in research from elsewhere.

The digital skin and its benefits

Digital cities have also been referred to as smart cities. Rabari and Storper (2014) choose to avoid the latter term because it is less neutral. Digital cities are made up of two parts: a "digital skin" of sensors which create data, such as cameras or RFID sensors like those used on toll roads; and the networks which communicate this data, such as WiFi, Bluetooth, or mobile networks.

For many, the rise of digital cities is an overwhelmingly positive development – an efficient and rational solution to social problems. However, as Rabari and Storper argue, we need to separate fantasy from the realistic potential of the digital skin. Humans like to think that rationalism and technological advances are a solution to all social problems. In the past it was "the machine" that would liberate humanity, and perhaps now it is "technology."

Rabari and Storper outline five major areas of modern life in which the digital skin is expected to play an increasingly important role. These five areas are: big data, smart urban



management, public participation and governance, the digital intermediation of social interaction, and disintermediation. Each has its own benefits and potential drawbacks.

Big data

Big data is something of a buzz word at the moment. Most basically, it refers to the massive amounts of data that get captured by ICTs such as sensors, smart devices, and social media. This data could take the form of tweets, video footage, credit card transactions, and data on the use of your smart fridge. Essentially, anything that is recorded by the digital skin. Big data is becoming increasingly important in modern life, perhaps most prominently in the algorithms of tech companies such as Google and Facebook, who use big data to learn about you and your preferences.

Big data's usefulness is not limited to business. Academics, governments, and people in the tech industry see big data as containing the potential for new insights into the social and individual behaviours of humans. These proponents believe that big data will allow us to understand human social life in a far more complete way. From this we may be able to better provide people with what they need, and prevent anti-social behaviour.

This line of thinking requires a degree of caution. Statistics and correlations are useful, but they're not the same as true understanding. Making sense of these requires interpretation, which raises the question of who is doing the interpreting.

There are also ethical issues with using this data as a basis for "predictive" policies against people – where is the line of certainty? More generally, human nature is complex and people are often defined by small differences. These may not be well captured by large-scale data sets.

There are also larger issues with big data. For one, we have to remember that algorithms are political, even though they are often presented as neutral. Most citizens don't understand how a company or organisation's algorithms work, and they don't have a say in how they are created. We leave this work to "experts," and assume that there is something inevitable about the end product. This raises interesting questions for democracy, where people have no say in how these important algorithms are created. We trust experts, but these experts aren't always reliable, and at the very least they are humans who rely on assumptions and ideologies.

Smart urban management

Smart urban management describes the use of the digital skin to improve public services and urban environments. This is accomplished by creating more data points about urban services which were previously unable to be measured, providing insight into their efficiency and how they are used.

As Rabari and Storper note, smart urban management is more of an ideal at the moment, as the technology is yet to be fully conceptualised and implemented. However, some pilot projects are underway, in collaboration with major technology companies. These include various examples in the USA such as a cloud-based water management system in Dubuque, and a "predictive policing" program in Memphis.

In general, smart urban management seems to be a positive trend. Predictive policing, however, has been beset by problems. As mentioned in the section on big data, the ethics and neutrality of using data to predict behaviour is on shaky ground.

As Rowe (2018) notes in the UK, predictive policing has been found to discriminate against poor people, and perpetuate certain representations of social groups.

More generally, Rabari and Storper caution against the over-planning of urban life, noting that spontaneity is considered to be an essential facet of urban environments.

Governance and social decision-making

The digital skin is also predicted to improve public participation in governance. This may be accomplished in two ways. Firstly, by making public datasets freely available to non-governmental users. This allows people to scrutinise the data governments use to make policy decisions, as a form of validation. Secondly, the digital skin is predicted to improve governance by allowing the public greater access to interactions with decision-makers. This allows governments to engage in an ongoing manner with citizens. Such a shift is also seen in the NGO and community sectors, which utilise digital media to create more grassroots support – an example of this being crowdfunding.

More generally, optimistic scholars such as Benkler (2006) argue that embracing ICTs enables liberal democracy to flourish, and represents a shift towards a less hierarchical economy of networked individuals. At the more extreme end of the spectrum, some in the tech industry see technology as ultimately replacing the need for governments. Instead, they argue that the world will become based more around individual choices rather than collective action. Similarly, social decision-making may become more accessible to individuals, improving decisions through the "wisdom of crowds."

Again this optimism needs to be considered with caution. Although increasing the capacity for individual decision-making is likely to be beneficial in some circumstances, it seems unlikely to solve collective problems. Designing infrastructure, neighbourhood planning, and other policies requires decision-making at the social level which can't easily be done away with by individual preferences. Furthermore, the rise of technology hasn't seen a move towards consensus between individuals. If anything, it has facilitated the division of people into their own thought groups. Ultimately, people often have mutually incompatible views of the world which can't simply be aggregated using technology.

Digital intermediation

Digital intermediation of social space refers to the increasing role of technology in our experience of the physical world. Companies create or utilise online maps, which are then overlaid with locations, tags, and recommendations based on the experiences of other users. Yelp, Foursquare, and even Google Maps itself are examples of this.

This is a large shift away from previous eras, where knowledge of urban life was based around local, individual, and contextual knowledge. In other words, we're seeing a shift from asking a local where their favourite restaurant is, to checking Yelp to see which one has the highest rating in an area. Proponents argue that this allows for a more accessible and dynamic experience in urban environments, where information about good experiences isn't limited to those with local knowledge.

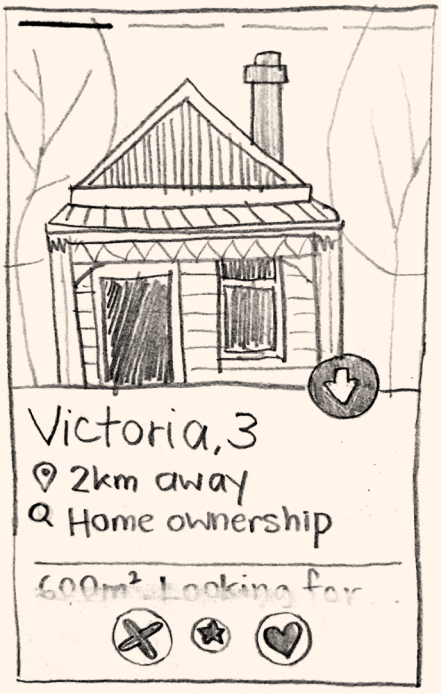
Aside from the loss of local knowledges, a potential downside to digital intermediation is that corporations play an outsized role in people's experience of urban environments.

If you use Google Maps to find places to eat and things to do in a city, then Google effectively influences how you experience your environment.

This effect can be circumstantial, for example not being able to find somewhere that wasn't indexed by Google, but it is also open to intentional manipulation, if Google directed you to certain places.

Disintermediation

Finally, the last area is called "disintermediation." This is when consumers are able to access services directly that, in the past, they would have needed a middleman to access. The best example of this is how people can now easily book flights directly from an airline, whereas pre-internet they had to go to a travel agent. Disintermediation is generally considered to be a net positive because consumers have more choice and information.



Disintermediation is also speculated to eventually apply to urban real estate. At the moment, purchasing land requires fairly specific local knowledge about neighbourhoods, quality and character of life, infrastructure, and so on. This information is, in part, provided by real estate agents. The only places where there is global knowledge of the character and value of property are London and Manhattan, due to their massive prominence in cultural consciousness.

The digitisation of urban land may mean that information about real estate all over the world will become more accessible, which could have a major impact on demand, and the way people purchase land.

There are drawbacks to this. A research project by Benjamin et al (2007) studied a land digitisation project in Bangalore. Although it was supposed to be a positive step by making information accessible to more people, it actually led to increased corruption and bribery. Since local information became more widely available, outside actors with better resources to make sense of the data could exercise control over the market. More generally, as Rabari and Storper note, urban land is a finite and position-based resource. This means that there will always be competition for its use, and no amount of efficiency and planning can eliminate the politics from this.

Discussion

Cities are almost certainly going to become more and more digitised in the future. A report by Manyika et al (2011) found that the number of sensors in commercial sectors was increasing at a rate of 30 percent per year. This proliferation of data will undoubtedly bring benefits: greater understanding of human behaviour, more efficiency in delivering public services, as well as more people having easy access to information. If this improves the overall wellbeing of people, it can be seen as a positive.

At the same time, we should be careful of assuming that the current trajectory of digital cities is inevitable and/or unquestioningly good. This is particularly true when talking about big data. Big data is useful, but it has limits. We should be careful using it to assume we know more than we do, for example with predictive policing.

More significantly, we need to be wary of the role that corporations play in digital cities. Corporations have every incentive to monetise the data that their users generate, and to use this data to create more profit. They develop algorithms which play a large role in our day-to-day lives and which we have no input in, but they may have priorities which conflict with the public good.

Ultimately, it seems like digital cities are here to stay. This isn't cause for despair, though, nor to sit back and relax. If we accept that digital cities are the way of the future, then we all have an investment in making sure that they're implemented in a way that benefits everyone.

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