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Ethics

Introduction

To every action there is always an equal and opposite reaction. In the case of datafication, this counterweight has been the notion of *data ethics* (Floridi & Taddeo, 2016), which has developed as an intersection between various contributing fields of philosophy and social science, including information ethics (Floridi, 2013) and critical data studies (Dalton & Thatcher, 2013), but importantly geography. The ethical dimensions of geography are an active and ongoing debate: Smith identified a 'moral turn' in the field in the late 1990s (Smith, 1997) that touched on both human geography concerns such as migration and politics and on ethics with regard to physical geography, something that has gained importance as climate change and environmental justice become central concerns in geography. Popke (2009) writing a decade later, argues for an affective ethics on the part of geographers, one that can take into account collectives and solidarity in relation to space – this notion can be seen underlying recent work on 'smart cities' such as that of Hatuka and Toch (2017).

Related fields such as geographies of development also help us to understand what an ethics of digital geography might be. The initiation of the Human Development Index (HDI) in 1990 provided geographers with new conceptual tools to research social and economic inequality, a conceptual shift that was then supplemented by GIS tools in the 2000s (Porter & Purser, 2008), and by new data sources over the course of the 2010s (United Nations, 2014). These new sources, particularly mobile phones, also pose ethical problems for digital geography in terms of research methods and power asymmetries (Taylor, 2016a), and are giving rise to calls for new research priorities in geographical ethics that can inform ethics in other fields dealing with digital data (Dalton et al., 2016).

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Through these debates, geographers have played an important role in developing the conceptual basis for data ethics, particularly around issues of positionality, research methods and data sources, One of the tasks data ethics is increasingly engaging with is interrogating the power asymmetries that have accompanied the rise of ubiquitous connectivity and big data analytics (Hatuka & Toch, 2017; Taylor & Broeders, 2015). By drawing attention to the human impacts of datafication, data ethics broadly aims to understand how moral choices are made with regard to data systems, but also the politics and history of data systems (Dalton et al., 2016) and how those shape and determine power asymmetries and conflicting understandings.

The new digital data sources present some important challenges for geographers. These challenges, which evolve out of known problems such as positionality and inclusivity, both require new thinking and offer insights into what good geographic research is in general. Issues that are central to the ethics of digital geographic research include positionality and inclusiveness, for example Kwan's work on the analysis of experienced space (Kwan, 2015) and Sen et al's on the discursiveness of location data as ground truth (Sen et al., 2015); Lauriault and Mooney's practical and ethical interrogation of volunteered and crowdsourced data (Lauriault & Mooney, 2014), and Georgiadou et al's deconstruction of GIS metadata in development (Georgiadou et al., 2016). As Schuurman points out (2009), focusing on these kinds of digital geography tends to demand qualitative, rather than mainly quantitative, research. How can this be reconciled with big (spatial) data and the opportunities it brings? This apparent conflict may underly Elwood and Wilson's (2017) observation that the technical demands of learning GIS tend to make geography students resist engaging with the ethical implications of their work.

One of the objects of study at the centre of digital geography's contribution to ethics is the smart city. This chapter will use the example of smart city data to examine some of the ethical concerns relating to today's digital geographies. What Dalla Corte et al. (2017) term the 'instrumented and digitised urban environment' involves acollaboration between public and private-sector actors, infrastructures and practices in the production of the sensed, and sensing, environment. City authorities do not

have the capacity to engineer an environment full of sensors, nor do they have sufficient data

scientists to analyse the data produced by them. Instead they contract with commercial firms, other

administrative authorities and academic researchers to get, and analyse, data about the city and its

functioning. This multifaceted public-private interface is sometimes citizen-facing and open to

analysis (Kitchin, 2016a) but often becomes opaque to both the public and to researchers who may

use the data the city generates, making it difficult to track and to govern the collection, handling and

storing of data, and to understand the possible ethical impacts of using those data.

Kitchin (2016b) has outlined the ethical implications of the change in the way data is generated and

the questions that are asked of it in the smart city, with a focus on privacy and awareness on the part

of citizens. This chapter will not cover the same ground. In order to draw out the particular problems

that face those aiming to use 'smart city data' as a research tool, I will use a descriptive lens to

analyse how ethics is portrayed and presented in relation to the datafication of urban space. I will

argue that if we seek to understand how decisions are made and justified, and which actors claim to

be the arbiters of data ethics, we may find productive ways to interrogate the political, moral and

economic factors that make up these new ways of seeing and influencing through smart

infrastructure.

Datafication as a tool for the commercialisation of public space

The visibility produced by the datafication of space has a particular politics. It is a byproduct of

informational capitalism: people are seen, and become objects of policy and commercial

intervention, through the data they emit by using particular spaces, services and devices. This

confers important components of the power to intervene to commercial entities, either in partnership

with public authorities, or alone (Taylor & Broeders, 2015).

One example of this dynamic is the Flow system developed by Alphabet's Sidewalk Labs (Alphabet

being the parent company of Google). Flow is a system for digitising and centralising urban transport

data that is marketed to cities as a complete 'solution' for managing their transport systems (Harris, 2016). If a city adopts Flow's services, the provider will take charge of a number of key functions in the public transport system: it will coordinate subsidies for low-income residents, provide Google's mobile payment system for all transport payments, and optimise public parking by matching the location of vehicles to those of parking spaces, through a process of monitoring drivers' position via their mobile phones using Google Maps. Flow also, however, exacts a price from the city that adopts it. The system comes as a package which cities must adopt as a whole, and at a cost to the public-sector monopoly on public transport provision. Flow demands that any passenger overflow in the transport system be diverted to ride-sharing companies such as Uber (with vehicles automatically called to overcrowded bus stops), and share all public transport data with Uber in order to facilitate this. It also demands that the city share all parking and ridership information with Sidewalk in real time, and that it commit passengers to exclusively using Sidewalk's payment infrastructure (ibid.).

The public-private interface where systems such as Flow reside is problematic in that it normalises using public resources to subsidise private-sector service provision. Just as voucher programs that fund students to attend private schools are criticised for undermining the public school system, Flow presents the risk that the data that allows the city to understand people's transport needs and identify shortfalls in service provision will instead become a tool to hone the business strategies of private transport services. This will inevitably undermine the city's prerogative to manage the public transport system so that the public can access it fairly and efficiently.

This example demonstrates how people's visibility changes when data is handled by both public and private actors. The city, as part of its administrative functioning, usually processes data on subsidies, travellers and payments. It does so, arguably, as part of the social contract: we provide data about ourselves to the relevant public authorities so that they can fulfil their various functions. However, when Sidewalk needs to process the same data it must be provided separately to the private sector. It also requires more data: it wants to know where a driver is all the time, in case she needs a parking space. It wants to know where a subsidised rider is entering and exiting the bus, where she

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takes a ride-sharing service to if the bus is too full, and which bank account she uses to transfer money to the payment system. These visibilities, once commercial, have different implications. They transform citizens into customers, they make it possible to relate people's behaviour as consumers to their behaviour as travellers on public transit, and they tell a story about people's finances, work and leisure that is valuable within the data market. A system such as Flow may optimise city transport, but to whose benefit? Public space becomes commercial space, public resources blend with commercial services, and a system that initially appears to create capacity and efficiency actually diverts public funds to private actors.

Many technologies of today's 'smart city' tend to approach service provision in ways that maximise people's visibility to private companies. Beacons used in retail areas (Social Retail, 2017) connect with an app to push messages about special offers from retailers in the vicinity, but can also send notifications guiding people to local landmarks such as churches and official buildings, and provide public service announcements such as floods and evacuation warnings. 'Smart lampposts' used in cities around the world (Slate, 2015) are marketed as tools for energy efficiency and public safety (Humble Lamppost, 2016) but are also arrayed with sensors that can monitor movement, behaviour and mobile phone traffic. This sensing in public space is oriented toward risk-assessment. It creates visibility that is then the basis for interventions by city authorities and law enforcement. The lampposts themselves can also be designed to intervene directly in people's behaviour by spraying scents or changing lighting when aggression is perceived by the array of sensors (Volkskrant, 2015).

This public-private visibility is one example of the kind of problems that an ethics of digital geography must engage with. It emerges due to the particular political and market configurations that characterise big data analytics, and makes it hard to identify who should be the target of claims about ethics and moral choices. Who should we ask to be ethical towards whom? What kinds of data should we pay attention to and should we access them through city authorities or their private sector partners? How do we know data are accurately representing the city if they are proprietary and

protected? Unless we know who is acting through data technologies, and whom they are acting

upon, it becomes hard to think clearly about these essential questions.

The group and the individual

One reason for the currently high profile of data ethics is that the big data simply presents new

governance and rulemaking problems. Kitchin (2014) has outlined how 'Big Data epistemologies'

denote a shift in our strategies of knowledge creation: we are moving from targeting specific

problems using honed data, to mining multiple datasets to detect patterns and generate hypotheses.

This is the fundamental difference between big data and other forms of data, but it also results in

real-world effects that we need to think about differently. As datasets become larger and our

analytical strategies more inductive, and as new methods such as neural networks develop, which

are at least partly opaque to both researchers and the populations we study, people are increasingly

categorised and intervened upon in ways that target the group rather than the individual. This brings

us back to Popke's call to think about the collective with regard to geographical research (Popke,

2009): our current approach to governing data is based on protecting individuals from individual,

identifiable harms. It is not based on protecting the crowd from uncertain harms occurring through

influence and manipulation, including those produced as a result of research. As the basis for

claiming harm becomes foggier, so does our ability to understand what should and should not be

done with data.

Yet this uncertainty about who is impacted, and how, is normality in the business of data analytics.

As the manager of a living lab in the Dutch city of Eindhoven remarked, 'we are only Big Brother to

the crowd' (Volkskrant, 2015). The project that is using a smart lamppost does not need to identify

the people walking below in order to target them for intervention and manipulation, just as

policymakers engaging in 'nudging' the public (Thaler & Sunstein, 2008) do not seek individual

consent when they engage in experiments designed to induce behavioural change.

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These ways of making people visible are not subject to the legal framework for privacy since it derives from individual rights,[1] and those rights have been translated, in the European and US systems, into individual protections from data-related harms. This means that if data is de-identified, it is then considered fully safe and open for use. Such data are particularly important to researchers, who can use them to study the spatial dynamics of population, mobility and development, Yet research demonstrates that even if data does not identify anyone directly, it can still impact them just as seriously as if they were identifiable (Raymond, 2016; Taylor, 2016b). In fact, data that are non-identifiable (or as Raymond (2016) puts it, 'demographically identifiable') nevertheless tell a story. Big data is used to analyse group characteristics and dynamics as much as to identify individuals, for instance in terms of population and urban dynamics, risk estimation and predictive analytics and network analysis of communications. Especially when analysed on the network level, they can tell us about the lives of groups, networks, villages, cities, even states, and are already becoming 'shadow maps' that allow for intervention on the collective level (Taylor & Broeders, 2015). Given these possibilities, researchers who go along with the assumption that anonymous data is safe data may create real problems for the subjects of their research (see Raymond et al., 2013, for the case of satellite data).

The task of data ethics

The problems identified here represent just some of those raised by the new sources of data, and the new technologies becoming available for processing those data. There is an important disjuncture between the ethical parameters that are usual for researchers and the possibilities of the new digital data sources. Given this, we may do well to look beyond the standard set of rules regarding privacy and data collection – even though these, as Kitchin (2016b) points out, are a necessary precondition for preventing the abuse of citizens in the instrumented urban environment. Identifying impacts on society should logically be done by stakeholders within society more broadly,

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[1] Notably in the Universal Declaration of Human Rights (Art. 12) and the European Convention on Human Rights (Art. 8).

and foremost by citizen groups. Yet citizen participation is ill-defined in relation to the smart city: it is currently considered largely irrelevant in many high-profile urban digitisation projects (Greenfield, 2013), and serious concerns are often sidelined until they become disruptive (Datta, 2015). Those promoting smart city projects genuflect to citizen participation initiatives (e.g. EIP, 2016), but the smart city is primarily the technocratic city (Shelton & Clark, 2016) and the expert city.

The rules we have are necessary but not sufficient. Even the rules developed to deal with digital data may not be right in every case: take for example the now-common 'open research data' requirement that data collected by researchers must be placed in repositories to become accessible to the field. If we no longer know which data are risky, how can we decide which data to make open? Or if, for example, we target datafication's collective risks as well as individual ones we cannot simply rely on the notion of an individual right to privacy and instead we end up with a different, more political and structural notion of what an ethics of digital geographies might need to accomplish. Such a structural approach would demand that we ask how data value chains and institutional controls might be configured to promote privacy, nondiscrimination and autonomy, and that we critically historicise data's problems as a way to identify what we are for and against (Dalton et al., 2016).

What approaches, then, provide ways to understand what is ethical with regard to digital geographic research? In order to assess what is fair and just in terms of data's uses and impacts, it is necessary to include as diverse a set of stakeholders as possible. Several possibly overlapping frameworks are available. First, Nadya Purtova's notion of data as 'system resource', an ecosystem of people, platforms and profiles, with distributed ownership (Purtova, 2015), provides a way to argue against technocratic perspectives that may prioritise innovation over consensus. Alvarez León (2016) has made an economic analysis of such distributed data ownership with regard to geographic information, but a corresponding analysis from the ethical perspective, regarding who has rights over the data produced by instrumented and digitised urban space, would be a useful tool in thinking

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through how to respect different claims over data. As a starting point, the notion of overlapping stakeholders is clearly important: the most obvious groups to consider seem to be citizen associations; educators and research communities; local councillors and mayors; firms themselves, and national-level actors such as lawmakers and regulators. These groups have entanglements that, if considered together, necessarily provide a multifaceted approach to determining what data should do, and how. One could be a member of an interest group or a town council at the same time as working for a corporation or as a teacher or researcher. Furthermore the missing 'citizens' can be found in each of them, since all these may be composed of individuals who live and work in urban space.

Another approach is to start from the point of view that data technologies should be used in ways that enhance human flourishing, dignity and integrity, and to test each new use of data against these benchmarks. These overarching perspectives can be found in the philosophy of information (Floridi, 2016), but also in international development (Heeks & Renken, 2016) and media and communications (Arora, 2016; Powell, 2016). By placing these perspectives in dialogue with each other (Taylor, 2017) we arrive at an argument that we need to build broad societal debates that can set the boundaries for experimentation with big data, and that can help think through what kind of rulemaking process we want to adopt. What is clear is that our current tools for identifying and addressing the risks of our data economy are insufficient, and that the notion of 'data ethics' may be one of very few useful placeholders for the diverse set of discussions about rulemaking and boundary-setting that are necessary. We need a new discussion about what shape ethical behaviour takes with ubiquitous connectivity and the sensed environment: we must hope that data ethics can be the territory for that discussion.

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