

'Smart' discourses, the limits of representation, and new regimes of spatial data

Abstract:

As "smart" urbanism becomes more influential, spaces and places are increasingly represented through numeric and categorical data that has been gathered by sensors, devices and people. Such systems purportedly provide access to always visible, measurable and knowable spaces, facilitating ever-more rational management and planning. Smart city spaces are thus governed through the algorithmic administration and categorisation of difference, and structured through particular discourses of smartness, both of which shape the production of space and place on a local and general level. Valorization of data and its analysis naturalizes constructions of space, place, and individual that elide the political and surveillant forms of techno-cratic governance on which they are built.

This article argues that it is through processes of measurement, calculation, and classification that "smart" emerges along distinct axes of power/knowledge. Using examples drawn from the British Home Office's repurposing of charity outreach maps for homeless population deportation and the more recent *EU EXIT* document checking application for European citizens and family members living in the UK, we demonstrate the significance of Gunnar Olsson's thought for understanding the ideological and material power of smartness via his work on the very limits of representation. The discussion further opens a bridge towards a more relational consideration of the construction of space, place, and individual through the thinking of Doreen Massey.

Keywords: Massey, Olsson, smart cities, data, space, place, spatial data,

1. Introduction

"a leading homelessness charity passed key information about migrant rough sleepers to Home Office enforcement teams and may well have done so without their consent." (The Guardian 2018)

"the app [is] analogous "to border guards knocking on every door in the U.K. and forcing EU nationals to show documentation." (Forbes 2018)

Smart geographical rhetorics - whether concerning cities, devices, spaces or places - are promising more rational, calculated geographical policies and procedures, with critical implications for the production of space and place (Anthopolous, Janssen and Weerakkody, 2019). Existing research has revealed that carbon-neutral towers and other positive uses of "smart" technologies are not the only outcomes of smart initiatives (Söderström, Paasche, and Klauser 2014). In practice, data-based decision making facilitates both empowering and disempowering experiences, ranging from self-driven data navigation using crowdsourced apps (Hind and Gekker 2014) to the identification and deportation of homeless people in cities across the UK (Jackson 2015). In practice, the language and framing of the smart city frequently obscures a landscape of governmental and corporate imperatives in which individuals, spaces, places and things experience the uneven promises and pitfalls of "smart" technology, often in terms of representation (Rose and Willis 2018) and generating inequality (Shelton, Zook, and Wiig, 2015).

Smart city initiatives reflect geographic scalar shifts, as the power to measure, calculate, and classify becomes more centralized, and the power of signification becomes re-situated at divergent, often conflicting scales of space and place. Scalar relations have interested

geographers for decades (Marston et al. 2005; Moore 2008), yet, as smart cities promulgate, measurements, calculations, and classifications produced for specific purposes are reappropriated, resulting in unexpected conflicts between stakeholders *across* multiple scales.

The definition of the smart city often encompasses only those places defined specifically by “smart” initiatives (Milton Keynes, Madrid, or Songdo IBC are key examples). In this article, we examine smart urbanism more broadly via the relations between data and body, representation and self, individual and society, and representational structures of smartness. These relations underpin the constant negotiation between the structural and governmental logics in smart city discourses, and the lived, embodied and situated experiences of place (whether in cities or beyond) (Dowling, McGuirk and Maalsen 2018). We examine these tensions through the impacts and experiences resulting from two nominally “smart” cases: a London charity that shared personal information about homeless people with a government agency to identify, locate, and deport non-citizens, and two of the author’s own experiences with the newly released *EU EXIT* identity checking application, as an example of the future of data-driven smart technologies in regulating bodies, spaces, and places. Through these cases, we explore how societal valorization of data and associated analytic capabilities naturalizes constructions of space and the individual - constructions which elide the political and surveillant aspects of technocratic governance that undergird smart city discourses. Such discourses, as Datta (2018), Cardullo and Kitchin (2018), and Maalsen (2019) explain, reinforce values of smart-citizenship while overlooking neo-liberal and colonial logics of governance. This, we argue, requires a critique focused upon the relations between power/knowledge and space/place. To undertake this critique, we first outline current research on the technosocial nature of measurement, calculation, and classification in smart discourses; we then consider the limits of representation through rationalism, and in particular cartographic reasoning in terms of the interweaving of individual (placed) experience and global governmental logics, before presenting two key cases that exemplify the slippages between the operation of smartness, lived experience, and the representation of space and place.

Highlighting the epistemic limits and ontological breaks that occur between representation and individual within these systems, we emphasise the works (and critiques) of Gunnar Olsson regarding the translation of abstract classifications and calculations into material, bodily, and social subjugations, and of Doreen Massey, regarding the distance between these abstractions and lived experience, including the relationality between space and place, against the totalising logic of abstract global technology and ‘real’ life (2005, 184-185). These critiques hinge upon linguistic and indexical correspondence, the space of representation and speech that structures encounters with place and power, primarily through the use of representation to secure and stabilise spatial processes. As Massey writes of a territorial geographical imagination: “words such as ‘real’, ‘everyday’, ‘lived’, ‘grounded’, are constantly deployed and bound together; they intend to invoke security, and implicitly - as a structural necessity of the discourse - they counterpose themselves to a wider ‘space’ which must be abstract, ungrounded, universal, even threatening” (*Ibid*).

The writings of Olsson offer a structuralist and linguistic analysis of the way in which power works through the indexicality, symbolism and semiotics of representation itself with a distinctly spatial (rather than temporal) lens. Olsson’s work, however, has been critiqued as a self-indulgent reaffirmation of masculinist geographical knowledge and dehistoricized subjectivity (Sparke, 1994) at the cost of situated, nuanced, and sensitive acknowledgement of the specificity of space and place, as well as a failure to engage with the theoretical work undertaken by feminist geographers such as Rose (1993). To this end, we aim to complement these representational analyses with the arguments made by Doreen Massey (2005) about the way in which representational power comes to bear as it is entangled with

the lived, material and coformational - that is, language, but not without bodies or emplaced experiences and relations. In particular, Massey's rejection of a place/space dualism, or "technology-led" understandings of "information as disembodied and of globalisation as some kind of other realm, always somewhere else" (2005, 185) are of particular use in examining smart cities and their discourses.

By using the representational and spatial critique of Doreen Massey (2004, 2005) to complement Olsson's structuralist, epistemic claims to the basis of linguistic ontology - and thereby power through calculation - an experience of space is described in which self and other are situated simultaneously within, beyond, and governed through language and the limits of representation. Specifically, while data governance or governmental logics might be understood via Foucault's (2002a) writings on disciplinary societies, we are specifically interested in outlining the role that linguistic ontologies play in both promising (and failing to achieve) total and absolute representation of urban people, processes and places. This is a cautious distinction: as Foucault (2002b) argued, and Belyea (1992, 3) reminds us, "texts must be examined independently of the persons who write them". Yet, our argument is precisely that the meaning and power of data is at once embodied by the data themselves *and by the person or authority who seeks to use it*, and that this will shift as the same data is used in different contexts. By leveraging Olsson's structuralist (and oftentimes humanist) thinking around signification as thought-and-action, we demonstrate how, as equivalences are made between data and the lived world, the politics of generating and repurposing social and spatial data occurs at multiple scales. Furthermore, as differences defined by data and analysis become rescaled, signifiers (and therefore social implications) shift in the move from one context to another. Both the cases discussed - the Home Office's acquisition of homeless people's personal information, and the use of the mobile-phone *EU EXIT* app to verify the status of (already-settled) EU nationals and their families in the UK - are examples of such shifts, where one set of data is repurposed in a different spatial context, albeit in the same place. The contextual shifts in social and spatial data are crucial when considering the wider implications of smart city governance - particularly when working between the affective experiences of inequality and representational expressions of "smartness" (Shelton and Lodato, 2018). Thus, Olsson's framework provides a means to bridge critical discourse and lived materialities without discounting the possibilities of 'smart' technologies and cities. We demonstrate how, as differences become datafied, they are re-scaled and, in the process, signifiers slip.

2. The Unstable Foundations of Smart Cities

Cities are frequently the subjects of geographical discourse on smartness (Silva et al. 2018) that. Smart city initiatives come in many different forms, ranging from smartphone apps for reporting potholes (Shelton et al. 2015) to the wholesale development of new neighborhoods (Scola 2018), but in each case, as Olsson suggests, the discourses around them move beyond the sayable, to the representable, and into the power of representation to fix and deny being in both space and place. Scholars have been quick to note the discursive underpinnings and associated material dimensions of such smart initiatives. Söderström Paasche, and Klauser (2014) characterize smart cities as a form of corporate storytelling, a sales pitch that places the company at an "obligatory passage point" (Callon quoted in Söderström et al. 2014) on the way to a systems-based, planned technological urban utopia. In practice, delivering on such rhetoric is extremely difficult (Wiig 2016). Even if they work as designed and intended, smart city initiatives often involve data-focused, technical solutions to urban problems that lack consideration or engagement with social processes and political conditions (Luque-Ayala and Marvin 2015). Nevertheless, those political dimensions are vital to understanding how the braiding of identity at an ontological level between individuals and societies (Olsson 1979) that emerge with and through smart cities and associated technologies is highly contingent.

Narratives of smart cities cut across scales from the individual to the global; however, at each step, greater quantification and analysis lead inexorably towards an apparently better, more organised and more efficient self, city, nation, and planet (Wilson 2015). Fundamentally, this occurs through the generation, capture, and analysis of data. In this context, classification and measurement is the process of quantification by which *something* is rendered into data, calculated into being meaningful and used to enact change. That something, somewhere or someone - within narratives of smartness - may stretch across multiple scales and may refer to persons, objects, or flows.

Entangled with the notion of an abstract 'global' the technological emphasis of smartness tends to juxtapose proximity and materiality, much like global and techno-focused imaginaries of the past, in which spaces of power and control were (conveniently) abstracted from a supposedly more distinct sense of place (Massey 2015, 183), as if individuals, objects, or sites can be simultaneously fixed, but untouched, by governmental logics, and their representations. Within semiotic theory, and specifically, theories of signification (Saussure 1987; Olsson 1980), the politics of conceptualising objects as coherent, nameable and durable things (and so, measurable, classifiable and calculable) is critical to understanding how representation matters in the contemporary data-centric context of smart cities. Crucially, as Olsson (1980) argues from Saussure, the formation of the sign does not simply link a word with a thing but instead defines the thing itself at an ontological level - whether it is subject or body, place or space, neighbourhood or nation-state. If urban spaces are already proliferated with signs, then smart city discourses reshape and rewrite processes of signification into digitally-oriented interoperable and calculable systems of representation (c.f. Wilmott, 2016). Thus, urban processes of quantification are hinged on the development of coherent ontological structures through classification (Leszczynski 2009). This is achieved through the standardisation of systems of classification and measurement, and the relationship between both. In short, the question of what should be measured is conditional on how it should be measured (Beer 2016; Gabrys 2016). For instance, within the smart city, the question of how a body should be rendered as part of a population is co-dependent on how it is being measured: biologically (i.e. temperature, weight, blood type); socially (race, gender, sexuality, class, age); culturally (ethnicity, religion, taste); economically (income, housing, expenditure); or politically (nationality, suffrage, residence). As the cases in this article will discuss, this enables the repurposing of data to be calculated towards a number of analytical ends - some of which may be unanticipated.

Classification-measurement secures spatio-temporal correspondence: between objects in time and space or between the points of measurement themselves as an act of differentiation/similarity. In doing so, both classifications and measurements are political actions: first, defining what socio-spatial objects are ontologically being measured (spaces, places, bodies, neighbourhoods) through difference and indexicality; second, methodologically determining what processes should be measured (i.e. what kinds of data - heat, particles, location, nationality); and third, the production of (inter)nationalised baselines or starting points from which measurement occurs (i.e. meridians, datums, data points, time zones). Thus, acts of quantification, of reducing and representing one thing as another, are fundamental to the processes of the modern state (Scott 1998; Foucault 2008). As such, signification is not unique to smart city processes, but is intrinsic to their functioning - it also flows beyond the smart city, impacting a range of places and populations. As Massey (2005) notes of the line, such representation is an attempt to create ontological security and is therefore the basis on which all smart city discourses rest. It assumes a discrete correspondence between the real world and the data produced; both the act of "saying that something is something else and being believed" (Olsson 2000, 1237).█

As measuring involves producing and framing the world, setting the limits of what can be epistemologically known and ontologically secured, calculation is the means by which these quantified representations are leveraged in service to the social ambitions of smart city initiatives, but also smart technologies and various models of smart urbanism. Through the application of measurements, the city becomes a computer, a now-smart city that “frames the messiness of urban life as programmable and subject to rational order” (Mattern 2017). If measurement is roughly the creation and capture of data, and calculation its processing, the (re)classification is again the end goal of these two processes; it is the rendering of all *things* as populations (Mackenzie 2018a, 116) according to smart city agendas. This occurs through a refiguring of what counts (and is counted) and measures (and is measured) through the host of sensors and sensing devices that have proliferated within smart city environments (Gabrys 2014). Thus, classifications themselves become calculable, in that they need to be calculated against each other to draw inferences between previously separate categories. In the representational promise of a fixable, classifiable, calculable world, smart city discourses in particular purport to have achieved that long sought goal of the modern state: controllable, knowable populations. To become populations in the smart city, however, categories must be algorithmically sortable outputs from *digital* calculations. In short, digitally-oriented measurements inform digital calculations which are then used to re-classify *things*, people, places, sensors, into a promised better, more efficient digital-material world, the space of the smart city itself. From border security (Amoore and Hall 2009) to pop musician safety (Canon 2018), these classifications and measurements are then calculated into conclusions, their power suffusing everyday life and being directly felt through the transformation of probability into certainty, and then, data into materiality (Mackenzie 2018b; Amoore and Piotukh 2015).

Smart city technologies (from facial recognition to data sharing) make equivalences and produce differences. Whether the sets of directions that individuals receive when moving through space, or the mortgage rates that are offered depending on the specifics of place and individual, the manipulation and control of bodies in space rests upon these calculation and classification processes (Thatcher 2013; Dalton and Thatcher 2015). As the given examples will demonstrate, these logics also apply to wider contexts - national borders, collective citizenship, global security - stretching the rhetoric and practice of smart cities across a far wider field than the underlying knowledge production. As Shelton et al. (2015, 17) point out, “this new kind of expertise tends to be embodied in far off places and organizations which must be brought in from outside”. Under these conditions, local knowledge is only valued and included to the extent that it can be collected and fit into the data models and technological imperatives of smart city initiatives. Furthermore, this classificatory sorting sits at the nexus of power/knowledge formations - the power to state “something is something else” but also to make it exist as *such* (Foucault 1972; Olsson 2000). But, as Gabrys (2016, 41) writes “[p]rocesses of producing data are also processes of making sense”. Smart city systems are fundamentally concerned with securing a specific epistemological and ontological understanding of space and place (Kitchin, Lauriault, and McArdle 2015).

The computable, calculative solutions offered through smart urban technologies belie a double transformation that occurs with respect to lived experience. Processes of calculation rest upon an epistemic myth of the world as perfectly knowable and representable, what Greenfield (2017), Wyly (2014), boyd and Crawford (2012) and others refer to as a resurgent, unreformed logical positivism. Smart solutionism belies a second transformation of the real: algorithmically calculated probability becomes the highest form of knowledge and certainty (Beer 2018). At the extreme, this form of knowledge production eschews situated, theoretical, and historical understandings in favor of what Gregg calls the ‘data spectacle’ wherein data require only “the indication of potential to achieve veracity” (Gregg 2015, 40). In doing so, calculation also smooths over the difference established in the first instance of measurement. In short, smart city discourses do not prioritize accurate measurement or

calculation but rather engage in a “fantasy of command and control” (Gregg 2015, 37) that serves Söderström et al.’s (2014) corporate sales pitches through which society is transformed into an superficially calculable whole. This process homogenizes collective and individual experience, bringing many places under a single mechanism of calculation, producing a spatial logic that shapes, but also denies, the diversity of lived material encounter.

3. The Limits of Cartesian Reason

Issues of individuals versus governance, ontological complications, and epistemological divides have long been the focus of geographer-thinker Gunnar Olsson. Alongside Farinelli, his critique of ‘cartographic(al) reason’ is specifically useful in the context of smart cities for connecting ontological and epistemological disjunctures with expressly geographical scales and lines (Farinelli 1998; Olsson 2007). While Foucault’s work understands control through discursive epistemes, in Olsson, ontological concerns arise around material encounters and individual experiences, while epistemological framings specifically reflect what is and can be known through representation(s), including those that structure a sense of space and place. For Olsson (and Farinelli (1998)), cartographical reason thus denotes the moment when the act of inscription ceases to be purely descriptive and instead becomes a platform for decision-making and action - in short, reasoning. We argue that for smart cities, as well as smart city initiatives and discourses of smartness, structures of reasoning emerge in the crucial distinction between measuring urban processes and the deployment of calculation and classification as models for future building, planning, and policy.

The distance between measurement and reasoning stretches across spatio-temporal scales, from long-term urban planning to near-real-time data-driven reasoning involving individuals. Massey recognised the territorial capacities of meaning production through reason and abstraction, in the context of space/place and global/local dualisms (2005, 184). Massey’s push for a relational spatial politics insists upon a mutual constitution of local and global, asking: “Where would you draw the line around the lived reality of your daily life?” (2005, 185), gesturing towards a critique of reductive inferences that name the local place as more ‘real’, while denying the interconnectedness of the individual with national and global governmental spaces and structures.

For Olsson, deploying structures of reasoning relies on making logical inferences between object and subject, the finger and the eye (Olsson 1991). This is where the ontological and epistemological interweave at the level of denotation, through body and symbol. Applying data knowledges into material structures (and vice versa) engages this form of linguistic indexicality. This notion underpins much of Olsson’s work on thought and action. He describes how language and identity are intertwined and how the ability to point at an object and give it a name is at once separative (between self and other) and connective (between self and language, and between objects) (Olsson 1980). Language is a “prison house”, forming and delimiting our thinking, yet it is impossible to think beyond it: we think and talk *in* it, even when talking about it. This is a “chiasm”, where language and action (epistemology and ontology) occupy a kind of mobius strip in their paradoxical separation and connection (Olsson 1993). Yet, Massey (2005) makes a crucial distinction between representation and space: space is open, brimming with possibility and always in formation and process; representation, on the other hand, fixes spatial processes into stasis, leaching out material vibrancy in pursuit of indexical, descriptive or numeric qualities. In between, Massey insists on a lived and situated sense of place and space that includes the past and the feeling of emplacement (2004). In this sense, the way in which data operates within and produces space is necessarily reductive, omitting both the emplacement of individuals in specific sites, but also resisting open spatial possibilities to further fixed and calculable space(s).

It is in translating between space and representation that we find both Olsson and Massey's anxieties about the limitations and politics of representation. For instance, for Olsson (1982) "/" is a fundamental sign for understanding the ability of the State to draw inferences between previously separate categories, or "state capitalism" (Olsson 1982). Signs like "/" and "-" hold the crux of power, to "mislead by mixing ontologies" (Olsson 1982, 29), *suggesting* links even where there may be none. In doing so, they hide how language is being deployed to deliberately draw relations between ideas in the pursuit of political agendas, as we demonstrate in the next section. Here, where Olsson would argue there are inferences between A/B or $A=B$, we can see a new set of inferences emerging through political initiatives, documented in critical accounts of post-18th century governmentality and, contemporarily, smart city measurement: $A/1$, $A=1$. The ability to connect one concept, a human being, a space, a place, to a numeric value becomes embedded in the linguistic play of city planning (now including smart cities), which as Massey argues, has real material consequences, and "is a dangerous basis for politics" (2005, 185).

4. The UK Home Office

The UK Home Office is a particularly interesting governmental structure for understanding the politics of (spatial) representation that underlies smartness, and the slippages between lived experience and abstract data. The two cases that follow demonstrate the ways in which the logic of smart cities, including many of the technologies and attendant data, are routinely, seamlessly adapted for territorial control of space in both local and global contexts. Both cases deal with individual's right to occupy particular places and spaces, mobilised through questionable rhetorics of citizen and non-citizen, deployed in specific sites (the streets, the home, the border; London, Manchester, and across the UK), through the use of smart technologies.

The first case of data's meaning slipping across scales - between local place and wider governmental, smart space - took place amidst the United Kingdom's recent "hostile environment" policy on international migration (Jackson 2015). The Home Office began to collaborate with charitable organizations in London to target homeless non-UK citizens for deportation. Some collaboration was directly on the ground, but much involved repurposing the charities' data about people who were sleeping on the street to identify and locate foreign nationals. When this partnership became public, it sparked a scandal and governmental investigation (Taylor 2018a).

The data in question was part of the Combined Homelessness And Information Network (CHAIN), a shared database funded by the London Mayor's office and administered by St. Mungos, a major homelessness charity, with access to the data granted by the Greater London Authority (GLA). Each homeless person has a listing, logged by charity outreach workers, with their name, history of homelessness, special needs, gender, age, and crucially, their regular location and nationality (St. Mungo's 2018; Greater London Authority 2019). In May 2015, the Home Office secretly obtained GLA permission to access the CHAIN database. That data now served a Home Office program to remove homeless non-UK nationals. If a homeless person declined contact or refused an outreach worker's offer of help to voluntarily return to their country of origin, the Home Office would send officers to their regular location to detain and deport the person by force (Taylor 2018b). CHAIN geographic data facilitated the detentions by indicating where to find the homeless person in question, and, in the aggregate, geographic "hotspots" where potential deportees might be concentrated. "We are trying to build in a timeline on the map so you can see where non-UK nationals have moved to over time, which hopefully will also be able to help you establish priorities by seeing patterns..." (Townsend 2017). Deportation rates rose an estimated 41% for EU nationals, totalling 698 EU nationals deported by May 2017 (Ironmonger 2018).

The second example stretches from 2018 to the time of writing. In the wake of Brexit, the UK Home Office introduced an app-based immigration application system for EU migrants hoping to settle permanently in the UK. *EU EXIT* is an Android-only app that cross-references multiple data channels, using smartphones to conduct biometric passport or residence card scans, and “iProov” facial recognition technology to verify applicant’s identities before checking against pre-existing residential data (Brewster, 2018). The power of the smart-technology discourse is evident in the limited push-back against such a vast data-gathering exercise, which underwent testing with a group of university of Manchester health-service workers in November and December 2018 and a public beta test ending in March 2019 (the former including two of the authors of this paper). In April 2019, the app was rolled out to all UK-based EU nationals. There is evidence to suggest that this technology will lead to further use of facial recognition technology provided by iProov, as well as RFID, NFC, and other technology provided by WorldReach and ReadID, which are likely to be used at UK ports and borders after Brexit (GOV.UK, 2019; Parliament.UK, 2019), indicating the expansion of the logic of smart technocratic governance beyond non-citizen individuals and into far wider spheres.

This emerging case - the consequences of which are as-yet unclear - represents one of thousands of new interactions between spatial and social data under the guise of “smart” rationalisations - where abstractions of place and identity feed into a national network, but with profoundly personal consequences. In both cases, the ontology of the data scaled between the hyperlocal coordinates at a single street or block and the centralised, more global administrative hubs of commercial servers, CHAIN, and Home Office. This extreme scalability is characteristic of data use in recent years (Dalton 2018), but also of the omnipresence and naturalisation of particular smart discourses, which in turn shape smart initiatives and the spaces and places of smart cities more broadly. In the CHAIN-Home Office example, it was non-smart resistance (in the form of media discourses and community push-back) that worked against the implied objectivity of the CHAIN database and its representation of homelessness as something appropriate for the Home Office to calculate and act upon within the City of London. The local scale of street and place came up against the national scale of CHAIN, creating a slippage between lived experiences of place, wider occupation of smart spaces and places through software, and the governmental logics of measurement, calculation, and classification.

In the *EU EXIT* example, what is at stake is the existing right to occupy your own home or place of work, but also the very representation of home, and space in the smart city: the EU right-to-remain that is presently held by millions of EU nationals and their families in the UK has been brought into question, even before the conclusion of Brexit. Data that previously existed for ease of transit (passport or biometric residence card data, for example) is repurposed and triangulated via smart technologies into disempowering significations and determinations. Though borders, locations, and everyday practices haven’t changed, this amalgamation of smart biometric technology and data demands new measurements and calculations (nationality, years and place of residence, even criminality), to determine classification (settled, pre-settled, rejected), in turn to support or deny the right to reside in the UK. This right is first determined by the algorithms, calculations, and biometric scans of an app, before ever being assessed by Home Office staff. The lived and situated encounters of local people are rendered as dates and documentation to be verified by human eyes only once the app has confirmed that the scanned passport (using NFC technology) and the scanned face (using iProov technology) match the database information (checked using WorldReach). In this context, local people suddenly become non-citizen others; their places are transformed from secure and settled, to under threat from the power of smart technology, deployed in service of the governmental logics of measurement, calculation, and

classification - a process that is mirrored by the violence seen by Olsson in language, and the logics resisted by Massey denying the specificity of place.

Our concern is in the production, reproduction, and reassignment of equivalences between local, situated processes and broader governmental rationalities through analytically-created “obligatory passage point[s]” (Callon 1986 cited in Söderström, Paasche, and Klauser 2014). Like Massey’s relationality (2005, p. 180-186), these points support the production of a space of governance, and influence specific experiences of place. In London, for example, CHAIN aims to describe and map urban homelessness through the personal data and location of homeless individuals, including their nationality, while the *EU EXIT* app operates at a more diffuse level, measuring the future legal rights of EU citizens throughout the UK. When this data ceases to be purely descriptive and becomes actioned - by people refusing to rent houses to EU nationals (Westwater, 2019) or the Home Office using location data to find and deport vulnerable individuals - measurement, calculation, and classification come into being as political tools which shape not just personal experience, but also wider ontological/epistemological claims to the experience and knowledge of particular places as they emerge within the spatially-driven reasonings of “smart”. Clear lines of division emerge between empowered experts who make and respond to data equivalences and the people whose spaces and places are transformed (Shelton et al., 2015).

The calculative and classificatory abilities of such interactions build upon the critical concerns of both cases at the level of representation and its limits. What the *EU EXIT* app shows us is the exceptional capacity not only for scalability but for structuring a space of control that operates in many individual places at once - through the portability of the smartphone app, but also through the omnipresence of the surveillant capacities of smart technologies. We argue it is at these moments of representation, or as Olsson suggests, equivalences and inferences, that “smartness” begins political work. Rather than conceptualising space as multifaceted and vibrant, this technocratic smartness flattens space into a representational data surface, which is easily correlated with other flat data surfaces and might be hijacked or repurposed according to different political and economic agendas.

The original intention for the data, much less its calculation and classification at other scales, neglects important aspects for people who live in these datafied spaces and places, including the jobs, privacy, and human rights of homeless people in London, and EU citizens living across the UK. Furthermore, due to the limitations of the data measurement, calculation, and classification, these processes overlook how such programs and applications may simply redistribute problems. The CHAIN case, for example, may redistribute homelessness internationally and possibly within London as homeless people become wary of charity workers, but does nothing to resolve the issue of homelessness itself. Conversely, the *EU EXIT* app repurposes and shares existing data, in concert with private entities, with little attention to identity security; community impact; or the inherent risks of unleashing mobile-mass-surveillance technology and data with limited forward planning. In Olsson’s terms, at the basic level of equivalence and inference, so much geographical context is left out of this “smart” data, that its fundamental equation, $- / -$, will obscure the many social, psychological, environmental, and even practical aspects of living in the smart city. Moreover, centralized strategic decisions rely on data that can be compared, contrasted, classified - a logic of the line (territory, rule, data), over the lived. Whether presenting short-cuts or deporting people, this logic involves enacting control through space, and removing bodies from place.

5. New Openings and Problems

In both cases, data sets are devised and chosen to suit the platform (Android; IProov; *EU EXIT*), or organisation (Home Office) rather than to reflect the heterogeneity of the places and lives they represent. Equivalences and inferences become ideologically embedded in quantitative systems transforming into bureaucratic systems focused more on reifying their own epistemological status than addressing social needs (Olsson 1974). This calculating approach emphasizes preserving already-present political relations of the status quo. Connecting back to Olsson's concerns about language, the problem of signified Cartesian inferences in spatial planning models is precisely this emphasis on producing conditions to ensure its own perpetuity, rather than resolve social problems supposedly targeted by governmental logics.

Signs, for Olsson, are always culturally situated and subjective, demarcating lines of difference and identity: you/me, we/them, individual/society. Through measurement, calculation, and classification, data moves between these contexts, creating slippages, even disjunctures along those lines between people and organizations operating on different geographic scales, articulating new political and spatial relations. However, in arguing that language is a prison house, Olsson's thought elides any possibility of reclaiming spaces and lives that have become datafied and rationalised according to external agendas and discourses. Alternatively, Massey (2004) suggests that emplacement, the embodiment of the self as structured through place, is fundamentally meaningful; it is the site at which representation, bodies, and language come together. Far from Olsson's prison, Massey argues that lived and grounded spatial encounters are the site at which meaning must be made in resistance to hegemonic geographies, which we argue includes smart discourses and cartographic reason. Massey cautions against the exoneration of the local from global spaces and instead demands a critique of local/global politics around individual experience, space, and place:

"These things are utterly everyday and grounded at the same time as they may, when linked together, go around the world. Space is not the outside of place; it is not abstract, it is not somehow 'up there' or disembodied. Yet that still leaves a question in its turn: How can that kind of groundedness be made meaningful across distance?" (2004, 8)

We have argued that such groundedness has been both exploited and obscured by the operations of smart city politics that classify and calculate, and increasingly extend beyond smart cities and into wider discourses and bureaucratic functions. Although Olsson's "reason" certainly dictates the operation of smart cities and discourses, place itself presents its own complexity that cannot be reduced neatly to data nodes and points. Within these processes, which places and people are deemed worth defending (Massey 2004) from such processes that rely so heavily on measurement, calculation, and classification? What alternative possibilities are missed? And ultimately, how can we better know the limits of Cartesian reason and recognise the unstable foundations upon which smart cities, spaces, and places, are built?

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