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SURVEILLANCE AND CONTROL

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The aim of this chapter is to highlight and problematise the surveillance dynamics inherent in the contemporary proliferation of new spatial media. In addressing this problematic, the chapter is structured in two main parts. The first section provides a broad outline of the surveillance potential – and functioning through surveillance – of spatial media. We also discuss the key issues arising from the increasing digitisation and interconnection of various forms of new spatial media/spatialised data collection and analysis, and we critically assess the roles and positions of two key stakeholders connected with these issues: the individual user of spatial media, and the technical experts involved in coding everyday life into software. The second section of the chapter then focuses on three main aspects that characterise the surveillance dynamics implied by new spatial media: personalisation, interconnection and anticipation. The chapter's conclusion argues for further analysis and conceptualisation of the increasing flexibility of contemporary governing through code with respect to new spatial media.

SURVEILLANT POTENTIAL OF NEW SPATIAL MEDIA

By creating spatialised informational environments that mediate daily-life practices, new spatial media rely fundamentally on systematic forms of data gathering and analysis (Green and Smith, 2004; Farman, 2011; de Souza e Silva and Frith, 2012). Put differently, new spatial media are inherently surveillant in functioning and impli- cation, if we understand surveillance as the 'practices and techniques aiming at the focused, systematic and routine attention to personal details for purposes of influ- ence, management, protection or direction' (Lyon, 2007: 14). For example, in order for Google Maps to provide its users with a map corresponding to their location, it has to gather positioning information from their devices. This is complemented with other types of information that Google collects and analyses (e.g. users' search history, content of their Gmail account, etc.) in order to personalise its cartographic service.

Thus, the main difference between such applications and 'traditional' spatial media (such as a map or a *Lonely Planet* travel guide) lies in the fact that Google can collect and process information on who and where we are, what places we are interested in, combine that information with data from its other services, and do so each time the application is used. Thus, by using these applications, we produce what Kitchin and Dodge (2011: 90–91) have named a 'capta shadow', a digital shadow of ourselves, which reflects our locations, preferences, practices and relations—a shadow that is growing and persistent over time.

If surveillance is the very condition and price to pay for spatial media to achieve their proclaimed benefits – simplify everyday life, anticipate individual needs, optimise specific activities, etc. – the increased possibilities of knowing and tracking daily-life activities raise a series of critical issues. These range from the effects on privacy and social trust, to the lack of accountability and transparency, the risks associated with information sharing, the potential of social discrimination, and the role of private interests in the design and use of spatial media applications (Cost Action IS0807, 2008). To further pursue this reflection, it is worth pointing towards three sets of issues or problems in particular.

PRIVACY AND DATA-PROTECTION CONCERNS

The first set of problems revolves around privacy and data-protection concerns, related to issues arising from the commercial and political exploitation of data accumulated by new spatial media (see Chapter 21). As shown by the recent National Security Agency (NSA) leaks for example, government agencies can have a strong interest in collecting data about their citizens or foreign organisations/citizens for purposes ranging from tax-fraud suspicion to the detection of terrorist activities (Albrechtslund, 2012). Furthermore, data generated by new spatial media can also have a considerable commercial value, allowing companies to profile consumers and to market products accordingly (see Chapter 17). Thus although these data are often used in aggregated form, their production and storage on external servers significantly increases the scope of what is recorded and potentially 'searchable' about one person, thus undermining individual privacy (Lessig, 2006: 202).

Yet, despite the dangers and ethical dilemmas implied, the 'omni-memory' of spatial media can also be experienced in positive ways by their users. As shown in more detail elsewhere (Frith, 2015; Widmer, 2015b), many users of locative media perceive the storage of their locational data as something practical, allowing them to delegate their memories of the places they had visited to technology. This outsourcing of one's memory is part of a broader trend of 'self-tracking', consisting for instance in the monitoring of one's sleep, sports performance, number of steps taken, etc. through the use of wearable devices (such as fitness trackers) and various smartphone applications (Klauser and Albrechtslund, 2014). These self-tracking practices challenge the common representation of a 'top-down surveillance', where the individual would merely be the passive object of a monitoring conducted by governments or private corporations. Here, on the contrary, individuals are active

initiators of their own surveillance—what Mann et al. (2003) terms sousveillance – in deciding themselves which application and spatial media to use. Yet this freedom to decide is informed and governed on all kinds of levels and in all kinds of ways, including financial incentives, information campaigns, advice generated by software, etc. Together, these mechanisms form a mode of regulation that does not work in a disciplinary way (through rigid prohibitions or prescriptions), but that acts on the user's own desire to benefit from the data-derived advantages offered by new spatial media.

SOCIAL SORTING

The second set of problems can be subsumed under the heading of 'social sorting'; that is, the categorisation and differential treatment of individuals based on their calculated worth and eligibility: for example, algorithmically processing data to determine whether a person should be given a job or loan or tenancy (Graham, 2005). A key aspect of spatial media is not merely data gathering and transfer, but information processing and analysis through software to generate automated responses (Thrift and French, 2002; Kitchin and Dodge, 2011). Put differently, at their very core, spatial media rely on the coding of social life into computer algorithms that automatically perform tasks (Graham, 1998; Haggerty and Ericson, 2000; Lyon, 2007).

As shown by a range of scholars, the implied processes of data analytics are never neutral, whether the collection, classification and processing of data aim at greater efficiency, convenience or security (Thrift and French, 2002; Graham, 2005; Lyon, 2007). Instead, they depend on technologically mediated codes that are used to assess and orchestrate everyday life. These codes constitute often invisible processes of classification and prioritisation, which may affect the life-chances of individuals or social groups in ways that are often opaque to the public and that easily evade conventional democratic scrutiny. As Graham et al. (2013: 470) note with regard to spatial media, 'the apparently straightforward relationship between content sought and content displayed is usually mediated by complex algorithms that tailor information based on the interactions of several factors'. In other words, on the basis of the data that are collected and analysed, algorithms shape the visibility and the invisibility of content on spatial media, channelling users' choices and decisions about where to go. When, for example, algorithms personalise information in order to match users' interests or preferences, the resulting tailored maps and spatial recommendations produce filtered informational landscapes where the user only sees what resembles them the most (Pariser, 2011). Those filtered informational landscapes reinforce socially and demographically homogenous 'communities of like-minded people' (Graham, 2005: 571) and contribute to the splintered geographies that characterise our contemporary societies. New spatial media thus raise a series of critical power issues arising from the codes' use to assess people's profiles, risks, eligibility, and levels of access to various spaces and services, thus instilling a new kind of 'automatically reproduced background' in everyday life (Thrift and French, 2002: 309).

INTERESTS BEHIND CODE

Following from this, the third set of problems concerns the question of who defines and controls the computer algorithms that allow new spatial media to work. In recent years, an increasingly detailed body of work has shown that novel software-mediated techniques of regulation and control further exacerbate the reliance on the role of private actors and technical expertise in defining, optimising and managing the 'control by code' (Lyon, 2007: 100) of urban systems and services. Managing, ordering and governing, in this context, means to make use of the mediating means and mechanisms involved in coding everyday life into software. Thus, authority derives from the expertise necessary for the design and use of computer algorithms needed to control, sort and associate the masses of data generated and processed. Giving certain (private) parties more weight challenges traditional modes of governance in which the management and control of individuals were the exclusive responsibility of the nation-state (Cost Action IS0807, 2008: 19). It also raises the critical question of how commercial goals, particularly when they intersect with public interests, situate themselves in relation to wider considerations such as democracy, accountability and efficiency. Yet, despite the significant ethical issues raised by corporation involvement in the regulation and control of everyday life, there is a dearth of theoretical and empirical work on questions of how, by whom and for what reasons such systems are being developed and deployed.

POWER DYNAMICS IMPLIED BY NEW SPATIAL MEDIA

One way to move beyond a broad discussion of the surveillance implications of new spatial media is to focus more specifically on the regulatory dynamics implied by the technologies' functioning through data accumulation and data analytics. If we are to understand the surveillance enabled by spatial media we need to foreground the basic rationalities of power inherent in the specific forms of regulation and control that arise from their use. Here, we focus on three such rationalities: personalisation, interconnection and anticipation.

PERSONALISATION

Whether we are using Google Maps for directions, Foursquare for recommendations or getting navigational indications from Mynd or Google Now, geolocational services differentiate their content depending on what their algorithms understand about where we are (location- and context-aware apps), who we are (user-aware apps) and what we do (practice-aware apps). Thus, rather than providing standardised and predefined recommendations or information to all users, spatial media start from the decipherment and analysis of each individual user's preferences, activities and context, so as to subsequently provide them with personalised web content that fits best the deciphered fields of reality. In other words, with the banalisation and democratisation of new spatial media, we are moving from a universalist model of

services to a model in which the basic spaces and services of everyday life increasingly become commodities that can be differentiated and adapted to the profile of each user (Graham, 2005: 565–6).

Furthermore, in terms of the power and regulatory dynamics implied by new spatial media, three other key points need highlighting. First, the surveillance-enabled personalisation of web content by new spatial media implies a regulatory dynamics – i.e. a type of governmentality in a Foucauldian sense – that does not start from a pre-defined normative model, but that derives recommendations through techniques of data gathering, processing and analysing, thus aiming to identify the patterns or regularities that characterise both the user's individual preferences and habits, and his or her wider context. For example, Foursquare provides users with information on specific restaurants that is not only based on the app's understanding of what places we visit and what interests we have, but also draws on a series of contextual parameters (where and when we start a restaurant search, etc.). The point is to make consumer demands and offers function better in relation to each other, thus optimising the relation between context, location and individual user needs. Reality is approached as a relationally composed whole, whose components are deciphered in their intertwined articulation. What matters is the optimised adjustment of the considered components of reality, depending on and in relation to each other.

Second, the reality-derived mode of regulation inherent in new spatial media also implies that the conveyed regulatory *telos* does not postulate a perfect and 'final' reality ever to be fully achieved, but a constant process of optimisation derived from and taking place within a given reality, whose aims and conditions are constantly readapted and redefined, depending not only on the ever-changing parameters of reality itself (we have new interests, new friends, new places to visit, etc.), but also on the shifting context and conditions of regulation (new offers are available, new transport services in place, etc.). However, whilst new spatial media indeed aim to adapt to an ever-changing context, the images and information they convey are sometimes fixed and outdated, leading to a blurring of time references, which causes users' spatial experience to be 'continuously augmented by the "here" but not by the "now"' (Graham et al., 2013: 477).

Third, if governing through new spatial media starts from the decoding of reality in its intertwined components, this also means that these components are not valued as either good or bad in themselves, but taken to be natural processes (in the broad sense) that are granted freedom to evolve according to their internal logics and dynamics, within the acceptable limits of the system. This implies a model of regulation and normalisation that 'work[s] within reality, by getting the components of reality to work in relation to each other, thanks to and through a series of analyses and specific arrangements… The norm is an interplay of differential normalities' (Foucault, 2007: 47, 63).

INTERCONNECTION

Importantly, spatial media not only work through the decipherment of their users' daily-life activities, but also through the interconnection of these records amongst each other and with other users' 'digital history'. Many spatial media indeed offer

ways to combine and store data from diverse sources. For example, as Scipioni and Langheinrich (2010: 5) have put it regarding the application Loopt, '[a] location-based recommender system has thus to match a user's individual movement history with traces from other users, find overlaps, and identify from these overlaps new places (i.e., stores, events) that the user should explore'. An identical conclusion can be drawn with regard to Foursquare's former recommendation engine Explore, which analysed users' check-in history to infer their tastes and interests. Partly based on the technique of 'collaborative filtering', Explore was recommending new places to visit on the basis of the places frequented by similar users.

In technical terms, spatial media thus exemplify the increased possibilities that now exist for interconnecting data sources situated on multiple geographical scales, and for processing and analysing in increasingly automated ways the data hence generated (Hollands, 2008). What we see emerging is a form of geographically, socially and institutionally distributed agency with regard not only to who generates data, but also to who can access the data fused and interconnected within the complex 'surveillant assemblages' (Haggerty and Ericson, 2000) underpinning everyday life. It follows that new spatial media imply a mode of regulation that aims at the ever more intensive and extensive study of reality, to decipher its internal regularities. We find a combined reflex towards ever more increased data gathering and ever wider circuits of data flow.

In more social terms, as techniques of 'collaborative filtering' and interconnection, new spatial media produce inherently volatile and dynamic 'filter bubbles', to use Pariser's term, standing here for the social aggregations created by the deployed computer algorithms, which contain users with similar tastes, interests and practices. Yet by rendering visible only that which corresponds to our shared tastes and interests, this 'bubbling effect' also accentuates homophilous forms of togetherness, which in turn polarises and fragments social space and indeed reinforces social exclusivity and separation (Widmer, 2015a).

ANTICIPATION

The mode of governing through personalisation and interconnection conveyed by new spatial media also implies a specific temporal logic of regulation, in which the relationship between past, present and future manifests itself in a particular way: governing relies on predefined codes, derived from the analysis of the past and applied to the present, to anticipate the future (Klauser and Albrechtslund, 2014). Thus personalised geolocational services can be considered as predictive technologies, whose functioning relies on the assumption that knowledge about the future is already present in the collected data (Amoore and De Goede, 2008). As stated by Thrift and French, 'software is deferred. It expresses the co-presence of different times, the time of its production and its subsequent dictation of future moments' (2002: 311). Algorithmic governmentality, as we see it in the case of new spatial media, is also, fundamentally, anticipatory governmentality (Amoore, 2007; Budd and Adey, 2009).

It follows that governing through new spatial media is also inherently performative in its relationship to reality. Computer algorithms constitute not only a tool of analysis but also a grammar of action (Kitchin and Dodge, 2011). As a model and technique of

analysis, they simplify reality into a legible order (Budd and Adey, 2009); as a means of automated response, they perform the future through this order. In different ways and at different levels of complexity, new spatial media thus imply a relationship with reality that is at once calculated and calculating. Governing through new spatial media is both produced by and in turn produces specific classifications and orderings of reality.

One of the important questions that arises here relates to the adequacy of software to approach and govern the internal complexities and dynamics of reality. As Budd and Adey (2009: 1370) argue, 'whilst the relationship between software and the simulations they enable is often less than clear, the practice of using models and simulations is often constrained by the computing tools and languages in which they were written, limiting their accuracy and potential application'. Future research should provide more detailed empirical evidence with regard to how exactly contemporary spatial media aim to address this issue, and the wider implications this has for everyday social life.

CONCLUSION

As shown, in their reality-derived, pluralist and relative approach to reality, new spatial media aim at the surveillance-enabled provision of information and services that help manage activities, flows, etc. in highly adaptable and differentiated ways. In normative terms, the question at stake is how to know, regulate and act upon the managed reality within a 'multivalent and transformable framework' (Foucault, 2007: 20). In sum, new spatial media imply a regulatory dynamics that are fundamentally flexible and 'fluid' in their management of reality.

This brings to the fore a fundamental conceptual and analytical problem that requires more attention in future research: how to further explore and conceptualise the fluidity and flexibility of contemporary governing through personalisation, interconnection and anticipation enabled by new spatial media. In recent years, some scholars have started to address this issue, examining the changing modalities and functioning of contemporary surveillance, from rigid and permanent monitoring and enclosure to more flexible and adaptable forms of regulation and control. Conceptually speaking, this work owes a great deal to Deleuze's (1992) essay on the 'society of control' (Boyne, 2000; Lianos, 2003; Murakami Wood, 2010), to Foucault's work centred on the concept of security (Amoore, 2006, 2011; Klauser, 2013; Klauser et al., 2014) and to Bauman's 'liquid modernity' (Bauman, 2000). As David Lyon put it in a recent conversation with Zygmunt Bauman, 'it is crucial that we grasp the new ways that surveillance is seeping into the bloodstream of contemporary life and that the ways it does so correspond to the currents of liquid modernity' (Lyon and Bauman, 2013: 152).

It would be possible and useful, we believe, to make Lyon's programmatic comment the starting point for a more sustained and systematic inquiry into the nature and functioning of contemporary software-based forms and techniques of surveillance. The three analytical axes distinguished in the present chapter – personalisation, interconnection and anticipation – could offer an initial organising framework for such inquiry.

ACKNOWLEDGEMENTS

REFERENCES

Albrechtslund, A. (2012) 'Socializing the city: location sharing and online social networking', in C. Fuchs, K. Boersma, A. Albrechtslund and M. Sandoval (eds), *Internet and Surveillance: the Challenges of Web 2.0 and Social Media*. New York: Routledge. pp. 187–97.

Amoore, L. (2006) 'Biometric borders: governing mobilities in the war on terror', *Political Geography*, 25 (3): 336–51.

Amoore, L. (2007) 'Vigilant visualities: the watchful politics of the War on Terror', *Security Dialogue*, 38 (2): 215–32.

Amoore, L. and De Goede, M. (2008) 'Transactions after 9/11: the banal face of the preemptive strike', *Transactions of the Institute of British Geographers*, 33 (2): 173–85.

Bauman, Z. (2000) *Liquid Modernity*. Cambridge: Polity Press.

Boyne, R. (2000) 'Post-panopticism', *Economy and Society*, 29 (2): 285–307.

Budd, L. and Adey, P. (2009) 'The software-simulated airworld: anticipatory code and affective aeromobilities', *Environment and Planning A*, 41 (6): 1366–85.

Cost Action IS0807 (2008) 'Memorandum of understanding Cost Action IS0807, living in surveillance societies'. Available at: http://w3.cost.eu/fileadmin/domain_files/ISCH/Action_IS0807/mou/IS0807-e.pdf (accessed 11 August 2016).

Deleuze, G. (1992) 'Postscript on the societies of control', *October*, 53: 3–7.

de Souza e Silva, A. and Frith, J. (2012) *Mobile Interfaces in Public Spaces*. London: Routledge.

Farman, J. (2011) *Mobile Interface Theory, Embodied Space and Locative Media*. London: Routledge.

Foucault, M. (2007) *Security, Territory, Population*. London: Palgrave Macmillan.

Frith, J. (2015) *Smartphones as Locative Media*. Cambridge: Polity Press.

Graham, M., Zook, M. and Boulton, A. (2013) 'Augmented reality in urban places: contested content and the duplicity of code', *Transactions of the Institute of British Geographers*, 38 (3): 464–79.

Graham, S. (1998) 'Spaces of surveillant-simulation: new technologies, digital representations, and material geographies', *Environment and Planning D: Society and Space*, 16 (4): 483–504.

Graham, S. (2005) 'Software-sorted geographies', *Progress in Human Geography*, 29 (5): 562–80.

Green, N. and Smith, S. (2004) 'A spy in your pocket? The regulation of mobile data in the UK', *Surveillance and Society*, 1 (4): 573–87.

Haggerty, K. and Ericson, R. (2000) 'The surveillant assemblage', *British Journal of Sociology*, 51 (4): 605–21.

Hollands, R.G. (2008) 'Will the real smart city please stand up? Intelligent, progressive or entrepreneurial?', *City*, 12 (3): 303–20.

Kitchin, R. and Dodge, M. (2011) *Code/Space. Software and Everyday Life*. Cambridge, MA: MIT Press.

Klauser, F. (2013) 'Through Foucault to a political geography of mediation in the information age', *Geographica Helvetica*, 68 (2): 95–104.

Klauser, F. and Albrechtslund, A. (2014) 'From self-tracking to smart urban infrastructures: towards an interdisciplinary research agenda on Big Data', *Surveillance and Society*, 12 (2): 273–86.

Klauser, F., Paasche, T. and Söderström, O. (2014) 'Michel Foucault and the smart city: power dynamics inherent in contemporary governing through code', *Environment and Planning D: Society and Space*, 32 (5): 869–85.

Lessig, L. (2006) *Code: Version 2.0*. New York: Basic Books.

Lianos, M. (2003) 'Social control after Foucault', *Surveillance and Society*, 1 (3): 412–30.

Lyon, D. (2007) *Surveillance Studies. An Overview*. Cambridge: Polity Press.

Lyon, D. and Bauman, Z. (2013) *Liquid Surveillance*. Cambridge: Polity Press.

Mann, S., Nolan, J. and Wellman, B. (2003) 'Sousveillance: inventing and using wearable computing devices for data collection in surveillance environments', *Surveillance and Society*, 1 (3): 331–55.

Murakami Wood, D. (2010) 'Beyond the panopticon: Foucault and surveillance studies', in J. Crampton and S. Elden (eds), *Space, Knowledge and Power. Foucault and Geography*. Aldershot: Ashgate. pp. 245–64.

Pariser, E. (2011) *The Filter Bubble: What the Internet is Hiding from You*. New York: Penguin Press.

Scipioni, M. and Langheinrich, M. (2010) 'I'm here! Privacy challenges in mobile location sharing', paper presented at the *Second International Workshop on Security and Privacy in Spontaneous Interaction and Mobile Phone Use* (IWSSI/SPMU 2010), May 2010.

Thrift, N. and French, S. (2002) 'The automatic production of space', *Transactions of the Institute of British Geographers*, 27 (3): 309–25.

Widmer, S. (2015a) 'Experiencing a personalised augmented reality: users of Foursquare in urban space', in L. Amoore and V. Piotukh (eds), *Algorithmic Life: Calculative Devices in the Age of Big Data*. London: Routledge. pp. 57–71.

Widmer, S. (2015b) 'Navigations sur mesure ? Usages d'applications smartphone en ville de New York', *Géoregards*, 7: 55–71.