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SECTION 9

UBIQUITOUS SURVEILLANCE

As we saw in Section 1, computers and computer databases—and their combination with telecommunications technologies—contributed to one of the most fundamental transformations in contemporary surveillance. Surveillance enabled by the analysis of abstract and often discrete data signaled a phase shift in the bureaucratic monitoring of individuals and groups, increasing the intensity of systematic observation but also adding layers of buffering that obscured such processes. These were some of the shifts described by James Rule (1973) in one of the field's earliest works, *Private Lives and Public Surveillance*.

In discussing technological changes of this sort, it is essential to consider, using the term introduced by Donald Norman (1988), the *affordances* of particular sociotechnical systems. This is neither to go down the route of technological determinism and argue that technologies create certain kinds of inevitable transformations nor to ally with extreme forms of social constructionism that can see no agency or purpose in technologies beyond their intended functions. Instead, an appreciation for affordances recognizes that, in their social and technological aspects, sociotechnical developments open up some possibilities and limit others. Within their specific cultural contexts, technologies lend themselves to certain uses in ways that can seem natural (Pfaffenberger 1992; Winner 1986). Such is the case with the relationship between computational and telecommunications systems and surveillance.

This section starts out with Roger Clarke's classic 1988 piece on *dataveillance*, which is a term he coined to describe the process by which data—often generated from previous stages of surveillance—are acted upon to make profiles and judgments about people in the real world. When "non-obvious relationships" emerge from these processes, data analysts tend to refer to this as "knowledge discovery in databases." Data can be subjected to a second stage of processing to examine, combine, sort, match, and predict, with outcomes that ramify both on individual and group levels, which are some of the concerns that Oscar Gandy (1993) and David Lyon (1994) would later explore in further detail.

A few short years after Clarke wrote his piece, Mark Weiser (1991) of Xerox wrote another vital piece that claimed that the future of computing would be "pervasive," that is, both that computing devices would be everywhere in the world and at the same time there would be a gradual disappearance of these devices *into* the world. Weiser's highly influential vision came to be known by many names: pervasive computing, ubiquitous computing (or "ubicomp"), or ambient intelligence (AmI). The latter term, pioneered by the Philips Corporation, includes both ambient computing and ubiquitous communications, and this understanding of the combination of pervasive computing with the Internet has given rise to the idea of the "Internet of everything" or more commonly, the "Internet of things" (IoT).

In an important but largely overlooked article in the mid-1990s, Agustin Araya (1995) argued that ubiquitous computing is necessarily ubiquitous surveillance. Why is this? Briefly, this is because ubiquitous computing requires knowledge of the location and identity of anything that is networked (devices, people, etc.) and for all of these to be addressable. These are systemic impositions. In other words, if the system is to function, these parameters are basic requirements. This insight gradually spread in the social sciences, particularly in geography with articles by scholars such as Nigel Thrift and Shaun French (2002), who talked of the "automatic production" of both space and social relations, and urbanist Dana Cuff (excerpted here), who wrote of the agential "enactment"—or ongoing recreation—of pervasive-computing embedded space, along with its propensity to displace and disperse public life. As communication scholar David Phillips (2005) observed, with ubiquitous computing systems, the automatic and restrictive coding of possibilities for identity expression might also curtail the ability of people to manage the context of intentional performances of self-disclosure, such as with "coming out" by members of the gay or lesbian communities, which could reduce opportunities for the achievement of personal and political power by marginalized groups.

The fields of geography and urban studies have tended to be at the forefront of theoretical innovations in approaches to the convergence of space and surveillance, both in consideration of video surveillance (see Section 7) and of the emerging "virtual" world. Stephen Graham and Simon Marvin are significant figures in this regard, with works like *Telecommunications and the City* (1996) and *Splintering Urbanism* (2001). In this section, we excerpt a piece by Mike Crang and Stephen Graham, which is a rich and eclectic treatment of the ways in which cities were (and are) being transformed through ambient intelligence and augmented reality (AR)—the layering of virtual information onto the physical world—leading them to suggest that the city itself comes to possess an emergent kind of sentience. Research continues to flourish in this area, with Rob Kitchin and Martin Dodge (2011) producing what remains perhaps the most sustained treatment of these themes in their book, *Code/Space*, whose title indicates both the influence of Lawrence Lessig (1999)—where code acts as a kind of law, akin to what Langdon Winner (1986) called the "politics" of technologies—and the guiding conception that the human environment is always already, to some extent, coproduced with computing software.

With the protean nature of industry and academic branding of so-called technological innovations, the digital city and cyborg city have given way to the intelligent city and the smart city. The labels change, but the proponents of these terms share a vision of combined ubiquitous computing and urban management, characterized by pervasive wireless computing networks and distributed sensor platforms, which monitor flows of anything from people and traffic to sewage and weather. Augmented reality, the Internet of things, and the smart city all assume the connection of individuals through handheld devices (or a more direct connection) to an information-rich environment and, also, the translation of bodies into information, which then becomes part of the operable environment. In these visions, more than in their actual application so far (Shelton

Hyper-Reality [Augmented reality city of the near future], 2016, Keiichi Matsuda.

et al. 2015), Deleuze's societies of control (see Section 2) are manifest. Information is seen as diffuse and everywhere, "in the cloud" (Mosco 2014), which tends to draw attention away from both the real physical infrastructure and the social and environmental impacts of these systems.

However, recently we seem to have returned somewhat to Clarke's warning about the perils of dataveillance. The current buzzword of "big data," which is critically unpacked in the excerpt by Mark Andrejevic, draws attention to the combination and processing of enormous quantities of data. These data are generated, of course, in large part by the forms of pervasive surveillance, mobile computing, and telecommunications discussed so far. Big data promises that Clarke's dataveillant world will finally be brought to fruition, emphasizing the possibilities of preempting and anticipating future risks and profits through automated analytics that can detect patterns that human beings cannot.

The hubris of big data brings to mind Laplace's demon, the imaginary being posited by the early modern statistician, which, because it was able to know everything in the present, could see the future. It seems that big data advocates see this as a real possibility not a metaphor (Mayer-Schönberger and Cukier 2013). However, it seems unavoidable that pervasive computing will transform not just the city or particular aspects of life but the entire planet—Benjamin Bratton's conjuring of *The Stack* (2016), the planet as computing system, seems all too plausible. And planetary computing means planetary surveillance. But few have even begun to consider what kind of affordances are offered by a truly ubiquitous surveillance. As the excerpts in this section show, the surveillance being scripted into such systems is frequently dictated by the interests of capital and tends to exacerbate existing societal divisions, tension, and inequalities. Thus, Mark Andrejevic (2014: 1674) refers to "a form of *data divide* not simply between those who generate the data and those who collect, store, and sort it, but also between the capabilities available to those two groups."

However, the affordances of ubiquitous surveillance need not necessarily be oppressive. There is no reason why pervasive computing could not be empowering and enabling (Monahan et al. 2010; Monahan 2010). For example, combinations of augmented reality with universal design could allow for richer, extended sensory environments for those disabled by the current social emphasis on the visual. And while the big data divide is exacerbated by its analytic processes being proprietary, state secrets, or just being hidden from the public gaze in the black boxes of algorithm-driven systems (Pasquale 2013), big data could also be open data, with the same analytic tools and possibilities available to people as to states and corporations. These are futures worth exploring and implementing, but a necessary first step seems to be coming to terms with the inherent politics of all technological systems—politics that are increasingly difficult to detect as the systems themselves fade from view.

REFERENCES

Andrejevic, Mark. 2014. The Big Data Divide. *International Journal of Communication* 8:1673–89.

Araya, Agustin A. 1995. Questioning Ubiquitous Computing. In *Proceedings of the 1995 ACM 23rd Annual Conference on Computer Science*, 230–37.

Bratton, Benjamin H. 2016. *The Stack: On Software and Sovereignty*. Cambridge, MA: MIT Press.

Gandy, Oscar H. 1993. *The Panoptic Sort: A Political Economy of Personal Information*. Boulder, CO: Westview.

Graham, Stephen, and Simon Marvin. 1996. *Telecommunications and the City: Electronic Spaces, Urban Places*. New York: Routledge.

———. 2001. *Splintering Urbanism: Networked Infrastructures, Technological Mobilities, and the Urban Condition*. New York: Routledge.

Kitchin, Rob, and Martin Dodge. 2011. *Code/Space: Software and Everyday Life*. Cambridge, MA: MIT Press.

Lessig, Lawrence. 1999. *Code: And Other Laws of Cyberspace*. New York: Basic Books.

Lyon, David. 1994. *The Electronic Eye: The Rise of Surveillance Society*. Minneapolis: University of Minnesota Press.

Mayer-Schönberger, Viktor, and Kenneth Cukier. 2013. *Big Data: A Revolution That Will Transform How We Live, Work, and Think*. Boston: Houghton Mifflin Harcourt.

Monahan, Torin. 2010. Surveillance as Governance: Social Inequality and the Pursuit of Democratic Surveillance. In *Surveillance and Democracy*, edited by K. D. Haggerty and M. Samatas, 91–110. New York: Routledge.

Monahan, Torin, David J. Phillips, and David Murakami Wood. 2010. Editorial: Surveillance and Empowerment. *Surveillance & Society* 8 (2):106–12.

Mosco, Vincent. 2014. *To the Cloud: Big Data in a Turbulent World*. New York: Paradigm.

Norman, Donald A. 1988. *The Design of Everyday Things*. New York: Doubleday.

Pasquale, Frank. 2015. *The Black Box Society: The Secret Algorithms That Control Money and Information*. Cambridge, MA: Harvard University Press.

Pfaffenberger, Bryan. 1992. Technological Dramas. *Science, Technology, and Human Values* 17 (3):282–312.

Phillips, David J. 2005. From Privacy to Visibility. Context, Identity, and Power in Ubiquitous Computing Environments. *Social Text* 23 (2):95–108.

Rule, James B. 1973. *Private Lives and Public Surveillance: Social Control in the Computer Age*. London: Allen Lane.

Shelton, Taylor, Matthew Zook, and Alan Wiig. 2015. The 'Actually Existing Smart City'. *Cambridge Journal of Regions, Economy and Society* 8 (1):13–25.

Thrift, Nigel, and Shaun French. 2002. The Automatic Production of Space. *Transactions of the Institute of British Geographers* 27 (4):309–35.

Weiser, Mark 1991. The Computer for the 21st Century. *Scientific American* 265 (3):94–104.

Winner, Langdon. 1986. *The Whale and the Reactor: A Search for Limits in an Age of High Technology*. Chicago: University of Chicago Press.