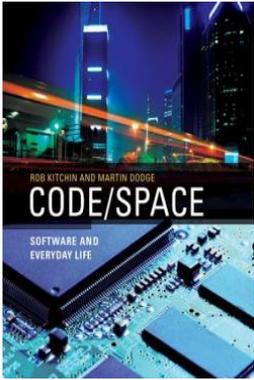


## 1. Essential reading



# Code / Space: Software and everyday life - by Rob Kitchin et Martin Dodge

(Code/Espace : logiciels et vie quotidienne)

By Javier Caletrió (Sociologue)  
24 March 2015

Code / Space furthers social analyses of information and communication technologies by questioning what these technologies do and how they are programmed for this. It analyses how software helps create new mobilities and spaces of everyday life and its implications for both greater creativity and new modes of controlling populations.

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## Book Review

### Smart cities

The notion of 'smart city' evokes urban environments fitted with digital devices interacting with each other and their surroundings in an automated and almost sentient manner, enabling new modes of doing, sensing and knowing. These devices and infrastructures generate, integrate, transfer and share 'big data', facilitating fine-grained, real-time knowledge of city life and new forms of technocratic urban governance. The 'smart', 'digital' or 'sentient' city is seen as a tool for innovation, efficiency, creativity and sustainable living in a context of global ecological crisis and what is being described as an increasingly competitive 'knowledge-based economy'. And although no city is as yet anywhere near the futuristic urban environment envisioned by, for example, Microsoft's Future Vision, many of its key technologies are in an embryonic form and digital devices are already snaking their way through the city. In examining how information and communication technologies (ICT) become normalized in urban life, social scientists have largely focused on the effects of the technologies themselves (e.g. time-space compression). However, what these technologies are and, especially, what they do and how they are programmed to do this has received much less attention and still remains a 'black box', something taken for granted as if requiring no sociological explanation.

Code / Space analyses how software instructs various technologies on how to act. It argues that software matters because it exerts a profound influence on everyday life by producing new subjects,

practices, mobilities and interactions. More specifically, Code / Space argues that understanding this influence requires a spatial approach and it tries to theorize how software creates new spatialities of everyday life and new modes of governance and creativity.

## Software

Software is a set of machine-readable instructions (algorithms) that, when supplied with certain data and criteria, ensures that tasks are performed in a particular way. As such, software is a 'grammar of action' that guides machines in the production of routines. In the industrialized countries of the rich north and increasingly in other societies too, the machines and infrastructures in which software is embedded constitute an increasingly pervasive presence in everyday life which mediate, supplement, augment, monitor and facilitate collective life. Most often people engage with these technologies in an unconscious manner constituting a taken for granted background that only becomes evident when it fails to perform its tasks. Examples here include domestic practices such as heating the living room (thermostats for the central heating), playing (video game consoles), communicating (mobile phones), as well as other everyday activities such as shopping in the supermarket (coded prices) and, increasingly, driving a private car (navigational aids), which all depend on software. Software enables new ways of doing things, automates existing practices, alters social relations and opens up new potential for cultural activity. Software increasingly mediates more and more aspects of everyday life. It has become the lifeblood of the emerging information society.

## Producing space

An aspect of software that has been overlooked in the newly emerged field of 'software studies' is the way in which, through that capacity to perform tasks in certain ways, software generates new kinds of space and reconfigures the world according to its own logic or system of thought inherent in algorithms. The idea that space can be generated or 'performed' may seem contrary to common sense –after all space is simply the domain where things happen. However, rather than conceiving of it as a container with fixed characteristics and nature, social scientists find it more productive to think of space as the result of social practices which people habitually repeat in ways which are recognisable but never completely the same and which involve a dynamic relationship between people, materials, meanings and technologies. In a simplified way this is what social scientists often mean by the 'performance of space'. Adopting this view on space, two distinctive features of how software produces space can be noted.

- First, software shapes this process by influencing the conditions (range of possibilities) through which space is constantly being re-created. Kitchin and Dodge term this process 'transduction'.
- Second, new software systems generate, capture and process information about people and the world making judgements and enacting outcomes in automated ways, without human supervision. This means that technologies are programmed to make decisions by themselves in a way that is responsive to the flow of data that these technologies autonomously gather and store. This ability to do work in the world in an automated way, this almost-sentient capacity, is termed 'automated management'.

## Code / Space

The arrival of ICTs has not influenced or transformed all spaces in the same way. In some places the incorporation of ICTs is relevant but not necessary. It has augmented the possibilities to do certain things (e.g. a classroom with a digital projector) but if the technology were not there or broke down, the nature of the space would not substantially change (e.g. the classroom would still be a place where the lesson could be imparted albeit through more traditional means). Other spaces, however, would completely cease to function as intended if the software broke down. This is the case, for example, in an airport checking-in area. Should the software fail, the passenger processing comes to a halt and the

checking area merely becomes a room with disappointed or angry people. The checking area is an example of a space that is the product of code. Likewise, the code in this case exists explicitly to produce a particular type of space. This is what Kitchin and Dodge term 'code / space', a space that depends on software to function, or for it to be 'transduced', as intended.

Code / spaces are enabled by coded infrastructures (infrastructures monitored and regulated by software) stretching across localities, countries and continents. So pervasive are code / spaces that it becomes increasingly difficult to think about aspects of the everyday (mostly in Western but also in many other societies) not mediated by software. This has led some scholars to state that people in the rich north are entering an age of 'everyware'.

## **Governmentality**

The pervasive mediation of everyday life by software has opened up new opportunities for creativity and empowerment, but also more sombre possibilities for regulating and monitoring behaviour, and gathering, storing, sorting out and processing information about an individual's life, from the most banal to the most intimate details. Given this huge and still largely untapped potential to control people, it seems remarkable that opposition to its expansion has been so weak and quiet. Following the French philosopher Michel Foucault, Kitchin and Dodge note how the techniques and practices of mundane management of populations –what is known as governmentality- have historically been accompanied by a set of discourses that rationalize and legitimize these practices and techniques. The techniques and rationalities of governmentality have varied with changing modes of economic production, technologies and ideologies. Today software stands as a most widespread and therefore effective technique of governmentality partly due to discursive regimes based on notions of flexibility, productivity, efficiency, economic rationality, competitive advantage, reliability, safety and security. This ubiquitous presence and mediation of software has been possible due to a process of 'interpellation' (to use Althusser's term) wherein people become seduced and accept its logic. People in western societies seem to have decided that the convenience and 'magic' of new ICTs is worth a reduction of personal freedom, or maybe the growing presence of software in everyday life has not been seen as a loss of freedom at all.

## **Code / space and mobility**

Mobility is one of the areas where code/ space is set to become most prominent. Certain transport sectors such as aviation already rely almost completely on software, from the filtering and processing of information about passengers to the operation of air control systems and the aircraft. 'Intensive software solutions', Dodge and Kitchin argue, 'are the hegemonic production of space associated with air travel' (p. 155). Being part of a statist apparatus of control and security along with fears of terrorist attacks partly explains the growing role of software in airports, especially in screening passengers at police controls. But while this raises concerns about the opacity of processes through which people are allowed to circulate internationally, air travel remains used by only a small part of the world's population (around 2-3%). The worrying trend, Kitchin and Dodge observe, is rather the growing mediation of software in more banal and popular aspects of everyday life such as automobility. Automobile systems are being designed, developed and operated by a range of state agencies, car manufacturers and other third parties with multiple purposes in mind. As automobility becomes increasingly mediated by software these actors will be able to collect and store detailed information about our movements, habits and practices. The knowledge that companies store data has the potential to discipline people even in their more everyday interactions. As noted earlier, whether this is being seen by the majority of the population as severing their freedoms remains to be more thoroughly examined. Following events in 2013 concerning the disclosure of routine spying over millions of European and US citizens by the US and EU governments in connivance with new media corporations the promises of convenience, flexibility and productivity of a digital world seem to outweigh concerns about privacy.

Research on 'code/space' in the mobilities field is still in an embryonic stage, although the growing policy and academic interest in 'smart mobilities' is set to make this a thriving area of research. Some of

the pioneers in this field have been Peter Adey and Lucy Budd who have looked at affect and the body in relation to the code/spaces of civil aviation.

This is no doubt an important book and I look forward to seeing further research inspired by this work in the coming years, especially regarding the implication of 'everyware' for the resilience or fragility of cities in the twenty first century, an issue which is overlooked in this book.

## About the authors

Rob Kitchin is Professor of Human Geography and Director of the National Institute of Regional and Spatial Analysis at the National University of Ireland, Maynooth. He has conducted research on the geographies of disability, sexuality and cyberspace.

Martin Dodge is Senior Lecturer in Human Geography at the University of Manchester (England). His research interests include conceptualising the social and spatial dimensions of digital technologies and urban infrastructures, the theorisation of visual representations and new methods of geographic visualisation.

## Références

### **Code / Space: Software and everyday life**

by Rob Kitchin et Martin Dodge  
Massachusetts Institute of Technology Press  
2011  
290 p.

### **Mobility**

For the Mobile Lives Forum, mobility is understood as the process of how individuals travel across distances in order to deploy through time and space the activities that make up their lifestyles. These travel practices are embedded in socio-technical systems, produced by transport and communication industries and techniques, and by normative discourses on these practices, with considerable social, environmental and spatial impacts.

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#### Associated Thematics :

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- Digital technologies

##### Policies

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##### Theories

- Concepts
- 
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Javier Caletrió is the scientific advisor of the Mobile Lives Forum for the English-speaking world (BA Economics, Valencia; MA, PhD Sociology, Lancaster) . He is a researcher with a background in the humanities and social sciences. In addition, he also has a strong interest in the natural sciences, especially ecology and ornithology. His research lies broadly in the areas of environmental change and sustainability transitions, especially in relation to mobility and inequality. Javier was based at the Centre for Mobilities Research at Lancaster University from 1998 to 2017.

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To cite this publication :

Javier Caletrió (24 March 2015), « Code / Space: Software and everyday life - by Rob Kitchin et Martin Dodge », Préparer la transition mobilitaire. Consulté le 20 May 2024, URL:  
<https://forumviesmobiles.org/en/essential-readings/2805/code-space-software-and-everyday-life-rob-kitchin-et-martin-dodge>

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Mobile Lives Forum

1 <http://www.microsoft.com/office/vision/>