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ORIGINAL PAPER

The ethics of Smart City (EoSC): moral implications of hyperconnectivity, algorithmization and the datafication of urban digital society

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Abstract
Cities, such as industry or the universities, are immersed in a process of digital transformation generated by the possibility and technological convergence of the Internet of Things (IoT), Big Data and Artificial Intelligence and its consequences: hyperconnectivity, datafication and algorithmization. A process of transformation towards what has come to be called as Smart Cities. The aim of this paper is to show the impacts and consequences of digital connectivity, algorithmization and the datafication of urban digital society to outline possible ways of resolving the underlying moral conflicts.

Keywords Ethics · Hyperconnectivity · Algorithmization · Datafication · Urban digital society · Smart cities

Introduction

Urban society is currently immersed in an unprecedented process of change. This involves the trend imposed by technology, economics and politics towards the hyperconnectivity, algorithmization and datafication of all areas of human activity. Because of the application of Key Enabling Technologies (KETs)[1] and, above all, the development and convergence of Big Data, Artificial Intelligence and the Internet of Things, this is transforming the processes involved in production, education, care, relations, communication, selection, culture, decision-making and democracy itself, and not always for the better.

Digital hyperconnectivity is a very recent phenomenon related to Internet of Things. Firstly, it is the trend towards the digital connectivity of everything: objects, machines, processes, activities, animals and people (IoT). Secondly, it is the application of algorithms allowing the governance both of the processes involved and the connected *things* themselves (AI). Finally, it is the establishment of processes to generate and analyse Big Data to feed the algorithms with the objective, relevant information they need so they can make effective, efficient decisions capable of optimizing processes and making the behaviour of all the *connected things* in the system more predictable.

Digital hyperconnectivity has given rise to another, no less important phenomenon: datafication. This is a neologism coined by Cukier and Mayer-Schöenberger in *Big Data. A Revolution that Will Transform How We Live, Work, and Think* (2013, pp. 73–97) as a name for processes of the transformation of social action into quantified online data, allowing companies and government agencies to carry out monitoring and predictive analysis in real time of digital citizens via AI algorithms (van Dijck 2014, p. 198, 2016).

Digital hyperconnectivity and datafication have generated a strong tendency to algorithmize the different areas of human activity, including cities. Particularly important in this respect is the way that control, security and decision-making are increasingly left in the hands of AI algorithms because of their supposed capacity to analyse the Big Data constantly generated, predict the impacts and consequences of the possible decisions in play, and act in accordance with criteria intended to maximize benefits. However, either intentionally or unintentionally, the process leads to highly corrosive consequences for society. As O'Neil states (2016, pp. 16, 20–21), one of the negative consequences of this increasingly hyperconnected, datafied and algorithmized

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[1] For further information on the application of KET in smart cities, see Obaidat and Nicopolitidis (2015).

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