

Chapter 1

Introduction



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Abstract Technology is no stranger to the city. Cities are planned, built, maintained, governed, demolished, and destroyed by technical means. Yet, the city has yet to receive much attention within the philosophy of technology. This volume addresses this gap, and in doing so contributes to the much-needed discussion on technology-enabled urban futures from the perspective of the philosophy of technology. In this introductory chapter, the larger volume is introduced by reflecting on the rationale and need for such a collection, sketching the main themes analyzed throughout, and providing an overview of the contributions.

Technology is no stranger to the city. Cities are planned, built, maintained, governed, demolished, and destroyed by technical means. Technologies can play a central role in making future cities more sustainable, making urban governance more transparent and just, and increasing the efficiency in various sectors ranging from transport to education. Conversely, poor planning and short-sited policy and design choices for urban technologies can exacerbate social, political, and ecological challenges. It should come as little surprise that questions of *why* and *how* to design and manage urban environments in the twenty-first century has emerged as a transdisciplinary topic of inquiry (e.g., Batty, 2018; Graham & Marvin, 2001; Sennett, 2019). Yet, neither does the city receive much attention by Philosophers of Technology, nor do Philosophers of the City consider technology to be a central topic. Recent volumes on Philosophy of the City offer important contributions to the burgeoning field via historical, ethical, aesthetic, ecological, and political analyses (e.g., Jacobs & Malpas, 2019; Meagher, 2008; Meagher, Noll, & Biehl, 2020; Stefanovic &

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Scharper, 2012). However, explicit and focused reflections on the technological nature of urban environments have occupied a peripheral role. Indeed, the last widely recognized contribution from a prominent representative of Philosophy of Technology on the city is Lewis Mumford's *The City in History* (1961).

The notable exception is discussions of “smart cities” and “smart urban technologies.” All over the world massive investments are being made to realize visions of the smart city. This has spurred a growing body of (largely critical) scholarship on the ethical and political ramifications of said visions from adjacent disciplines (Cardullo, Di Feliciano, & Kitchin, 2019; Kitchin, 2016a, 2016b; Mitchell, 1996; Sadowski & Bendor, 2019; Sadowski & Pasquale, 2015). However, discourse on smart cities or smart urban technologies from *within* Philosophy of Technology has only begun to take shape (e.g., Epting, 2019; Martens, 2017; Nagenborg, 2018; Nagenborg, Albrechtslund, Klamt, & Murakami Wood, 2010; Ryan & Gregory, 2019; Stone, Santoni de Sio, & Vermaas, 2019; Voordijk & Dorrestijn, 2019).¹ Yet, even in these writings, the fundamental role of technologies in the urban lifeworld is taken for granted. Technologies of all scales—artefacts, buildings, systems, and infrastructures—are inexorably intertwined with the very concept of “city.” To discuss social and political facets without appreciating and analysing the interrelated technological components is therefore to omit a defining feature of cities. Rather than framing smart city technologies as invaders into the urban lifeworld, we need to understand their role in discourse and praxis from within the context of an already technologically constituted urban lifeworld. We may still remain critical and ultimately reject these developments, but the reason should not be that we are addressing a *technological* development.

Philosophy of Technology can help to understand the role of urban technologies, and in doing so contribute to a more sophisticated and comprehensive approach to developing smart cities. As in Philosophy of Technology in general, we need to move from Capital-T Technology, which appears as a monolithic threat to Capital-C Culture (Franssen, Lokhorst, & van de Poel, 2018). Rather, we need to recognize the ambivalence and ubiquity of technologies in the life of city users, towards a more nuanced understanding of *how* different technologies foster or disrupt perceptions, behaviours, values, and politics. The contributions in this volume demonstrate how urban technologies shape—and are shaped by—fundamental concepts and principles, such as citizenship, publicness, democracy, and nature. And, they explore how to think about technologically mediated urban space as part of the human condition. Through these explorations, “smart” technologies come to be understood via critical and constructive examinations of philosophical concepts (e.g., authenticity), human experience (e.g., soundscapes), socio-technical practices (e.g., mainte-

¹ Within Philosophy of Technology there is also a large body of literature that focuses on technologies and technology-related issues that can be categorized as “smart” (e.g., cell phones and apps, sensors, wearable devices, drones, AI, big data, etc.). However, the scope of these investigations remains at the level of individual artefacts or specific use cases, and are to a lesser extent contributions to Philosophy of the City.

nance), socio-political institutions (e.g., policing), urban form and planning (e.g., public space), and specific domains of application (e.g., streetlights).

The volume consists of three parts. The first part is dedicated to exploring technologies of the city. The chapters in this part are aimed at answering questions of how we can understand and know the city by means of technological mediation, technology-enabled practices, and technology-city relations. The second part features contributions to the responsible design of urban technologies. The focus here is on applying insights from the ethics (and politics) of technology to contemporary developments and concrete projects in urban planning and design. The final part broadens the scope and addresses potential urban futures, especially the underlying ideas of so-called “smart cities.” In doing so, timely questions regarding, for example, the future of public space are brought to the fore.

1.1 Part 1: Ontological Foundations: City-Technology Relations

The first three chapters study the city through the lens of aesthetics and artistic practices. Sanna Lehtinen and Vesa Vihanninjoki (Chap. 2) address the challenges of new and emerging urban technologies from the perspective of everyday aesthetics. They argue that we need to understand the impact of such technologies on our experience in order to improve the skills and capacities of city dwellers to adequately deal with these changes. The authors demonstrate how aesthetics and Philosophy of Technology can be brought together to better understand currently under-researched phenomena.

Tea Lobo (Chap. 3) highlights the value of contemporary literature as a “strange tool” to grasp the interplay between technology and city life. She argues that urban technologies also bring about new forms of life and are therefore also poetic in the sense of *poiesis*. Going back to the seminal writings of Georg Simmel and Walter Benjamin she first shows how the process of industrialization has been reflected and captured in the works of Charles Baudelaire and others. She then turns to three prominent examples of contemporary works, namely Zadie Smith, Rana Dasgupta, and Tom McCarthy to analyse how the process of digitalization can be explored through twenty-first century writings. She further argues that literature allows us to gain insights into what she calls “subjective modes of urban experience” which are not accessible via quantitative data analytics.

EL Putnam (Chap. 4) invites us to pay closer attention to the sound of urban spaces through a critical engagement with artistic works. In the first part, she discusses various projects that aim to map urban soundscapes, and thereby mediate the way that urban dwellers perceive such soundscapes. However, she also shows how such projects may not be sufficient to challenge dominant perceptions of the city. The case in point here is the reliance on Google Maps as the unchallenged base map. Therefore, she turns to different projects that challenge the base map by making use of re-designed listening technologies.

Vlad Niculescu-Dincă (Chap. 5) investigates an important facet of cities that, alongside many other practices and professions, is changing with new smart technologies: policing. For this, insights from Postphenomenology are applied to the role and effects of new digital technologies on the strategies used by law enforcement, combined with a detailed ethnographic study of policing practices in England and The Netherlands. Through this combination, Niculescu-Dincă shows how new profiling techniques can have certain biases layered into the system itself—an issue highlighted via drawing a comparison to *sedimentation* in geology. As smart technologies continue to mediate the perceptions and actions shaping policing practices, explains Niculescu-Dincă, there is an imperative to actively “dig up” these layers and examine the ethical issues at stake therein.

Mark Thomas Young (Chap. 6) and Marcel Müller (Chap. 7) offer philosophical explorations of a prominent subject in urban research: infrastructures. Young (Chap. 6) challenges the prominent role of infrastructure failure in the philosophical discussion. His main concern is that the sole focus on failures, which reveal what is otherwise hidden, stops us from paying due attention to other important aspects, namely the everyday work of maintenance, repair, and modification. Without denying the epistemic value of breakdowns, he argues that we will not be able to fully grasp the nature and role of infrastructures unless we also understand these other practices.

Marcel Müller (Chap. 7) combines critical infrastructure research, Philosophy of Technology, Phenomenology, and the work of Jean-Paul Sartre to study what it means to live within infrastructures. By going back to Sartre, Müller succeeds in addressing a blind spot in current works of the Philosophy of Technology caused by the emphasis on technological artefacts in use. As Müller shows, living within infrastructures has the desirable consequence of living in a stable and, thus, secure environment. Yet, infrastructures can also trap city dwellers in their routines.

In the final chapter of the first part, Jaana Parviainen and Seija Ridell (Chap. 8) bring together the topics of infrastructure and human bodies. While resonating with Müller’s contribution, they offer a specific tool to understand the multiple ways in which power is enacted through infrastructures: choreography. Through analysing the technologically mediated kinaesthesia and movement trajectories of lived bodies, the authors demonstrate how city dwellers become enrolled in global cybernetic feedback loops on various levels.

1.2 Part 2: Responsible Design of Urban Technologies

The chapters of part two explore the needs and the opportunities for the responsible design of urban technologies. Rockwell F. Clancy and Aline Chevalier (Chap. 9) offer a rich case study on dockless app-based bicycle-sharing systems in China. The lessons to be learned from the particular and localized case go beyond the single technology. While the systems have been widely adapted, specific design choices in combination with lack of public policy-making resulted in contested spaces and

significant waste issues rather than a viable addition to existing transportation systems. The chapter, thus, makes a significant contribution by raising questions about design, the privatization of transport services, and the challenges of integrating new alternatives into existing transportation infrastructures. Further, it offers an in-depth case study exploring the impacts of emergent technologies and the important role that cultural factors play in their ultimate use patterns.

Kevin Mintz (Chap. 10) addresses the need for universal design to ensure that people with disabilities have equal access to a city. He also addresses the tension between assistive technologies and universal design by arguing that technologies assisting people with disabilities are an important element in realizing universal design principles. Mintz not only provides illustrative examples of disabling urban design, but also grounds his work in the ongoing debate about disabilities and distributive justice.

The next two contributions investigate the opportunities for the value-sensitive design of particular technologies. Taylor Stone (Chap. 11) focuses on a seemingly mundane technology system, street lighting, and recent developments in making streetlights more sustainable by using LEDs and “smart” technologies. He proposes the value-sensitive framework of *designing for darkness*, which aims at incorporating substantive environmental values and making room for meaningful nighttime experiences. The chapter includes three design proposals to show the alternatives available and to highlight the differences responsible design can make to future urban nightscapes.

Pieter E. Vermaas and Sara Eloy (Chap. 12) provide us with a critical reflection on digital tools for urban and architectural design. They consider ‘shape grammar’ design systems that allow inhabitants to generate new designs and adjustments of existing designs of apartments on the basis of design rules. On the one hand, such systems may allow for a more participatory approach to architecture while respecting the structure of the existing built environment. On the other hand, the approach raises interesting questions about the role of expert knowledge. The chapter’s findings are illustrated by presenting two cases. First the authors look into the potential integration of a shape grammar system into the open-source software The HouseMaker© by the Dutch architectural office MVRDV. The second case is the Rabo-de-Bacalhau Transformation Grammar developed for the refurbishment of apartments built in the mid-twentieth century in Lisbon.

Ryan Mitchell Wittingslow (Chap. 13) makes the case that the design of smart cities needs to allow for an authentic experience. In order to outline the design requirements to facilitate an authentic city, he turns to Albert Borgmann’s device paradigm and the idea of focal practices. In contrast to Borgmann, he considers “authenticity” as an aesthetic rather than an ontological category. In turn, the experience of inauthenticity becomes an indicator for design failures, which allows for an exploration of how to design for an authentic experiences in—and of—the smart city.

Finally, Henry Dicks (Chap. 14) examines the implications of biomimicry for urban design and planning through an in-depth look at the idea of modelling the city like a forest. In the first part of the chapter, the author presents three arguments (about “fittingness”, “scale”, and “complexity”) to make the overall idea plausible.

In the second part, he explores the implications of the forest-model in the domains of urban planning, urban water systems, urban energy and transport systems, and urban agriculture.

1.3 Part 3: Urban Futures and “Smart” Cities

Udo Pesch (Chap. 15) proposes a historically informed normative understanding of urban spaces. He argues that the introduction of smart systems leads to the emergence of the experimental city, which allows for new forms of civic engagement. However, the experimental city needs to accommodate for the normative understanding of public spaces developed in the context of the ideals of the liberal, sanitary, and rational city.

Bart van der Sloot and Marjolein Lanzing (Chap. 16) offer a critical evaluation of a prominent element of the smart city: the Living Lab. By studying three contemporary cases (Singapore, Toronto, and Eindhoven), the authors show how the idea of testing various “smart” products in public urban spaces changes the meaning of the public sphere, thereby undermining the foundation of a deliberative democratic society. Thus, they support Pesch’s (Chap. 15) argument that the experimental city needs to accommodate the liberal city. At the same time, they offer insights into how we can safeguard the experimental use of technologies in urban space.

In a similar spirit, Germán Bula (Chap. 17) mobilizes Jane Jacobs’ writings, notably her 1961 book *The Death and Life of Great American Cities*, to counter what he calls *control cartesianism* rooted in the *planner’s itch*, that is: the “drive to anticipate and control every future state of a system” (Bula, this volume). By contrasting the Cartesian tradition with Spinoza’s approach, Bula works towards the idea of planning for self-organization, which is underlying Jacobs’ work. Taking this idea as a starting point, he arrives at three conditions for the smart city, namely: the political power of cities and neighborhoods, the willingness to engage in participatory democracy, and the possibility to reclaim urban spaces by communities.

Stefano Borgo, Dino Borri, Domenico Camarda, and Maria Rosaria Stufano Melone (Chap. 18) enter the discussion on the smart city by demonstrating the lack of a clear understanding of what a city is. They propose an ontological-grounded and historically informed analysis of the city as a complex system consisting of three components: *city-place*, *city-agency*, and *city-knowledge*. The outcome is a unifying framework for understanding cities, which does justice to the traditional (“non-smart”) city as well as the smart city, which is marked by the dominant role of the *city-knowledge* component.

In contrast, Brandt Dainow (Chap. 19) builds on insights from Actor Network Theory and system-theory. He takes as a starting point that human beings and the (smart) city do not directly encounter each other but interact through the medium of digital systems. Persons and their digital devices are thus fused to nodes, which he refers to as “Integrated Personages.” The communication between various nodes gives rise to an “Integrated Domain,” such as a smart city. This process-oriented

framework allows Dainow to show that an analysis of ethical issues within a given Integrated Domain must focus on connectivity and processing. He explicates his findings in a discussion on how autonomy may come into play within such an Integrated Personage.

Wang Qian and Yu Xue (Chap. 20) offer an analysis of the smart city from the perspective of the Philosophy of Organism and the Tao of the city. The vocabulary in this chapter may deviate at points from the one that comes with the European or American tradition of Philosophy. Yet, Wang and Yu provide useful links to Western Philosophy, and reveal a similarity between Chinese Philosophy and Western discourses about the city as a system of systems that invites a comparison with Dainow's account of the integrated domain.

We conclude the third part and our volume with Robert Seddon's reflections on the city of tomorrow after tomorrow (Chap. 21). Echoing Vlad Niculescu-Dincă's contribution (Chap. 5), Seddon argues that the city is made up of various historical layers, which form the memory of a city. In the process of digitalisation, data not only represents the past in the form of VR and AR application and data records. On the long run, data captured today and in the future will become the next layer. Seddon thus leaves us wondering: what will be discovered in and under that layer in a more distant future?

1.4 Conclusion: Towards a Philosophy of Urban Technologies

As a new direction for the Philosophy of Technology, the chapters present a multiplicity of methodological approaches, and many incorporate insights from adjacent fields (e.g., STS, environmental philosophy, political philosophy, geography, and urban design). However, they are unified in the common starting point and final output: providing conceptual and practical insights into how technologies can—and in many chapters *should*—interact with cities and city life. The volume thus contributes to the much-needed discussion on technology-enabled urban futures from the perspective of Philosophy of Technology. In doing so, it opens new directions for inquiry at the intersection of Philosophy of Technology and Philosophy of the City.

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