

Special Issue Future of Smart Cities

FUORI LUOGO

Rivista di Sociologia
del Territorio, Turismo, Tecnologia



Guest Editors

Monica Bernardi

Luca Bottini



Direttore Fabio Corbisiero
Caporedattore Carmine Urciuoli

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Introduction

The smart city paradigm has been on the agenda of local governments for at least a decade (among the others: Anthopoulos, 2015; Meijer & Bolívar, 2016). The idea of envisioning and creating an “intelligent” city able of harmonising growth, sustainability, and improving the quality of life for its citizens is the objective pursued by urban policies moving in this direction. The continuous increase in populations choosing to migrate to cities in pursuit of better opportunities and services has led major metropolitan centres around the world to experience a constant flow of urban growth over the past decades. The impact of this growth on the demand for commons such as energy, services, space, and other resources has prompted scholars to explore new modes of governing contemporary cities (Obringer & Nateghi, 2021).

The smart city paradigm emerged in the early 2000s as a new approach to interpreting the pressing challenges posed by ongoing and unstoppable urban transformation; indeed, it marked a significant shift in how urban development was conceptualised and addressed. The idea of smart city developed over time, moving from a more technological perspective, with a focus on the role of advanced technologies in optimising urban systems and services, as emphasised by authors such as Caragliu, Del Bo and Nijkamp (2011), to a more citizen-centric perspective, advocated by authors like Nam and Pardo (2011), and Hollands (2008), according to which citizens should be put at the core of the smart city initiatives, promoting their engagement, participation, and co-creation of urban solutions. Authors such as Giffinger and colleagues (2007) underscored also the importance of sustainability and eco-friendly practices, while Janssen and colleagues (2015) and Deakin and Al Waer (2011) emphasised the importance of a governance model able to involve multiple actors in decision-making processes for effective smart city implementation. In general the smart city paradigm has always aimed to prevent societal harm by leveraging the parallel development of information technology, promising a gradually sustainable quality of life capable of addressing the challenges imposed by urban transformations (Townsend, 2013). However, as time has progressed, urban development has had to confront a monumental change for which cities themselves can be considered among the main culprits: climate change resulting from the ever-increasing emission of greenhouse gases into the atmosphere. Cities, since the Industrial Revolution, have been the hub of factories and manufacturing economies (Klein & Kraft, 2018). The economic and technological progress exacted an enormous cost in terms of human-generated emissions starting from the 19th century. The transition from the Fordist era to a post-industrial urban society, while liberating cities from large industrial settlements and embracing a more environmentally friendly vision, did not eliminate the problem of climate change, which continued to worsen over time (Huang-Lachmann & Ting, 2019).

Today, cities find themselves compelled to actively participate in a necessary global shift aimed at promoting decarbonization processes and energy transition to mitigate the impact of climate change on human societies. The scenario that has unfolded forcefully challenges the concept of the smart city, as one of the foundational characteristics of this paradigm is the intelligent use of environmental resources and, more broadly, the diffusion of a sustainable approach to cities (Arroub *et al.*, 2016). Consequently, the smart city paradigm is now subject to greater scrutiny than in previous eras, as it plays a critical role in transforming processes and urban innovation towards a sustainable future, and it is called to adopt a more resilience-centric perspective

As we question the prevailing “smart city” paradigm, it becomes evident that the theoretical framework that has guided discussions so far should serve as a solid foundation for the creation of bold new policies. What will the smart city of the future look like? How will the concept of sustainability be realized in the smart cities of the future, given the current challenging situa-

¹ Monica Bernardi, monica.bernardi@unimib.it, ORCID: 0000-0002-8860-8779; Luca Bottini, luca.bottini@unimib.it, ORCID: 0000-0001-5605-1665, University of Milano-Bicocca, Department of Sociology and Social Research.

tion? This special issue tries to answer to these questions exploring the future of smart cities in a climate-neutral scenario, focusing on the sustainability of the urban environment. It develops from the conference held in 2022 in Bozen, titled "Smart and Sustainable Planning for Cities and Regions – SSPCR 2022". The papers that participated in the panel "The Future Of Smart Cities In A Climate Neutral Scenario", coordinated by the guest editors of this special issue, Monica Bernardi and Luca Bottini, have been selected for publication in this edition with the objective of reflecting on the challenges of future smart cities and discussing the necessary adaptations this paradigm must consider to guide the actions of policymakers in the field of decarbonization and environmental sustainability in contemporary cities.

In particular, the special issue includes seven contributions that address the most relevant aspects of the smart city concept and its future challenges. Following their propositions the special issue goes from the macro to the micro urban level.

The first contribution has a wide-ranging gaze on the topic, approaching the urban macro level: Bernardi and Aquili's essay reflects indeed on the reformulation of the smart city model in terms of technology, circularity, sharing, self-sufficiency, and proximity that cities are embracing to address climate change. In particular, it analyses several Italian cities in the context of the "100 Climate-Neutral and Smart Cities" EU Mission, questioning the governance model that best translates the mission's demands in light of urban needs. In doing so, the authors contribute to the ongoing discourse on the best approaches to translate the mission's requirements into practical and impactful solutions. One notable contribution of the essay is the identification of the co-city model, proposed by Foster and Iaione, as an embodiment of the EU requirements. This model, grounded in a penta helix approach, recognizes the collaborative efforts of five key stakeholders – government, academia, industry, civil society, and the local community – in driving sustainable urban development. By endorsing the co-city model, the authors advocate for a holistic and inclusive approach to achieving the European goals by 2030 in a fair and just manner.

The Crivello's essay provides a comprehensive exploration of cities as crucial sites for contemporary energy transition, drawing from the perspective of urban sociology. The author's theoretical reflection brings attention to the multidimensionality and complexity of this phenomenon, which is influenced not only by tangible climate change but also by the ongoing debates and social constructions facilitated by various actors within this context. The core objective of this contribution is to propose critical approaches and innovative practices that integrate environmental protection with the imperative of social justice. Additionally, the contribution underlines how urban sociology, through conceptual and methodological tools, can help to understand the phenomenon of the energy transition and contribute to identifying possible solutions.

While keeping a steadfast focus on the dimension of social justice in the context of climate change and energy transition in smart cities, Terenzi's contribution offers a comprehensive examination of the relationship between social inequalities and urban regeneration, using the specific case of Genoa as an illustrative example. By delving into this case study, the author effectively demonstrates the interconnectedness of addressing social disparities and promoting sustainable urban development paradigms. The analysis of the Genoa case allows Terenzi to document a close and intrinsic link between the fight against social inequalities and the promotion of urban development paradigms that prioritize sustainability and societal well-being. This exploration sheds light on the critical role of urban regeneration in fostering a more equitable and sustainable future.

Conte and Anselmi's contribution start with a thorough exploration of the phenomenon of short-term rental platforms within the city of Milan. Their analysis extends beyond the immediate effects of these platforms to examine their broader impacts on the city' touristification and urban sustainability. By delving into this topic, the authors shed light on the crucial role that public administration plays in shaping the outcomes for the city's sustainability. The contribution brings attention to the need for proactive governance strategies and policies that consider the broader social, economic, and environmental implications of short-term rentals. It underscores

the importance of striking a balance between promoting tourism and preserving the liveability and sustainability of the city.

Moving from platforms to enterprises, the paper authored by Mura, Aleotti, and Diamantini examines the significance of decision-making processes within companies in generating positive sustainability outcomes that transcend organisational boundaries and yield favourable effects on the broader urban environment. By integrating sustainability considerations into decision-making processes, companies can indeed contribute to positive impacts on the environment and society as a whole. The insights provided by the analysis of the three case studies demonstrate practical examples of how companies can proactively contribute to sustainability beyond their organisational boundaries. This not only benefits the companies themselves but also yields favourable effects on the broader urban landscape, including social, economic, and environmental aspects. This heightened awareness is essential to foster a sustainable relationship between local public and private entities, ultimately leading to positive impacts on the urban landscape.

The micro level is finally reached through the works of Bottini on the one hand and Landi and Raimondi on the other. Bottini's essay reflects on the role assumed by urban neighbourhoods as engines of innovation and transformation of social behaviours from the grassroots level. The author critically examines how the spatial characteristics of these neighbourhoods can either promote or discourage positive phenomena for society, with a specific focus on pro-environmental behaviours. By proposing the "Neighborhood-Perceptions-Sustainable Behaviors" (NPSB) model, Bottini provides a conceptual framework to understand the complex interaction between the urban environment and citizens in fostering sustainable behaviours to achieve comprehensive climate neutrality goals. This model highlights the intricate relationship between neighbourhood characteristics, individuals' perceptions, and the resulting behavioural patterns related to sustainability.

Lastly, the contribution by Landi and Rimondi focuses on the pivotal role of urban neighbourhoods as centres of socio-ecological innovation, similar to the emphasis seen in Bottini's work. The authors put forth a methodology aimed at comprehending how neighbourhoods serve as catalysts for driving change and transformation in socio-ecological practices. Through a series of case studies, they substantiate the notion that a city cannot be governed using a "one-size-fits-all" approach, but instead requires tailored strategies for each neighbourhood, which is an urban entity with its own distinct characteristics, autonomy, and specificities. The contribution by Landi and Rimondi challenges the notion of a homogeneous city and advocates for a more nuanced understanding of urban governance. By embracing the diversity and individuality of neighbourhoods, cities can foster innovation, promote sustainability, and create thriving communities.

This special issue aims to provide a comprehensive understanding of the future of smart cities by exploring sustainable urban development from various perspectives. The articles within this issue share a common theme of interconnectedness, highlighting the complex factors involved in achieving sustainability goals. They delve into interdisciplinary aspects such as technology, governance, social justice, energy transition, decision-making processes, and neighbourhood dynamics.

By unravelling the intricacies of urban sustainability and presenting innovative strategies, this special issue seeks to inform policy development, inspire transformative practices, and guide cities towards a sustainable and resilient future. The contributions offer valuable insights into the challenges and complexities inherent in achieving sustainability goals within urban environments.

The issue also presents complementary reviews of three recent books that take stock of the state of smart cities. The first book, reviewed by Francesco Calicchia, is "Ripensare la smart city/ Rethinking the smart city" (2018) written by Bria and Morozov. Here the authors argue that the predominant vision of smart cities often prioritises technological solutions over the needs and well-being of citizens. They critique the top-down approach that places a heavy emphasis on data collection, surveillance, and efficiency while neglecting the social, democratic, and envi-

ronmental dimensions of urban life. They advocate for a more human-centred and inclusive approach to urban development proposing alternative frameworks that prioritise social justice, democratic participation, and the empowerment of communities. Overall, the book challenges the dominant narrative of smart cities and encourages readers to reevaluate the role of technology in urban development.

The second book, reviewed by Antonella Berritto, is “Città aumentate/Augmented cities” written in 2021 by Maurizio Carta. In this book, the author presents ten conceptual and operational gestures aimed at empowering cities, regardless of their size, to effectively respond to the challenges of the 21st century and resiliently navigate the Anthropocene crisis. These ten gestures serve as a guide to transform cities into “augmented cities” able to provide tangible solutions to the key challenges of our time, such as mitigating and combating climate change, fostering the knowledge society, reshaping the global networks of cities, and enhancing the overall sustainability of urban ecosystems. By offering concrete strategies and approaches, “Città aumentate” provides a framework for urban transformation and serves as a valuable resource for policymakers, urban planners, and researchers. The book encourages cities to embrace innovation, collaboration, and sustainable practices, enabling them to become engines of positive change in the contemporary world.

The last book, edited by Giulia Agrosi in 2022, and titled “La smart city e la città comoda. Una nuova realtà futurista «smartiana»/The smart city and the convenient city. A new «Smartian» futurist reality”, has been reviewed by Maria Camilla Fraudatario. The book examines the functioning of urban and environmental neuralgic energy centres, highlighting their synergy with human beings and their integral role in achieving a synchronised intersectoral balance within the urban connective system. The author delves into various topics related to urban sociology in the context of the smart city, exploring the methods and approaches for transforming it in a comfortable and sustainable place. This includes aspects such as housing-environmental dynamics, microclimatic considerations, energy systems, legal frameworks, cultural-architectural elements, museum integration, digital technologies (such as IoT, GIS, and BIM), and the vital role of the National Recovery and Resilience Plan (PNRR) in shaping the evolution of digital infrastructures in Italy. In general, the book paints a vision of a future where cities are optimised for comfort, sustainability, and interconnectedness, and sheds light on the pivotal role that digital infrastructures and the smart city concept play in shaping this transformation.

Overall, this collection of articles contributes to a nuanced understanding of the future of smart cities, emphasising the need for interdisciplinary approaches and the integration of various factors in creating sustainable urban environments. The aim is to provide actionable knowledge that can drive positive change, foster innovation, and support the development of resilient cities. For this reason, beside the seven contributions, the issues also offers an interview with a distinguished scholar in the field, Professor Mark Deakin of Edinburgh Napier University, who has been critically analysing for years the conceptual foundations, semantic nuances, narrative constructions, and practical manifestations behind smart cities. The interview, thoughtfully curated by Sergio D’Agata, presents an insightful dialogue that delves into smart cities’ complexity, addressing local governance, data ownership, and climate management. In his responses, Deakin emphasises the crucial shift towards smart cities in addressing climate change and urban growth challenges; he underscores the role of public local governments in underwriting this transition and highlights the opportunities and threats associated with private data ownership; and also points out the persistent challenges in managing climatic events, such as the need for real-time strategic management and scientific understanding. His insights revolve around creating environmentally just and fair urban growth and leveraging interdisciplinary research and innovation to address climate change adaptation and extreme weather events.

Concluding, the issue with its contributions, the interview, and the book reviews offers a nuanced understanding of the future of smart cities, highlighting the need for interdisciplinary approaches and the integration of various factors in creating sustainable urban environments.

The aim is to provide actionable knowledge that can drive positive change, foster innovation, and support the development of resilient cities.

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