The City Project
Strategies for Smart and Wise Sustainable Urban Design 6

Dario Costi
Giovanni Leoni *Editors*

Smart City: A Critical Assessment

Springer

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Strategies for Smart and Wise Sustainable Urban Design

Volume 6

The book series The City Project reports on applied research and operational developments that promote urban renewal and the sustainable transformation of contemporary cities. Inspired by the "City of Man" as imagined by Adriano Olivetti and Ernesto Nathan Rogers, and going beyond the concept of the smart city and related technological advances, the series' goal is to present holistic, practice-oriented and multidisciplinary strategies for realizing the City 4.0, i.e., the city of the fourth industrial revolution, in keeping with the objectives of the UN's 2030 Agenda for Sustainable Development.

In particular, the series reports on effective design, planning and management approaches that leverage urban and architectural design skills, engineering, environmental and social expertise, and administrative abilities alike. It welcomes books on each of the aspects mentioned above, as well as studies analyzing multiple aspects, their interactions and/or holistic solutions. The City Project addresses a very broad readership, including designers, engineers, architects, social scientists, stakeholders and public administrators, who deal with various aspects of the realization of the City 4.0. It publishes theoretical investigations into the contemporary built environment, international case studies, and pilot projects concerning urban renewal and the regeneration of urban areas, as well as the proceedings of key international conferences.

Books published in this series are devoted to supporting education, professional training and public administration. Outstanding PhD theses on emerging topics, if properly reworked, may also be considered for publication. The series is published with the support of the Smart City 4.0 Sustainable LAB, an interdisciplinary teaching and research project on future cities initiated by the University of Parma, and jointly implemented with other regional universities (the University of Bologna, University of Ferrara, and University of Modena and Reggio Emilia).

About the Cover

The cover of the book series The City Project features a painting by Carlo Mattioli (C. Mattioli, *Estate in Versilia*, 1974, oil on canvas cm. 118 × 70, Catalog n. 1974D0029, Courtesy of Fondazione Carlo Mattioli, thanks to Anna Zaniboni Mattioli)

The horizon of poppies painted by Carlo Mattioli between the dark background of the forest and the white plane of the wheat, becomes for us, thanks to a transfiguration of meaning that aligns with the attitude towards abstraction rooted in the figure of the painter, a city which is intertwined with its landscape, evoking the idea and the possibility of recomposing a balance and seeking an integration between settlement and environment, between human space and natural element.

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Foreword

The Smart City Idea of the Emilia-Romagna Region

The cultural debate on the theme of the "smart" city is an opportunity to reflect on this adjective, which is widely accepted uncritically—as we are now used to doing for other "slogans"—without considering its real, actual meaning. The role of cities in the development processes of a territory is a topic widely debated by the Emilia-Romagna Region in defining its Regional Energy Plan 2030. The city is a topic of absolute priority for those who deal with energy and climate, since 70% of the European population lives in cities and, for this reason, urban areas contribute significantly to energy consumption and greenhouse gas emissions. At the same time, cities represent the main engines of the European economy and in the Pact for Work and Climate—which the Emilia-Romagna Region signed in December 2020 with more than 55 subjects, associations, companies, institutions, universities, professional orders and colleges—the city's role has been recognised in contributing to the Region's regeneration and development project based on sustainability through its inseparable components: environmental, social and economic.

The definition of a city's role within an ecological transition pathway capable of reaching the goal of climate neutrality is a broad and interdisciplinary topic. Climate neutrality means dealing with urban planning, energy, mobility and transport plans, controlling emissions, increasing the energy efficiency of buildings and installations, managing data, networks and services and social relations in order to manage a just and inclusive transition. This complexity has been exacerbated by the COVID-19 emergency, which brought about changes that have made the need to make the city "smarter" even more evident and urgent. In this context, smarter means a better and fairer spatial and social entity, capable of rekindling communities' interest in greater "resilience", understood as the capacity to adapt both to health emergencies and to those induced by climate change or other events capable of bringing about substantial changes to the quality of life.

To address this complex issue, in 2019, the Emilia-Romagna Region signed a protocol with the University of Parma and LEPIDA to implement a project aimed at expanding the *Smart City 4.0 Sustainable LAB* research laboratory to develop a research and training centre on the themes of smart and sustainable cities with the aim of extending the boundaries of the "Smart

City" to the entire regional territory and contributing to demographic, productive and economic rebalancing. In particular, we believe that the laboratory can serve as a research space capable of providing guidelines for urban regeneration practices and, more specifically, for network upgrading processes, for rationalising the use of resources, for identifying measures capable of tackling climate change effectively, for promoting eco-innovation and the "green economy", and for defining policies to reduce social and economic inequality. For this reason, the laboratory has brought experts from different fields together around each of the various projects, including environmental scholars, biologists, economists, engineers, architects and anthropologists. The key focus for the laboratory has been "participation", because everyone can make a contribution, because the city belongs to everyone.

The following publication provides a Glossary for the smart, wise or, even better, the just city, which will provide an opportunity to reflect on the future of places where the integration between knowledge, technologically advanced structures and services can contribute to sustainable growth, wellbeing and improved quality of life; a city capable of producing new forms of social cohesion and linking material infrastructure with human and social capital.

If we are talking about New Technologies, we must be able to ensure that everyone can make use of them. Otherwise, instead of being a positive element, they too could become a cause of social exclusion and marginalisation. We will have to be able to educate citizens in terms of awareness, knowledge, competence, interpersonal skills, inclusive attitudes, improving established behaviours and relationships and implementing participatory planning methods that allow everyone to perceive real democracy in relation to the decisions that affect them.

Cities of the future will be conceived and designed as hyper-connected ecosystems, dotted with sensors and devices capable of collecting and processing an enormous amount of data that can, if handled wisely, contribute to the management of urban functions (energy, security, mobility, health, residence, study, work, production, etc.).

Another topic of great interest is the expansion of the Smart City to the entire regional territory, an operation that requires deep reflection on the relationship between urban life and life in the suburbs or provinces. The distribution of services and functions will have to be rebalanced through targeted investments aimed at reversing the process of impoverishment that has affected many peripheral areas and led to the loss of human capital in those places.

A final issue I would like to highlight is that of training, an essential activity for local authorities that will be required to have skills and abilities that they do not possess today. These professional skills can contribute towards strengthening active citizenship, increasing the capacity to build strong communities and facilitating the identification of strategic locations for urban development capable of attracting market players interested in investing in the implementation of interventions.

In parallel with the laboratory's work, the Region has launched a series of actions to help make its territories and urban areas more attractive and sustainable places to live in by immediately applying the concepts of Smart Cities:

- promoting cleaner and more sustainable public and private mobility through support for the implementation of Sustainable Urban Mobility Plans (SUMPs), the renewal of Local Public Transport (LPT) fleets and regional trains, the introduction of systems to increase the attractiveness of LPT (infomobility, mobile ticketing, video surveillance on board vehicles and at stops), intermodality, the improvement of goods logistics, the creation of cycle paths and the spread of charging stations for electric mobility;
- encouraging the energy requalification of public buildings;
- simplifying procedures for the renovation of private buildings;
- supporting Sustainable Energy and Climate Action Plans (SECAPs);
- trialling energy communities.

These are merely the first steps of a long journey we have undertaken to contribute to change in our cities, fully aware that we will certainly have to take other actions since there are many variables to take into account. The authoritative testimonies presented in the publication will help us understand how to make the concept of the sustainable city a reality, focusing on all those specific concerns that will enable us to move in the right direction

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Preface

The following volume is the first testimony of a multidisciplinary collective work focused on the topic of the Smart City from both scientific and operational points of view.

The intention is not to passively assess the topic but rather subject it to criticism in order to relaunch its current and productive aspects, also updating its terminology. The reflection on the terminology, which in the text takes the form of a reasoned glossary, does not derive from requirements of pure philology but rather aims to make the discussion among the disciplines more grounded and specific in order to build a field of research-action with a wide spectrum of skills involving the various actors—specialists and otherwise—that have an interest in the topic. On the one hand, an effort to reunite the current narrative of the Smart City and its variations (Wise City, Wise Town, Care City, 15 Minute City, etc.), and on the other the real city, no less elusive in its persistence and transformation with powerful accelerations such as the one triggered by the pandemic.

Several aspects of the study's design and launch delineate the orientations of this update.

1. The geographical reference to the Emilia-Romagna Region, to its cities that recall the specific historical city of European origin: a place of elaboration of the conflict of cohabitation; an example of fruitful intermingling of private and public spaces: a laboratory of community and mobility that becomes social. A model that sheds light on the false nature of the alleged conflict between tradition and innovation and offers numerous opportunities to combine cultural identities and technological experiments to their mutual advantage.
2. The assumption of the Smart City not as an abstract concept or model but as a specific process characterised by conscious convergence and interdependence between humanistic reflection, technological innovation, assessment of economic and social impacts, policy orientations. A continuous process, as is continuous the transformation of cities, substantiated by education and research, able to reconnect the fragmented multiplicity of city plans and to overcome political vagaries pushing in the direction of the simplification and fluidification that are required by the rapid pace of innovation.

3. The choice of urban culture as the target of reference in all its various facets and compared with the fourth industrial revolution. Consequently, the assumption of the Smart City as a project that is as complex as its area of application: the city. Thus is defined a terrain for the comparison of different types of knowledge that are seen as inter-connected and inter-enabling, without predetermined hierarchies: cultural elaboration of the city and its images; cultures of the project of transformation, conservation and development of the city; energy issues; technological innovations; artistic practices and creative industries.
4. The desire to reconnect this process to the physical existence of specific, real places inhabited by specific, real communities by extending this attention to the physicality of both the visible city of the surface and the invisible city of the technological networks underground or in the air, having as its objective the search for a joint, reciprocally measured functioning of the two.
5. The objective of subordinating technological applications and purely economic aspects to criteria of benefit—in the short as well as in the long term—for the communities of reference by introducing principles of social economy and social inclusion to the field of Smart City research-action.

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About the Laboratory Research Team

Smart City 4.0 Sustainable LAB is a laboratory carrying out research on the contemporary city at the University of Parma. It has been supporting public bodies, institutions and stakeholders in the territory since 26 March 2018. In 2019, on the strength of a memorandum of understanding signed between the University of Parma, the Emilia-Romagna Region and Lepida ScpA, the laboratory formed an interdisciplinary and inter-university network composed of professors from the Universities of Parma, Modena and Reggio Emilia, Bologna, Ferrara, and the Milan Catholic and Polytechnic Universities, Piacenza campus. Since then, the research groups of the universities involved have initiated integrated research activity with the perspective of sharing an overall, organic and heterogeneous response that provides solutions for the implementation of intelligent and sustainable cities by collaborating with the regional Federations of Professional Orders of Engineers, Architects, Surveyors and Experts, ANCE (National Association of Building Constructors), ANCI (National Association of Italian Municipalities), CNA Emilia-Romagna (National Confederation of Craftsmen and Small and Medium Enterprises), Legacoop Emilia-Romagna, Arpae (Regional Agency for Prevention, Environment and Energy of Emilia-Romagna), ADBPO (Po River District Basin Authority), Regional Agency for Territorial Safety, Civil Protection and AIPo (Interregional Agency for the Po River).