

# TeMA

Journal of  
Land Use, Mobility and Environment

Cities need to modify and/or adapt their urban form, the distribution and location of services and learn how to handle the increasing complexity to face the most pressing challenges of this century. The scientific community is working in order to minimise negative effects on the environment, social and economic issues and people's health. The three issues of the 14th volume will collect articles concerning the topics addressed in 2020 and also the effects on the urban areas related to the spread Covid-19 pandemic.

TeMA is the Journal of Land Use, Mobility and Environment and offers papers with a unified approach to planning, mobility and environmental sustainability. With ANVUR resolution of April 2020, TeMA journal and the articles published from 2016 are included in the A category of scientific journals. From 2015, the articles published on TeMA are included in the Core Collection of Web of Science. It is included in Sparc Europe Seal of Open Access Journals, and the Directory of Open Access Journals.



THE CITY CHALLENGES AND EXTERNAL AGENTS.  
METHODS, TOOLS AND BEST PRACTICES

## THE CITY CHALLENGES AND EXTERNAL AGENTS. METHODS, TOOLS AND BEST PRACTICES

3 (2021)

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The cover image is Rue de Rivoli - an emblematic street of Paris connecting Bastille to Concorde – that since May 2020 has been reserved for bicycles and pedestrians, Paris, France, Saturday, Nov. 6, 2021.

TeMA. Journal of Land Use, Mobility and Environment offers researches, applications and contributions with a unified approach to planning and mobility and publishes original inter-disciplinary papers on the interaction of transport, land use and environment. Domains include: engineering, planning, modeling, behavior, economics, geography, regional science, sociology, architecture and design, network science and complex systems.

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## REVIEW NOTES – Urban planning literature review

# Ecological transition: innovation in cities

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### Abstract

Starting from the relationship between urban planning and mobility management, TeMA has gradually expanded the view of the covered topics, always remaining in the groove of rigorous scientific in-depth analysis. This section of the Journal, Review Notes, is the expression of a continuous updating of emerging topics concerning relationships between urban planning, mobility and environment, through a collection of short scientific papers written by young researchers. The Review Notes are made of four parts. Each section examines a specific aspect of the broader information storage within the main interests of TeMA Journal. In particular, the Urban planning literature review section aims at presenting recent books and journals, within global scientific panorama, on selected topics and issues.

This contribution focuses on one of the most significant features of ecological transition which concerns digitalisation and innovation. In particular, for the third issue of TeMA Journal 2021, this section of Review Note proposes a literature overview of how the vocation for innovation and Industry 4.0 can change the structure of neighbourhoods and entire cities. The contribution shows some significant best practices and interesting books and journals which delved into the topic.

### Keywords

Ecological transition; Urban planning; Innovation.

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## 1. Introduction

The world is facing increasing environmental pressures, including rising air and water pollution, climate change, biodiversity loss and waste generation. Numerous policies and initiatives have emerged, at the international and local levels, to respond to these challenges, but more must be done to ensure a rapid ecological transition and a cleaner global environment. As highlighted in previous issues, the health crisis caused by the spread of the novel coronavirus and the resulting financial crisis have undermined the already precarious economic structures of many countries around the world. At the same time, the breaking of financial and economic dogmas (Guida & Natale, 2021) has allowed the construction of tools and the distribution of substantial resources to trigger the desired changes and promote economic, social and urban models that are not only more sustainable, but also more competitive and efficient. These changes will need to happen in a context of other major structural transformations, including economic convergence between developed and developing countries, rising urbanisation, and the diffusion of automation and digitalization (Aldegheishem, 2019).

The ecological transition depends on the development and diffusion of new technological, economic, social, behavioral, and business model innovations. Innovation – the creation and diffusion of new ideas – is at the core of the transition to a cleaner global environment. This includes not only technological innovation, but also innovation in economic and social systems and in lifestyles. Innovation is the main source of modern economic growth, which implies that the ecological transition is not only compatible with long-term economic growth. It also opens a wide range of economic opportunities for businesses, which include electricity production, distribution, and storage; agriculture and forestry; natural resource exploitation; buildings; transportation; water supply and treatment; and waste management. Many of the necessary innovations in each of these sectors already exist and now need to be diffused and scaled up. This process can be eased thanks to the development of enabling innovations such as artificial intelligence, the internet of things and blockchain technologies. At least in the technological domain, the pace of innovation for the ecological transition has accelerated markedly since the mid-2000s. However, it is still insufficient to address the environmental challenges facing the planet today, and there is evidence to suggest that the pace of green innovation has slowed again in recent years. This suggests that major barriers remain and need to be lifted in order to accelerate the ecological transition.

It is worth bearing in mind that public administrations cannot act on their own, without focusing on public-private partnerships: this extended relationship must permeate all levels and will also be central to the implementation of projects for the use of funds from Next Generation EU, or Italian PNRR (Piano Nazionale di Ripresa e Resilienza - National Recovery and Resilience Plan).

In such context, cities play a key role since they have always been associated with transformative ideas and novel social initiatives. Some argue that the innovative activities are the products of cities or regions, and that cities and urban regions are not just mere containers for innovative activities but are actively involved in the generation of new ideas, new organizational forms and new enterprise (Florida et al., 2017).

Most of the challenges our societies face today are exacerbated within urban areas. This is both one of the underlying reasons for greater innovation in cities, and one which can eventually be overcome by harnessing this same, vital innovation. The high level of provision of education, services and leisure activities, combined with a high population density and the very high frequency of interactions notably found in cities, favor technological and social innovation, entrepreneurship and creativity.

However, some cities are able to harness most of their potential and do more with their tangible and intangible resources than others. Cities that succeed in innovating are those where “people are fewer mechanical units of production and more the creators of wealth. Cities shift from having a density of resources to a density of networks and circuits where proximity to resources was substituted by proximity to knowledge” (Landry, 2012). Besides hosting technological progress, cities are also enabling various other types of innovation. This variety of innovations is associated with products, processes, marketing and organizational contexts, all of which are

significant in urban and metropolitan areas. Some concrete ways in which cities are encouraging innovation are:

- entrepreneurial innovation oriented to support small businesses in the creation of new jobs;
- social innovation highly focused on meeting social needs by enhancing social interactions and integrating ideas, knowledge and vision of civil society with urban development;
- innovation in work systems: including teleworking, high mobility of entrepreneurs, co-working spaces, open office areas and other alternative ways to generate income;
- culture-led innovation, typically stemming from the creative knowledge of the arts and cultural domains and inspiring many city-relevant sectors and areas, including cultural tourism, consumer electronics and urban regeneration.

Some cities have oriented the physical and functional transformations of their territory towards the promotion of a competitive and fertile environment for the production of technological and social innovations. As will be described below, some cities have developed in response to this vocation, others have transformed degraded areas into innovative hubs. Still others are seeking to transform their land-use in order to be more resilient and sustainable. A significant example is the city of Venice.

The pandemic has stopped time in a city where the clocks seem to run slower than elsewhere. There is an unreal air in the alleyways, emptied of the flood of large ships. The water in the lagoon turned clear and even dolphins have been spotted. But the emptied city offers no work: many houses have long since lost their residents to become lucrative rentals on web platforms. The population now stands at around 50,000 and is falling by a thousand a year, two thousand in 2020. Venice has a sustainability problem of two kinds: environmental and social. The environmental one is linked to high water: Venice owes everything to the sea, but, at the same time, must defend itself from the sea. The second problem is of social nature and concerns the increasing depopulation.

The idea of transforming Venice into an Innovation Hub was born to address such issues. Its key, in short, is to replace mass tourism with a constant presence of medium- to long-term residents, making the maintenance of a breathtaking beauty-city sustainable. In the 1950s, 170,000 people lived in Venice, while surveys, today, show that that figure is reached every day by the sum of the flow of day trippers and the fifty thousand residents. Hence, the innovation hub would replace tourists with the so-called "futurists", people who live in the city, even if only for a few years.

In order to achieve such goal, it will be necessary to transform Venice and its vulnerabilities into opportunities for economic development and resilience. Urban planning plays a vital role in supporting this new territorial vocation, as do productive partnerships between the public and private sectors. There is no shortage of experiences, which have become best practices, analyzed below: Turin (Italy), Sophia-Antipolis (Nice, France) and Silicon Valley (San Francisco, California, US).

These are very different experiences, arising from divergent contexts and therefore developing their own peculiarities in becoming outstanding centres of science and innovation. The descriptions of the three case studies are followed by reviews of three interesting books. The first one is "The Innovation Complex: Cities, Tech, and the New Economy" by Sharon Zukin. Then, there is "Innovation Capacity and the City. The Enabling Role of Design" by Grazia Concilio and Ilaria Tosoni. Finally, "Uneven Innovation. The Work of Smart Cities" by Jennifer Clark.

## Turin - Italy

Torino City Lab (TCL) is an initiative-platform aimed at creating simplified conditions for companies interested in conducting testing in real conditions of innovative solutions for urban living. The project began in 2016 with the first "Torino Living Lab", based in Campidoglio district. The neighborhood has become the first urban space in Turin dedicated to innovation and smart city, thanks to the activation of 29 projects on different areas such

as environment, mobility and tourism. Torino Living Lab is an initiative of the City of Turin created to promote, develop and test new innovative solutions in a real context.

Citizens, companies and public administration explore and experiment together innovative products, technologies and services in a specific area of the city in order to test its functionality and utility for end users and assess the impacts on quality of life.

Torino City Lab involves a vast local partnership of subjects from public and private sectors interested in supporting and growing the local innovation ecosystem. Currently Torino City lab promotes specifically co-development and testing in the following areas:

- autonomous mobility services with a focus on autonomous vehicles and drones for the transportation of people and freights;
- innovative urban services enabled by 5G technologies: city applications of artificial intelligence and collaborative robotics, Internet of Things, augmented and virtual reality.

Torino City Lab is an open and widespread "laboratory of innovation" throughout the city area. It provides for innovators and star-uppers simplified access to public spaces and assets, including intangible assets (processes, services and data). TCL expands and strengthens relationships within the local innovation ecosystem, through an articulated partner system. Moreover, the lab allows to "scale the solutions", promoting them within networks and projects on a local, national and international scale. TCL aims to involve end users and citizens, promoting local challenges and supporting the active participation of interested communities.

The first underlying purpose of such project is positioning Torino at European and international level as a place where innovation is easier and is a shared challenge for the territory. Secondly, to attract companies from Europe and the world to engage new trajectories of economic development in sectors with high added value and to serve the citizens of tomorrow (Zanini, 2019).

## Sophia Antipolis, Nice - France

The second case study presents a more consolidated and structured experience over time: the Sophia Antipolis Technopark in the core of the French Riviera. It was designed in 1969 as a science and knowledge center by French Senator Pierre Laffitte.

On a vast, arid plateau the technology park was built: 90% of the land was planted with vegetation and it is now home to 2,500 companies, valued today at more than 5.6 billion euros and employing more than 38,000 people.

In terms of urban planning, from its beginnings, the Sophia-Antipolis Joint Association (SYMISA) has supported economic growth by creating office and residential areas, while maintaining a very significant proportion of planted areas. The first 1,500 hectares of green space were quickly transformed into departmental parks open to the public, while the hilltops were protected by a building ban. The innovation chain which began with the set-up of international Research&Development centers, continues today with the arrival of company creation and support players including incubators, competitiveness hubs, research laboratories and higher education stakeholders (Partenay et al., 2015).

Nowadays, Sophia Antipolis is the Europe's leading technopole since it has turned into a center for global technological innovation. Each year more than 1,000 new jobs are created in the technopole in key fields such as artificial intelligence, biotechnology and autonomous and connected vehicles. The technopole was built on a unique urban planning model formalised in the 1977 Charter and characterised by the special emphasis placed on the natural environment and on the will for buildings to blend into the landscape. Buildings cannot be taller than the ridge line of the park's hills.

Sophia Antipolis was designed from the beginning start as a "fertile" centre of advanced technology focusing on conviviality, diversity and multi-disciplines to pool energies creatively and thus create the major innovations of tomorrow. A state of mind which is being reinforced. Concerning its attractiveness, Sophia Antipolis has

established itself as a place of work benefitting from services and a high quality of life, including opportunities for sport and proximity with nature, to contribute to well-being at work and to facilitate scientific and technological creation and innovation. Talents, researchers and entrepreneurs from over 80 different countries have set up in the technopole. They were attracted by this innovative, dynamic culture open to change and difference and brimming with enthusiasm. This community is responsible for major innovations which are shaping the world of tomorrow.

Among the main research and innovation topics towards ecological transition, the key sectors in Sophia Antipolis technopark are health and biotech, intelligent vehicles, and mobility, bluetech, sportech and cybersecurity.

## Silicon Valley, San Francisco – California, US

While the other two case studies refer to single urban environment or neighbourhood designed to promote research and innovation, the American Silicon Valley is an extraordinary and unique case study since it gathers more than one city, created on purpose with a vocation for research and development of innovative technologies, and more. California's Santa Clara Valley wasn't always known for high tech. The area had once been an agricultural paradise, teeming with fruit orchards and canneries. Its sunny weather, attractive suburbs, proximity to Stanford University, and casual but fiercely entrepreneurial business culture attracted talented people and new businesses to the region. A booming electronics industry emerged in the 1960s and inspired the nickname "Silicon Valley," after the main element in integrated circuits. In the 1970s and '80s, this cluster of cities south of San Francisco nurtured the invention of the personal computer.

Nowadays, the Silicon Valley is a rich ecosystem where everyone with an idea eventually shows up, raise some money, and get started. Numerous accelerators, such as Y Combinator make it easy to get a start, and the cost of starting a company has come down significantly due to cloud-based infrastructure and software development tools and frameworks.

However, Silicon Valley has become a self-parody, with all the downsides of its own success: race, age, and gender discrimination, drug and alcohol abuse, suicide and depression. Its "win at all costs mentality" has spawned excesses of every variety, also in the field of urban quality of life.

California's Silicon Valley is notoriously jobs-rich and housing-poor. There has been a particularly severe shortage of affordable housing, forcing workers employed in communities such as Mountain View, Los Altos, Sunnyvale and Santa Clara to live far from their workplaces, driving long distances through severe traffic congestion just to do their jobs. A detailed 2007 report developed by The Institute for Metropolitan Studies at San Jose State University found that Silicon Valley would need 90,000 new units of affordable housing over the next 20 years to meet growing demand.

This has been a drain on the region's economy, and a source of significant environmental damage. Because an insufficient number of homes have been built within existing Valley communities, the region's housing supply has taken the form of low-density suburban sprawl in far outlying areas, eating up the California landscape while mandating lengthy car trips that increase emissions of carbon dioxide and other air pollutants. The dilemma among land-use consumption by creating new residences for workers and traffic congestion for those living far away from their workplaces has driven the urban planning processes of Silicon Valley in the last decades (Gargiulo & Russo, 2017).

Ken Layne, an American writer, states that if Silicon Valley wants to remain the world's high-tech capital, it needs to reform itself into an urban wonderland instead of a Simi Valley suburb with lots of wealthy people. The writer proposes high quality residential areas, with services and activities and a complex system of light railway lines. The idea is to combine technological innovation and urban planning strategies in order to increase local competitiveness and turn cities into fertile grounds for attracting innovators, their ideas and their applications to the real world.

### The Innovation Complex: Cities, Tech, and the New Economy



Author/Editor: Sharon Zukin  
Publisher: Oxford University Press  
Publication year: 2020  
ISBN code: 978-0-19-008383-0

It is commonly said that "innovation and entrepreneurship" and how "good jobs" in tech will save our cities. Yet these common tropes hide a stunning reality: local lives and fortunes are tied to global capital. You see this clearly in metropolises such as San Francisco and New York that have emerged as "superstar cities." In these cities, startups bloom, jobs of the future multiply, and a meritocracy trained in digital technology, backed by investors who control deep pools of capital, forms a new class: the tech-financial elite. In *The Innovation Complex*, the eminent urbanist Sharon Zukin shows the way these forces shape the new urban economy through a rich and illuminating account of the rise of the tech sector in New York City.

The book introduced significant and interesting insights about how New York has become a supercity of the tech economy. Moreover, it presents a critical first look at urban economic transformation in the digital age and shows how the startup economy, tech ecosystem, and politics of innovation really work. Furthermore, it connects actions of government, business, and universities to expose the powerful underside of the new urban economy. The author combines original interviews with venture capitalists, startup founders, and economic development managers to explore the world of hackathons, meetups, accelerators, and innovation districts

Drawing from original interviews with venture capitalists, tech evangelists, and economic development officials, she shows how the ecosystem forms and reshapes the city from the ground up. Zukin explores the people and plans that have literally rooted digital technology in the city. That in turn has shaped a workforce, molded a mindset, and generated an archipelago of tech spaces, which in combination have produced a now-hegemonic "innovation" culture and geography. She begins with the subculture of hackathons and meetups, introduces startup founders and venture capitalists, and explores the transformation of the Brooklyn waterfront from industrial wasteland to "innovation coastline." She shows how, far beyond Silicon Valley, cities like New York are shaped by an influential "triple helix" of business, government, and university leaders—an alliance that joins C. Wright Mills's "power elite," real estate developers, and ambitious avatars of "academic capitalism." As a result, cities around the world are caught between the demands of the tech economy and communities' desires for growth—a massive and often-insurmountable challenge for those who hope to reap the rewards of innovation's success.

### Innovation Capacity and the City. The Enabling Role of Design



Authors/Editors: Grazia Concilio, Iliaria Tosoni  
Publisher: Springer  
Publication year: 2019  
ISBN code: 978-3-030-00122-3

Adopting design as a way to embed innovation within urban environments, in order to conceptualize feasible answers to complex global challenges, is the core topic of this book. In particular, our line of reasoning tries to reduce the conflict between those innovators who, despite targeting societal change and sustainability, adhere to the classical economic model and therefore look for market success and profitability and those who, otherwise and in opposition to such mindsets, do not focus on the potential for revenue from their innovations and promote alternative ideas and economies. To that end, this book explores the conditions for innovation to be disruptive of values yet, at the same time, gradual during the dynamics of change. For us, disruptiveness, with regards to values, is the best guarantee for establishing an effective path to sustainability, while the gradual aspect is crucial to reduce the risk of a dull resistance of the predominant socio-economic system.

With such an intent in mind, the book puts together three key concept domains rarely considered in a unitary fashion. They are: innovation, the only possible response to global crises, aiming at transforming behaviours and practices towards systemic changes and transition; design, a way of creatively conceiving, developing and driving forward new practices for undertaking large scale transitions; and cities, seen as the environments where problems present themselves in the most socially relevant way and at the same time as key opportunities for testing and adopting forms of innovation which target global challenges. Therefore, given the setup and aims of our reasoning, we interrogate how the interplay between design and the urban dimension can contribute to sparking or fastening the various pathways of the innovation process.

The book discusses these issues moving from some key research hypotheses. The first hypothesis concerns the application of design approaches and tools and how they can facilitate the generation of innovations in urban contexts both as an endogenous process relating to local resources and as a result of embedding innovations from other contexts with similar, or even dissimilar conditions. The second condition related to the fact that application of design approaches and tools may help propagate local innovation skills and capacities within urban contexts not having previously been exposed, to the required extent, to other innovation facilitating conditions. The third condition concerns the potential of application of design approaches and tools in facilitating the scaling, embedding and/or transferring, of innovations born from some urban contexts into other contexts having similar, or even dissimilar conditions.

Operationally, what the authors will be looking at are multiple (sub)processes, including: (i) the dynamics of innovation pathways and their interactions with the urban dimensions and resources; (ii) the skill and capacity building processes, enabled by design, leading to those relevant dynamics; (iii) the creation of the conditions for scaling innovation in a generative dialogue with the city; (iv) the creation of the conditions for distributing innovations "born elsewhere" and the generation of local "hubs" of actors dealing specifically with such innovations, and/or the transformation of those innovations into something else, more tailored to the local situation, or even dramatically different.

The last point alludes to Jacobs' belief in a powerful multiplier effect of the "two interlocking reciprocating systems" leading to "explosive city growth". As per our second caveat, we do not intend to follow such a line of thought to the point of considering a massive take up and a diffused emergence of innovations as the inevitable outcome of adding design tools, methods and instruments to a supposedly non-design-enabled process. More modestly, we will be satisfied if an "appropriate" injection of those methods and tools, combined with critical awareness for the role of urban dimensions and networks, will "increase" the creative capacity and/or encourage the relevant innovation to be judiciously adopted and put into practice in a certain community or environment.

The book chapters follow this reasoning starting from the exploration of key concepts and then introducing the main research findings.

### Uneven Innovation. The work of Smart Cities



Authors/Editors: Jennifer Clark  
 Publisher: Columbia University Press  
 Publication year: 2020  
 ISBN code: 978-023-118496-0

The city of the future, we are told, is the smart city. By seamlessly integrating information and communication technologies into the provision and management of public services, such cities will enhance opportunity and bolster civic engagement. Smarter cities will bring in new revenue while saving money. They will be more of everything that a twenty-first century urban planner, citizen, and elected official want: more efficient, more sustainable, and more inclusive. Is this true?

In *Uneven Innovation*, Jennifer Clark considers the potential of these emerging technologies as well as their capacity to exacerbate existing inequalities and even produce new ones. She reframes the smart city concept within the trajectory of uneven development of cities and regions, as well as the long history of technocratic solutions to urban policy challenges. Clark argues that urban change driven by the technology sector is following the patterns that have previously led to imbalanced access, opportunities, and outcomes. The tech sector needs the city, yet it exploits and maintains unequal arrangements, embedding labor flexibility and precarity in the built environment. Technology development, *Uneven Innovation* contends, is the easy part; understanding the city and its governance, regulation, access, participation, and representation—all of which are complex and highly localized—is the real challenge. Clark's critique leads to policy prescriptions that present a path toward an alternative future in which smart cities result in more equitable communities.

*Uneven Innovation* problematizes the smart city project, showing us the many ways that it continues—rather than disrupts—underlying patterns of inequality, precariousness, and powerlessness. Clark's insightful critique is not only a call for action, her work draws to light the 'operational standards' that all cities should be pushed to uphold when engaging the latest urban development fad. An essential read for practitioners, activists, and scholars seeking to understand and shape the role of technology on the future of cities and the urban workforce.

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