Green urbanism: strategies for a diverse city

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Abstract

This paper aims to contribute to the current debate on green urbanism as a multidisciplinary approach which calls on us to move beyond the traditional polarity between cities and nature, creating sustainable places, communities and lifestyles. In view of the the urgent need to integrate sustainability principles into urban design processes, what is required are new strategies for facing the profound challenges involved in moving towards a diverse city. The case of Stockholm, the first European Green City (2010), shows that the holistic strategies adopted by the city can increase community engagement, thus acting as a catalyst for more sustainable future cities.

Parole chiave: green urbanism, città verdi, sviluppo sostenibile, comunità
Keywords: green urbanism; green cities; sustainable development, community

Introduction

Looking at the contemporary city and its territorial models, it is evident that the continuous erosion of environmental resources required by the urban metabolism represents a state of serious non-sustainability. The pollution and congestion stemming from forms of mobility that remain excessively tied to private motorization is exacerbated by the enormous waste of energy produced by a mostly obsolete heritage.

More and more people live in urban areas: the economic shift accompanying the growth of a knowledge-based economy tends to concentrate populations, creating both a need for resources and the opportunity for economies of scale and creative activities. The city and its associated lifestyle have become sites which are seductive (Rykwert, 2004) and therefore competitive. As Rykwert has suggested, twenty-first century cities reveal something about us, how we made them, how they have evolved and how we might foster change and effect

improvements. Taking into account our role as citizens and consumers, we need to consider the economic, social, and cultural implications of development and, if necessary, take action against its side-effects.

This scenario draws attention to the fact that we need to change current territorial models by instead looking to virtuous practices and strategies that pursue a careful policy of reducing land consumption and re-naturalizing unused areas within the city, creating a green infrastructure system the transformation of which no longer appears plausible in the face of possible directions of development. These considerations also touch on issues such as landscape and cultural heritage, too often considered sectorial topics in relation to ordinary planning.

How can we design and plan a sustainable city? How do we promote spaces that are capable of becoming sustainable? The effort to answer these difficult questions entails two main assumptions: the fact that there are some general conditions which exist that can be accepted everywhere, and that there are some specificities linked to the given context as a result of differing geographic, social and cultural circumstances.

The first issue is the increasingly central role that cities play in the global agenda for sustainability. To this end, as Tickell (1998) and Beatley (2010) have argued, "The first and most obvious thing about cities is that they are like organisms, sucking in resources and emitting wastes" (Tickell, 1998). This ancient organic metaphor is more and more useful for highlighting the enormous amount of waste caused by urban growth, high carbon dioxide emissions, and the squandering of natural resources. According to Di Palma (2006), "to conceive the city as organic implies not only a focus on life but also an assumption that life itself is dependent on an organized system." By choosing organic over biological, as the author suggests, it is possible to identify a system the components of which work together to support life because this aspect makes organic a term applicable not just to natural bodies, but to social bodies too. The term "organic" thus incorporates ideas of life in a broad sense, stretching from the life of an individual to the life of a collectivity, or a society, as a whole. Cohen (2017) stresses that there is an urgent need to focus on cities because, if we want to achieve a sustainable planet, "it needs to happen in our cities." In view of this point, it is up to institutions, governments and non-governmental organizations as well as researchers to drive such change through policies, rules, and innovative plans for modifying individual and collective behavior. The careful use of new technologies can, for example, promote consumption even while curbing its environmental impact. Furthermore, new economic trends such as the circular economy are intended to transform contemporary

consumers into prosumers; this approach shifts the focus from ownership to use, from possession to access and from the individual to the community (Maggioni, 2017). These economic and cultural aspects imply a paradigmatic change that moves away from the traditional technocratic vision of modernist and rational nature to instead pursue the idea of a shared city.

To make a city sustainable requires active and effective political strategies, but that is not enough. In a broader sense, the element that is central to achieving sustainability (in terms of environmental-social and economic dimensions) is a bottom-up approach to a human and environmentally centered city. The push for a diverse city must be sustained by people's aspirations of achieving a diverse city.

Green cities represent the best urban therapies (Galdini, 2017) for facing global challenges such as climate change, biodiversity loss, land consumptions and air pollution, improving the quality of life and creating wellness. Green cities can model and pilot this shift, suggesting new directions to move in in order to achieve real development.

To observe and reflect on such issues, this paper analyses the case of Stockholm, the first Green European City (2010) and an urban model characterized by a very high quality of life. Stockholm is the only place, for instance, where we can observe a case such as the Hammarby Sjostad district, an example of a future city built using the most advanced practices of eco-sustainability.

Methods

This paper focuses on green urbanism and the idea and planning of green cities in Europe. Contemporary cities appear to be transitioning towards a diverse model, but this shift still has a long way to go. As many cases in Europe demonstrate, this process is a work in progress due to the urgent need to counteract natural resource waste and widespread urbanization.

This study addresses the role of sustainability in European policy and examines the case of Stockholm as a concrete example of the actions and policies required to transition towards a diverse city model. To this end, it provides a short overview of the literature on green urbanism and green city, adopting the Lehmann scheme to identify the main principles of urban sustainability. The analysis of the selected case study uses secondary data to highlight certain specific findings in relation to this city in terms of public space, infrastructure, economic development, social cohesion and, in a more general sense, fostering sustainable urban living. We

hope that this article will contribute to furthering research and discussion on these issues in Italy as well.

What is green urbanism?

The idea of green urbanism springs from a desire to create more sustainable places for the communities living there, places in which inhabitants would be able to consume fewer resources.

The origin of this concept can be traced back to the early writings some authors such as Olmsted (1870), Howard (1902), Jane Jacobs (1961), Michael Sorkin (1963), and many others who recognized the extent to which public space, green areas, streets, parks, squares, sociability and human interaction are connected and how much they impact wellbeing, safety, and social cohesion.

Nowadays, these ideas feed the political debate at the European and global levels. Although this debate involves different disciplines and an increasing number of actors, the issues at state are quite considerably similar. In the nineteenth century, scholars began to recognize the central role of green infrastructure, considered one of the central aspects of a comprehensive approach to sustainable community development (Eisenman, 2013). Olmsted (1870) wrote about the parks movement and Howard, in his "Garden City of Tomorrow", described a marriage between "town and country" while Jacobs recognized the streets as "vibrant public spaces where social interaction takes place" and Sorkin's green utopia represents a response to the side effects of industrial urbanization. Over time, all of these insights have influenced urban planning. Green urbanism has thus been characterized by a marked tension between idealism and practicality.

In his 1961 work "The City in History: Its Origins, Its Transformations, and Its Prospects," Mumford noted that cities had become dehumanizing, their former bonds to their surrounding environments severed. He proposed an organic relationship between the city and nature, a vision in which economic aspects were less relevant.

In the 21st century, defined by Beck as "a new era of uncertainty, and where natural resources are critical," green urbanism theory made a re-appearance. Since that point, social scientists and urban theorists such as Sassen, Sennett, Gehl, Castells, and Giddens have focused on wider issues such as globalization, sustainability, ecology, information and communication technologies, and other related fields.

Although modern and contemporary planning has largely overlooked these theories, green urban design has always been a basic human aspiration. Today, this aspiration has become ever more driving and urgent in view of the need to save natural resources and assure smarter development. Planning green infrastructure currently represents a central aspect of the evolution of the contemporary city. Green urbanism is the keyword for reshaping our cities.

As an interdisciplinary concept that has enjoyed widespread acceptance in recent years, green urbanism is an approach that combines different disciplines and takes up theories known as "sustainable cities" (Beatley, 2000), "sustainable urbanism" (Farr, 2008), the "green city" (Karlenzig, 2007) and the" eco-city "(Lehmann, 2010) aimed at reducing environmental impact on cities and pursuing sustainable development. According to Wells[1] and Bardacke (2010), although green urbanism may seem like an elusive and evocative term, it can be defined as "the practice of creating communities mutually beneficial to humans and the environment." Green urbanism recalls the idea of an eco-systemic city characterized by a specific endowment in terms of biodiversity and, at the same time, a human city hosting citizens who live in green, open spaces, capable of ensuring a high quality of urban life.

Freiburg-Vauban (Germany), Hanover-Kronsberg (Germany), Stockholm Hammarby-Sjöstad (Sweden), and the green district EVA Lanxmeer in Culemborg (The Netherlands) represent some of the numerous examples of sustainable urban development at the beginning of the 21st century.

Lehmann (2010) notes that green urbanism is an interdisciplinary approach which "requires the collaboration of architects, engineers, urban planners, ecologists, sociologists, economists and other specialists, in addition to architects and urban designers. Green urbanism makes every effort to minimize the use of energy, water and materials at each stage of the city's or district's life-cycle" (Lehmann, 2011). The author has listed the 15 Principles of green urbanism as a conceptual model for tackling contemporary challenges and re-thinking future urban settlements.

These principles, based on a triple-zero framework (zero fossil-fuel energy use; zero waste; zero emissions), must be tailored to the location, context and scale of the urban development by adopting a specific integrated approach. Understood as integrated elements that interact to promote sustainable urban development, these principles are:

1. Climate and context
2. Renewable energy for zero CO2 emission
3. Zero-waste city
4. Water
5. Landscape, gardens and urban biodiversity
6.Sustainable transport and good public space: compact and poly-centric cities
7. Local and sustainable materials with less embodied energy
8. Density and retrofitting of existing districts
9. Green buildings and districts, using passive design principles
10. Livability, healthy communities and mixed-use programs
11. Local food and short supply chains
12. Cultural heritage, identity and sense of place
13. Improved urban governance, leadership and best practice
14. Education, research and knowledge
15. Strategies for cities in developing countries

Lehmann's scheme, adapted by the author

Besides eco-friendly solutions, these principles also encompass the social, cultural and identity-related aspects involved in creating healthy communities.

The case of Stockholm

Stockholm, Copenhagen, Barcelona, and Amsterdam are examples of cities of the future that have already been moving towards a smart city model for some years, each with its specific characteristics linked to its own history, culture, organization and larger context. In Amsterdam, for example, almost a thousand homes have been equipped with sophisticated consumption detectors designed to advise the inhabitants about how they should manage energy in the house, thus leading to an average savings of 14%. Stockholm has succeeded in reducing carbon monoxide emissions per inhabitant by 25% since 1990; it has 760 kilometres of bicycle paths and its inhabitants carry out 78% of their trips using public transport while green spaces occupy 55% (the city Ecopark provides 26 square kilometres of real forest).

Stockholm is, therefore, an example of a smart, green city with a very high quality of life. It has long promoted effective environmental policies, and in the last ten years such policies have

begun to deliver exciting results. In 2010, the Swedish capital was awarded the first 'European Green Capital' title by the EU Commission, becoming a leading example of how to be green. Today, environmental policies are even highly prioritized and now fully integrated into all city development (Stockholm – the first European Green Capital 2015).

STOCCOLMA. foto di proprietà del commune di Stoccolma.

The city aims to become fossil-fuel free by 2040 and can without a doubt be defined as an eco-friendly city. With a population of 1.5 million in the urban area and 2.3 million in the larger metropolitan area (2016), Stockholm is the most populous city in the Nordic region. As regards the environment, Stockholm has around 1,000 green spaces, accounting for about to 55% of the city's overall area; it also hosts 30 public beaches and eight protected nature reserves. The city is growing, but it remains green. Its environment strategy is based on early efforts of district heating and an extensive public transport system. The first comprehensive environmental program dates to 1976. Since then, its efforts have been focused on innovative programs with high ambitions to increase quality of life.

The city also has expanded the development of infrastructure such as streets, public transport, sustainable housing, and an environmentally friendly lifestyle.

Innovation, cooperation, cohesion are the imperatives not only for mayors and politicians but also for the local community that is working hard to take part in meeting these challenges. The City Budget 2015, the overall Sustainability document that has played a central role in all strategies and city planning, is based on four distinct yet interconnected pillars. They can be treated as basic tools to grant form, function and organization not only to the Swedish case but also to other cities which have already chosen to go green:

1. Social sustainability: the provision of education, social housing, and services for both children and the older generation

2. Ecological sustainability: an efficient transport system is combined with an increased proportion of renewable energy, with organically grown food being produced and consumed

3. Economic sustainability: a range of initiatives to improve the labor market, ensuring rights to employment, education and accommodations for all.

4. Democratic sustainability: measures are taken to counteract all forms of discrimination and all residents are guaranteed the same rights and opportunities.

We can also expand on these four pillars, as Berger (2014) Forbes, Williams (2011) suggest when they argue that “enabling sustainable cities requires an extension of the term sustainability to the six aspects of aesthetical, environmental, financial, functional, political, and social sustainability.” All of these elements of sustainability must work in unison, with people at the center of the process.

HAMMARBY SJÖSTAD. Foto di proprietà de commune di Stoccolma.

As the report “Stockholm – the first European Green Capital” outlines, sustainability represents an integrated part of all the strategies the city has adopted and its urban planning. Green areas and eco-systems are important in that they contribute to the quality of life for citizens and the overall quality of the city. The first eco-city district was Hammarby Sjöstad, and it is considered a model to be replicated in other European citie**s.**

Hammarby Sjöstad, the first Eco-city district

The case of Hammarby shows that it is possible to transform a grey industrial area into a green, modern and smart residential neighborhood. At the beginning of 1990, this neighborhood surrounded by a lake was home to several large manufacturing industries and, later, a widespread web of craft activities housed in metal sheds. In the following years, the area was designed to reuse and incorporate residential expansion in order to meet the demands of the intense demographic increase in the capital due to rising birthrates and massive immigration, both nationally and abroad. The project implemented by the Municipality of Stockholm involved series of interventions aimed at minimizing environmental impact and using energy from renewable sources. Initially conceived as an area for constructing an eco-friendly village for the 2004 Olympics, the Hammarby project was later converted to residential use when Stockholm was not chosen as an Olympic venue.

Today, Hammarby Sjostad is a compact neighborhood which, when all work has been completed, will have 11,000 accommodations for about 25,000 inhabitants and 10,000 employees involved in production activities, aimed at reducing the environmental impact below 50% of the level characterizing 1990s Swedish residential buildings. From a chaotic and polluted slum, at the beginning of this century it was transformed into a green city with an efficient network of transportation, car sharing and carpooling, bicycle paths (760 Km), a light rail link with the city center and large green spaces. The old industrial sites have been reconverted into residential areas nestled amidst green parks, thus ensuring that no further soil is consumed by building. Even the houses are constructed entirely from eco-friendly materials that make them comfortable and above all, healthy. The houses are equipped with balconies and large, interconnected spaces that facilitate meeting and cooperation; 50% of the walls are formed of glass to make better use of sunlight and save electricity.

The rest of the energy needs are instead met by solar panels placed on the roofs of the buildings which have the capacity to ensure not only lighting for the common areas but also hot water for domestic use. In each apartment there is a system of pipes that brings hot or cold water through the space as required to heat or cool it. The energy circuit makes this urban district unique: its design involves the use of renewable sources and the re-use of the heat lost in the homes, with devices to reduce consumption. A recycling system was also created to produce clean energy from waste: in fact, all domestic waste is transported to huge underground cisterns where the sewage generates biogas which is immediately available for use in the kitchens of those same apartments. The solid residues of this process are instead extracted and used as fertilizer for the gardens located in the internal courtyards of the buildings. One element of particular interest is the functioning of the water cycle involving nearby Lake Malaren: potable yield is transported to homes and, after use, it is purified once again and returned to the sea.

The closed-cycle model of resource use, energy, water, waste known as the "Hammarby model" has been tested in the context of an urban design that has integrated the various systemic components involved in terms of sustainability: mobility, greenery, residences and services.

However, the smartness of the model lies in other aspects as well: while the masterplan entails full integration among architecture, landscape and water, in terms of social sustainability this district strikes an effective balance between public and private space for residents, with priority placed on social capital. The development of programs and processes in the neighborhood serves to foster social interaction and cultural enrichment. The residents, and young people in particular, appreciate the fact that the area lies close to the center and, at the same time, features the typical characteristics of a suburb. The Hammarby Sjöstad plan has been judged to be one of the best examples of sustainable urban planning implemented anywhere in the world. The project was managed by the Municipality of Stockholm through an innovative system that effectively involved both public and private subjects. Such a partnership involving private individuals would constitute a key opportunity in our country as well, in terms of both its possibilities for potential business and the chance to accumulate know-how to be used in other projects. The Hammarby Sjöstad project, inspired by the principles of Agenda 21 and the objectives of social promotion and eco-compatible systems development, represents a successful experiment and best practice that has every potential to be replicated in other contexts as well.

Conclusions

In all probability, green urbanism is set to become the leading model for future cities. In Italy as well, local administrations are engaged in drafting agreements with companies in the ICT sector to identify new action strategies. Following the example of the Hammarby district in our country, Italian cities are working towards a greener future featuring modern and high-quality public transport by developing infrastructure for electric cars in cities. Although it is a relative latecomer to this movement, Italy is currently adopting initiatives for smart cities thanks in part to European Union support, with the European Initiative on Smart Cities providing 12 billion euros in funding by 2030. There are numerous ongoing projects aimed at expanding the range of initiatives and extending the benefits, however, granting a central place to the social aspects often overlooked in programs initially based on the diffusion of technologies.

Citizens thus become the leading participants of a strategy through which they are engaged in new forms of interaction and collaboration. This aspect is key because, in order to be smart, a city must first be a city of smart people, a context characterized by high human and social capital featuring flexibility, dynamism, and creativity with an international, multicultural, inclusive and public-life society. Hammarby represents an example in which sustainability is ensured by a set of important design elements: the structure of the urban system and relations with the surrounding context, accessibility and the transportation system, connections with open spaces and procedures for implementation and quality control. The Swedish case demonstrates that sustainable urban development requires a holistic approach encompassing more than the 15 green principles suggested by Lehmann. It also calls for involving the government, private sector, and academia in the planning process and bringing about change in citizens' behaviors and mindsets. However, as the case study highlights, Hammarby represents a model of collaborative attitude on the part of the people who, living in this neighborhood, experience the real possibility of constricting a diverse city.

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