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Perspectives for Smart Landscapes

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Perspectives for Smart Landscapes. *The urban landscape is a topic scarcely covered in international literature, but today has a new consideration. The search for attractiveness and quality of life is the objective of long-term projects in the cities that propose to initiate new trajectories of development related to smart city paradigm, conditioning the social, economic, cultural and landscape perspective of towns. The landscape diagonally crosses the five dimension of smart city (mobility, environment, people, knowledge, tourism, urban transformations) becoming a necessary component of new policies and actions and therefore emerging as a strategic element on which to focus to develop an intelligent future for our cities.*

Keywords: *smart city, landscape disegn, smart planning*

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The urban landscape is a topic scarcely covered in international literature that favours the study of the natural and rural suburban area, together with the green and/or free spaces in the city, dwelling on their physical, functional and symbolic relationships with the built-up environment.

The landscape of the city is the result of plans and projects which - by responding to the various socio-economic, functional and physical espectations - produce built-up and free spaces (public and private), but also natural, rural and closely interrelated by being connected. The study and design of the urban landscape is therefore a strategic question for the future of cities, which cannot be separated from that of development. Quality and urban landscape are central objectives of the change processes of the economic model that involve cities nowadays through the definition of strategies and projects aimed at designing a new future and reinstating the urban hierarchy. Indeed the scenarios of urban development determine the transformation of economic, social, cultural, functional and physical characteristics that contribute to "producing landscape", while contributing to the search for competitiveness and attractiveness.

These processes which in the last twenty years have generated innovative dynamics in cities, supported also by EC policies, leading to the upgrading of poor areas, the mobility system, parkland, services, through complex projects; they have produced the transformation of vast parts of the urban and socio-economic fabric, by contributing to building new images, to reinforcing attractiveness and competitiveness, but too often determining limited landscape results (that is, obvious

*The § 1 is written by Attilia Peano. Instead the § 2, 3 and 4 are written by Angioletta Voghera.

effects on the landscape intended in its formal and socio-cultural complexity).

On the one hand, the inadequate effectiveness of policies and projects of transformation of the city and the urban landscape, on the other, the global economic crisis, without precedent in speed and gravity, determine the necessity to adopt innovative solutions, by starting short-term initiatives and long-term projects to modify the attractiveness and quality of urban life also through the adoption of a new grammar based on the knowledge economy and on culture. A grammar that can build the future of the city on new competitive factors and on a territorial experimentation which - through infrastructural and environmental couplings of the spaces of connection and of fruition - can give new shape to the city and define perceptive signs and self-defining, landscape values.

1. Innovative issues for cityscape

The search for attractiveness and quality of life is the objective of long-term projects in the cities that propose to initiate new trajectories of development within the framework of the knowledge economy to modify urban conditions from a social, economic, cultural and landscape perspective.

The new knowledge economy, which replaces that of the twentieth century based on the use and transformation of material resources, is based on assets, often intangible, in which invention, production, socio-economic value are the result of knowledge, as a productive factor. The knowledge economy is founded on the quality, in a broad sense, of economic, social and territorial processes, as quoted in the conferences held in Brussels to mark the European year of creativity and innovation 2009 (Manifesto of the European Ambassadors for Creativity and Innovation, European Year of Culture 2009; Create.Innovate.Grow = Closing Conference of the European Year of Creativity and Innovation, 2009). In this venue, how to mobilise knowledge and the capacities of creativity and innovation to overcome the crisis was reflected upon, placing at the centre the city that must include meeting and aggregation spaces, environments of learning and work to develop creativity, together with places of interdisciplinary cultural experimentation, networks of centres of excellence that bring together university experts, public administration and companies to develop ideas, products and services. Indeed, the urban dimension is the ideal framework for this process of economic and social development based nowadays on knowledge, which constructs the competitive factor on visions, innovation, capacity to apply and organise new knowledge and methods of growth in areas, through a productive infrastructure composed essentially of information flows.

In this context, the urban texture links the germs of experimentation and territorial innovation through infrastructural and environmental connections and those of the related public spaces that have always shaped the city and constitute its self-defining benchmark. The new forms of urban “territoriality” that are appearing generate places characterised by “multi-belongings” or “multi self-definings” (Dematteis, 2001) that are reflected in a fragmented space that signals profound changes in relation to urban behaviours and the processes of organisation and management of the territory. Consequently, new and often casual landscapes are constructed, artificially composed in the absence, at times, of a real relationship with social processes and needs. At the same time, new demands for a better settlement environment emerge, with increasing force, as an outcome both of unsatisfied past needs, and of new demands linked to the effects of climate change, the continued loss of biodiversity, the worsening of the conditions of non-reproducible primary resources - air, water, soil -, the desire for quality and beauty in the places we live.

The most recent international and European development strategies make reference to these needs which, starting with the Copenhagen Congress (2009), promote sustainability

and the struggle against climate change (EC Directive 2009/28) as objectives of the government of the land. Of prominence are the actions promoted on a European scale by the new Directorate-General for Climate Action, established in 2010 and by the strategy "Europe 2020" (2010). The latter promotes concrete actions on a European and national level that integrate the sectors of climate change, energy, transport, industry, raw materials, agriculture, fishing, biodiversity and regional development.

Europe 2020 points towards three growth engines in particular:
- "intelligent growth" linked to knowledge, innovation and the digital society,
- "sustainable growth" related to more efficient production from the viewpoint of resources to relaunch competitiveness,
- "inclusive growth" that incentivises participation in the labour market, the acquisition of competencies, the struggle against poverty and the quality of life.

The most recent European policies are also moving towards a more balanced consumption of non-reproducible resources and are promoting actions for the development of "zero emission" forms of settlement, through: the development and rationalisation of the mobility system, more efficient treatment of waste, energy saving, creation of green corridors, improvement of the landscape, salvaging of the existing real estate and the upgrading of urban areas and degraded sites.

Policies and actions that propose to go beyond the practices of urban regeneration developed since the nineties and supported by EC initiatives which, if they have produced certain positive effects of economic and social revitalisation, have still contributed in a very limited fashion to the quality of the environment and urban landscape

3. Smart Cityscape

The possible directions for the redesign of urban policies are referred to in the Leipzig Charter on Sustainable European Cities (2007) which promotes an integrated system of actions that refers to the Smart Cities, an increasingly widespread password that proposes a new model of urban life. Europe encourages the development of "intelligent" communities aimed at "integrated and sustainable" solutions through the smart European Programme called Smart Cities to support innovative and pioneering cities in the energy and environmental fields starting with an initial notification of approximately 70-80 million euro for projects of restoration of public and private real estate and the energy networks. Many European cities moved in this direction which, for example like Turin and Genoa, are geared towards: the reduction of emissions, development of clean technologies, use of renewable energies, while interconnecting environment, mobility, energy saving.

Smart City has, however, a broader significance. It is a movement born in North America but which has already had theoretical and applicational developments in Europe and should help to create life and work projects that simplify the complexity of urban living, through physical infrastructures and services, but also through the development of territorial capital, that is, social, environmental and cultural.

This project brings into play the values and symbols of the territory, such as tradition, social inclusion, participation, solidarity, that are referred to in the concept of "community", which has deep roots in the European city and may constitute the benchmark for visions that create a condition favourable to the development of the overall attractiveness of the city (The European Dream; Rifkin, 2004). This vision stems from the presence of a creative class, together with the quality and attention to the urban environment, as elements positively connected with urban endowment and which contribute to sustainable development.

This implies that public administrations and local governments define strategic programmes aimed at a better management of resources and of the operational choices to make cities more "intelligent". Indeed, by Smart City is intended

an urban space guided by long-term strategies that embrace the challenges of globalisation and the economic crisis by interweaving new synergies between competitiveness, sustainability and social cohesion. Strategies that promote a vision of planning that formulates policies for the development of knowledge, creativity, mobility, use of ICT in public administration, quality of the environment and landscape, while conditioning the quality of living and urban dwelling.

The five principal dimensions on which the vision of Smart Cities is based are: mobility, environment, tourism and culture, knowledge economy and tolerance, urban transformations for quality of life. They are five strategic dimensions of the government of the land that require interrelation of choices in a vision of planning of socio-economic development and territorial planning.

4. Landscape in the smart city grammar

The landscape diagonally crosses all five dimensions listed, becoming a necessary component of new policies and actions and therefore emerging as a strategic element on which to focus to develop an intelligent future for our cities.

The new vision of mobility implies easier movements, good availability of public transport, innovative and sustainable, with transport means with a low ecological impact, with advanced mobility management and info-mobility solutions both inside urban areas and in relationships with the external area. This implies the control of pollution through for example the promotion of the use of car-sharing, the continuous replacement of the coach fleet of local public transport companies with electric transport means, recourse to photovoltaic solar sources for the energy supply of the new coach fleet and the opening of recharging points in the sites with greatest traffic frequency. It involves structural choices, appropriately planned over time, that may involve the landscape significantly, for example through the design and upgrading of the pedestrian zones in the historic centre and the most frequented areas of the city suburbs, the creation and integration of networks of green routes for movements on foot and by bicycle, creation of park-and-ride car parks on the outskirts of cities, creation of overground trains on sections that are disused or in operating loss, setting of residential streets, and so on. These are the measures than can impact on pollution and at the same time on the quality of movements and therefore on an activity central to life in the city.

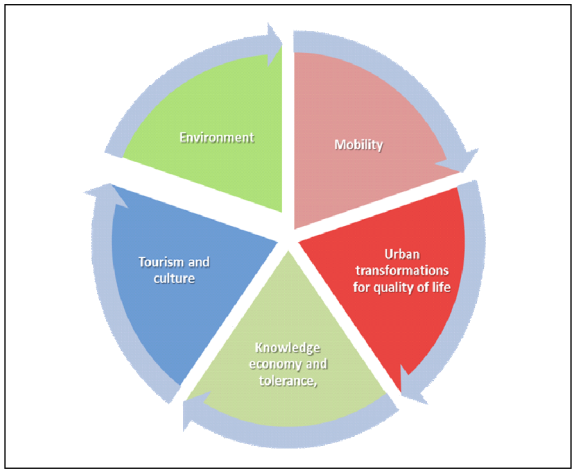

Fig. 1
Dimensions of smart cities.

The new strategy for the environment requires measures for: the reduction and differentiation of waste collection and its economic upgrading, reduction of emissions into the atmosphere with the limitation of private traffic, improvement of industrial emissions, rationalisation of the building industry (heating, climatisation), creation of public lighting from renewable sources, promotion and management of urban parkland, reclamation of disused areas, city planning development based on soil saving and on the creation of locally produced urban agriculture and food chains. Important relationships with the landscape, supported by the local plan, refer to the design of urban parkland and public spaces and the possibility of creating new urban landscapes with the upgrading of the disused real estate. Urban agricultural production

(regulated urban vegetable gardens, garden activism, agrarian parks, vegetal gardens, balcony vegetable gardens,....) also combine the need to find "handy" and always-fresh vegetable foods, with the need for manual skill, contact with nature, while integrating environmental, landscape and social effects. These are projects that also bring into play a new relationship between cities and agriculture, by rebuilding links that had fractured, bringing the produce close to the consumer.

The new measures for tourism and culture are based on the optimisation of the cultural heritage and the traditions for citizens and consumers, on a coordinated tourist offering that uses advanced communication techniques and access to on-line services. From the point of view of the landscape it means pointing towards the development of real estate, the construction of thematic itineraries in cities, both cultural and natural that connect the networks of parkland, urban parks and the system of historical, traditional and symbolic values. It also means constructing a new "virtual" image of the urban landscape and its values capable of increasing competitiveness and tourist attractiveness.

The strategies for the diffusion of the knowledge economy are founded on the creation of an environment suited to creativity, of high quality that promotes innovations and experimentations in culture, art and performance. These strategies are aimed at the creation of a city that presents itself as a workshop of ideas, inclusive of the various players and social groups, that lend their voice and which develops alliances between universities and training agencies. From the landscape perspective the varied art experiments in the city can play a significant role, the gardens of districts and communities that contribute to the knowledge and collective creation of new values and landscape symbols. The experiments of exhibitions spread across the urban territory can promote knowledge of the artistic and cultural heritage, but also assign new meanings to public spaces and those of aggregation, by offering visibility to places that are little known or habitually denied fruition. The role of community and district garden projects is interesting, spaces of landscape and social experimentation, that create new collective models of production and management of the landscape and the urban parkland. In these experiments the garden is the driver of landscape innovation and social cohesion, a space where the work is intergenerational and inter-ethnic. Thus, the production of parkland and floriculture also become a way of creating synergies, social aggregation, to rebuild the increasingly frayed social fabric in an urban context.

Furthermore, the new policies and transformation of the city are founded on a strategic vision of development geared towards the quality of life and of the landscape that places the maintenance of real estate and its efficient management at the centre.

Basing its own growth on respect for history and identity in the project and in the physical development, the policies and projects of urban transformation create conditions for social inclusion and for eliminating the barriers that prevent its use by all citizens.

Attention for degraded districts through strategies to improve the physical environment and transport infrastructures is central, but also for the development of the local economy and labour market and innovation in the culture sector; through these synergies the degraded districts can be redesigned as economically and socially integrated places, of social progression, growth and innovation in the long term.

The high quality of architecture and public spaces, and of residential models, must contribute to reinforcing the spirit of belonging of people with their own district, to rendering it more liveable for young and old alike. Towards achieving this the active involvement of residents is necessary and better dialogue with political representatives and economic players, for the purpose of better solutions for each urban area.

The strategies and designs of "intelligent" urban landscapes necessitate complex measures that combine interventions of an ecological-environmental nature, with those of development of culture, of urban

attractiveness, by contributing to constructing urban spaces, forms, attitudes and behaviours that are new and shared on a social level. The new aesthetic quality and quality of life can, through the creative experiment of the landscape, project ideas of sustainability in directions, social practices and innovative designs.

This diverse urban and landscape order can only be constructed through a growth model that points towards the green economy, characterised by economic, social and territorial synergies directed at a different paradigm of long-term development, aimed at reducing the consumption of energy, natural resources (water, air, soil, food, combustibles, ...) and environmental damages, by promoting the increase of energy efficiency, reduction of greenhouse gas emissions, local and global pollution and proceeding with the recycling of every type of domestic or industrial waste.

5. Experiences

The initiatives inspired by the process of innovation of smart cities are very varied in objectives and strategies (Smart cities. Ranking of European medium-sized cities, 2007); below are cited some examples of European cities (Amsterdam, Malmo, Pisa) that have promoted visions on the model of smart cities with interesting repercussions on the landscape.

Fig. 2
First page of the Amsterdam Smart City website.

Amsterdam Smart City is a strategy of development and planning integrated by territory, environment and landscape that developed from the collaboration between Liander (Dutch gas and electricity company), Amsterdam Innovation Motor (agency for the promotion and support of research and innovation) by involving the social, economic and cultural activities present in the urban area of Amsterdam.

In particular, the project starts with the necessity to construct a strong link between the inhabitants of Amsterdam, companies and the public administration of the city through measures that focus attention on the combination of innovative technologies for the creation of concrete projects that involve public and private partners, and that facilitate the change in behaviour of the residents of Amsterdam on a large scale, mainly on the theme of energy saving.

The Swedish city of Malmö promoted a Comprehensive visioning Process launched at the beginning of 1995 (then integrated into the directives of the Comprehensive Plan City Malmö of 2000), inspired by the sustainability strategies and today a benchmark for the start-up of a smart planning process. The objectives of the innovation process are: sustainability and environmental and landscape quality, starting with the improvement of the existing one, the restoration of the urban centre, the containment of soil consumption. The agricultural landscape in the south and alpine in the east are at the centre of the development strategy, aimed at safeguarding its biodiversity, naturalness and historical-cultural evidence and at promoting its accessibility. Öresund, a marine landscape of great importance for international and national navigation and for the fishing industry. is also a strategic space for open air recreational activities and for the ecological development of the system, by integrating it with the parkland, urban parks and with the countryside in the most extensive territory. A smart landscape comes to be defined as one that is created and derives value from the system of relationships between natural spaces, of water, rural and urban.

The strategy of urban sustainability is also referred to in the Green Plan (sector plan), a city planning document that is placed alongside the Comprehensive Plan and presents development proposals for the city's parkland system: a network of connection between the green areas which, by covering the entire city, connect both the urban territory and the countryside (Green Network). habitat and landscape systems with different charac-teristics.

In Italy there are many initiatives in the process of realisation, touching strategic dimensions of urban development, but with measures mainly sector-based (energy, culture, parkland, fruition, accessible agriculture) which, are different from international examples such as Amsterdam, Rotterdam, ... that have developed scenarios that invest, in an integrated way, all the dimensions of smart cities through a strategic plan.

An interesting example in this regard is the "Tourist Itineraries project" in Pisa that promotes technological tourism, supported by new multimedia itineraries, pedestrian itineraries with historical, artistic and landscape importance. Along the itineraries of fruition of the urban landscape, which meander starting from the points of access to the city, are created multimedia apparatuses both informative and interactive (Multimedia totems with WIFI access) that provide tourist, cultural and historical information, with the most advanced information and communication technologies (App mobile). The design integrates the multimedia informative structures along the itineraries with furnishings inside the service structures (such as the railway station, airport, etc...), already equipped with interactive and multimedia screens, and in other newly-built glass structures equipped with interactive and multimedia screens to be created in the park-and-ride car park areas. It is defined as a system of development and fruition of the cultural system that also transforms the urban landscape, by linking the values of the territory with sustainable itineraries.

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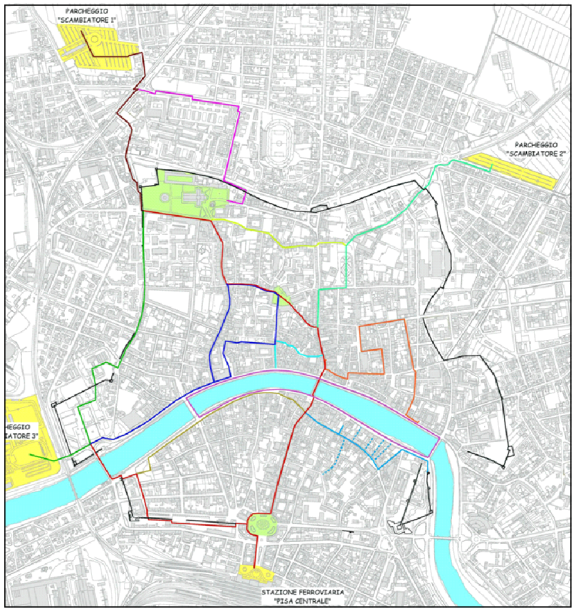

Fig. 2
Pisa smart city

Fig. 3
Malmo smart strategies

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