

Accepted Manuscript

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PII: S0048-9697(19)30238-4

DOI: <https://doi.org/10.1016/j.scitotenv.2019.01.398>

Reference: STOTEN 30712

To appear in: *Science of the Total Environment*

Received date: 18 October 2018

Revised date: 16 January 2019

Accepted date: 17 January 2019

Please cite this article as: S. Prestamburgo, F. Sgroi and C. Zanin, Anthropic space and design for all. New knowledge paths for urban planning strategies, *Science of the Total Environment*, <https://doi.org/10.1016/j.scitotenv.2019.01.398>

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Anthropic space and design for all. New knowledge paths for urban planning strategies

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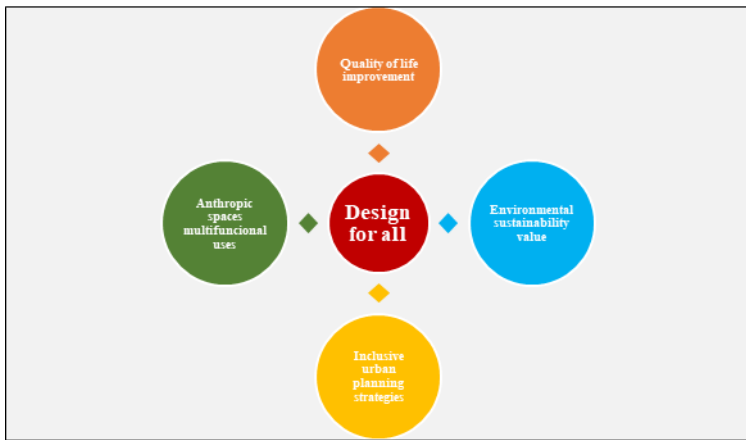
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HIGHLIGHTS

- Space and environmental resources protection and enhancement are becoming increasingly important in urban areas.
- Multifunctional urban structures often show wasteful conditions between spaces' use goals and sustainable practice possibilities for resident citizens.
- Urban space management needs planning rules and methods able to obtain efficiency and effectiveness conditions related to environmental and anthropic resources allocation.
- Design for all plan approach represents a sustainable solution for matching people needs to urban environmental quality improvement.
- New inclusive planning strategies can start up widespread ecosystem services network.

GRAPHICAL ABSTRACT



ABSTRACT

Nowadays city environment shows the presence of a mixed variety of elements, as natural, semi natural and anthropic components that build up both structure and connections of the urban context. This specific structure shapes and directs space and its functions strictly connected with their sustainable potential uses and sustainable development opportunities.

The lack of rules and proper planning methods produces inefficient use conditions by resident citizens, entropy, functions' reduction of ecological networks and deep environmental impacts.

The consequence comes out to be a great widespread life quality decrease in urban areas.

These thoughts lead the authors to rethink the definition first and then the *place concept* own interpretation, as a theoretical reference approach and in a particular way of the *urban place*, as an anthropic action useful in a multidimensional relationship analysis.

Based on these considerations, the aim of the paper is that to introduce *design for all* as an efficient and effective *planning action tool* able to get sustainable operating strategies to match both people needs and urban system quality of life' protection and enhancement in a long term timeline analysis.

Keywords:

urban environment

design for all

sustainability

planning strategies

ecosystem services network

quality of life

1. Introduction

Today, theoretical and operational debate on the issue of sustainability is interpreted across several dimensions and levels within a broad, diversified cognitive framework. This framework includes a range of issues related to safeguarding and controlling environmental emergencies, which are becoming increasingly important in the decision-making mechanisms that underpin the processes of planning, governing (analysing and identifying solutions), and improving environmental resources and urban areas, with a new view to long term flexibility, resilience and robustness.

The design of the urban environment is fragmented by structures, contexts, end users and needs that are diverse, have a disorganised morphofunctional fabric, and are inefficiently used and managed. This causes a profound disconnect between urban spaces on the various levels of planning and analysis. The result is a diffuse, dispersive image of urban design, which in most cases appears confused and sometimes incapable of utilising the guiding framework of its natural, semi-natural and manmade components to activate and adequately support the objectives of sustainable qualitative use of different areas, and simultaneously generates the conditions for functional distortions and harmful impacts on the local environment.

Increasingly, planning approaches interested in efficient and effective solutions for using urban spaces oppose and/or conflict with the need to recover and enhance elements that improve the quality of life in urban environments.

As it is constantly undergoing rapid transformation, the urban environment tends to forget the role and the value of the multiple elements of which it is made up, and which contribute to the construction, perception and utilisation of its landscape: complex in terms of the number of its characteristics, rich in resources and in potential for spatio-temporal utilisation.

This deep fracturing of the urban system causes a series of negative effects such as: the interruption of the proper functioning of ecological and natural networks, inefficiency in human use of space, undervaluation of contexts, entropy, reduced mobility and flow management, abandonment and environmental degradation. The result comes out to be both a significant impairment of the quality of life in urban areas, and a substantial deviation from the resident communities' habits in terms of socialisation and territorial management (Alberti, 2005).

Faced with these considerations, “the cityscape appears as a system of multifunctional, inhomogeneous networks that are often disaggregated, a design which is heterogeneous in its characteristics and depth, a system in which it is precisely the diversification of forms that paves the way for functional disorganisation, leading to tension and conflict in terms of environmental compatibility” (Fabbri, 2010).

Recognising the existence of these critical elements leads us firstly to define and then interpret the very concept of *place* as a baseline theoretical approach and in particular, *urban place* as a privileged space for human action in a relational, multidimensional and intertemporal way. This is a reconnection that combines the purely physical aspect of planning interventions with the recovery of the identity, features and roles defined by the characteristics of the urban spaces and by the various options for using them.

To this end, we need to identify the issues, methods of analysis, evaluation and decision-making, as well as the dimensions and areas of intervention that can reconstitute and reactivate the

functionality of the territorial context, while simultaneously improving the efficiency of planning measures with detailed planning instruments.

The disconnected urban landscape can thus be re-composed by utilising accessible planning, which combines the users' various needs with an improvement in the quality of the urban environment. It is a tool that can engage with and enhance positive environmental externalities in order to reduce, manage and control environmental impact by reconnecting the pathways of mobility and the presence of the various territorial components, creating new scenarios for urban regeneration, relationship, and resilience in shared, stable spaces¹ (Albert et al., 2014; 2016).

This is accessibility seen as an activator of environmental valorisation, and this approach looks at the accessibility of the urban space and the built environment from a planning point of view, not purely to eliminate the barriers that prevent the widespread, informed utilisation of space by the public, but by evaluating it as a process by which to guide the planning of environments in a multi-referential way. It considers individuals and the context/s, the expression of different social groups free from specialist visions, the absence of references to identity, the simplification of planning solutions, categorisation and/or marginalisation of end users.

In this sense, this paper intends to validate the active role of *design for all* as a prerequisite for efficient, effective planning that enhances the very idea of place, in terms of knowledge, perception. It also is a key to improving study and selection of projects in the built environment in order to start up a wide environmental services system and measure their value accurately for the construction of

¹ The UN Convention on the Rights of Persons with Disabilities, enacted into Italian law with Law no. 18 of 2009, establishes the conceptual transition from identification of the needs of an individual to his right to inclusion, and identifies accessibility and its evaluation as an essential condition for the avoidance of discrimination. On particular importance is Article 1: “-Purpose- 1.[...] to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities,[...]. 2. Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in *interaction* with various barriers may hinder their full and effective participation in society on an equal basis with others [...]”. Article 9: “1. To enable persons with disabilities to *live independently and participate fully in all aspects of life*, States Parties shall take appropriate measures to ensure (...) *access*, on an equal basis with others, to the physical environment, to transportation, to information and communications, (...) and to other facilities and services open or provided to the public, (...). These measures, (...) shall include the *identification* and elimination of obstacles and barriers to accessibility (...)”.

an integrated and spread ecosystem services network, able to contribute to a sensitive and dynamic urban system quality of life' enhancement in a long term timeline analysis' approach.

2. Literature review

“Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design” (Mace et al., 1990).

Recognising the existence of a deep bond between the environment - in the sense of a space to be used and a space for action, and intervention, which is seen as the results of planning activity - requires us to reflect on the essential aspects of architecture in order to consider accessibility outside of the purely technical/regulatory approach, but in terms of dynamic planning whose primary purpose is to maximise the results of function, relationship and service to the end user.

Today, the planning culture is often reduced to a purely self-referential exercise. This has led not only to an impaired, difficult-to-understand language that does not express the culture of the social group that produced it, but also to inaccessible built environments that prevent many people from integrating into society, and which lead to an inefficient, ineffective management of space. The origins of this can be found in the culture of the modern movement, “existenz minimum”, the concept of architecture as a logical, mathematical, rational space (Le Corbusier, 1923). The thesis requires that planning should equip itself with tools that allow for a multireferential approach that considers the individual, rejecting certain popular rhetoric, and which can express symbolic identifying aspects. A methodology for evaluating accessibility is a tool that can yield results which can be used in the approach to a *design for all*, enhanced by the users' contribution in terms of indications and participation.

It is well known that Le Corbusier and other architects of the modern movement saw architecture and space as a logical, mathematical concept: “... architecture is the skilful, rigorous and magnificent game of volumes united by light. Our eyes are made to see shapes in light: shadow and

light reveal those shapes: cubes, cones, spheres, cylinders and pyramids are the major primary forms [...] their image appears clear and unambiguous to us. The purpose of architecture is to create emotion. Architectural emotion arises when the work resonates within us in harmony with a universe to whose laws we offer obedience, faith and respect” (Le Corbusier, 1923).

On the other hand Christian Norberg-Schultz, who was interested in exploring a phenomenological vision of architecture, saw it as an *existential space*, in the sense of *concretization of conservation and transmission of meanings*, which embraces the fundamental relationship between humans and the environment without which there can be no orientation, identification, memory or identity, the “being in the world” of mankind. Architecture is seen as a tool that can give human beings a “*grip on existence*”. Architecture’s main objective is therefore, not the practical aspect but the exploration of the psychological indications of architecture by introducing the concept of maximising the quality of space through a form of planning that can overcome rigid sectorial specialisations, and is shared rather than exclusive and diffuse, in the firm belief that “an individual cannot achieve a grip on existence by scientific knowledge alone; he needs symbols, in other words works of art that represent existential situations” (Norberg-Schultz, 1992). In this sense, “*place*” becomes a concrete term to identify the environment and “*inhabiting*” takes on the meaning of “*belonging to an actual place*”. Just as a house, the icon of family intimacy, can receive, unite and “bring the world closer”, the threshold separates the internal from the external. The “fracture” between the “unknown” and the “known” leads to suffering and “changes it into stone”. The *threshold* thus embodies the problem of inhabiting a place or places.

“Inhabiting” defines the complexity of the relations of human space in its various ways of perception, transformation and utilisation; the structure of a place is described in terms of “landscape” and “settlement”, and is analysed using the categories “space” and “character”. The two psychological functions implicit in “inhabiting” thus become “orientation” and “identification”. While space indicates the three-dimensional organisation of the elements that make up a place, “character” denotes the general “atmosphere”, which is the most comprehensive quality of any

place and can be summed up as “lived space”, in the sense of knowledge, the rediscovery of the original meanings, and its nascent potential, either spontaneous or through human action.

Consequently, the profound meaning of *inhabiting*, in the sense of the human use of space, allows identification with the environment in terms of the cognitive profile of the spatial structures of a place, and belonging to a place in the sense of an existential decision to settle and an apparatus to be utilised.

It is in this analytical dimension that we can include the interpretation of architecture as a tool used by humans to obtain a grip on existence, to “bring order” to a place and to “bring people together” in order to allow synergistic territory development. A distinctive feature of any artificial place is therefore “closure”; the character and spatial properties of a place are determined by the way in which it is closed, in the sense of a sign, “putting a place into operation”, construction, planning activity within the space. It cannot be denied that the “presence” of closure starts with the line that delimits the internal and external - both natural and artificial - as the reassuring experience of feeling part of the world and yet open to it at the same time: localised in the natural *genius loci*, and open to the world thanks to the bringing-together achieved by the artificial *genius loci*. At the centre we still have the *urban place* in the sense of a space in which human intervention and relations can be exercised through a form of planning that preserves the natural and seminatural distinctive features of a place while simultaneously amplifying its conditions and functionalities in an inclusive, accessible, diffuse and environmentally sustainable way (Norberg-Shultz, 1992).

The following approaches are fundamental in this regard: considering the end user as a planning resource; enhancing context and cultural identity; seeking participation in planning; expressing symbolic meanings; achieving the conditions for accessibility by valorising differences, studying complexity and analysing the context(s).

In this way, *design for all* can be seen as an *attribute* that is sensitive to the relationship between the different components of the built environment and the characteristics of the individual/user, an attribute that is interpreted in each case according to the basic objectives of the planning

intervention with an eye that implies a holistic approach to the issue of the intended use of an urban space and its resources², at the heart of which is the objective of aligning, in efficient, effective conditions, the viewpoint of the planner with that of the user in terms of access to spaces, the availability and circulation of information in a complete, symmetrical way.

Nevertheless, design for all can combine the need for the economic viability and environmental sustainability of decisions to act in the planned environment which can generate resilience scenarios, positive, perceptible, testable externalities, direct and indirect eco-environmental, economic and social benefits, reducing costs over the medium and long-term, in the context of even evaluating the contribution made by ecosystem services towards improving the quality of life of the urban population.

3. Discussion and results

Today's approaches to governance, combined with tools for planning and the sustainable management of space and its resources have gradually expanded the reference to the environment in an ecological/naturalistic sense to a broader, more articulated vision that is closer to the principles of sustainable development in a scenario of potential integration of economic growth, environment protection and the specificities of the territorial dimension of activities, functions and relationships, considered in relation to intervention and social quality measures (Pareglio, 2005).

In economic terms, the environment performs three main functions: it provides resources for the processes of production and consumption, it absorbs the residues of those processes, and it supplies the habitat and resources that every species needs to survive. These "environmental" or "ecosystem

² Specifically this is referring to: standard accessibility and actual accessibility; levels of accessibility linked to the characteristics of the context(s); accessibility criteria derived from: distance, communication (information, legibility, content, placement, lighting, visibility, usability and safety), the relationship with the city (guaranteed links), routes (possible access to a place, asset or service; usability on the architectural scale), which are mechanisms that respond to the fundamental principles of Universal Design developed by North Carolina State University's Centre for Universal Design in 1997. All of these are related to: Equitable Use; Flexibility in Use; Simple and Intuitive Use; Perceptible Information; Tolerance for Error; Low Physical Effort; Size and Space for Approach and Use.

services” are defined as “*the conditions and processes through which natural ecosystems and the species they are composed of can support and satisfy human life*” (Daily, 1997); meanwhile, other authors (Costanza et al., 1997) define them as “*a flow of material, energy and information from the natural capital stock that produces benefits for humankind*”.

The urban environment, however much it may be subject to various sources of human pressure, should also be seen as a natural system that is subject to the same processes of interaction and exchange between the various environmental matrices (Matosab C. et al., 2018).

Economic services are those benefits that directly or indirectly influence the market or specific economic and production-related activities that generate monetary wealth. The economic benefits generated by the presence of vegetation are not counted on balance sheets or by traditional indicators, as they are not easy to quantify.

Therefore, planning, and the related valorisation of the urban environment, are vital for the construction of efficient, effective urban systems in which humans can find all the conditions they need in order to guarantee economic and social well-being. Imbalanced management of the urban environment can have direct repercussions on economic processes, which are systematically underestimated. Rendering the value of the urban landscape visible to the community is important in order to construct development pathways that are sustainable over the long term (access to housing, energy saving, use of digital assets, social equality, productivity, eco-efficiency of urban cycles and safety). Urbanisation is a key factor in industrialised societies and, by creating ecosystem services it must contribute to efficient territorial management³ (Millennium Ecosystem Assessment, 2005; Alberti, 2005; Tratalos et al., 2007). Proper urban planning can lead to change, while

³According to the definition of the Millennium Ecosystem Assessment, ecosystem services are “the multiple benefits supplied by ecosystems to humankind”. The services generated by ecosystems are the direct or indirect result of the different ecological functions, which the Millennium Ecosystem Assessment divides into four categories: a) *supply or procurement services*, which supply real goods such as food, water, timber, fibres, fuel and other raw materials but also genetic materials and pharmaceutical active ingredients; b) *regulation services*, which regulate the climate, air quality and the water cycle, soil formation, pollination, waste processing, the nutrients cycle, and mitigate natural risks such as erosion, infestation etc.; c) *cultural services*, which include non-material benefits such as education, cultural legacy and identity, spiritual and intellectual enrichment and aesthetic and recreational values; d) *support services*, including the creation of habitats and the conservation of genetic biodiversity, the nutrients cycle, the production of food and hydrological cycles.

simultaneously creating local development (management of rainwater, provision of recreational activities and open spaces, etc.). Land use planning offers many opportunities for incorporating the concept of ecosystem services into the urban development process (Albert et al., 2014; 2016; Woodruff and BenDor, 2016).

The proper management of the urban environment is a tool for growth, which in turn can influence human health and the spatial distribution of ecosystem services. Utilising an ecosystem framework in global planning can be a solid approach to facilitating sustainable urban development (Brauman et al., 2007; Grêt-Regamey et al., 2013; Biggs et al., 2015). Generally, the services that are naturally provided by the ecosystem present themselves as public assets with no market, and therefore with no price; this is why their economic and monetary value is rarely recognised.

This means that the economic functions performed by the environment are not adequately recognised: on the one hand, the reduction in collective wellbeing due to decreasing environmental resources is not included in national accounting; on the other hand, the impoverishment of natural capital is inevitably considered to be useful for increasing economic wealth. Therefore, if public policies aimed at protecting and improving collective well-being are to be focused on sustainable development, we need to identify implements to estimate and evaluate collective well-being tools that consider not only economic factors but also social and environmental ones, thus acknowledging the value of the positive externalities that come from the preservation of biodiversity (Fabbri, 2010). It is precisely in this direction that we can use design for all as a concrete basis for planning, which, in accordance with the framework for analysing the economic benefits of alternative investments in the man-made landscape - intended to optimise the functional solutions of the planning instruments - and the shared, diffuse methods of using the urban environment, we can make decisions that are aimed at optimizing the direct and indirect benefits expected by the community.

The result is a new way of conceiving and representing a plan as a control test, against the needs and expectations of users, in order to achieve a significant increase in quality of life.

In addition, there are the purely economic advantages of the application of participatory planning, which can trigger operational dynamics and project management strategies that can minimise planning errors, reduce the inclusion of variants, control polluting emissions, save energy and therefore reduce and remodel the costs of the public sector.

Finally, accessible urban planning enables medium and long-term economic benefits that involve: a potential increase in property values, the control of safety costs, a reduction in compensation for accidents, and a reduction in the costs of social, health and welfare services (Biggs et al., 2015).

At this point, we can now construct a system to evaluate urban accessibility as a factor in the value of ecosystem services by using the strategic representation method offered by the Strengths, Weaknesses, Opportunities and Threats Analysis (SWOT), applied here in corresponding sections in an open-ended format (Fig. 1).

From an operational viewpoint, this means building a network of relations from among the multiple elements in the analytical framework: *SO strategies*, which act positively and draw on the strengths inherent in the system to derive benefits from exogenous opportunities; *WO strategies*, aimed at deriving benefits from opportunities by overcoming internal weaknesses; *ST strategies*, which exploit strengths in order to neutralise external threats, and *WT strategies*, which can minimise weaknesses by facing threats that originate from outside the system. The interaction of these strategies is highlighted as follows and it is quite easy to find out the basic and positive role played by *design for all* planning approach (Fig. 1).

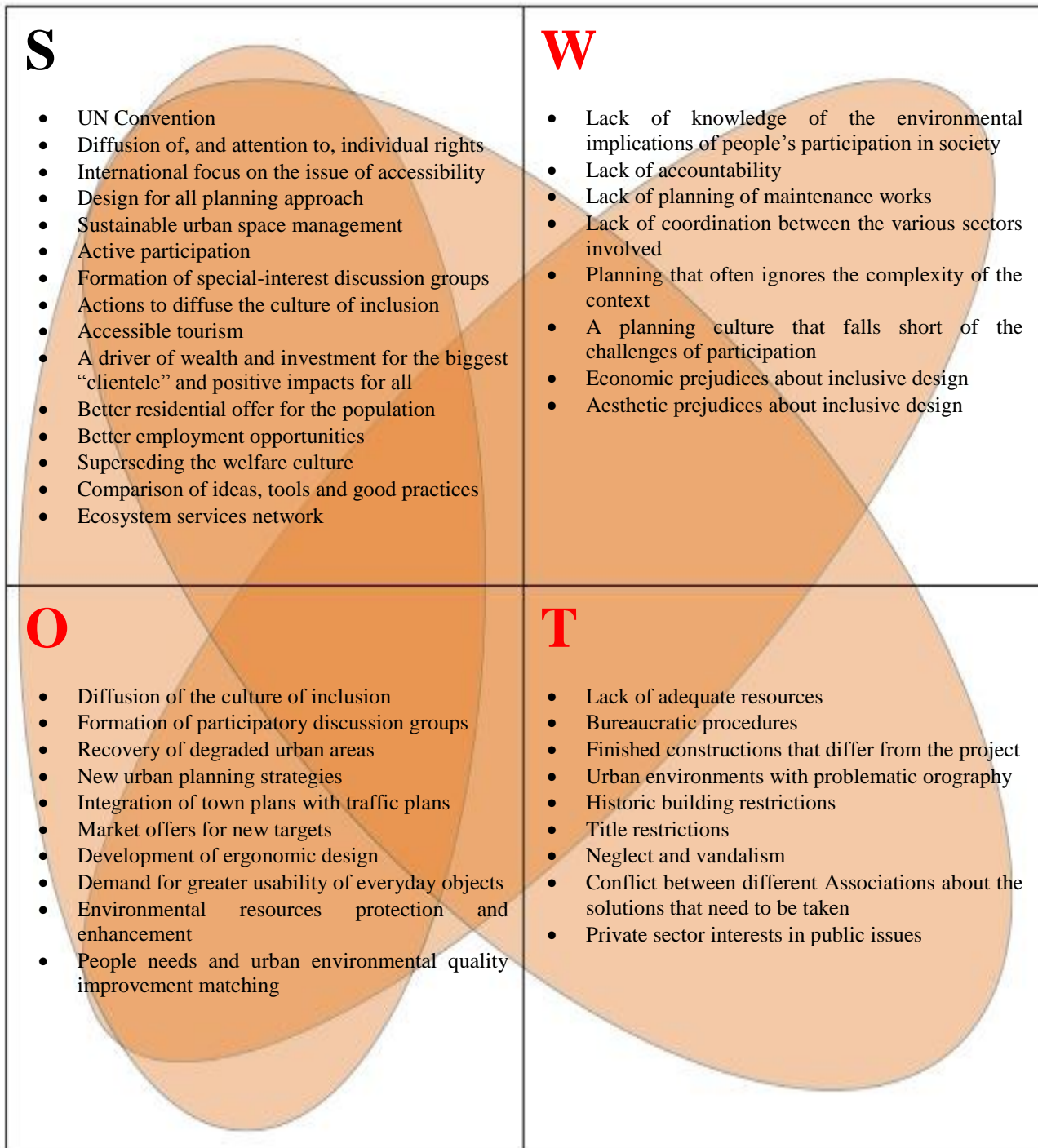


Fig. 1. Urban accessibility SWOT analysis integrated evaluation

4. Conclusions

The concept of Pareto efficiency is a useful tool for analysing accessibility as a driver of environmental enhancement in terms of economic advantage, as it is full of highly relevant yet subtle implications.

It is well known that in the context of the *Economics of Wellbeing*, evaluating the mechanisms for allocating the resources available for a given investment in relation to the utilisation of an asset or service *has an efficient Pareto equilibrium if, according to the theoretical foundation, there is no possibility of increasing a user's level of satisfaction without reducing the satisfaction level of another user.*

The presence of an extremely dense group of correlating elements that are, by nature and function, highly diverse, illustrated by the use of the SWOT Analysis grid, gives us a diverse, complex operational scenario from which clearly emerges the urgent need to continue to explore the theoretical approaches derived from general economic theory and from the economics of well-being, in order to have an accurate indication and evaluation of the contribution made by environmental services connected to decisions regarding inclusive planning and management of man-made environments (Woodruff et al., 2016).

The reality of the urban space as explored in its multidimensional structure allows us to highlight its enhancement capabilities in terms of creating an interactive system of ecosystem services with high public value, aimed at reactivating the relationships that pertain to the man-made environment; decisions regarding multiple intended uses for this space can significantly improve the quality-of-life of the resident population both directly and indirectly, in terms of stability and resilience.

The benefits expected from reactivating the network of ecosystem services come primarily from the recomposition of the structural and functional split that exists between natural and man-made components, modes of use and the diverse perception of the space included in the diffuse urban fabric. While on the one hand the tight mesh of urban expansion does give a citizen or individual a

certain level of *protection* against the unexpected action of elements that are exogenous to the urban system, on the other hand it *limits* that individual's freedom of movement and of contact in terms of relational trade-off (Xianwen Chen et al., 2019).

In this vision, the new possibilities of intervention offered by *design for all* in the sense of a fundamental prerequisite for planning logic combined with a series of detailed micro-interventions guided by regulatory indications, can act as a functional reconnector of the spaces within a city and its environs, to create an urban landscape which is re-composed in terms of its prospects for utilisation, complete, diffuse and sustainable.

Nevertheless, it is possible to maintain the historic and cultural value of an urban place by slowing down the potential for the loss of identity and of informed use of its spaces. This opens up a pathway for sustainability and diffuse accessibility that re-educates the city towards new forms of rational, sustainable and possibly temporary use of spaces, as places for action and relationship, while also encouraging opportunities for meetings, active participation and social inclusion (Arengi et al., 2016).

What emerges is a new structure of the city, as a *new urbanity*, which uses modern materials and planning devices to regenerate its connective tissue in order to create an accessible, resilient city in which the dynamic role of environmental services actively contributes to improving the quality of public life and modern ways of inhabiting the complex places and spaces of the future.

Representing the city as it is perceived and lived thus becomes a dynamic series of interventions with a reticular structure that follows, orders and moulds the diversification of the forms of anthropic use over time and in space, compared to the evolution of the functional relationships between its components.

“Current planning instruments, which are poorly coordinated, despite their significant differences, start from an analysis of the status of environmental resources, often neglecting the ecosystem processes, dynamic interactions and controls of those processes, in particular their relationship with socio-economic factors” (Santolini R., 2010).

Therefore what is necessary from this perspective is an effort to embark on pathways of analysis and planning that come from a modern, open and attentive style of planning that can integrate and interpret, by identifying the instruments and tools of intervention, approaches to participation and to the full use of a conscious, versatile living, which is constantly searching for a possible equilibrium between the demand for landscape spaces, and the culture of the environment (Lynch K., 1960).

The theoretical/operational framework offered by design for all combines the objectives of safeguarding and valorising environmental resources with those of long-term economic growth.

At the same time, it takes into consideration the parameters of economic efficiency and effectiveness of territorial planning and governance decisions that are simultaneously based on the differentiation and synergy of institutional roles surrounding the issues of economic cost-effectiveness and the need to use spaces and contexts on different scales.

This is resilience planning, which calls for a significant renewal of the content of projects and plans on every scale, with a view to developing new methods for acquiring knowledge that can deal with the existing problems and adequately support the evaluation of possible scenarios of use, non-use and valorisation of the man-made environment without forgetting to account for the qualitative and quantitative results of the intervention.

Ultimately, it is necessary to continue studying and exploring these issues in terms of their theoretical foundation and also their methodology, with the aim of defining as precisely as possible the model(s) of qualitative and quantitative evaluation and the indicators that can measure the contribution of applying design for all planning approach to calculating the value of ecosystem services connected to the inner urban environment. This consideration is made in a dimension of integrated, inter-temporal sustainability that exploits the attributes of adaptability and active resilience provided by the accessibility approach to planning, as a driver for maximising human well-being and defending global systemic biodiversity.

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Author Contributions: This paper is the result of the full collaboration between the authors. However, Sonia Prestamburgo wrote Introduction and Conclusions; Carlo Zanin was responsible for Literature review and Filippo Sgroi elaborated Discussion and results.

Conflicts of Interest: The authors declare they have no conflicts of interest.