

**City and nature relationship - resilience through contemporary urban-  
architectural projects**

**Camila Cesario Pereira de Andrade**

PhD candidate, UFSC, Brazil

arqcamilacesario@univali.br

**Alicia Norma González de Castells**

PhD Professor, UFSC, Brazil

alicianormacastells@gmail.com

## **SUMMARY**

The aim of this paper is to enunciate convergences between the contemporary city, the urban-architectural projects and their relationship with nature. Starting from the assumption that the city is an integrating portion of the natural environment, as a complex and uninterrupted system of biotic and abiotic changes, influenced mainly by the culture, values, customs and habits of its residents. To propose based on the project the green infrastructure system, as it enables a better quality of life, the reduction of social and economic asymmetries arising from the environmental context of certain social groups may constitute an alternative to mitigate the degradation of the urban landscape, in addition to providing environmental services essential to the cities' sustainability.

**KEY WORDS:** City. Nature. Urban-architectural projects

## **1 INTRODUCTION**

The relationship between environment and society has been asserting itself as one of the main concerns, both in the field of public policies and in the production of knowledge. Cities (on a global scale) are the focus of the planet's biggest social and environmental problems, but they are also part, or should be part, of the solution to environmental challenges. Rapid urbanization and urban sprawl (expansion of impervious areas) across the natural soil have led to significant changes in the ecosystem in cities.

Contemporarily, the interdisciplinary implications of socio-environmental issues promote the convergence between dimensions that until recently were thought of in a fragmented way, pointing out possible connections between nature, society and the city. The purpose of this paper is to expose some of these connections that are part of this triad: nature, society and city.

To insert the discussion, we divided the text into four conceptual stages in order to make sense of the aforementioned relationship: (a) city and nature; (b) the urban from a systemic perspective; (c) urban projects and (d) urban resilience. Our interest is to present a comprehensive view of this problematic, allowing us to delimit some aspects of a theoretical position as a way of looking at these socio-spatial phenomena arising from the relationship between city and nature.

## **2 CITY AND NATURE**

On a global scale and at an aggregate level (rural and urban), there is evidence that the number of people affected by disasters, conceived as 'natural', is constantly growing and the world population that is at risk of suffering from the effects of a natural disaster is steadily increasing. The pace of global urbanization today is unprecedented, with an almost fivefold increase in urban population between 1950 and 2011 (UNITED NATIONS, 2011) with urban population surpassing rural population in the year 2007. Projections show that by 2050 about 66% of the world's population will live in urban areas.

This phenomenon can have several explanations, but one of the most obvious is the concentration of the population in the cities and its spreading throughout the territory.

As society increases its ability to interfere in nature to meet its growing needs and desires for the promise of happiness by capital, tensions and conflicts arise over the use of

space and resources. Urban territorial/population expansion and the expansion of the industrial production and consumption system contribute to worsening environmental conditions, especially in the urban setting.

The belief that the city is an entity separated from, and even contrary to, nature has dominated the way the city is perceived and continues to affect the way it is built. This attitude has aggravated and even caused many of the urban environmental problems: polluted water and air; dilapidated or unrecoverable resources; more frequent and more destructive flooding (SPIRN, 1995 p.21).

The complex, global and interdisciplinary character of the environmental problematic generates a range of positions. It's possible to discuss the attitudes and relations of societies with the natural environment, the material transformations in the relationship between human beings and the environment, but we will look, in this writing, in a present view and interpret this relationship as follows:

[...] nature cannot be considered as something external, to which human society adapts, but rather in an environment of coevolution, in which each human activity implies the emergence of its own and independent dynamics in external nature, at the same time that, in a boomerang effect, it produces impacts on social nature and on the biology of human populations (FOLADORI and TAKS, 2004, p.326).

The same authors mentioned above analyze the objectivity of socio-environmental problems. They understand that in the mid-1980s, environmental problems were national, regional or local; they were discrete and related to river contamination, deforestation, urban environmental pollution, depredation of animal and plant species, etc. However, since the late 1980s this scenario has changed, and "climate change" has become the common denominator of all environmental problems, and global warming the main defendant. Still, according to the referenced authors, many organizations and groups of ecologists and environmentalists began to consider global warming as the potentializer of the environmental crisis, the result of human action. Such change of attitude has created a great elitization and technicalization of the socio-environmental problem, which the authors warn: "the way of conceiving nature, and the problems that nature imposes, cannot be isolated from the agents that create this awareness - definitely, it is not simply a matter of "society", but of determined strata and groups". (FOLADORI and TAKS, 2004, p. 332).

We need to understand the city as an "urban ecosystem", and following the systems theory, it is emphasized that an ecosystem is greater than the sum of its parts.

The ecosystem concept is a powerful tool in understanding the urban environment: it provides a framework for perceiving the effects of human activities and their interrelationships; facilitates assessment of the costs and benefits of alternative actions; embraces all urban organisms, the physical structure of the city, and the processes that flow through it; and is appropriate for examining all levels of life, from a city pond to the megalopolis. (SPIRN, 1995, p.269)

It is necessary to recognize the city as part of nature and design it accordingly. It is not possible to work on "projects of/for the city" (design, implementation and management) ignoring this recognition. The city needs to be seen as an integrating portion of the natural

environment, as a complex and uninterrupted system of biotic and abiotic changes, influenced mainly by the culture, values, customs and habits of its inhabitants.

It is necessary to consider the differences between social groups in the context of a city. This refers not only to quantitative differences, but especially to qualitative ones that don't hide class differences. The contemporary challenge for the cities lies in seeking public policy models that contemplate the new demands of the globalized economy and the political regulation of the city's production, with the confrontation of social exclusion and environmental degradation. "The contemporary city, in opposition to the modernist city, turns to diversity and for this reason may elect the landscape as one of the fundamental principles to resolve this conflicting relationship between man and nature" (FRANCISCO, 2012, p.11). The urban design/project should be developed with the objective of minimizing the negative impacts caused on the physical, cultural and social environment so that the elements to be modified or added in the physical-spatial structure do not threaten the morphological integrity of the set, but contribute to the creation of an intense urban image and a space with vitality.

### **3 THE URBAN UNDER A SYSTEMIC PERSPECTIVE**

System is an increasingly complex method of interpretation that seeks to explain architecture, urbanism, and landscape from the perspective of society and politics, the interests of social classes, while at the same time thoroughly analyzing the formal and structural complexity of the constructions. The systemic approach looks at the process as a whole. This concept unfolds from Immanuel Kant's *Critique of Pure Reason*, originally published in 1781, which precisely defined *architecture* as the art of building systems.

Steiss (1974), is one of the theorists that references the systemic analysis for the understanding of the urban environment, which considers: "the urban system is flexible enough to escape determinism and to take into account the part of chance that appears in any action in which man participates".

De Oliveira (1998) conceives the city as a system:

We understand that the city is the most accurate expression of human actions on the physical environment, in it are recorded the marks of time and urban evolution with its social and economic aspects. In the scope of this evolution, new activities, new processes and new environmental factors emerge, resulting from the dynamics or complexity inherent to a system [...]. This apprehension of the urban environment suggests an understanding of the city as a system or a complex of associated and interactive factors: natural, urbanistic, demographic, socio-cultural, economic and, consequently, technological and productive factors (DE OLIVEIRA, 1998, p. 46).

The concept of system became known through the proposition of complex thinking by Edgar Morin, for the author, the description (explanation) of the parts depends on the explanation of the whole which, in turn, depends on the explanation of the parts. According to Atlan (1972) (apud MORIN, 2016, p.156) "The simple fact of analyzing an organism from the components entails a loss of information about that organism." For the author, the need to conceive the system in its relationship with the surrounding environment, with time and, with the observed: "We need a systemic concept that expresses at the same time unity, multiplicity, totality, diversity, organization, complexity" (MORIN, 2016, p.156).

The general systems theory aims to study the elements that make up a system, as well as the interaction between them, because the study of each one separately does not lead to an accurate conclusion of the system in which these elements are inserted, since the interactions between them are fundamental to the understanding of the system as a whole. For Bertalanffy (1976, p.1) "[...] the system can be defined as a complex of interacting elements, an interaction of an orderly nature (not fortuitous), which implies recognizing the properties of dynamic interaction between the elements of a set".

But how to apply this systemic thinking to contemporary architecture and urbanism? Perhaps the first step would be to completely oppose all reductionism, seeking to approach the idea of complex thinking (where the whole is much more than the global form, the sum of the parts surpasses the whole). The systemic approach seeks to offer a look that organizes knowledge about the processes linked to life. It helps in the understanding of the concrete and dynamic reality in which life expresses itself. It helps us think about the promotion of practices that are more appropriate for the balance of systems.

The system can then be conceived as a set of heterogeneous elements with different scales, related to each other, having a link with no isolated parts. They are organized in a way to adapt to the context in which they are inserted, and their degree of complexity is given by the amount of relationship we observe it establishing.

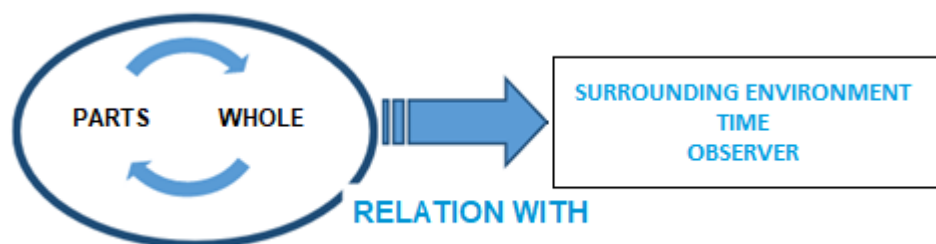
Urban projects must therefore appropriate the four properties of system theory: interaction, totality, organization, and complexity, as well as the specific components of the urban system: labor, capital, politics, behavior, and the physical framework.

Montaner (2009) reinforces the importance to stop focusing on individual architectural objects and dedicate ourselves to the object systems, the more complex architecture that reaches the urban scale, diluting the boundaries between architecture and urbanism (that is why we bet here on urbanistic-architectural projects). We must understand the complexity of the projects as being at the same time morphological (form), constitutional (structure), functional and a phenomenological experience<sup>1</sup>. The concept of systems is assimilated as a guide to the methods of analysis and urban planning, considering the interrelations between all morphological elements.

---

<sup>1</sup> Phenomenology is constituted much more as a stance, a way of understanding the world, than as a theory, a way of explaining the world. GIL (2010, p.39) "[...] phenomenological research proposes a description of the lived experience of consciousness, measuring expurgation of its empirical characteristics and its consideration on the plane of essential reality." Phenomenology seeks to rescue subjectivity as the original source of human life and its correlation with the world. The phenomenological understanding has influenced several contemporary studies on perception and its relations with knowledge. Phenomenology is not interested in the existing world, but in how knowledge of this world occurs for each subject, and its task is to unveil the lived world before meaning it. Phenomenology lets itself practice and recognize how it really exists, that is, it is necessary to describe the real by making a reflection of experimentation and learning, putting back in a subjectivity from the side of its being and time (MERLEAU-PONTY,1996).

Figure 1 - Systemic Thinking



Source: authors

#### 4 URBAN PROJECTS

This third block presents the idea and differences between projects, seeking to understand the scales of action, addressing the different opportunities for intervention in the city. To approach the local scale as a project conditioner is to involve symbolic and temporal dimensions sensitive to the cultural, economic, and socio-environmental phenomena that shape the urban reality.

The word Project derives from the Latin *projectu(la)* (launched), we could say in a generic way that project is the formalization before the action. But it is important to contextualize each project: a) **Architecture project**: the one linked to the form, related to its author, to time and to a small space of the urban plan unit. b) **Urban project**: refers to a wide range of actions and instruments of urban transformations. It has the presence of multiple actors, affects multiple spaces and temporalities, has the need to articulate different levels and spheres of intervention, needs political will in decision making. The architectural project, or just architecture, defines entire patterns of urban form. Projects of different scales produce different urban fabrics, and our look seeks to remain in the relationship between these two projects, what we will call here urban-architectural projects.

The implementation of Urbanistic Projects are key pieces in the transition stage from a small and traditional city to a metropolis<sup>2</sup> scale. It is a stage in which measures must be taken in order to avoid an uncontrolled and disorderly growth of the city and to enable the use of resources and efforts made in the city by private, public/private and/or public capital to benefit in a qualitative way the living conditions of the local population, so that this can be reverted in the various restructuring plans of the city.

In the context of the Brazilian reality, the urban-architectural project (treated at the local scale, that is, at the scale of the city) is here thought of as an approach in itself and/or a complement to the practice of urban planning to respond to the challenges of Brazilian cities. The recognition and interpretation of these demands require, therefore, an attitude of thinking the whole of the city and acting punctually in order to impact and modify its transformation

---

<sup>2</sup> "a city of high urban development that organizes around itself a centrality responsible for establishing a network composed of cities dependent on it, making up a dense urban network"

dynamics. The understanding of the interdependence between the proposed urban structure and the system of green areas and urban water management should be the starting point for the development of such projects.

#### **4.1 Urban-architectural projects in the contemporary city**

The dissemination of urbanistic models and principles, often distinct in appearance, but quite similar in essence (economic and cultural values), produced very different results outside their original contexts. Meyer (2006, p.4) points out that with this, metropolitan cities (whether European, American, Latin American, and/or Asian) created patterns of material organization, forms of growth, urban cultural life, urban image, and relations with nature, which simultaneously expressed the logic of the production system and the singularity of their historical contexts. The author also highlights that metropolises all over the world, regardless of their global geographical location, their level of economic and social development, located in developed, underdeveloped or developing countries, no longer fit into the characterizations (of these urbanistic principles) used (in the modern metropolis) until the 1970s to define them.

A good part of these contemporary urban cities has already stopped or are stopping growing at such a fast pace, which allows us to stop developing an urbanism of anticipation and move on to an urbanism that we could call participatory to the existing problems.

Urban programs involve, or at least should involve four levels: political (which is revealed in the political management of space), economic (which produces space as a condition and product of accumulation, ruled in the contemporary city by Capital), environmental (which is revealed in the management of environmental resources), and social (which puts us face to face with the contradictions generated in the socio-spatial practice as a plane for the reproduction of life).

Meyer (2006, p.7) explains that the two key words used to describe physically and functionally the new organism (Contemporary Metropolis) are fragmentation and dispersion. Both point to the territory's tendency to break traditional urban continuities (fragmentation) and, as a response, to generate diffuse and insulated nuclei of activities (dispersion). It is in the projects of these fragmentations that the urban-architectural project is inserted.

"New urban territories spread (it is the so-called dispersed urbanization). New ways of living and consumption of territory impose themselves. The structuring of cities and the configuration of their centralities<sup>3</sup> change (locations, uses, scales, forms, meanings)." (ASSEN DE OLIVEIRA, 2011, p.21).

These new territories characterize a phenomenon of several occupations without spatial articulation and condition new spatial practices that are more collective than public at different scales, showing a new relationship between the space of public life and the space of private life. The public spaces resulting from this new way of thinking are no longer understood as the residue of free space among idealized objects, but as an entity of its own value. Deliberately designed to articulate the complexity of this new way of seeing the city. The scales

---

<sup>3</sup> Contemporary centrality is a malleable term, meaning concentration, mixture, urban life, and assumes diverse forms. According to SERRA (1996), the morphology of the centers is complex and consists of the intersection of different scales: the small, more human; and the large or monumental, which relates it to the other parts of the city.

of the contemporary city are overlapping requiring a more simultaneous look at the larger and smaller scales, in this way we show how complex contemporary urban life is and the challenges imposed to the new projects.

How to design and execute the necessary transformations in this current context? What is more sustainable (economically, environmentally and socially) in the transformation of contemporary cities: remaking their immense central territories rarefied with contemporary paradigms or letting the city grow in a propitious way by occupying distant and poorly urbanized areas? Without a doubt, this is the question that hangs in the air, this is the contemporary challenge: to remake the existing city, reinventing it, in an intelligent, fair, sustainable, resilient, and inclusive way.

#### **4.2 The challenge of designing in the contemporary city**

On September 25, 2015, in the framework of the World Summit on Sustainable Development, the 17 Sustainable Development Goals (SDGs) were unanimously approved, goals that should guide initiatives to support the development of our cities in the period 2015-2030. Among the 17 goals, we highlight SDG 11: "*Make cities and human settlements inclusive, safe, resilient and sustainable,*" but we highlight the interconnectedness of the goals.

It is cities that generally offer a good starting point for the implementation of most SDGs, as the local scale is where inequality and dysfunctionality, which are often hidden in national data aggregations, become visible and consequently, policy and institutional actions at the city scale have unique potential to catalyze national and global change.

Certain that we can no longer face contemporary urban problems in a traditional way, we must have in mind a more humanistic reflection of the city.

When designing, we must rediscover the logic of human relationships, considering the specificity of each people, diving anthropologically into the culture of each place. And with this look, try to understand the urban space, from the macro - the displacement of flows of services and needs - to the micro, what is unique - whether dating on a bench in the square or in the street games of a group of children (FERRAZ, 2009).

The beginning of the 21<sup>st</sup> Century is crying out for the emergence of a new horizon of changes and adjustments, of new experiences and good practices that lead to a contemporary society that is fairer and more diverse, more sustainable and more balanced, able to build without destroying (MONTANER 2016, p.215).

Some contemporary architects have a broader vision committed to the socioeconomic dimension of urban development and no longer approach urban intervention as large-scale, isolated architectural projects. In these terms, the contemporary urban project proposes to have a strategic significance, that when articulated with other punctual projects inserted in a plan provokes beneficial effects that transcend the limits of the intervention area.

For Somekh and Campos (2005), *apud in* PUGLIESE and VARGAS (2016), urban projects, understood as "urban renewal initiatives concentrated in certain sectors of the city," combine investments and interventions by public and private agents through an urban plan, relying on the redesign of urban and architectural space, specific legal regulations, and other institutional articulations and forms of management.



According to Pugliese and Vargas (2016), the process of organizing space is more conflictive the greater the social density of the territory. Understanding the complexity of entities that dispute power and influence the construction of urban intervention projects also makes clear that a simplified division between public and private no longer makes sense, but rather there is a triad between public power, corporations, and society. The networks are becoming increasingly complex and it is necessary to incorporate issues of social and economic development in urban projects, in addition to the traditional concern about the requalification of the physical component, such as, for example, how to insert, in the various stages of design, the global challenges, especially the climate ones, of this century?

As already mentioned at the beginning of this writing, the urbanistic-architectural project is thought of here as an approach in itself and/or a complement to the practice of urban planning to respond to the challenges of Brazilian cities: social, cultural, economic and environmental, and it is this last challenge that has been receiving more recent attention in projects. The projects should then fundamentally incorporate the Green Infrastructure<sup>4</sup> (recognized as a landscape design method capable of mitigating and addressing environmental issues by creating multifunctional landscapes<sup>5</sup> that integrate nature-based solutions -SbN<sup>6</sup>), seeking proposals for integration, or reintegration of nature into urban areas. Green Infrastructure is able to face emerging issues in contemporary cities, directly related to the management of water resources and the scarcity of green areas without opposing urban development.

## 5 URBAN RESILIENCE

One of the great challenges that the urbanization process poses to decision-makers and to architects and urban planners is not only to identify and implement strategies that encourage sustainable urban development, but for cities to be resilient in the face of climate change. And what is a resilient city?

The *Intergovernmental Panel on Climate Change's Fifth Assessment Report* (IPCC, 2014), defines resilience as:

The ability of social, economic, and environmental systems to cope with a hazardous event, trend, or disturbance by responding or reorganizing themselves so as to maintain their essential function, identity, and structure, while maintaining the capacity to adapt, learn, and transform (IPCC, 2014, p.5, our translation).

---

<sup>4</sup> Green infrastructure can be understood as a connected and multifunctional infrastructure of green spaces, present in and around urban space, that provide a set of benefits in the ecological, economic and social spheres (FRANCO, 2010; TZOULAS et al., 2007). Green infrastructure: multifunctional networks of interconnected permeable and vegetated patches that restructure the landscape mosaic (HERZOG, 2009).

<sup>5</sup> The design of multifunctional landscapes allows the few remaining open spaces in cities of consolidated urbanization to combine hydraulic functions with social, environmental, and economic functions. Multifunctional landscapes, designed in the open space system, are the basis for landscape redevelopment.

<sup>6</sup> According to the European Commission - EC, through the Horizons 2020 Expert Group, nature-based solutions are solutions inspired and supported by nature that simultaneously provide environmental, social and economic benefits by bringing more nature, resources and natural processes to cities and marine areas and help promote resilience (EC, 2015).

According to the International Union for Conservation of Nature - IUCN, these are "actions to protect, sustainably manage, and restore natural or modified ecosystems that effectively and adaptively address societal challenges while simultaneously providing human well-being and biodiversity benefits" (Cohen-Schacham et. al, 2016, p.2).

Building resilience is part of the effort to ensure development that changes current patterns of production and consumption, as well as the way we relate to our environment, incorporating the five dimensions of sustainability: social, cultural, economic, political and environmental. Urban resilience comes to be conceived as a possibility to ascertain the capacity of urban systems to recover from disturbances and adapt to existing conditions.

Integrating nature-based solutions into urban-architectural planning and design must be a priority. Recovering and connecting natural systems becomes fundamental to protecting life both inside and outside the city.

### **5.1 Green infrastructure in contemporary public space projects**

Just like the city, public space (objects of urbanistic-architectural projects), being the result of a social construction of space, transforms as contemporary society changes, this transformation has been at the center of a broader debate on quality of life, citizenship, social justice, and sustainability. Public space should be recognized as unifying and articulating the different parts of the city.

The form of the public space is about not only with lines and geometric figures, but something essential to the space itself. The way of designing public space (based on the principles of New Urbanism<sup>7</sup>) is organized mainly around formal elements, where the cognitive process assumes the base lines of intervention. Lynch (1997, p.134) warns that a well-organized environment is not enough, we need environments with identity "it must speak of individuals and their complex society, their aspirations and their historical traditions, the natural setting, the complex movements and functions of the urban world. But clarity of structure and expressiveness of identity are the first steps in developing strong symbols."

The importance of public space also lies in its ability to articulate with private space. According to Solá Morales (1992), the function of public space is to urbanize the private, that is, to convert it into a part and/or continuity of the public.

Schäfer (2012, p.52) adds that, urban spaces should not behave like islands, unrelated to adjacent spaces, but be so related to each other as to effectively form a system in this way, provide better legibility to pedestrians who have the possibility to pass from one space to another.

As an assumption of the present work, we start from three forms of intervention that are **intercomplementary** with three scales of the urban: (1) at the global scale, urbanistic projects could be based on the sharing of knowledge about sustainable urban development, governed by the prioritization of the structuring principles of green infrastructure. (2) At the metropolitan scale, they could be based on joint watershed planning and management and metropolitan green and blue infrastructure systems. (3) At the local city scale (scale of urban-

---

<sup>7</sup> In 1996 the Charter of New Urbanism was launched with the goal of establishing the movement's guiding ideals and principles. A total of 27 principles divided into three topics that represent the different scales of occupation: The Region: metropolis, city and town; The neighborhood, the neighborhood and the corridor; The block, the street and the building. In the topic Region (09 principles are presented), it is argued that communities contiguous to city limits should be organized into neighborhoods and districts integrated into the urban fabric, and those beyond city limits should be developed as small independent towns, with their own infrastructure and services, so as not to result in "suburban dormitories". CNU. The Charter of the New Urbanism. Congress for the New Urbanism.

architectural projects), perhaps we should invest in green regeneration and urban river corridors.

Green Infrastructure is a landscape design method based on the creation of a strategically planned and managed interconnected network of natural areas, rural landscapes and other open areas that perform infrastructural functions while providing Ecosystem Services to cities, this network is effectively consolidated in public space. Vasconcelos points out that green infrastructure theory advocates the argument that conserving, restoring, and maintaining the functioning of natural systems not only protect ecological values and functions, but also promote economic, social, and cultural benefits (2015, p.32).

From this perspective, the green infrastructure system has stood out as an interdisciplinary research/implementation front that aggregates social, economic and environmental issues in the elaboration of urban projects. It is important to insert green infrastructure in projects, as it enables a better quality of life, reduces social and economic asymmetries resulting from the environmental context of certain social groups, and may be an alternative to mitigate the degradation of the urban landscape, besides providing environmental services essential for the sustainability of cities.

The natural systems protected by the green infrastructure network are not always green, water bodies are extremely important elements of this system. Vasconcelos points out some other elements of green infrastructure: public parks, green belts, riparian lands, mangroves, green corridors, bike paths and tree lanes, public open spaces, historic sites, among others (2015, p.36). They consist of low impact interventions in the landscape and high performance, with multifunctional and flexible spaces that can perform different functions over time - adaptable to future needs.

Benedict and McMahon (2006) in the publication *Green Infrastructure: - linking Landscapes and Communities* sets out 10 principles for green infrastructure:

- (1) Connectivity is key; (2) Context matters; (3) Green infrastructure should be grounded in scientific knowledge and land use planning theory and practices; (4) Green infrastructure can and should function as a network for conservation and development; (5) Green infrastructure should be planned and protected prior to development; (6) Green infrastructure is a key public investment that should be prioritized for funding; (7) Green infrastructure provides benefits for nature and people; (8) Green infrastructure respects the needs and desires of landowners and stakeholders; (9) Green infrastructure involves carrying out activities within and outside communities; (10) Green infrastructure requires a long-term commitment (BENEDICT; MCMAHON, 2006, p.37, (BENEDICT; MCMAHON, 2006, p. 37).

Reducing deficits in basic infrastructure services (water supply system, sewage system, electricity system, etc.), directly improving the housing sector, and building resilient infrastructure systems can significantly reduce vulnerability and exposure in urban areas. Urban adaptation benefits from effective multilevel urban risk governance, alignment of policies and incentives, strengthening local government and community adaptive capacity, synergies with the private sector, and institutional development. Greater capacity, voice and influence of low-income groups and vulnerable communities and their partnerships with local governments also benefit adaptation.

## 6 (IN)CONCLUSIONS

Cities, just like people, are dynamic and will transform themselves to keep up with and adapt to the social, cultural, political, economic, and environmental changes of their time. And in this sense, we ask: What is our current scenario?

After a decade and a half of the 21<sup>st</sup> Century, we need to be aware that analyzing, discussing, representing and designing the territory represent moments of a permanent process of knowledge, which in turn allow us to observe and contemplate, in order to build urban architectural projects, both the references attributed to places by their users, helping us to identify the relationship between the existing and the desired space. To conclude, we consider that it is necessary to change the current patterns of production and consumption in our cities. For all these reasons (and others not covered in this paper), in any sustainable urban planning strategy for cities that continue to grow exponentially in the developing world, environmental impacts must be taken into consideration when making strategic decisions for the construction of urban infrastructure.

Certainly, regardless of the continent where one lives, the city in the 21<sup>st</sup> Century will still be the focal point of discussions, the stage for all actions, and the fertile field of man's performance in various forms of community. The action of planning, implementing and managing urbanistic-architectural projects must allow the adoption of integrated and articulated solutions with the sectorial public policies that seek to attract resources and investments with the other agencies. In addition, it should aggregate the responsibility for planning the city's growth, mainly by attracting the private sector's partnership, being able to maximize the intended benefits by promoting the sustainable growth of the entire municipality. Planning a city must be a collective act, and it is essential that there is identification, engagement, and motivation on the part of all involved.

Finally, green infrastructure makes it possible to transform densely built-up and inhabited areas into attractive spaces, re-establishing people's everyday relationship with waterways and expanding ecological awareness. Steps that address resilience and enable sustainable development can accelerate successful adaptation to climate change globally. Existing and future green areas, to constitute green infrastructure, must be organized and understood as interconnected, interdependent, intercomplementary green networks. When well planned, implemented, and monitored, green infrastructure can support the resilience of cities.

## BIBLIOGRAPHIC REFERENCES

ASSEN DE OLIVEIRA, Lisete. Caminhos da centralidade na cidade contemporânea. Um jogo de escalas. In: ASSEN DE OLIVEIRA, Lisete DO AMARAL E SILVA, Gilcéia P. and ROSSETTO, Adriana Marques (Org.). **Arquitetura da cidade contemporânea: centralidade, estrutura e políticas públicas**. Itajaí: UNIVALI Publishing House, 2011

BENEDICT, M; MCMAHON, **Green Infrastructure. Linking Landscapes and Communities**, Island Press, London, 2006.

BERTALANFFY, L. von *et al.* **Teoria dos sistemas**. Rio de Janeiro: FGV Publisher, 1976.

CNU. The Charter of the New Urbanism. **Congress for the New Urbanism**. 1996. Available at: [https://www.cnu.org/who-we-are/charter-new-urbanism?utm\\_medium=website&utm\\_source=archdaily.com.br](https://www.cnu.org/who-we-are/charter-new-urbanism?utm_medium=website&utm_source=archdaily.com.br) . Accessed on October 2<sup>nd</sup>, 2022.

DE OLIVEIRA, Josildete Pereira. Cidade e meio ambiente sob um enfoque sistêmico. **Turismo, Visão e Ação**, Itajaí: Univali, v.1, n.1, p. 45-49, 1998.

European Commission, Directorate-General for Research and Innovation Horizon 2020 expert group on Nature-based solutions and re-naturing cities. **Final Report: Towards an EU research and innovation policy agenda for nature-based solutions & re-naturing cities**. Brussels. Publications Office, 2015, <https://data.europa.eu/doi/10.2777/479582> Available at: <https://op.europa.eu/en/publication-detail/-/publication/fb117980-d5aa-46df-8edc-af367cddc202> . Accessed on October 2<sup>nd</sup>, 2022.

FERRAZ, M. São nossas periferias a causa perdida. In: GUERRA, A.; FIALHO, R. N. **O arquiteto e a cidade contemporânea**. São Paulo: Romano Guerra Publishing House, 2009. p.42-45.

FOLADORI, Guillermo e TAKS, Javier. **Um olhar antropológico sobre a questão ambiental**. Mana [online]. 2004, v. 10, n. 2 [Accessed 3 October 2022], pp. 323-348. Available at: <<https://doi.org/10.1590/S0104-93132004000200004>>. Epub 26 September 2005. ISSN 1678-4944. <https://doi.org/10.1590/S0104-93132004000200004>.

FRANCISCO, A. M. Os Desafios do Planejamento Urbano em Áreas de Fundo de Vale Consolidadas: o Caso da Microbacia do Córrego do Veado em Presidente Prudente, SP. **APPURBANA**. Natal, RN. v. 1. 2012.

FRANCO, M. A. R. Infraestrutura verde em São Paulo: O caso do corredor verde Ibirapuera-Villa Lobos. **Labverde Magazine**, n. 1, p. 135-154, 2010.

GIL, Antônio Carlos. **Como elaborar projetos de pesquisa**. São Paulo: Atlas, 2010.

HERZOG, C. P. **Guaratiba verde**: subsídios para o projeto de infraestrutura verde em área de expansão urbana na cidade do Rio de Janeiro. 2009. 189 f. Dissertation (Master in Urbanism) - School of Architecture and Urbanism, Federal University of Rio de Janeiro, Rio de Janeiro, 2009.

IPCC - INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE. **Climate Change 2014: impacts, adaptation, and vulnerability**. Cambridge; New York: Cambridge University Press, 2014.

KANT. Immanuel Kant. **Critique of pure reason**. Translated by Fernando Costa Mattos. Petrópolis: Vozes Publishers, 2012.

LYNCH, Kevin. **A imagem da cidade**. São Paulo: Martins Fontes, 1997.

MERLEAU-PONTY, M. **Fenomenologia da percepção**. Translated by Carlos Alberto R. de Moura. São Paulo: Martins Fontes, 1996.

MEYER, Regina Maria Proserpi. O Urbanismo: entre a cidade e o território. **Revista da Sociedade Brasileira para o Progresso da Ciência**, São Paulo, v. 1, n.58, p. 38-41, 2006.

MONTANER, J.M. **Sistemas arquitetônicos contemporâneos**. Barcelona: Gustavo Gili, 2009.

MONTANER, J.M. **A condição contemporânea da arquitetura**. São Paulo: Gustavo Gili, 2016.

MORIN, Edgar. **O método 1: a natureza da natureza**. Porto Alegre: Sulina, 2016.

PUGLIESE, Livia Louzada de Toledo; VARGAS, Heliana Comin. Projeto urbano: mediação e parceria entre Estado, mercado e sociedade. **Anais**. São Paulo: FAU/USP, 2016.

ROSSETTO, Adriana Marques. Políticas públicas na estruturação da cidade: a construção de centralidades territoriais. In: ASSEN DE OLIVEIRA, Lisete DO AMARAL E SILVA, Gilcécia P. and ROSSETTO, Adriana Marques (Org.). **Arquitetura da cidade contemporânea: centralidade, estrutura e políticas públicas**. Itajaí: UNIVALI Publishing House, 2011.

SERRA, E., ESPAÑOL, J.& QUINTANA, M. **El Centre Reinventat**. Barcelona, Fundación Politecnica de Cataluña. 1996.

SPIRN, Anne Whiston. **O Jardim de granito: a natureza no desenho da cidade**. São Paulo, SP: USP, 1995. 345.

STEISS, A. W. **Models for the analysis and planning of urban systems**. USA. Lexington, 1974.

TZOULAS, K.; KORPELA, K.; VENN, S.; YLI-PELKONEN, V.; KAŻMIERCZAK, A.; NIEMELA, J.; JAMES, P. Promoting ecosystem and human health in urban areas using Green Infrastructure: A literature review. **Landscape and urban planning**, v. 81, n. 3, p. 167-178, 2007.

UNITED NATIONS. **Global Report on Human Settlements 2011: Cities and Climate Change**. 2011. Available at: <https://unhabitat.org/global-report-on-human-settlements-2011-cities-and-climate-change>. Accessed on October 1<sup>st</sup>, 2021.