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Papers

Healthy Cities and Smart Cities: A comparative approach

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Abstract
This article aims to present, compare and analyze the notions of Healthy Cities and Smart Cities. To reach it, the methodology used consisted of a review of the literature, which could contribute to the scientific discussions and increase understanding about healthy and/or Smart Cities. Among these notions, there are differences and points in common, as evidenced in this article. Keeping in mind the particularities, in both what is sought is sustainability, quality of life, health and well-being from interventions in the environment and valorization of social capital in an urban and globalized society. It is reiterated that the materialization of this search depends on the efforts of various sectors, institutions and intersectoral policies.
Keywords: Cities. Concepts. Sustainability. Urbanization. Globalization.

Introduction

In the last years of the 20th century and the beginning of the 21st century, there were several transformations of society, called urban-industrial. The rapid growth of the urban population, sometimes materialized unaccompanied by the provision of the resources to meet the basic needs, associated with the socioeconomic, environmental and technological changes, gives the present society a range of challenges. However, there are also opportunities for positive change.

Overcoming challenges and searching for better, more efficient and cheaper urban infrastructures, requires considering the inherent complexity of cities in globalized capitalism and exploring new opportunities such as

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technologies, including increased social engagement and horizontal cooperation to achieve socio-spatial development and related conditions, such as improving health, quality of life and sustainability in/around the city.

Cities are places of concentration of physical and human capital, a condition that can be enhanced by the use of innovation and technologies to attract residents, visitors and investments, transforming them into poles of global competitiveness. Governments, residents, businesses/industries and universities are interested in building cities that combine geopolitical competitiveness and sustainability (ANTHOPOULOS, 2014; MOSANNENZADEH; VETTORATO, 2014).

In this context, under different designations and approaches, there are movements around cities designated by concepts such as healthy, smart, among others. Even considering the diversity of approaches, especially in relation to Smart Cities, at first sight, the notions of healthy and Smart Cities would be very close because both of them focus on the gains in terms of socio-spatial quality from solutions in services and urban infrastructure.

In fact, there are similarities like this and others, such as the protagonism that the citizen should assume and the continuing nature of improvements, even if this is more explicit in the context of Healthy Cities. Another point in which the notions resemble is that the condition of healthy or smart has always been susceptible to successive evolutions in line with the citizens' desires and actions. However, it is also possible to observe different points, especially when taking into consideration the desired characteristics for services and urban infrastructure and the focus of each notion. It is explicitly and/or implicitly observed that, while in Healthy Cities it is sought to offer an accessible urban infrastructure that meets the demands of the residents, the Smart Cities' aim is that the urban infrastructure and services are connected in accordance with the demands of a technology-based society.

The aim of this article is to present, compare and analyze the notions of Healthy Cities and Smart Cities, in view of the theoretical and practical importance of these notions have in the present day. Thus, to achieve this aim, the methodology consisted of a review of the literature, where academic studies and documents were considered as reports on projects and examples of implementation initiatives designed by municipalities, governmental institutions and large companies. This study is justified for its contribution to the discussions on the notions of Healthy and Smart Cities, considering the need for the scientific approach to understand the concepts. In addition, as Healthy or Smart City initiatives have been specific to each location and, in general, covering only part of the city, this study sought to provide an overview of the applicability of the concepts.

The notion of Healthy Cities

The concept of a Healthy City expresses a World Health Organization (WHO) movement originated in 1978 in North America (Toronto/Canada) and first spread in Europe and later in the United States of America (USA) with a global reach these days. One of its assumptions is to put local health at the center of the political, economic and social agenda, improving it through changes in the physical, social and economic environments. The fundamental definition of Healthy Cities, developed by Hancock and Duhl (1986) is,

> [...] The one that is continually creating and improving the physical and social environments and strengthening the community's resources that enable people to support each other in the fulfillment of all the functions of life and achieve their maximum potential. (HANCOCK; DUHL, 1986, *apud* HANCOCK, 1993, p.7.).

The concept was supported by the WHO and is based on the principles of Primary Health Care, Health Promotion, Health for All and Health more than the Absence of Disease, emphasizing the interaction

between physical, mental and social dimensions, incorporating recently the "health strategies and targets for the 21st century" of the Local Agenda 21, and the recommendations of the United Nations Conference on Human Settlements. The potential of local actions to solve urban health problems in industrialized and developing countries is emphasized in the notion of Healthy Cities. (WHO, 1997; MYFANWY, 2010).

Due to differences in social, economic and natural conditions, the concept "healthy" can take different meanings, which implies different approaches and priority areas. As exemplified by Righetti (2004), Costa Rica focused on cleaning cities and on increasing the collection of recyclable waste, Cuba prioritized the consumption of healthy foods and Colombia raised campaigns to reduce alcoholism and against guns possession to the high crime rates, especially in Bogotá.

As general requirements for the establishment of a Healthy City, Duhl (1986) outlines that the city offers adequate and effective responses to the development needs of organizations and people; that the city has the ability to change itself to meet the emerging needs; that it enables its inhabitants to use it for the sake of well-being, which refers to the education of its citizens.

Thereby, a commitment to health, a process and a structure to achieve it, as well as the continuous improvement of environments and of physical and social resources, define a Healthy City. Not the current state of health or even the fact of having reached a particular state of health. As it is the case for achieving sustainability, the most relevant is adopting actions that lead to the intended objective. In this sense, there is a consensus on the importance of a social pact of commitment to health promotion, aimed at improving the quality of life of the population, where the key is the change of attitude regarding ways of promoting health, changing the policies, laws and services provided by the municipality.

As highlighted by the WHO (2013b), the Healthy Cities Movement promotes comprehensive and systematic policies and planning for health and emphasizes: (1) the need to address inequality in health and urban poverty; (2) the needs of vulnerable groups; (3) participatory governance; (4) planning and healthy urban design; and (5) the social, economic and environmental determinants of health.

The conception of health as a process, which from the control of certain factors can be improved, recognized in the Ottawa Charter, implies the need for new skills, processes, styles and structures for the governance process, which is

> [...] consisting of the following elements of action: i) Strong leadership and support from mayors; ii) support from all parties in municipal councils; iii) partnership agreements with statutory and non-statutory sector; iv) a variety of structures and processes to support inter-cooperation and citizen involvement; [...] v) strategic planning to direct-define; vi) and formal and informal network. (WHO, 2013, p.58).

Thus, according to the WHO, equity, participatory governance and solidarity, inter-sector collaboration and action are essential for Healthy Cities. A project for Healthy Cities, according to Hall; Davies and Sherriff (2010) rejects the top-down approach (the physical and social engineering solution) in favor of a new perspective on urban health problems and focuses on strategies based on the bottom-up community to combat public health issues. Thus, to achieve the Healthy Cities is demanded: explicit political commitment, leadership, institutional change, and intersectoral partnerships, which according to WHO (2014, s/p) demand "involvement of the local population in the decision-making process, a political commitment and organizational and community development". The WHO (2014) also highlights that the process is important as the results, which will be visible in the long term.

Therefore, the Healthy Cities of the WHO network are those committed to health and sustainable development, focusing on health, economy and urban development, through "of political commitment, institutional change, empowerment, partnership-based planning and innovative projects", which involves local governments in an ongoing effort for improvement. Considering the complexity and dynamism of the city, which is constantly changing, the Healthy Cities project considers the current state of the city, but with a vision that this can become healthy by improving their environments and expanding their resources for people to support each other in achieving their highest potential (WHO,1997).

The Panamerican Health Organization (PAHO) defines a healthy municipality in which political and civil authorities, public and private institutions and organizations, owners, entrepreneurs, workers and society make constant efforts to improve the living, working and culture of the population; establish a harmonious relationship with the physical and natural environment and expand community resources to improve coexistence, develop solidarity, co-management and democracy (PAHO, 1996).

Mendes (1996) was one of the first Brazilian authors to address the issue of Healthy Cities, considering them as structuring projects of the health field. In addition, the dissemination of the ideals of Healthy Cities began in public health schools in the 1980s, strengthening the health sector with the creation of the Unified Health System (SUS, in Portuguese) in the 1990s, which assumptions converge with those of Healthy Cities.

The notion of Smart Cities

The concept of Smart Cities is not a novelty of the 21st century, it has roots in the 20th century. According to some authors, its origin is related to the increase in the use of scientific methods and application of

computational analysis in urban planning from the post-war years, in the 1950s (SHELTON; ZOOK; WIIG, 2015). For other scholars, its origin derives from the search for new planning, emerging in the literature later in the 1990s. In the 21st century, the concept was used by the business sector through the Internet and Web 2.0 technology for the improvement of the cities' infrastructures (DAMERI, 2013; ANTHOPOULOS, 2015).

The fact is that, in recent years, this concept has gained strength all around the world. In addition, it is very diffuse and employed from various perspectives according to who uses it, with the particularities of each location and to face the multiple urban challenges. In the words of Anthopoulos (2015, p. 140):

> [...] Smart City does not describe a city with particular attributes, but is used to describe different cases in urban spaces: portals that virtualize cities or city guides, knowledge bases that address local needs, agglomerations with Information and Communication Technologies (ICT), an infrastructure that attracts business relocation, metropolitan ICT infrastructures that provide electronic services for citizens, ubiquitous environments and, recently, ICT infrastructure for ecological use.

The International Business Machines company (IBM s/d), which deployed technologies in Rio de Janeiro (Brazil), Zhenjiang (China), Dubuque (Dubai), New York (USA), Dublin (Ireland) and Nairobi (Kenya) etc., states that a Smart City is the one that applies information technologies for the planning, design, construction and operation of the city's infrastructure. According to the European Commission (2015) a Smart City presupposes building efficient and useful solutions in the traditional services of a city, such as education, health, environment, resource management (water and energy) and mobility systems, waste treatment, safety and accessibility of public spaces and municipal administration. Thus, according to Nam and Pardo (2011), although technological innovation is often more focused than innovation in management and policy,

the idea of Smart City suggests a contextualized interaction of technological innovations, in management and politics.

The Brazilian Network of Smart and Human Cities associates the concept of human to smart and defines cities with these qualities:

> [...] those providing an interoperable technological infrastructure, necessary to connect all existing or that comes to exist hardware, software and applications, in a way that they can transform themselves into a platform that functions as a node that connects all the other platforms, allowing the city to integrate all data and information generated, to have an open and transparent management information system, in a way that the technology serves as support to improve the quality of life of people, Always with their participation in a co-creative process with the public power. (REDE BRASILEIRA DE CIDADES INTELIGENTES E HUMANAS, 2017, s/p.).

Mosannenzadeh and Vettorato (2014), when conducting a literature review, found that the concept of Smart City was developed in three main areas: (1) academic, (2) industrial and (3) governmental. In each one prevails different points of view and interests, as well as understandings of the word "smart".

A significant part of the visions of a Smart City converges to the sense that in such cities infrastructures and services are based on innovation, not restricted to ICT- Information and Communication Technologies - (DAMERI 2013; ANTHOPOULOS, 2015), although these are essential (LEE et al, 2013; ODENDAAL, 2003 *apud* MOSANNENZADEH; VETTORATO, 2014) and generally used to allow the production of “big data” which may be used, including in real-time, to increase the efficiency of the city.

It should be considered that, in addition to the understanding of Smart Cities from the innovations and implementation of various electronic services in urban areas (ANTHOPOULOS; VAKALI, 2012), the concept can be used to refer to e-governance (VAN DER MEER; VAN WINDEN, 2003); to the learning or knowledge (CAMPBELL, 2012; MCFARLANE, 2011); to creative cities (FLORIDA, 2010); and to open data sharing (BATES, 2013).

When considering the prominent valuation of initiatives that consider sustainability, the notion appears linked to the rationale consumption of energy, transport and other types of management of rigid assets (NEIROTTI et al, 2014); to the low-carbon outlets (BULKELEY et al, 2010) to the discussions on eco or green cities (BEATLEY; NEWMAN, 2008; JOSS et al, 2013), to the energy consumption and environmental footprint (COHEN, 2012) and "smartness footprint" of a city that can be measured by a set of indices (GIFFINGER et al., 2007). There are also authors, such as Moyser (2013) and Comstock (2012), who emphasize the government and urban services, considering that these are the most basic levels of a city (ANTHOPOULOS; FITSILIS, 2014; HOLLANDS, 2014).

Another issue that converges on various approaches to Smart Cities is the fundamental role of the citizen, be it in relation to democratic participation and social control in the urban planning and management process and/or in the contribution with information and evaluations or as an end-user of services, especially those provided by ICTs. Citizens should be protagonists in the appropriation of technological innovations to provide a better quality of life, in terms of solving objective problems and meeting objective and subjective needs. In this sense, authors like Hollands (2014) Hoornweg (2011), Harvey (2012) and Anttiroiko (2013) assert that the center of urban innovations should be the citizen since the main urban problems have sociological and non-technological bases. According to Hollands (2014) one should expand the space for people to lead intelligent initiatives and democratically discuss their rights and solutions to urban problems. Thus, a Smart City would be welcoming, inclusive and open.

Dameri (2013) considers as the components of an Smart City the physical and social environment, the technologies aside ICTs, such as those related to electricity and heating. For this author, the transformation of the city into a Smart City includes changes in the characteristics of buildings

and transport that must become efficient, as well as in the values and initiatives of citizens and governments.

Despite the small variations, the measures inherent in a Smart City, ie the use of information resources in transportation, energy, sanitation, etc., ultimately converge with the ideals of inclusion, connectivity, shortening distances and sharing, as well as demand effort and planning, in an integrated way, to be implemented. In this sense, when considering the form of a proposition and construction of a Smart City, it is identified both bottom-up approaches from the citizens, as top-down, from planners and managers.

Dameri (2013) highlights a top-down approach from a strategic vision of a Smart City developed by applying government rules and policies, to achieve certain objectives around the improvement of urban problems, and also a bottom-up approach, which is based on the application of technology to urban problems, considering that the technological qualification of urban activities can extend the potential access of citizens to the city and that citizens can provide data to the collaborative solution of common problems.

Hollands (2014) highlights the concentration of Smart Cities developed by ICT corporations in Asia, especially in Japan and South Korea. Among them, we can cite the Cisco project, in partnership with Gale International, US real estate company, in creating New Songdo City, South Korea and the Panasonic project on the creation of Fujisawa Sustainable Town Smart (Fujisawa SST) in Japan.

The emergence of the notion of Smart Cities in Brazil is more recent and the initiatives, more restrict. The milestones of this emergence being the creation of the Brazilian Network of Smart and Human Cities in 2013, the commission Interministerial to deal with the subject, coordinated by ABDI (Brazilian Industrial Development Agency) in 2015 and the Joint Parliamentary Front in “Supporting Smart and Human Cities” in 2016.

It stands out in Brazil, the emergence of Smart Cities projects and pilot initiatives, such as Laguna - Ceará, Palhoça – Santa Catarina, and Uberlândia – MG, where measures are proposed, such as the use of solar energy and smart grids, reducing bureaucracy to facilitate entrepreneurship, apps focused on urban mobility, among others.

The Smart City Laguna, located in the District of Croatá, municipality of São Gonçalo do Amarante, in the State of Ceará - Brazil, was thought to be a social Smart City, since it is based on the principles of inclusion and accessibility, in the search for the sustainability and quality of life of its inhabitants. The Laguna project provides for the mixed land use, among residential, commerce, services, and nearby leisure, to reduce large daily displacements. In addition, there are sensor installations in almost everything from light poles and trash cans to public utilities and an app that will unify all the technology used in the city accessible to citizens via smartphones. (AUTOMATIC HOUSE, 2019).

In the case of the municipality of Palhoça, in the great Florianópolis, Santa Catarina - Brazil, from the project called "Masterplan Pedra Branca", derived the neighborhood "Pedra Branca" with blocks of mixed land use, to be developed until the year 2020. The foundation for this urban project is the search for the quality of life of the residents, who should live, work and have fun in nearby places, moving by bike or on foot (AUTOMATIC HOUSE, 2019).

It is also worth mentioning the pioneering of the city of Uberlândia, MG – Brazil. The initiative of a private company of local capital, Algar Telecom, in partnership with other companies and institutions will provide the neighborhood Granja Marileusa, which was previously a farm, as a prototype of a Smart City. It proposes innovations in public transport (*e.g.* Easybus, which will allow the passenger to know the crowding and flow of passengers); in the collection of solid waste (*e.g.* smart dumps, which will measure the volume of waste and the space available, as well as allow the

user to accumulate points from the correct destination of the waste) and in rain flow (smart manholes, which will allow one to know the volume retained in it). Finally, considering the places where internet access is restricted the goal is to use connectivity balloons as a solution (LIMA, 2017).

In addition, the Granja Marileusa neighborhood, approved by the Uberlândia City Hall at the end of 2012, was designed according to the mixed land use design. Therefore, with the installation of different types of projects, such as residential spaces, commercial and service spaces, academic spaces, living spaces, etc. The adoption of such urbanistic design aims to optimize of the time spent in daily commuting, saving natural resources through the adoption of ecologically sustainable attitudes and rescuing the interaction between residents in public spaces.

Smart City projects are still punctual in parts of the city. However, in view of the possible positive results of these projects, as they are based on sustainability, considering the human, economic and technological aspects, it is expected to expand both in number of cities and in the scope of urban space. In addition, Smart and Healthy Cities should underpin the 21st century urbanization process, which should be based on the participation of space-producing agents in planning for mobility, health, sustainability, etc.

Therefore, the projects and pilot initiatives of Smart Cities are trendstoward urban centers development in the 21st century, and they converge with structural changes in intraurban areas, *i.e.* they aim at creating new urban centralities. They strengthen the urban restructuring from the break with the monocentrism to the detriment of the complexity of the urban centrality, by revitalizing, according to the term used by Lefebvre (1999), the poly(multi)centrality of the cities.

Healthy Cities and Smart Cities: Similarities and differences

Quality of life, well-being and sustainability depend on the characteristics of cities, which through planning solutions can innovate, harness their capacities and promote the reach and intertwining of such conditions. After all, according to Myfanwy (2010) the cities have a systemic operation, in constant modification to perform the required adjustments and to modify to satisfy the ever-emerging demands of their inhabitants.

When considering such emerging demands in cities, according to Dameri (2013), there are several concepts used to refer to the use of innovations to improve cities, such as Smart Cities, Sustainable Cities, Healthy Cities, etc. Despite some differences, they do not always contradict each other, because they share some aspects, such as social participation and search for quality of life. For example, the use of clean technology, which characterizes a Smart City, allows energy efficiency and CO2 reduction, which is a property of a sustainable city and a condition for a clean physical environment, and it allows for a stable ecosystem, an essential aspect to a Healthy City. In such a way, initiatives for a Smart City can contribute to the construction of a Healthy City and vice versa, given that people with high levels of health, education, quality of life, etc., are more likely to be active in changing cities.

Table 1 summarizes the main similarities and differences between them.

Table 1: Main aspects of Healthy Cities and Smart Cities.

Components	Healthy Cities	Smart Cities
Decade of emergency	1980	1990
Origin of the concept	WHO	Private initiatives
Main feature	Health promotion	Innovations and technologies
Objective	Life quality, well-being, sustainability as a requirement for development.	Life quality, well-being, sustainability as a requirement for competitiveness
Focus	People	Market
Approach	Bottom-up	Top-down and bottom-up
Infrastructure and urban services	Accessible	Connected
Orientation	Long Term	Short to long term
Environment/nature	Natural well-being	Natural Resource
Citizen role	Active	Active
Urban Planning	Integrated	Integrated
Public Policy	Intersectors	Intersectors
Applicant	Governmental initiatives	Private initiatives
Evaluation	Indicators	Indicators

Org. Elaborated by the author (2017).

The concepts of Healthy City and Smart City are recent, emerging at the end of the 20th century, a context marked by the rapid expansion of the urban population and the problems arising from it, together with the economic and technological changes caused by globalization. The context, represents, at the same time, an environment of socioeconomic crisis and opportunities for change, considering the growing expectations of citizens and the new opportunities arising from the increasing advances in ICTs.

The notion of Healthy Cities originated within the framework of a WHO initiative, starting from the search for health promotion by a public institution of international scope. The notion of Smart Cities, more recent, arose from technology companies, within the private sector, to refer to the use of innovations and technological resources in urban infrastructure and services.

The objective, regardless of the adjective used to qualify cities, is to achieve the quality of life, well-being, and sustainability. However, a critical analysis of the studies, technical and scientific considered for the writing of this article makes it possible to affirm that under the concept of Smart

Cities, the attainment of such conditions would serve the reproduction of globalized capitalism.

For Marxist scholars, such as Harvey (1989), the proposals of Smart Cities generally do not represent an alternative to the neoliberal city, since part of business initiatives take over the label "Smart" as a marketing device for the city and an excuse for the domination of corporate models of urban entrepreneurship, spreading a worldwide model of corporate "Smart City". The cities then compete with each other to attract global capital and market themselves as cities (HOLLANDS, 2008 apud HOLLANDS, 2014).

As a consequence, it is assumed that in Healthy Cities the focus is on improving the environmental, economic and living conditions of people, for the promotion of health. In Smart Cities, on the other hand, the focus is to promote the concentration of human capital to attract businesses and activities that transform cities into poles of global competitiveness (MOSANNENZADEH; VETTORATO, 2014).

When considering the form of transformation of cities, the concept of Healthy Cities has as a presupposition the knowledge of the territory by the people, so that they can act on it in their favor. Therefore, the strategies must come from the community, which has an essential position in the construction of public policies with governments. In this way, it is emphasized that the bottom-up approach has a central role in this concept. On the other hand, while recognizing that this approach should also have a fundamental place in the concept of Smart Cities, it appears that in this case the top-down approach often stands out, from the proposal of the installation of technological equipment by companies, sometimes without taking into account the participation of citizens.

Considering the desired basic form of infrastructure and urban services can help in the understanding of these predominant approaches. Access, and therefore accessibility, is very important in Healthy Cities. It should be noted that accessibility comprises a 'dimension of access', *i.e.* the

quality of being accessible, both from the perspective of supply and the adequacy between the geographical distribution of services and citizens, considering travel time, distances and costs to reach the services (PENCHANSKY; THOMAS,1981; DONABEDIAN, 2003).

In Smart Cities, the connection between spaces and services is a fundamental issue. Above all, from the Internet of Things (IoT), whose essence is to connect increasingly sensors and devices that enables people to communicate and interact with other people and/or objects. For example, through a set of objects, urban mobility patterns are monitored in Smart Cities. Equally, lighting, trash cans, and manholes can be equipped with sensors that enable their connection to other devices, making them intelligent.

From the perspective of the achievement of results, the conditions of smart or healthy, the orientations for actions are also different. In the field of Smart Cities, especially considering the view of private initiative, there are interventions aimed at returns in the short term horizons. In Healthy Cities, however, the emphasis is on the process of continuous improvement and long-term horizons.

Finally, another aspect in which the differences between the concepts of a healthy and Smart City are remarkable is in relation to the understanding and treatment given to the environment. Although both concepts express concern with the preservation of natural resources, implicitly, it can be noted that in Healthy Cities nature is considered as an essential natural good for health and quality of life, which is everyone's right and cannot be monetized.In the concept of Smart City, it stands out the understanding of nature as a natural resource, which meets the needs of re-production of society. In this case, the focus is on rationality, efficiency and sometimes the valorization of certain areas of urban space that stand out for environmental amenities, the concern with social relations and social and environmental problems considering the totality of cities is secondary.

The cities are complex socio-spatial entities (SOUZA, 2003) built and reconstructed by various social agents, among which stands out: the owners of the means of production, mainly large industrialists; landowners; property developers; the state and social groups excluded (CORRÊA, 1995). Consequently, regardless of their role in the social structure, citizens have a great responsibility in the (re)construction of cities, whatever concepts are used to designate them. In this sense, the qualitative change of the cities reflects the social conditions*, i.e.* healthy and/or intelligent citizens (re)build Healthy and Smart Cities, respectively.

Projects such as Fujisawa (Japan) have emphasized the search for meeting the needs of the resident, as well as the value of the active participation of citizens (SMART-CITIES, 2015). After all, they must be able to hear what the city says, understand how it works and how it should or should not work, based on what they want or do not want.

The active role of the citizen is valuable in the context of urban planning and management, as well as in the elaboration and implementation of local public policies. It is from the smallest scales (city and/or neighborhoods) that knowledge and individual actions can have a greater contribution to the attainment of that goal. But this process must also be integrated, both vertically within the framework of the various local public policies, and therefore demands intersectoral public policies, and horizontal perspective, considering the various scales of materialization of public policies.

Achieving the condition of a healthy or Smart City presupposes the search for essential objectives such as the attainment of quality of life and the well-being, whose evolution and final results must be evaluated through performance indicators, which contribute to planning and management. However, a challenge is to adequately identify indicators that address the different dimensions, considering both bottom-up and top-down approaches,

as well as to serve the monitoring of the results and not as a marketing tool of the cities.

In this sense, just as there is a wide variety of initiatives and approaches, there are several indicators used both within Healthy Cities and Smart Cities. For the first ones, it is highlighted the relevance of offering indicators and accessibility to urban establishments, especially those that (in)directly enable health promotion. Regarding the second ones, according to Gartner (2017) (world leader in research and consulting in information technology) the tendency is to consider indicators of climate change, resilience and sustainability. When considering both trends we agree with Giovannella; Dascalu and Scaccia (2014) on the relevance of indicators such as time, which signals improvement in mobility, and the consumption of resources, which reflects environmental conservation and eco-sustainability, whose indicators can be monitored both by the use of sensors and quantitative indices and subjectively by individual perception.

Final Considerations

The emergence of the notions of Healthy Cities and Smart Cities represent alternatives for solving or at least mitigating much of the environmental, social, political and economic problems of cities in the 21st century context. By analyzing the main aspects of these notions, such as origin, definition, foundations and objectives, we identify points of convergence and divergence and the particularities of each notion.

Certainly the use of technologies, fruits of modernity, to improve the functionality of services and urban infrastructure, as well as to promote the integration of the different planning systems and the collaboration between the various stakeholders are essential preconditions for creating a Smart City. However, this may be more valued in the notion of a Healthy City,

since the articulation/connection consists of a fundamental attribute in the/of the contemporary society.

On the other hand, a basic assumption of the Healthy City is the active role of the citizen, as an individual who knows the demands of the place where he lives and so can be decisive in its positive change and, therefore, in their health conditions, since there is an intrinsic relationship between the conditions of the environment and of the health. This is an issue that should be highlighted within the framework of Smart Cities, which also need to consider that citizens are fundamental in the (re)construction of cities, after all the dissemination and use of technologies in a city depends on the social capital in it. Thus investment in education and appreciation of democracy have an important role in the dissemination of the use of technologies aiming at improving living conditions.

In addition, initiatives aimed at the reach of Smart City can contribute to the construction of a Healthy City and vice versa, because cities are complex systems, where people can achieve high levels of health, education, quality of life etc. through the use of knowledge and technological resources. Similarly, better living conditions can enable the development and adherence to scientific and technological innovations, which can promote better health conditions in a cyclical process.

Finally, it is also confirmed that the materialization of a condition, adjectived with smart or even healthy and/or sustainable, depends on the effort of various sectors, institutions and intersectoral policies (MOSANNENZADEH; VETTORATO, 2014). Therefore, in summary, a healthy and/or Smart City or region must be able to acquire and apply knowledge to face multiple future challenges.

References

ANTHOPOULOS, L. G. Understanding the Smart City Domain: A Literature Review. In: RODRÍGUEZ-BOLÍVAR, M. P. (Org.).**Transforming City Governments for Successful Smart Cities**. Granada: Springer International Publishing, 2015. https://doi.org/10.1007/978-3-319-03167-5_2

ANTHOPOULOS, L. G. Smart Cities and Their Roles in City Competition: A Classification. **International Journal of Electronic Government Research** (IJEGR), v.10, n.1, 2014. https://doi.org/10.4018/ijegr.2014010105

ANTHOPOULOS, L. G.; FITSILIS, P. Smart Cities and their roles in city competition: A classification. **International Journal of Electronic Government Research (IJEGR),** v.10, n.1, p. 63-77, 2014BARTON, H., et al. Healthy urban planning in European cities. **Health Promotion International**, v.24, n.1, p.91-99, 2009. https://doi.org/10.4018/ijegr.2014010105

BUSS, P. Promoção da saúde e qualidade de vida. **Ciência & Saúde Coletiva,** v.5, n.1, p.163-177, 2000. https://doi.org/10.1590/S1413-81232000000100014

BUSS, P. M.; CARVALHO, A. I. de. Desenvolvimento da promoção da saúde no Brasil nos últimos vinte anos (1988-2008). **Ciência & Saúde Coletiva**, v.14, n.6, p.2305-2316, 2009. https://doi.org/10.1590/S1413-81232009000600039

COMISSÃO EUROPEIA. **Smart Cities and Communities: The European Innovation Partnership on Smart Cities and Communities**. Bruxelas, 2015.

CORRÊA, R. L. **O Espaço Urbano**. São Paulo, Editora Ática, 1995.

DAMERI, R. P. Searching for Smart City definition: a comprehensive proposal. **International Journal of Computers & Technology**, v.11, n.5, p. 2544-2551, 2013. https://doi.org/10.24297/ijct.v11i5.1142

DONABEDIAN, A. **An introduction to quality assurance in health care**. New York: Oxford University, 2003.

DUHL, L. J. The healthy city: its function and its future. **Health Promotion**, v.1, p.55-60, 1986EXEMPLOS de Cidades Inteligentes no Brasil que vão te dar orgulho. **Automatic House**, 2019. Available in:<https://www.automatichouse.com.br/imprensa/exemplos-de-cidades-inteligentes-no-brasil-que-vao-te-dar-orgulho/20190328-134649-v508> Acessed in: Jun 15, 2019.

FROST & SULLIVAN'S. **Strategic Opportunity Analysis of the Global Smart City Market**. 2013. Available in: <http://www.frost.com/sublib/>. Acessed in: May 15, 2015.

GARTNER. **Hype Cycle for Smart City Technologies and Solutions**, 2017. Página inicial. Available in: <https://www.gartner.com/en/>. Acessed in: Jun 20, 2018.

GIOVANNELLA, C.; DASCALU, M.; SCACCIA, F. Smart City Analytics: state of the art and future Perspectives. **Interaction Design and Architecture (s) Journal**, n.20, p.72-87, 2014.

HALL, C. DAVIES, J. K., SHERRIFF, N. Health in the Urban Environment: A Qualitative Review of the Brighton and Hove WHO Healthy City Program. **Journal Urban Health.** v.87, n.1, p.8–28, 2010. https://doi.org/10.1007/s11524-009-9387-y

HANCOCK, T. The Evolution, Impact and Significant of the Healthy Cities/Healthy, Communities Movement', **Journal of Public Health Policy**, v.14, n.1, p.5-18, 1993. https://doi.org/10.2307/3342823

HERITAGE, Z.; GREEN, G. European National Healthy City Networks: the Impact of an Elite Epistemic Community. **Journal of Urban Health**: Bulletin of the New York Academy of Medicine, v. 90, Suppl. 1. p.154-166, 2013. https://doi.org/10.1007/s11524-012-9777-4

HOLLANDS, R. G. Critical interventions into the corporate Smart City. **Cambridge Journal Regions Economy Society, v.**8, n.1, p. 61-77, 2014. https://doi.org/10.1093/cjres/rsu011
IBM- International Business Machines. Cidades Inteligentes e seus impactos econômicos, 2011. Available in: <https://www.ibm.com>. Acessed in: Jan 15, 2017.
KOOLHAS, R. **My thoughts on the Smart City**. Edited transcript of a talk given at the High Level Group meeting on Smart Cities, Brussels, 24 September 2014. Available in <http://ec.europa.eu/archives>. Acessed in: 15 jan. 2017.
LEFEBVRE, H. **A Revolução Urbana**. Tradução de Sérgio Martins. Belo Horizonte: UFMG, 1999.
LIMA, M. Uberlândia ganha protótipo de Cidade Inteligente. **Revista Inova**. Available in: <http://www.inova.jor.br/2016/12/14/algar-uberlandia-cidade-inteligente>. Acessed in: Jan 15, 2017.
MYFANWY, T. **Working paper for the lancet**. Commission on healthy cities. Department of Geography, University College London, 2010.
MOSANNENZADEH, F.; VETTORATO, D. Defining Smart City: a conceptual framework based on keyword analysis. **TeMA Journal of Land Use Mobility and Environment.** INPUT 2014 Eighth International Conference INPUT - Naples, 4-6 June 2014.
NAM, T.; PARDO; T. A. Smart City as urban innovation: focusing on management, policy, and context. In: ICEGOV '11 Proceedings of the 5th International Conference on Theory and Practice of Electronic Governance. 5, Estonia. **Anais....** Tallinn: 2011, p.185-194. https://doi.org/10.1145/2072069.2072100
OPAS - Organización Panamericana De La Salud. **Desarrollo de los sistemas locales de la salud**. Washington, D.C., 1996
PANASONIC. **Panasonic inaugura a sua Cidade Inteligente e Sustentável em Fujisawa**. 27-11-2014. Available in: <https://www.panasonic.com/pt>. Acessed in: Jan 15, 2017.
PENCHANSKY, D. B. A.; THOMAS, J. W. The concept of access – definition and relationship to consumer satisfaction. **Med Care, Hagerstown**, v. 19, p. 127-140, 1981. https://doi.org/10.1097/00005650-198102000-00001
REDE BRASILEIRA DE CIDADES INTELIGENTES E HUMANAS. Institucional. 2017. Available in: <http://redebrasileira.org/home>. Acessed in: Jan 15, 2017.
RIGHETTI, S. Condições ambientais e bem estar social são fatores que influenciam saúde da população. **Cienc. Cult. [online].** v.56, n.2, p. 06-07, 2004.
SASSEN, S. **Las ciudades van a ser más importantes que los estados**. Entrevista a ABC. 15 mai. 2013. Available in: <http://www.abc.es/20120612>. Acessed in: Jun 14, 2016.
SHELTON, T.; ZOOK, M.; WIIG, A. The 'actually existing Smart City'. **Cambridge Journal of Regions, Economy and Society**, v. 8, n. 1, p.13–25, 2015. https://doi.org/10.1093/cjres/rsu026
SOUZA, M. L. **ABC do desenvolvimento urbano**. Rio de Janeiro: Bertrand Brasil, 2003.
WHO -World Health Organization. **City planning for health and sustainable development**. European Sustainable Development and Health Series, 2. 1997. 111p.
_____. Regional Office for Europe. **Implementing a Health 2020 vision**: governance for health in the 21st century. Making it haplicativoen, 2013b.
_____. **European Healthy Cities Network**. 2014.