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Campinas, Smart City: data, communication infrastructure and production of space

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Introduction

In the current capitalism, wherein the technologies assumed a fundamental role in the hegemonic concept of development, the globalization seeks to direct all the economic and social stories to the Eurocentric path, causing a confinement of economic processes, as occurs with the smart city ideal, which emerges in a certain context and is exported to multiple urban realities. The need for technological content in the territory increases, as they accelerate capitalist flows, help in the decision making and in creation of market's spatial strategies. However, on the other hand, the technology (specifically geotechnologies) excludes large parts of the population form access, making the differences among classes, mainly in the production and use of urban space, even more outstanding.

The ideal of Smart Cities has become very popular in the recent years, connected mostly with attempts from hegemonic agents to set a sustainable urban future, at least in discourse, in response to multiple threats to the continuity of the reproduction of capital and space in ways assumed in neoliberal era of capitalism. Simultaneously, the idea of Smart Cities has been an important element to promote public-private partnerships, mainly focusing on pairing management infrastructure to technology.

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"Camero and Alba (2019) show that the interest in the topic around the world has increased rapidly in the last decade, and core countries in the international context have the most publications about Smart Cities, highlighting China, the United States and western Europe". Although Brazil is not in the leading edge of the debate on the subject, multiple Brazilian metropolis have adopted the smart city ideal, and have created strategic and masters plans to implement "smart" infrastructure. This process reinforces the importance of thinking and planning the mode of production and the role played by land planning.

Recently, Campinas, consulting by IMA (Associated Informatic Municipalities), alongside politicians, entrepreneurs, scientists joined the Smart City inquiry, and drew up a few Management Plans, in which a series of urban policies are described. These plans aim to make Campinas become "the city of knowledge" and "the city of innovation". The development of the "smart initiatives" in Campinas is focused on investments in technology (with a special concern about Geotechnologies) like in fiber-optic network, public free wireless Internet stations and the building of an infrastructure capable of handling big data. However, apart from that, the Management Plans focuses on a very hegemonic, utilitarian and neoliberal concept of smartness, as consider as "smartness" the ability to make the flow acceleration possible, mainly through debureaucratization.

This scenario requires the conduction of a critical analysis over the current determinants of the ways of production of space in Campinas in the context of Smart Cities policies and narratives, mainly because of the risks and contradictions linked to this process. In this case, this article aims to shed light in the Smart City project of Campinas and in its consequences to production of urban space and to the socio-spatial inequalities.

Theoretical discussion

"The urban space is, by definition, produced by dialectical processes and conflicts among classes (Lefebvre, 1995)". "Lefebvre (2008) also shows that the social reality changes linked to the productive activities and shapes. Therefore, the author states the that the constant capitalist attempts of expanding its relations through space are attempts to solve its internal contradictions."

"The changes in the capitalist context along the last quarter of 20st century made technology and information the core of the accumulation processes, deepening the spatial division of labor (Lojkine, 1995; Harvey, 1989; Sheppard, 2016) and increasing the importance of control over the territory and increasing its technological content." "In the late capitalism context, says Carlos (2017), the transformations in the urban space redefines productive structures and impose new standards of flexibility, promoting very selective interventions, not intending to control and organize the whole city, but only creating a fragmented urban space, with some areas, used mainly by capital, with full access to technological content and sturdy Information and Communication Technology infrastructure, while other areas continues and dive deeper into the lack of accessibility, mobility and basic sanitation".

"From this context, emerges the ideal of smart cities, as a way of exploit the fetish built over technologies and the role played by science in the capitalist development along the last century to construct a city marketing (Marchesini Jr, 2010)", used to attract investments and implement policies that meet the interests with private companies, "frequently also responsible for providing services (like free Wi-Fi spots) through partnerships with the public power (Silva, 2020)".

"The current academic literature over smart cities focuses on multiple aspects, but a large proportion of the papers argues in favor of developing technology, especially Internet of Things. However, discussions on sustainable mobility, governance and living are also among the most applicant subjects (Camero; Alba, 2019)". Nevertheless, the present abstract considers as the main references authors concerning the theme through a critical approach.

"One important definition is present in Kitchin (2015, 2018), saying that smart cities are those that use a network infrastructure (big data) to produce a smart economy, government, mobility, environment and population". "Another important discussion is present in Hollands (2015), showing that behind the Smart City discourse, there is a corporate mentality, which appropriates from the concept of smartness, associating it with productivity, high performance and innovation (capable of making profits)".

"This technology infrastructure is both important to capital in decreasing the time it takes for completing its cycle, increasing profits (Harvey, 2014)", and "to create a corporative storytelling that sets IT companies as central actors of the urban management model

(Söderström *et al*, 2014)". "The ideal of smart city imposes the production of space to a more segregated composition, as take to strategic spots the development of technological infrastructure while, concurrently, it also takes to production of subdevelopment - leading to a broken urban space (Hoyng, 2016)".

In this sense, currently, geotechnologies has become an important point regarding production of space. "Multiple authors, such as Batty (2012), and Li (2020) show that the simultaneity Geographic Information System (GIS) can give to the urban space is a fundamental aspect of the hegemonic approach to the Smart Cities projects". "More specifically, recent advances in the cyberinfrastructure, powered by high performance computers, Big Data and geovisualization instruments has made new approaches to systematic decision making, including geospatial artificial intelligence (Zhang, 2021").

"From a critical perspective, the assumption of and Enlighted system of decision making in the urban planning, based on technological advances, Big Data and artificial intelligence sounds like corporate storytelling (Söderström et al, 2014)", as informational capitalist flows demand increases. "In this context, the geotechnologies have the capability to mobilize innovations and anticipate actions and are responsible for enabling the "smartness" spatially (Roche, 2015; 2016)", serving the hegemonic agents with critical information to support decision making – since in capitalist system the socio-spatial inequalities make a large part of population excluded from infrastructures.

Methodology

To accomplish the current paper's objective, it was fundamental to carry out a comprehensive literature review, taking notice about the most relevant articles, books and papers in the subject. This step allowed to understand the processes occurring in Campinas and identifying the main concepts and methods being used in the studying of Smart Cities and the processes of increasing the technical content of the urban space.

Another important step was the reviewing of Campinas Strategic Plan to Science, Technology and Innovation (PECTI) and Strategic Plan Campinas Smart City (PECCI) (2019), which made possible reflecting on the case and organizing a table (Table 1), showing the main intended interventions in Campinas urban Space in the context of smart city ideal.

Analysis and Final Considerations

After analyzing the material built by IMA consulting of Campinas management and land planning, which consist in both PECTI (2015) and PECCI (2019), and carrying out the literature review, as it was possible to take a brief look over the main spatial transformations intended by the Municipal Government alongside another economic agents (such as enterprises and foundations) for the next decade linked with the smart city ideal. The plans start from technocratic and depoliticized speech over the urban reality, reducing socio-spatial inequalities to bad public management, ignoring the social and economic conflicts that constitute the urban space. The Table 1 summarizes the main actions planned, ongoing and finished in Campinas.

Table 1 – Smart City project main actions in Campinas

Action	Status	Axis
Promoting Campinas's brand	Ongoing	Branding
Fiber-optic network	Expanding	Public/Private infrastrucure
Public Wifi network	Expanding	Public/Private infrastrucure
Low power wide network	Expanding	Public/Private infrastrucure
Data plataform	Expanding	Big data infrastructure
Monitoring Center	Finished	Big data infrastructure
Municipal GIS	Expanding	Big data infrastructure
Disaster Recovery infrastructure	Planned	Public/Private Infrastructure

Source: PECTI (2015); PECCI (2019).

As shown in Table 1, it is clarified that the project presented by Campinas municipal Government aims to develop many enterprises focusing on increasing technological content in territory. One important aspect that needs to be highlighted is the way that private and the public spheres appear undifferentiated: for instance, the plans don't specify that part of the fiber-optic infrastructure is private and requires an expensive particular internet plan to be accessed. This scenario creates a certain understanding of citizenship and right to the city linked to capitalist consumption.

It is possible to identify three main action axes in Campinas Smart City plans. The first is promoting Campinas's brand (branding), the second is building a public/private infrastructure to accelerate informational flows and the third is building a Big Data infrastructure to feed decision making systems.

While the first axis tries to fit the whole city as an innovative and full of technology space, the scenario shows that beyond the previous context in Campinas, known by very outstanding socio-spatial inequalities, the current enterprises are taking actions to maintain and deepen the differences, as it builds selective infrastructures and a big amount of data that can only be used by hegemonic agents, because it requires a sturdy Information and Communication Technology access.

This paper presented a few theoretical aspects of smart cities projects and the way they interfere in urban space production, the main agents and consequences of these projects. Also, it contains an analysis over the Campinas's case and the prominent actions that have been taken, setting out three action axes: branding, building private/public information and communication infrastructure and building a big data system (including GIS). I this case, communication and information infrastructure consist of an element of deepening socio-spatial inequalities as only meet corporative and private interests, although the city marketing and branding attempts to picture a depoliticized and integrated urban reality.

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