THE URBAN FORM RESULTING FROM URBAN TRANSFORMATIONS DURING THE TWENTIETH CENTURY IN CAMPOS DOS GOYTACAZES CITY, RIO DE JANEIRO STATE, BRASIL.

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ABSTRACT

Campos dos Goytacazes is located in northern Rio de Janeiro State. Until the 1970s its economy was based on the sugarcane plantation. After the discovery of oil sources, the region became the largest oil producer in Brazil, and, the land use changed from sugarcane production to real estate exploitation. We intend to analyze the urban transformations as a result of the industrialization process, allied to the characteristics of the geo-biophysical and land property conditions, leading to an urban sprawl process based on a highly concentrated land ownership. The research was based on bibliographical and historical review, field survey and thematic mapping. It concluded that the urban growth process maintains the synchrony between the actions of the public authorities, real estate agents and landowners, resulting in: fragmented urban sprawl; fenced condominium models; high income concentration; low income densification in peripheral neighborhoods; unbalanced open space systems; low-income housing concentration near protected areas; socio-spatial segregation. Nevertheless, the city has the potential to create new spaces for leisure and environmental conservation, providing the opportunity of integrating landscape design to city planning, as a way to change the urban form configuration for innovative trends. Keywords: urban sprawl, urban morphology, property system conditions.

INTRODUCTION

Campos dos Goytacazes is located in northern Rio de Janeiro State (Fig. 1), with its economy mainly based on sugarcane production until the 1970s. Throughout the 20th century, its economy has undergone major changes, with the industrialization of the sugar cane production, the crisis in this same industry and the modification of the city's economic base to oil and natural gas production (Aliprandi, 2017).

Given this context, the objective is to understand the problems that lead to the resulting urban segregation. The paper aims to demonstrate that these economic alterations combined with the characteristics of the geophysical site (plains irrigated by a *Paraíba do Sul* River, tributaries and lagoons) have originated a territory where the land for urban expansion belongs to a small group of landowners, generating political and economic hegemony. Hereby, the city's urbanization did not relate the expansion of the urban fabric with open spaces, infrastructure and the daily demands of the population, such as the conservation of the landscape ecological structure, and leisure and recreation options.

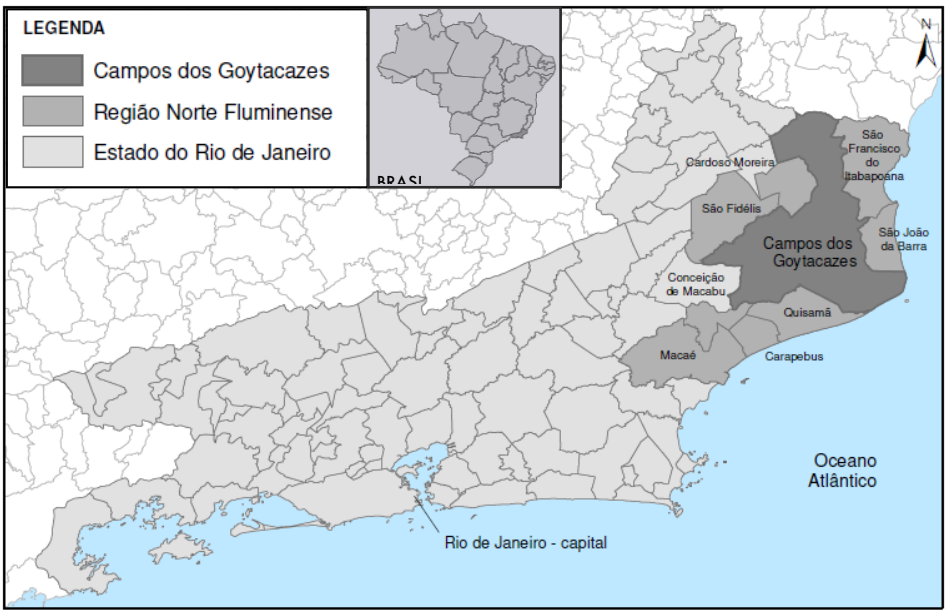

Figure 1: Campos dos Goytacazes location. Created by the authors (2020) based on IBGE (2010) and *cidade-brasil.com.br* (2020).

The present research was based on combined strategies: bibliographic and historical review, historical formation context; documental research and historical iconography; field study; thematic mapping with overlapping information such as population income, demographic density, land tenure, morphological types and public and private open spaces. Despite these conditions, the city presents great potential in overcoming the identified problems through its open spaces system, with emphasis on the open spaces reserve for urbanization and remaining water resources. It should be noted that the concept of open spaces adopted was defined by Magnoli (2006, p. 179) in the 1970s.

BACKGROUND

From the mid-twentieth century, Brazilian cities have changed significantly in form and content. Urban centers grew, populations migrated to cities and metropolitan regions were consolidated. By the end of the 20th century, most of the Brazilian population was living in urban centers (Alves, Souza and Marra, 2011). This rapid growth was not accompanied by sufficient investments in infrastructure, which generated different forms of urban expansion, both horizontal and vertical. As a result, cities design and usage characteristics have changed: streets were then re-dimensioned for cars; sidewalks were widened enough for people, cyclists, trees plantation and public lighting; plots have become smaller, generating density, and, vertical buildings have become increasingly common (Macedo and Sakata, 2010).

The rural environment has also changed, receiving large investments in agribusiness, extractive reserves and water supply, energy generation and transmission complexes, ports and airport facilities, among others. These represent significant environmental and socio-cultural modifications in the relation between rural and urban spaces. According to Rua (2009), these spatial dimensions have their roles modified, urban and rural identities have been redefined, with extractive, agricultural and cattle-raising activities as the nation's economic base.

The growth of cities was due to the population migration from rural areas, as a result of the mechanization of agricultural activity, the industrialization expansion in the cities, which generated

expectations of job opportunities, expanding the demand for labor and housing. However, the job offer was not enough and the work opportunities available to this population offered low wages. These workers were excluded from the real estate market, consequently forced to seek informal and illegal housing alternatives. The restricted access to land tenure and the difficulties in housing credit have caused irregular occupations in Brazilian cities forming slums, tenement housing or clandestine land subdivisions (Maricato, 2003). In this context, there is no layout regulation or infrastructure that meets the needs of residents. Brazilian Federal Constitution (1988) and the City Statute Law (2001) sought to correct distortions such as these stated. The negligence of regulatory and supervisory agencies did not allow them to fully succeed.

In countries with a market-oriented economy such as Brazil, urban land becomes a commodity, as it has use and exchange value. Largely, what values the land is its location and improvements that affect its surroundings. Such enhancements are usually urban infrastructure and equipment, which allow access to urban services and make housing construction, commerce, and industries possible. These spatial optimizations can be implemented by landowners, the state, private initiative, or even by a partnership between these agents (Gomes, 2009). Villaça (1986) states that when a person buys land, also acquires a location. In terms of improvements, its surrounding conditions can be produced. However, that specific location is something that cannot be reproduced. Therefore, the land owner of that has a monopoly on that location.

Many landowners keep their land unoccupied for long periods, awaiting infrastructure construction in their vicinity that can value their property. This is common in cities where agricultural land has been incorporated into the urban perimeter, generating large tracts that can be divided into plots (Conti, Faria, and Timóteo, 2014). The late 20th century is marked by major investments in infrastructure, demonstrating synchrony between the State and private interests. These investments, especially in urban mobility, allowed the city sprawl, urban fabric fragmentation and social segregation as housing options for higher income population are offered through enclosed condominiums. In the same trend, private malls and clubs expand, offering the security of a private and controlled space (Eppinghaus, 2004). According to Villaça (2003), segregation is a kind of social exclusion that presents a spatial dimension. The housing locations are the main form of segregation expressed in the urban space, as characterized by Castells (CASTELLS, 1983, p.210).

The outlined context took place along the 20th century throughout the country, generating transformations in the urban form of Brazilian cities, which resulted in current conflicts and problems, as presented in the case study of Campos dos Goytacazes.

FINDINGS

At end of the 19th century, the urban form of Campos dos Goytacazes, was conditioned to the characteristics of its geo-biophysical site, represented by extensive and fertile plains crossed by the Paraíba do Sul River (Fig. 2) with more than sixty ponds. The sedimentary soil is still in consolidation, susceptible to natural hydrological dynamics, such as floodings and inundations. These characteristics support agriculture, with highlights to the sugar cane plantation, but do not encourage the urban expansion that occurred later (Lamego, 1945).

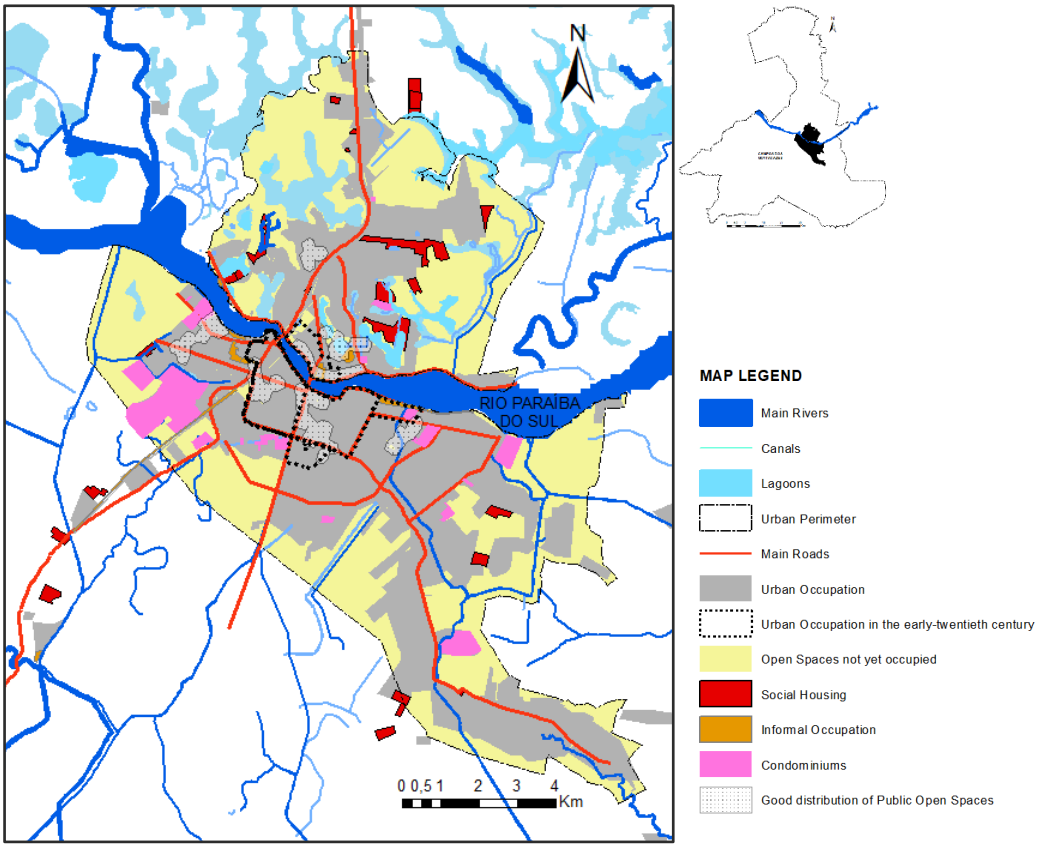

Figure 2: Urban Occupation Details in Campos dos Goytacazes/RJ. Created by the authors (2020) based on Aliprandi (2017).

The river was important to the urban core installation because it facilitated the sugar cane production flow to the sea and to the state capital. The existence of dozens of lagoons cracking the territory meant that the properties were split among countless landowners. Urban expansion was limited to the right bank of the Paraíba do Sul River, and sprawled over the structures that aimed to facilitate the production flow, with the construction of artificial canals and the railway. Thereby, the population had remained mostly rural until the end of the 19th century (Aliprandi, 2017).

Sugar cane production had became industrialized in the 20th century, what changed economic relations as many plantation owners were bankrupted, unable to join the competition with the industry production. The plant owners bought small lands, accumulating and expanding their properties. Consequently, the private lands became larger and belonged to a few (Lamego, 1945).

This new configuration endorsed the city's economic development with the creation of an industrial park, boosting local commerce and social relations, which became more stratified. The mercantile class emerged from a bourgeois formation, the oligarchy of mill owners, and major landowners and rural workers (Conti, 2013, p.102). With industrialization, people migrated from the countryside to the city. This background resulted in major urban interventions that became necessary due to the population growth and also because of landowners pressure, who wished to integrate and expand their properties. The urban interventions significantly altered the geo-biophysical site through sanitation implementation, construction of artificial canals and draining of lagoons through new technologies. It also enabled urban expansion to the peripheral areas by extensive road construction.

In the early 1980s, the city faced serious crises in sugar economy, resulting in industry bankruptcy, the acquisition of plants by outside industries and strong competition from São Paulo's production. On the other hand, the city envisioned great expectations with the oil discovery (Costa and Alves, 2005), . attracting companies and many job openings, causing rural exodus and migrations from other cities. Campos has become the largest producer of oil and natural gas in the country (ANP, 2004), with the inclusion of royalties and special participation in the city´s budget. However, the increase in its economy did not cooperate efficiently to improve the population's living conditions (Cruz, 2004).

This change in the city economic structure caused the disuse of large rural properties mainly dedicated to agro-industrial exploration. The interest in these lands and the changes in urban legislation resulted the inclusion of the former rural properties in the urban perimeter. The Urban Director Plan-PDUC (1979) had not yet addressed the social function of property and had neither brought housing projects that could solve or alleviate problems such as irregular occupations and the expansion of slums, it only affirmed its irregularity. In contrast, it brought alternatives to the major landowners who had been losing out with the fall of sugar and alcohol industry. It enabled them to work their land differently. In addition to rural activity, parts of their property were inserted in the urban perimeter, with flexible uses. This brought gains for the owners, who profited from the land sale, and also for the municipality, which started to get Property Tax on Urban Land.

The city started to sprawl to the peripheral districts where some improvements took place. This made the elite to envision new housing possibilities. One example was the investment in the road structure, resulting in the construction of new circulation systems to connect the center to the suburban areas. In this process we can conclude that changes in the economic relations influenced in the property forms and land use. This land-ownership structure and the original geo-biophysical site profile shaped the city's urban form. Currently, in the 2020s decade, this structure still directs growth and consolidation this way.

Urban problems were generated in this process, and they exist until nowadays. They are strengthened by planning, reaffirming the political and economic hegemony that has existed since the city formation. Among the problems we can mention: fragmented urban sprawl; fenced condominium models; the relation between housing location and population income; open space systems unevenly distributed; concentration of low-income housing near conservation areas; and social-spatial segregation.

Since the lands incorporated into the urban perimeter were not occupied immediately, fragmented sprawl occurred. Some of these spaces either have some legal hindrance, such as tax debts, or their landowners are awaiting property appreciation. These areas, while available to the real estate market, are not in compliance with its social function. On the left bank of the river, the Guarus district, urban fragmentation is mainly due to the characteristics of the site, where the lagoons still remain.

This nonlinear occupation creates a dispersed urban tissue that contains still non-parceled land, as observed in Fig. 2. This creates the need for investments in urban mobility and the implantation of urban services. Regarding open spaces, the city, with over 500 thousand inhabitants (IBGE, 2010), does not have parks and the population generally depends on small town squares, streets, and beach regions located outside the city. Also, for those who can afford it, there are private open spaces in fenced condominiums.

The expansion of the condominium pattern started in the 1980s, and mainly resulted in perimeter expansion and investments in mobility. The way in which these condominiums and subdivisions have been implemented has generated constraint areas, as they impede circulation between them and interrupt the continuity of the urban fabric as seen in the southwestern occupation (Fig. 2). In part, it happens due to the lack of specific regulations for this occupation type and of actions by public authorities in its inspection.

The high-income population mainly live in these condominium complexes that have better urban infrastructure and services, which corresponds, in some cases, to high rise buildings. However, the lower-income population is concentrated in peripheral informal settlements or housing estates, mainly formed by ground level houses. In general, the lower-income housing, either formal or informal, are located near water resources (Fig. 2). That represents social risks to the population and also implies difficulties in protecting these resources, because there is no basic adequate sanitation system in place, not even directions for use and appropriation of the lagoon or river margins.

In regard of peripheral occupation, Guarus stands out. That's due to not being a priority in urban investments throughout the 20th century. While the southern portion of the city received urban infrastructure, especially drainage, embellishment, and hygienical interventions, the northern portion received the population that was unable to fit in those standards. In the early 21st century, the segregation visibly marked by the river is reinforced by its location, by the State itself, by predominantly concentrating housing estates and by the existence of a social stigma that considers this area the periphery of the city.

Although the circumstances presentd, the city has many potentials, as there is a large reserve of open spaces and water resources, providing conditions for an integrated urban planning performance. Especially the creation of new spaces for leisure and environmental conservation, using landscape planning to create strategies that interfere in the urban form with more innovative and sustainable trends.

CONCLUSIONS

The occupation in Campos dos Goytacazes throughout the 20th century led to the landholding status that directs the growth and consolidation of the urban form. That maintains the old synchrony between actions from public authorities, real estate market and landowners. This process has originated and still sustains the identified urban problems:

- conflicts between low-income occupation and site elements, especially the ones located on lagoons and river banks;
- urban fragmentation, due to the permanence of open spaces inside the urban grid that haven't been parcelled and occupied since its insertion in the urban perimeter;
- expansion of the condominium pattern that do not collaborate with the urban space quality;
- verticalization and densification of high-income areas, especially in the city center and its surroundings;
- low-income areas in the peripheries with lack of infrastrucute;
- unsatisfactory service provided to the population demands, such as public open spaces for leisure and recreation;
- lack of public policies for preservation of water resources;

- spatial segregation condition, in which some areas of the city are more benefited than others in terms of urban infrastructure.

Despite all these problems, we observe that the city has potential for the creation of leisure and environmental conservation spaces, in a more balanced way concerning its distribution throughout the territory. Mainly because it still has natural site remnants, especially water bodies, and open spaces for expansion, which generates possibilities for integrated action to city planning. In overcoming the identified problems, the greater appreciation of the existing conditions is one tool along with the inclusion of landscape planning that considers the open spaces system as an important instrument in this process.

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