

ACCELERATED URBAN LANDSCAPE: FROM THE EMPEROR BRIDGE TO THE CONSTRUCTOR BRIDGE.

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ABSTRACT

This paper approaches the transformation of the urban landscape of Aracaju, a Brazilian Northeast city, located in the coast line, which has, in only 155 years, changed from the condition of village to a city-metropolis. The main case study involves the occurred transformations in a bordering landscape which can be seen from the main river of the city, in where two bridges are located. One of them has been inaugurated at the end of the 19 century and the other one at the beginning of the 21 century. The objective, besides presenting the accelerated transformations of the landscape of Aracaju in the land extension between the two bridges, is verifying the cognitive force of these architectonic elements in the daily one of the citizens. Results can be showed as the alteration in the legibility properties, accessibility, as well as the cognitive aspect and the interaction by the city-users.

1 INTRODUCTION

This paper presents urban transformations which have occurred in Aracaju, capital of the State of Sergipe, located at the Brazilian Northeast coast, through insertion of two bridges: the first one, the Emperor Bridge, was built as a little pier, at the time of Emperor Pedro II visited the region, in 1859; and the other one, the Constructor Bridge was recently inaugurated, which is a connector between two districts (Aracaju and Barra dos Coqueiros). Both bridges are located at the Sergipe River and they are visually far from each other, by only about 2 km. The Barao Rio Branco Avenue (and its continuity Ivo do Prado Avenue) notices all urban landscape alterations because it is a riverside via by the Aracaju side. Then, the other riverside (Barra dos Coqueiros district side) presents a great green area with many coconut palms. Constructions can be found rarely, and the city has only 20 thousand people.

Aracaju has the Atlantic Ocean from the East side; its land is located between two big rivers: The Sergipe River (in the north) and The Vaza-Barris River (in the South). The Aracaju district has 181,2km² and about 500 thousand people, which limits Barra dos Coqueiros district at the Northeast side (data from IBGE, 2008). (Fig. 1 and Fig. 2).

This paper does not try to discuss the causes which have defined the construction of the Constructor Bridge, but most important is to emphasize the way that landscapes of both cities have been changed and also to promote some reflexion upon possible future transformations since this new architectonic element.



Fig. 1 (On the left) The Aracaju region, showing the origin of the settlement at the Sergipe River; (on the right) Map of Aracaju in 1865, showing the Emperor Bridge location. Source: TRAMA Urbanismo (1995)/ Porto (1945).



Fig. 2 Aerial view showing Aracaju and Barra dos Coqueiros districts with the bridges location at the Sergipe River. Source: by the authors (2008).

For many years, the Emperor Bridge has worked as a historic mark and historic identity for the Aracaju citizens, passing through many architectonic alterations, but actually it would never work out as a bridge. It was not even a connection between two places. It has promoted the creation and growing of an urban identity for an eclectic city. Although, some questions have directed this research, such as: which kind of identity can be found on the relationship between bridges and the city? Which is the essential difference in cognitive terms for the citizens regarding to both bridges? Which are the topoceptive categories found on bridges characteristics that can allow the orientation of people in relation to the urban landscape?

As following, the historical importance of both bridges and how they are related with Aracaju landscape can be verified as well as The Barra dos Coqueiros city, contributing and allowing more transformations at the riverside, which has changed from a village character to a metropolis condition in only 155 years.

2 A LANDSCAPE HISTORY AT THE RIVERSIDE OF THE SERGIPE RIVER

The urban conception has originated from an orthogonal grid with a progress spirit at that period, in 1855. Aracaju did not have a basic infrastructure to be a capital of a State. Then, to provide passengers by boat to get on or off by the announcement that the Emperor and his group would come to Aracaju, the province president ordered to an engineer called Pedro Pereira de Andrada the construction of a pier in 1859. Nevertheless, this construction has had different names along the history, first it was named Disembark Bridge, also Governor Bridge, Metallic Bridge, President Bridge and since 1939, by decree-law, it has been called definitely as Emperor Pedro II Bridge, according to Medina (1999).

Essentially, this bridge has had political, religious and social functions. Since its first utilization by the Emperor and his group, the passers-by have been doctors, governors, the president and managers, besides the religious party of Bom Jesus dos Navegantes, always celebrated at the first day of the New Year, which many people follow a Jesus image by boat, ship, vessel, yacht...

Regarding the architectonic style and material, it was built with wood in a big arc form (a kind of allusion to the Triumph Arc in Paris). Although, the Bridge was ruined in 1867, it was rebuilt in 1904 by the governor Josino Menezes, who bought it from England. The silver seating would come from Rio de Janeiro, and also two little lateral towers would build to emphasize the entrance. Since then, the bridge worked as an encounter place, contemplation landscape and as a restrict pier.

New neighborhoods had been growing since the railway started to work out in 1914, as well as new highways in the last 30 and 40 decades. In 1919, the bridge was substituted by another one, because it was considered old-stylish. An official publication was printed to call projects to apply for the rebuilt, which should be about the substitution of the floor, concerning about water drainage, rebuilt of the lateral stairs, oil painting... The use of the bridge is maintained as a small pier. This reconstruction was assigned to constructor Hugo Bozzi by the Governor Pereira Lobo. This transformation was celebrated with many parties because it was coincident to the 100th anniversary of the bridge. At this part of the history, the Emperor Bridge is seen as a symbolic element to the society, according to Medina (1999).

The next bridge modification was at 30 decade, by German constructor Harendt Von Altesh, who projected a covering by cement, which many local newspapers brought news of rejection by the citizens because it did not combine with the building around and its landscape. In 1937, there was a bridge restoration and improvement with 34 meters forward to the river. In 1939, it was opened again.

Many high buildings were built at the Centre of the city and also at Siqueira Campos, a not so far neighborhood made so with the higher quantity of people in the city. In 1957, there was another restoration, however, with not much importance, some changing at the floor,

some ornaments got off, and some pathways allowed getting to the extreme side of the bridge.

According to Loureiro (1983), Aracaju, at the 60th decade presented a decreasing of the port activities. And the city has now a much stronger politic-administrative function, with many public employers who were the social class that could sustain the commerce at the central area, besides some tertiary activities which had a tendency to develop at local context.

The development in the 60th and 70th decades came from two main factors: a) economic one: with the oil discover in the region near the coast, which was responsible for the increase of salaries and also of land speculation, elevation of prices of almost all products, higher government taxes, increase of commerce and institutional activities; b) social one: there was a rural-urban migration, federal habitation politics for popular classes (Cohab), big habitational settlements located at the periphery of the city, bringing as consequences: there was an urban sprawling and also a constant and increase valorization of the urban land, according to Loureiro (1983).

Aracaju was around 300 thousand people in the 80th decade and there were many different categories of classes at the social-spatial-structure, according to Ribeiro (1989): a) The center of the Aracaju was an area with commerce and institutional activities; b) old neighborhoods around the Center area were destined to the media classes, residential area with locational facilities; c) Rich classes area at the center-south and near the beach, with high density and higher land value, also with locational facilities; d) speculation areas, low occupation but with speculation interest of the land, with accessibility to the coast; e) lower land value, to northeast and north areas, slums presence and a small commerce; f) recent occupation, to the North, Northwest, West and Southeast areas, lower density of people and lower land value, slums presence.

At the 90th decade, only two social-spatial processes have occurred: a) origin of the Great Aracaju, regarding the periphery areas of other near districts joined to the urban area; b) verticalization is intensified in areas with locational facilities (institutional and commercial activities, basic infrastructure, and so on), according to Nogueira (2006). The central area is more and more directed to commercial activities, there were some specific commercial points as shopping centers in the South areas; however they still are near from the central area. The bigger institutional use is located at the Northwest side. Industrial area is on the North and Southwest sides.

In the recent occupation (2003), urban area has involved the near districts, but the popular class is still located at the North and Northwest areas, with lower land value. There is an increasing of empty urban areas, economic segregation is more spatially notable because there are some specific "urban blocks" which have defined the space, as Nogueira (2004) has said.

On this recent economic and historic context, the Emperor Bridge has suffered some alterations; the last one was in the beginning of 2008 when the Municipal government has inserted some windows with glasses to close the bridge, which should protect a model sculpture of the city. However, some criticism and protests were presented by a group of people which asked for a patrimonial defense and fought for the free access to the bridge.

The Public Minister accepts the arguments and ordered to take off all strange materials, as published in a local newspaper (www.jornaldacidade.net/2008).

About the Constructor João Alves Bridge, it has not a long history as the last one, but presents a very strong identity with the citizens, being focus of many tourist incursions and also has a good accessibility to the other districts of the East side. Constructor Bridge was opened on the 26th of September, 2006, considered the bigger bridge of the Brazilian Northeast region (which has seven states, Sergipe is the smallest one) and also has been considered the development bridge, because it can connect, besides Barra dos Coqueiros, also Santo Amaro das Brotas, Japarutuba, Pirambu, Maruim, Carmópolis and Rosário do Catete districts. From the Constructor Bride it is possible to reach the seaport in 15 minutes, which presents more possibilities of investment and development to the region, according to other local newspaper (www.correiodesergipe.com.br). This bridge was projected by an Italian engineer called Mario de Miranda, and it has 1800meters of length with vehicles, bicycles and pedestrian lines (http://pt.wikipedia.org/wiki/Ponte_Construtor)

3 BRIDGES IMPORTANCE IN THE URBAN LANDSCAPE: LEGIBILITY AND INTELLIGIBILITY IN CHECK

There is a notable difference between the two bridges, besides historical context, there is a contrast of scale, style and construction materials (regarding to Eclectics versus Neo-modernism style); also related to the size (small versus big one); also to the function (attractive tourist pier versus functional bridge), however; the bigger similarity can be found on the relation of both bridges with the city, resulting on a important cognition which come from the citizens.

Spatial configuration of Aracaju, in some way, directs the view from the citizens to the bridges location, regarding the riverside avenue, Br. Rio Branco (and its continuity Ivo do Prado Avenue). Apprehension of the urban form can reveal some important information about movement and about how citizens use the city.

Many properties can be described from studies presented a long time ago but still in time, by Cullen (1983) as enlargement, straighten, barrier-building, relation, scale, (etc.) and also by Lynch (1980) as continuity, singularity, legibility (etc.), besides his visual analysis which organizes urban elements as paths, districts, borders or limits, nodes and landmarks. Topoceptive analysis at the geometric representation of the city can be found in Kohlsdorf (1996) related to the form composition of the landscape, as skyline descriptions (including delimitations of the superior part of buildings in contrast with the back side). Besides, since the 80th decade, researches from Theory of Space Syntax have looked for some relationship between the physical world and the mental world, as shown by Hillier and Hanson (1984). It could present some spatio-syntatic properties as local and global integration, connectivity, depth, etc., although specifically about cognitive processes the intelligibility property can describe the interaction between people and space, according to Hillier (1996) and Kim (2001).

The methodology utilized by this research is related to the analysis by some properties of the space and the interaction with people to comprehend how they can read the urban landscape, as users of the city. It should relate spatial aspects to the cognitive aspects. Legibility and intelligibility were chosen to this objective, which results come by questionnaires to the citizens who live in four different areas of Aracaju (Central, North,

South and Southwest areas), none of the interviewers could see the bridges at that moment, i.e., all of them should answer the questions by remembering and by their own experiences on the city. The other utilized method was a computational program (called Axman) which gave some interesting information, including quality and quantity data, about interaction people and space through intelligibility values.

Starting to verifying the skyline of the city in two moments, one of the past (around 1920) and other of present one (2009). It can be found different social and economic situations, focusing the landscape of the riverside of Sergipe river, as well as the bridges, checking styles, scales and materials (Fig.3 and Fig.4).

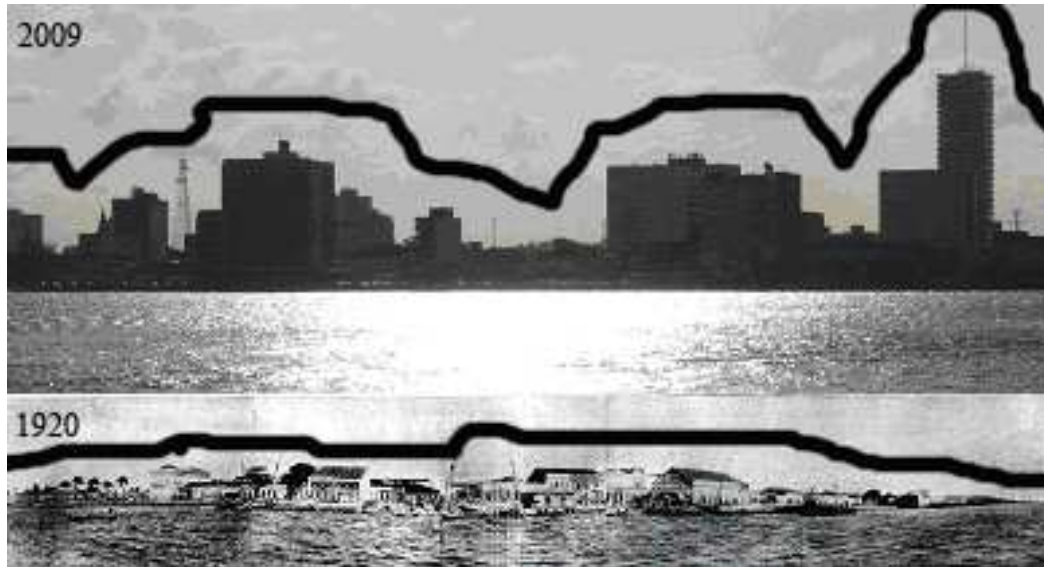


Fig. 3 Skyline of the Br. Rio Branco Avenue from the river in 1920 and in 2009.
Source: Silva (1920) /Photo: M. C. Giacomet, 2009.



Fig. 4 The Emperor Bridge (first layer, left side) and the Constructor Bridge (back layer). Source: by the authors (Photo: M.C. Giacomet, 2009).

One main focus of this paper is related to the conceptual comprehension of the words legibility and intelligibility, both of them with a strong cognitive relation, which tries to establish how the citizens are going to elect these bridges as part of their own history and as an urban representation element.

Legibility, according to Lynch (1983), is the facility whose parts of the city can be recognized and organized on a coherent structure for whoever is utilizing or observing it, as citizens, day-by-day users, visitants, tourists. Something that is legible is something

understandable, something which has translated or recognizable symbols or icons, regarding to the city itself, including it as a perceptual object of its inhabitants.

Intelligibility is the result of people and space interaction, i.e., it can be considered as the way through which people “understand” the living space. The word “*intelligibilia*” was offered by Plato at first time and reveals a cognitive meaning by Space Syntax Theory because demonstrates the relationship between local and global measures (local, speaking of neighborhood, and global as the whole city context) and this kind of relation affects the human perception about whole-part comprehension (Nogueira, 2004).

Intelligibility is related with human orientation and reference systems; higher is the intelligibility, much higher is the relation between cognition and configuration of the city, which makes increasing perception of legibility by citizens of that intelligible area. On unintelligible areas, there is a weaker relation between local and global, which affects quotidian activities because it diminishes their spatial sense at built environment, the result is lesser orientation. Intelligibility reflects memories and experiences of people about the living space. Cognitive meanings can be generated by intelligibility. Some recent researchers presented their results revealing that, since a high intelligible level is found in an area, the relationship between urban configuration and spatial cognition is stronger, increasing the legibility perception of local area (Kim, 2001).

Nogueira (2004) presents the intelligibility that was found in her research utilizing the Axman program by Space Syntax theory, which quantifies and qualifies this value for Aracaju in the recent period. High intelligibility values were found at the most integrated streets; especially in the Barao Rio Branco and Ivo do Prado Avenues (the riverside of The Sergipe River). This can be verified by analyzing the follow scatter gram. (Fig. 5)

The legibility can be verified since *in locus* researches and also by bibliographical references which have been produced by the local government and by newspapers to promote the bridges. Many tourist agencies have considered the bridges as historic or technological innovation symbols as well.

Important results can be found from cognitive research direct to the citizens by questionnaires in which preliminary information is presented as following: a) 50% of the interviewers mentioned the Constructor bridge as first recordation, 16,67% remembered of Emperor bridge and 33,33% to others; b) The most mentioned words to describe the Constructor Bridge were “transport” and “development”, meaning that this bridge represents the progress to their citizens; and also to describe Emperor Bridge, there were mentioned words by interviewers that are related to parts of urban landscape history of some way, examples, “pier”, “Emperor”; c) a question about the relation of the bridges with some form or element which could describe the bridges, the results were “pier function” to the Emperor Bridge and “geometric elements” (arc and lines) to the Constructor one; d) Clear colors were related to the Emperor bridge and Gray and blue colors with the Constructor one. Diverse meanings can be analyzed from these answers, it is an initial process which can receive contributions from many other researches, however directly these answers can show that both bridges are strongly realized and perceived, because any answer demonstrated ignorance about their existence. On the contrary, all people have related the bridges with their day-by-day activities and showed a kind of “familiar” proximity.

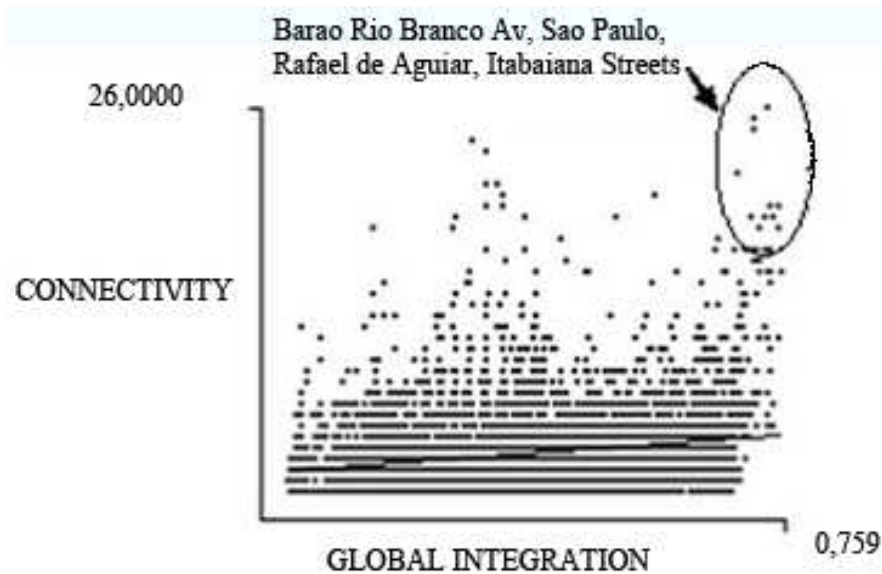


Fig. 5 Intelligibility of Aracaju (Connectivity versus global integration) in 2003 (each point at the scattergram means an avenue or street of the city). Source: Nogueira (2004).

4 CONCLUSION

Comparing results of legibility and intelligibility values, it is possible to conclude that the bridges work as a good influence about citizens' cognition processes, even though unconsciously the bridges produce a sort of aesthetic and historic sense, including the economic and social development sense. These results can demonstrate the relation between bridges and the urban identity, because it was proved that there is a people-city interaction regarding the landscape where the bridges were located. Although, a continuity of this research still can reveal important aspects about the way that people utilize their monuments and also regarding the river and its relation with cultural development and so many contributions that can be joined to this theme.

Imperator Bridge has a reference character; it is a landscape point at the river, which was and still has been a history canary, reflection of historic moments, religious events and strong academic discussions, fruit of a society that has been constructed since colonial period, then this bridge can be considered an identity element which was not unperceived at any time.

Constructor Bridge rescues the image of the media size city to reach a new step to be considered a big city. It interferes on urban landscape to re-adequate flows and scale to direct them to the development condition. The existent movement between Aracaju and Barra dos Coqueiros districts is constant; it can be said that the bridge is an element which is directed to the future.

The urban landscape on this part of the city can be interpreted from the past to the future, or remembering the past, since the foundation of the city, the urban landscape of the riverside of the Sergipe River has always been connected with leaving and arriving people, nowadays it is trying to put in the mystification that the eyes can reach over the river, the

two bridges seem to go to the same path, one related to the cultural and economic development of the city.

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