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ACCESS AND VITALITY IN THE PARANOÁ LAKE (BRASÍLIA, BRAZIL)

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ABSTRACT

This research aims at investigating vitality in leisure areas near urban water bodies and explores the relations that can be established between water bodies and the city. The theme is approached from a broad perspective and analyzes possibilities of fostering the appropriation of the shores by the population, by means of implementing morphological changes. The possibility of associating configurational variables to areas with greater vitality levels is thus the starting point for a discussion about how urban projects can create live spaces. The theory, methodology and tools of the Theory of Social Logic of Space are applied. The case study is *Projeto Orla* – an urban intervention project at the shores of Paranoá Lake, in Brasília, Brazil. Three research questions have been posed: 1) How does the lack of articulation between the city and leisure areas near water bodies affect the vitality of these spaces? 2) Can configuration be understood as a factor which contributes to the flow of people in the process of appropriation of these shores? 3) Which factors are responsible for the abandonment of some sites of *Projeto Orla*, even when the infrastructure was provided in accordance to the project? The results obtained for Paranoá Lake point to a disarticulation or lack or integration between the water body and the urban fabric as being the most marked aspect to justify low levels of vitality. Findings suggest the configurational aspect plays an important role in the urbanity of the case study, especially at the global scale.

KEYWORDS

Waterfronts, leisure areas, configuration, Brasília/Brazil, Paranoá Lake

1. INTRODUCTION

Several urban settlements have water bodies in its fabric or are adjacent to it and the vitality of waterfront spaces destined for leisure has sparked an ongoing debate. This paper, based on a master dissertation developed by Lembi (2015), aims to contribute to this debate and explores the role of spatial configuration in fostering such vitality. *Projeto Orla*, in Brasília/DF, was adopted as a case study. Spatial relations originating from morphological patterns are seen as a contributing factor to the dynamics of spaces in the city.

A crucial point in the dynamism of leisure spaces at the waterfront for urban life seems to reside in the articulation between cities and bodies of water, which is linked to characteristics of the location of the shores within the context of the urban system. In addition to the articulation between the parts of the whole, other aspects such as abandonment, underutilization, existence of residual areas, lack of infrastructure and fragile hierarchical position also seem to contribute to the lack of life in these spaces (for a further discussion, see Lembi, 2015).

Based on these premises, the research seeks to investigate the articulation between waterfront leisure spaces and the city. The analysis is carried out from a configurational perspective, implying the study of the relations between the parts that compose the urban system. The term "urban configuration" (Hillier and Hanson, 1984) is understood "not as a cluster of objects and forms-spaces distributed around the city, but as a set of articulated elements " (Medeiros, 2013, p. 102).

The mapping of local dynamics was incorporated to the procedures and has allowed the scrutiny of configurational data in order to discuss the synchronicity between the real and the potential performance. These elements were obtained from spatial modeling strategies based on Space Syntax. The focus of the interpretation is on the description of the system (axial and isovist representations), on the interpretation / quantification (processed data that result in measures or syntactic variables) and on the analysis of results / correlations (land use, street network, centralities, etc.), generated from city plans of Brasília and the blueprints of *Projeto Orla*.

The research aims to identify if the articulation between the city and the leisure spaces at the waterfront is decisive for the vitality of these areas and, based on the results, to define which "vitality variables" are associated with spaces of greater urbanity - which reinforces the exploratory nature of the research.

2. *PROJETO ORLA*

In the year of 1992, the then Department of Tourism of the Federal District – Detur, in partnership with the Brazilian Institute of Tourism – Embratur, hired the services of a consulting firm, TCI Planning, Projects and International Consulting Ltd., to carry out a feasibility study in an attempt to stop the continued privatization of the waterfront of Lake Paranoá and to bring Brasilia to the regional, national and International tourism scene. The studies comprised the document Tourism Framework and Structuring Plan of Brasília – *Projeto Orla* (Figure 1) intended to qualify and promote the touristic, economic and cultural exploitation of the remaining free areas located at the shores of Paranoá Lake, providing free access to the waterfront. It would be a broad project for the entire margin area developed in partnership with the private initiative, with the purpose of establishing quality public spaces for leisure.

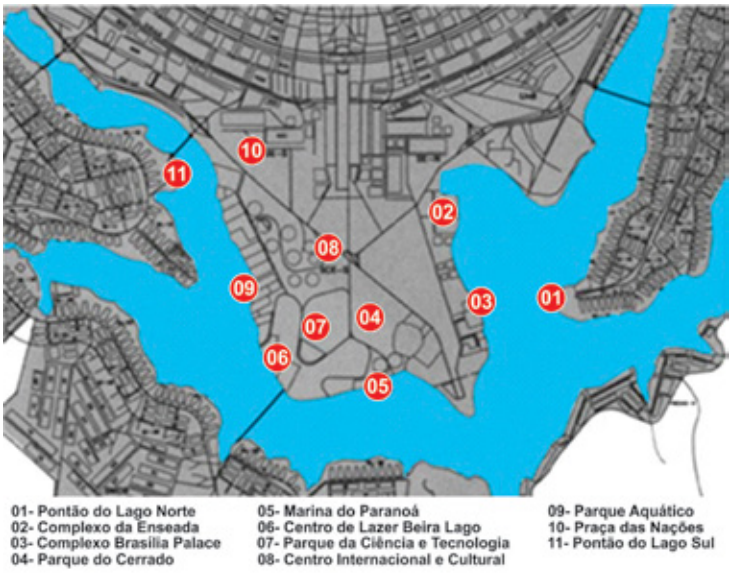

Figure 1 - Map of *Projeto Orla* (general plan), Activity Report - *Projeto Orla* - 1998 (with adaptations). Source: Botelho (2003, p. 40).

In 1992, *Projeto Orla* envisaged the implementation of ten sites of activities: (a) Site 1 – *Pontão do Lago Norte*; (b) Site 2 – *Complexo da Enseada*; (c) Site 3 – *Complexo Brasília Palace*; (d) Site 4 – *Parque do Cerrado*; (e) Site 5 – *Marina do Paranoá*; (f) Site 6 – *Centro de Lazer Beira Lago*; (g) Site 7 – *Parque da Ciência e Tecnologia*; (h) Site 8 – *Centro Internacional e Cultural*; (i) Site 9 – *Parque Aquático*; (j) Site 10 – *Praça das Nações*), with an estimated area of 780,000 m². At the same time, a group composed of representatives of various GDF bodies was appointed to follow the drafting of the proposal.

The project was restructured in 1995, so that leisure would be associated with both the development of economic activities with the generation of jobs and income and the democratization of access to the lake. Under the supervision and coordination of Terracap and the then Secretary of State for Urban Development and Housing – Seduh, the action then was carried forward, comprising eleven Sites – (k) Site 11 – *Pontão do Lago Sul* –, where various uses and activities were planned, including leisure, entertainment and lodging.

To interconnect the eleven sites, four circulation systems were proposed, the first one being the Lucio Costa pedestrian walkway, which would be the defining and structuring element of these spaces at the waterfront; the second a cycle path, which should run parallel to the avenue, but could sometimes move away from it and go through more isolated areas; the third option would be a low-speed vehicle (Light-weight Vehicle on Wheels - VLP) connecting the sites by an alternative route, which at times would run near the lake's shores; and finally, the public marinas and small piers to serve the water transportation.

Although the objective of *Projeto Orla* was, since its inception in 1992, to qualify and integrate the remaining public spaces, to promote the articulation between the city and the lake and to foster the free and public use of the waterfront, it has not been able to achieve this to the present day. Due to lack of political will, the project was only partially implemented. In addition, the circulation systems initially proposed for integration between the eleven sites was never implemented (for further details about the *Projeto Orla*, see Lembi, 2015).

3. THEORETICAL, METHODOLOGICAL AND TECHNICAL ASPECTS

3.1. THEORY /CONCEPTS

The conceptual scope adopted is based on the Theory of Social Logic of Space or Space Syntax (Hillier and Hanson, 1984; Holanda, 2002; Medeiros, 2013), which provides strategies for the investigation of spatial relations based on the principle of configuration. It is assumed that the reading of the urbanization process and the dynamics / vitality of the spaces that result from it can be better understood from its configurational reading.

3.2. STAGES OF RESEARCH

Phase 01 (Configurational Modeling) – Production of configurational modeling from Space Syntax, with focus on the description of the system (axial and isovist representations), Interpretation / quantification (processed data generating measures or syntactic variables) and analysis of results / correlations (land use, street network, centralities, etc.), derived from city plan of the city of Brasilia and the blueprints of *Projeto Orla*. The interpretations were developed in three stages: level 1 – area corresponding to Brasilia's Pilot Plan and the regions called *Lago Sul, Lago Norte, Paranoá, Varjão* and the *Setor Habitacional Taquari*, altogether called *Sistema Lago* (Lake System) (Figure 2); level 2 – the Federal District and level 3 – Brasilia's Metropolitan Area – AMB.

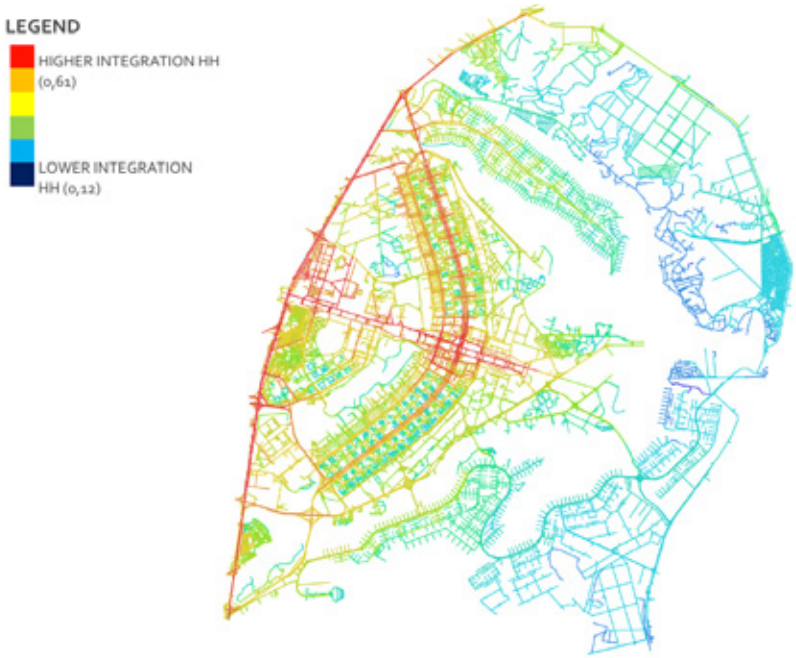

Figure 2 - Axial map of the Pilot Plan and Lake Region in Brasília – Lake System (Measurement of Global Integration Rn). Source: Dimpu/UnB Group (adapted).

Phase 02 (Mapping of Local Dynamics) – Mapping of the local dynamics to contrast with configurational data, in order to verify real and potential performance based on the modeling. The data collected allowed us to identify the sites of greatest movement in each of the sites of *Projeto Orla*, in order to search for the correspondence between the use of spaces, where there is a greater concentration of people or activities, and potentially more attractive areas.

Phase 03 (Consolidation of Results and Discussion) – Articulation of the findings, to contrast the results from the scrutiny of the object of study with the corresponding research questions.

3.3. TOOLS / INSTRUMENTS

There are three Space Syntax representation strategies used in the study of urban settlements and two of them are relevant to the present research: the axial map and the visibility/isovist map. According to Medeiros (2013, p. 149), each of these strategies is related "to an aspect of how individuals experience and use space: people move along lines (linear representation), group into convex spaces (convex spaces) and dominate a visual field from any given point (isovist)".

3.4. OBJECT OF STUDY AND CONFIGURATIONAL MODELING

For the study of the *Projeto Orla*, 13 areas were explored comparatively, (11 sites, and two places called *Calçadão da Asa Norte* and the *Ermida Dom Bosco*). Subsequently, five areas were selected to map the local dynamics, aiming to represent extremes of little or intense vitality of the public space. Two of them are part of the original ten sites created in 1992: *Brasília Palace Complex* (Site 3) and *Centro de Lazer Beira Lago* (Site 6). The third is the *Pontão do Lago Sul* (Site 11), incorporated to *Projeto Orla* in 1995. The others were incorporated into *Projeto Orla* during the administration of Governor Cristovam Buarque: *Calçadão da Asa Norte* and *Ermida Dom Bosco Park*.

In the areas described, the axial configuration and visibility tools were applied, focusing on two different situations: the first focus is the pedestrian, therefore the tools were applied to the official pedestrian pathways, that is, paved sidewalks (pedestrian map); the second focus is the automobile, so the tools have been applied to vehicle parking lots and streets (vehicle map).

4. DISCUSSION OF RESULTS

The variables were initially developed for 13 areas in order to measure connectivity, global integration and local integration solutions. Next, the axial maps and visibility maps were compared with the data obtained in the mapping of the local dynamics of the five selected areas of interest, to include (a) the main attractive element; (B) accesses; (C) identified uses; (D) identified profiles; (E) state of preservation and maintenance; and (f) safety.

The comparisons carried out resulted in a set of findings, summarized in Tables 1, 2 and 3 and consolidated as follows.

COLOR SCALE - PERFORMANCE / VALUE (Tables 1, 2 and 3)

Worst  Best

	Lake System											
	Pontão do Lago Norte (Polo 1)	Complexo da Enseada (Polo 2)	Complexo Brasília Palace (Polo 3)	Parque do Cerrado (Polo 4)	Marina do Paranoá (Polo 5)	Centro de Lazer Beira Lago (Polo 6)	Pq. da Ciênc. e Tec. (Polo 7) / Centro Inter. e Cultural (Polo 8)	P. Aquático (Polo 9)	Praça das Nações (Polo 10)	Pontão do Lago Sul (Polo 11)	Calçadão Asa Norte	Parque Ermida Dom Bosco
Connectivity												
Global Integration Rn												
Local Integration R3												

Table 1 - Synthesis of the axial measurements referring to access routes to the 13 areas (Lake System)[1]

1 The colors correspond to the values obtained, comparatively, for each one of the access routes to the thirteen areas (11 sites and 2 additions). The warmer the color, the higher the value; the colder the color, the lower the value.

	Independent Systems (Pedestrians)				
	Complexo Brasília Palace (Polo 3)	Centro de Lazer Beira Lago (Polo 6)	Pontão do Lago Sul (Polo 11)	Calçadão da Asa Norte	Parque Ermida Dom Bosco
Axial Measures					
Total Number of Lines*					
Average Leght of Lines					
Compacness					
Connectivity					
Global Integration Rn					
Local Integration R3					
Sinergy					
Inteligibility					
Visibility Measures					
a) Visibility Graph					
Visual Connectivity					
b) Isovists Properties (all points to all points)					
Isovist Area					
Isovist Compactness					
Isovist Max Radial					
Isovist Occlusivity					
Isovist Perimeter					
c) Visibility Relationships					
Visual Clustering Coefficient					
Visual Control					
Visual Controlability					
Visual Integration HH					
d) Metric Relationships (Rn and R300)					
Rn					
Metric Mean Shortest-Path Distance					
Metric Mean Shortest-Path Angle					
Metric Mean Straight-Line Distance					
Metric Node Count		NA	NA	NA	
R300					
Metric Mean Shortest-Path Distance					
Metric Mean Shortest-Path Angle					
Metric Mean Straight-Line Distance					
Metric Node Count					

Table 2 - Synthesis of axial and visibility measurements for pedestrian pathways for 5 selected areas (Independent Systems)[2]

2 For the axial measurements, we completed the table with a range of values, according to the variable and each of the five areas of interest. The warmer the color, the higher the value; the colder the color, the lower the value. However, for the variable total number of system lines *, the chromatic scale is inverted. For the measurements of visibility, we completed the table with a range of colors, according to the variable and each one of the five areas of interest. The warmer the color, the greater the correspondence between the variable and the actual movement, the colder, the less the correspondence. Therefore, in this case, the analysis is qualitative, since we do not explore the numerical measures, but rather the synchronicity between variables and movement of pedestrians and vehicles. This way, it is a first attempt to identify if one area has more or less synchronicity than the other. Blank cells indicate unprocessed variables, which we assume is a limitation of the Depthmap® software for analyses that require greater robustness. NA indicates a situation is Not Applicable.

	Independent Systems (Vehicles)				
	Complexo Brasília Palace (Polo 3)	Centro de Lazer Beira Lago (Polo 6)	Pontão do Lago Sul (Polo 11)	Calçadão da Asa Norte	Parque Ermida Dom Bosco
Axial Measures					
Total Number of Lines*					
Average Leght of Lines					
Compacness					
Connectivity					
Global Integration Rn					
Local Integration R3					
Sinergy					
Inteligibility					
Visibility Measures					
a) Visibility Graph					
Visual Connectivity					
b) Isovists Properties (all points to all points)					
Isovist Area					
Isovist Compactness					
Isovist Max Radial					
Isovist Occlusivity					
Isovist Perimeter					
c) Visibility Relationships					
Visual Clustering Coefficient					
Visual Control					
Visual Controlability					
Visual Integration HH					
d) Metric Relationships (Rn and R300)					
Rn					
Metric Mean Shortest-Path Distance					
Metric Mean Shortest-Path Angle					
Metric Mean Straight-Line Distance					
Metric Node Count		NA	NA	NA	
R300					
Metric Mean Shortest-Path Distance					
Metric Mean Shortest-Path Angle					
Metric Mean Straight-Line Distance					
Metric Node Count					

Table 3 - Synthesis of axial and visibility measurements for vehicle lanes and parking lots for 5 selected areas (Independent Systems)

Most sites have similar values for measures of connectivity, global integration and local integration. Within the selected areas, however, *Complexo da Enseada* (Site 2) and *Calçadão da Asa Norte* stand out, both represented with warmer colors (red and orange) in Table 1. *Marina do Paranoá*, on the other hand, shows the worst of the performances, with a predominance of cold colors in the three variables. In the comparative global perspective, however, they are spaces that tend to the homogeneity of performance.

These values indicate that the sites in general are poorly connected, especially when compared to those of the EPIA and the Monumental Axis (the two most emblematic avenues of the urban system, one for its intense flow and the other for its civic character and for how it symbolizes the notion of a capital itself), and in some cases with the average of the Lake System and the Federal District. The result correlates to the urban makeup of Brasília itself (understood within the scope of the Federal District, but which also reproduces the discontinuities within the Pilot Plan), which is associated with a labyrinthine and fragmented configuration, making accessibility difficult, as shown by the configurational readings (Holanda, 2002 and Medeiros, 2013). The sites, therefore, are also fragile areas integrated to the immediate urban fabric but far from the Central Zone of Brasília and the EPIA. As a result, Lake Paranoá is not part of the integrating core of the city.

Still for the Lake System, but now only considering the access streets of the five areas of interest, *Calçadão da Asa Norte* stands out with higher values of global integration. It is the most easily accessible place from all the axis of the system analyzed, which perhaps explains in part why it is one of the areas with greater vitality in the sample. It is worth mentioning that in the vicinity there are high flow streets which act as public transportation corridors, such as the *Eixo Rodoviário* and L2 North Avenue, facilitating wide access. In addition, the site has the highest values of connectivity and local integration R3. In the opposite end of the spectrum, *Ermida Don Bosco* stands out with low values of global integration, as can be seen on Table 1, therefore it is the most segregated site in the sample. Despite these unfavorable values, *Ermida Don Bosco* has values of connectivity above average and local integration R3, which points to the fact that it is internally well articulated, considering the immediate environment. *Pontão do Lago Sul* and *Beira Lago* have low values for all three measurements, generally below the average of the sites (In Table 1 the cooler colors predominate: shades of blue). However, all three areas have a considerable flow of people.

Complexo Brasília Palace (Site 3) has above average results for all three measurements (indicated with colors ranging from green to orange, in Table 1). However, among these five areas of interest, it is the one that appears to have the lowest concentration of people based on in loco observations. Despite the location of relatively easy access, local attributes do not contribute to the attraction and permanence of people: There are large empty areas, public equipment is lacking, and consolidated buildings in the vicinity or inside the site act as barriers, such as the flats located there.

Roughly, all these places show a moderate movement of people that fluctuates throughout the week, predominantly on weekends. In all cases, however, the configuration justifies a condition of isolation, which implies a lower vitality than it could achieve, given their arrangement in the urban system (global perspective of the city).

For the purpose of comparison, restricting the configurational modeling to the legal areas of the sites, the Independent Systems were evaluated (internal reading, including access streets). In addition to comparing connectivity, global integration and local integration variables previously explored for the Lake System, we also sought to establish their correlations (intelligibility and synergy). Three additional measures of interest were also generated from the axial maps: total number of lines of the system, average size of the axis and compactness (number of axis per area).

From the set of results, *Calçadão da Asa Norte* stands out from the other areas for the high averages of global integration, synergy and intelligibility (indicated in orange and red, in to Tables 2 and 3), both for pedestrian pathways as for streets and parking lots. Connectivity and local integration R3 measures, which relate to local interpretation, are similar to the average

of the other sites. This demonstrates that the configuration dynamics favors the movement of people, which, added to other attractions or attributes, such as free access, position in the urban system, and the numerous activities that this free access to the lake offers, would explain the great vitality of this area. On the other hand, *Calçadão da Asa Norte* has the lowest total number of lines, both for vehicles and pedestrians (Indicated in red in Tables 2 and 3, since for this measure, higher values mean compromised performances, hence the inversion of colors), resulting in low values of compactness, which in turn is related to the small scale (it is the smallest of all the sites) and the extreme linearity of this system. However, the space presents the highest values for the criteria 'average size of the axis' for vehicles (Table 3) and the second largest for pedestrians (Table 2), which would somehow justify their high values of global integration, since larger axis more effectively cross the system and connect more parts of the whole, implying greater accessibility.

On the other hand of the spectrum we have *Ermida Dom Bosco* presenting the opposite characteristics, for both the pedestrian pathways and streets and parking lots, with the lowest values of compactness, connectivity, global integration, synergy and intelligibility among all areas. The local integration R3 value for pedestrian pathways is also the lowest of all the areas (all these measurements are indicated in dark blue in Tables 2 and 3). The place has the second largest total number of lines for the pedestrian pathways (indicated in light blue in Table 2, since for this measurement, higher values mean compromised performances, hence the inversion of colors), which reveals a structure of more labyrinthic pathways resulting from the large voids and discontinuities in the use of space. This situation leads to dispersion, which explains its low values of compactness (the placement in the physical site must be considered here). *Ermida* has significant values for the criteria the 'average size of the axis', both for pedestrians and for vehicles (green and orange, in Tables 2 and 3), but this does not result in an increase in overall integration. However, it should be mentioned that the site has a considerable movement of users on weekends and holidays, which is certainly associated with other aspects, such as the possibility of contact with nature, free access, contact with water, beautiful view of the city, etc.

The *Brasília Palace Complex* (Site 3), for both pedestrians and streets and parking lots, has the highest connectivity values (in red, in Tables 2 and 3). There are high averages in both systems (pedestrian and vehicles) for measurements of global integration, local integration R3, synergy and intelligibility (indicated in orange and red, according to Tables 2 and 3). However, the configuration dynamics do not coincide with the flow of people in this area, which appears to be the one with the least vitality. The findings indicate that performance is associated with other factors such as low values of compactness, both for pedestrian pathways and for the streets and parking lots (light blue and green colors, according to Tables 2 and 3), a product of a great predominance of voids. The reading of these measures, therefore, would not explain everything, since *Calçadão da Asa Norte*, which has a large flow of people, also has low values of compactness. Therefore, once again, the potential of the configuration seems to be underused, since there is a set of characteristics that end up pushing visitors away: lack of diversity of uses; an excessive number of barriers demarcating the site, and lack of public equipment such as benches, garbage cans, proper lighting throughout the area of the site.

Centro de Lazer Beira Lago (Site 6) has significant connectivity values, both for pedestrian pathways and for streets and parking lots (orange and green colors in Tables 2 and 3). It presents, however, low values of global integration, both for pedestrians and vehicles (indicated in light blue in Tables 2 and 3), which are only not lower than the values for the *Ermida Dom Bosco*. It has significant numbers of local integration R3 only for the pedestrian pathways, since for the streets and parking lots it has the lowest values (indicated in dark blue, in Table 3). It comes in second to last for synergy, both for the pedestrian map and for the vehicle map (indicated in light blue in Tables 2 and 3), once again, only better than the *Ermida Dom Bosco*. Despite the aspects mentioned above, *Centro de Lazer Beira Lago* has significant values of intelligibility, mainly for the pedestrian map (green color in Tables 2 and 3). It also presents the second largest value of compactness, both for pedestrians and for vehicles (indicated in orange in Tables 2 and 3), however it presents more irregular fabric, considering the low values for the measurement of the average size of the axis of this system (light blue in color in Tables 2 and 3).

Pontão do Lago Sul (Site 11) has significant connectivity and global integration values and the highest local integration value for vehicles and the second highest for pedestrians (red and orange colors, Tables 2 and 3). The site also presents significant values for synergy, mainly for the pedestrian pathways (in green, Table 2), but it is but the last place for intelligibility, both for the pedestrian map and for the vehicle map (light blue, Tables 2 and 3). It has the lowest value for the criteria 'average size of the axis' (indicated in dark blue in Tables 2 and 3), which reveals the more irregular layout of its pedestrian and vehicle paths. However, it presented the highest values for the criteria 'total number of lines in a system' (indicated in dark blue in Tables 2 and 3, since for this criterion higher values mean compromised performances, hence color inversion), and compactness (in red, in Tables 2 and 3), for both pedestrians and vehicles, which reveals a more balanced relationship between fulls and voids.

We also independently analyzed each of the five areas which were the focus of this study, called Independent Systems. Therefore, from the axial maps, both for the pedestrian pathways (pedestrian map) and for streets and parking lots (vehicle map), we obtained three variables (connectivity, global integration [HH] and local integration [HH] R3). In this case, in addition to the quantitative interpretation (numerical measures), we tried to evaluate the degree of correspondence between variables and movement of pedestrians and vehicles.

In general, when analyzing connectivity measures, global integration and local integration R3, both for the pedestrian map and for the vehicle map, there is a good correspondence between pedestrian flow and vehicles and the axis with the highest values for the measurements. Correspondence is believed to be associated with the small scale of most of these systems. *Calçadão da Asa Norte* is the site in which correspondence occurs to a greater degree, both for pedestrian paths and for streets and parking spaces. This system is characterized by its small scale, extreme linearity and uniformity of streets and pathways. *Complexo Brasília Palace* also showed a good synchronicity, which is believed to be associated with its great orthogonality, which results in higher values of connectivity and integration, as well as higher values of synergy and intelligibility.

For the visibility measures, Tables 2 and 3 were filled with a range of colors, according to the variable and each of the five areas of interest. The warmer the color, the greater the correspondence between the variable and the actual movement, the colder, the less the correspondence. Therefore, in this case, the analysis is qualitative, since we are not talking about numerical measures, but about the synchronicity between variables and movement of pedestrians and vehicles. Furthermore, it is not necessary to have all the colors of the chromatic gradation: if all the sites reached a high correspondence between the configurational performance and the movement, they would all be represented in red.

The prevalence of cold colors over warm one is easily noticeable in the tables, for pedestrians as well as for vehicles, mainly for the vehicle map, which indicates that to a great extent there is little synchronicity between the variables of visibility and the real movement. At the local level, the potential of path configuration is underused. This shows that other factors, such as the presence of the lake, are more determinant than configuration in conditioning of the flow in *Projeto Orla*. *Calçadão da Asa Norte* and *Centro de Lazer Beira Lago* are the sites where correspondence occurs to a greater degree, especially for pedestrian pathways. These two systems are characterized by (a) their small scale, the smallest among the others analyzed (69.64K sq.m and 101.92K sq.m. respectively); (b) homogeneity of the path network and also (c) a rigidity that conditions the displacements.

5. CONCLUSIONS

The study points out that a series of configurational attributes (axial and visibility measurements) present a similar performance for most sites interpreted (micro level). Internally, connectivity and global and local integration have a strong relationship with movement (regardless of its intensity). It is worth mentioning that the configuration evaluated through Space Syntax is always potential, as the literature demonstrates, being traditionally compatible with reality (Hillier and Hanson, 1984; Holanda, 2002; Hillier, 2007; Medeiros, 2013). In the areas investigated

in the case study, this potential sometimes corresponds to reality, sometimes not (Tables 2 and 3). When there is a correspondence there is a synchronicity between configuration and movement, and when there isn't, other factors are a priority for the conditioning of the flow, including the state of conservation of the equipment, the presence of furniture, sense of safety, etc.

Therefore, it is believed that the abandonment or non-appropriation - understood here by the diversity of users - of areas of *Projeto Orla*, even when the infrastructure was offered / executed, is much more related to the fact that all these areas are not accessible to the city as a whole, that is, the sites have a low configurational performance from a global perspective (macro level). Other clearly configurational issues are related to the strong presence of voids in Brasília, which promotes significant discontinuities in the fabric, leading to poor performance. A complementary morphological aspect is the land use: for this reason, the areas around the sites are almost always monofunctional, hampering the diversity of people (although residential use is recurrent around some of the areas, which in principle would be positive).

The research presented the applicability of Space Syntax in the study of these peculiar areas, which made it necessary to adopt a series of specific criteria in the application of the analysis tools. In addition, it has brought contributions that may be relevant to the field of project and the urban design of open public spaces on the waterfront by confronting the spatial dynamics of movement and use and occupation, between real and potential performance obtained from modeling. The action seems to provide support for designing spaces along the shores of water bodies that attract greater vitality and provide the conditions for people to spend time.

A conclusion reached is the interpretation that the connectivity and integration variables are both, the clearest to investigate the subject, and the more easily obtained, which is relevant for expedited analyses - the others seem to derive from these two, with slightly different results, but pointing to an approximate performance.

In fact, there is criticism that the results of the application of the Space Syntax tools are better for dense structures and are worse for empty structures, but the literature is vague in the discussion. Therefore, what the work provides as contribution is to prove that a certain set of variables is not actually applicable in this context of the "empty" city, unlike others that apply even in this case. The findings reinforce the experimental character of the research, proving a set of presumed but unproven perspectives.

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