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Urbanity in Brasilia’s superblocks

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Abstract

The literature about Brasilia is almost consensual stating that the residential areas (superblocks) are monotonous and deserted. But a closer look can perceive variations in the configuration of its public spaces and patterns of copresence. The hypothesis of this paper is that these behaviors are linked to certain spatial variations that followed the implementation of the city. The research corroborates studies in urban planning that investigate the relations between architecture and human behavior. The sociological performance is simultaneously associated to global and local spaces attributes. Various aspects concern this: accessibility relations between public spaces; number of doors that open to them; visual permeability between open spaces, and between public and private space; size of the spaces; number, type and distribution of activities; availability of shaded areas and places to sit. The analysis starts with the comparison between spatial patterns and encounters system of eight superblocks distributed by Pilot Plan of Brasilia. To analyze the spatial patterns, space syntax tools were used and a field work depicting activities and facilities in each superblock was carried out. The analysis of social departed scheduled observations of subjects and activities in public spaces. Data is processed by the statistical tool Principal Components Analysis (PCA) for validation of the relations among spatial and social attributes’ variables.

Keywords

Brasilia, superblock, public space, setting, social behaviour.
1. Introduction

Several authors believe that the space influence on human behavior: (Jacobs 2007); (Gehl 2006); (Whyte 2009); (Hillier and Hanson 2003); (Holanda 2002); (Tenorio 2012) etc. This current research seeks to understand how the spatial characteristics may favor or not the presence and interaction of people in public spaces. Starting from the principle that the city's main functions are the people meeting and exchanges, the good performance space is the one which provides such relationships.

Most studies in this area emerged from the revelation of the problems encountered in modern designs implemented: a concrete experience has provided a review of the principles of modern urban planning in the design of cities. For many researchers, the zoning of activities, isolation between buildings and abundance of green areas implicated in the increased distances to travel, reducing the diversity of activities in the same area, monotony and consequent "road's death" (Holston, 1993), in other words, the possibilities of meeting and staying in public spaces in this context would be reduced.

Brasília, the city international symbol of the Modern Movement, has been the target of the critique of the urbanization model: “In Brasília, the urban public of open spaces from other Brazilian cities simply disappeared” (Holston, 1993, p. 312), “the city is a catastrophe on the level of observer. [...] If you are not in a plane or helicopter or car – and most people who live in Brasília are not – there is no much to be happy” (Gehl 2010, 197).

Recent studies reveal that the city has several positive aspects that make it a good place to live. According to Branco (2006) residents identify with the city, recognize its beauty and appreciate the natural aspects. Unlike the complete desertification that the critical literature describes, Brasília has urbanities spread out in its territory (Holanda 2010), though in a peculiar way, compared to the pre-modern city.

In residential areas of the Pilot Plan with configuration truer to modern principles, the use of public spaces is not restricted to commercial areas, but also occurs inside the superblocks. Although the superblocks presenting a certain uniformity on configuration it can be seen some variations: activities in the buildings and in open spaces inside and around the superblock; the implantation of the buildings; built in types; the presence of barriers to movement; distribution of leisure and sport equipment.

This paper assumes that there is a relationship between variations of use and the spatial characteristics of each superblock and aims to identify them. To develop the analysis were selected eight superblocks located in Pilot Plan: 109S, 207S, 308S, 412S, 113N, 209N, 315N and 408N. The choice of the sample had as criteria: diversity of uses and spatial patterns; superblocks located in the two districts (South Wing and North Wing) and each track ("200" and "400" on the east and "100" and "300" on the west).

The text is divided in three parts: problem, method and results. The first contains a brief characterization of Brasília and superblocks, emphasizing aspects of spatial design. The second part presents the method which comprises the evaluation on two levels: physical and social attributes. The third part looks at the results and validates the variables through statistical tool "Principal Components Analysis (PCA)".

2. Problem

The Brazilian capital Brasilia was designed in 1956 by Lucio Costa. The planned city for 500,000 inhabitants currently has 2.5 million (IBGE 2010) and is composed of a variety of settlements, from the most traditional to the genuinely modern (Holanda 2002). The original core called Pilot Plan (PP) corresponds to only one of the 30 administrative regions that integrate the metropolis.

The PP was expected bordering Paranoá Lake, structured on two axes cross, inserted in an equilateral triangle (Costa 1991). The major axis – Road – corresponds to the residential area and the transverse axis – Monumental – the civic and administrative centers. At the intersection of these was situated the Road Platform and entertainment center in its surroundings. The distribution of
residential areas and the urban center occurred symmetrically in relation to the Monumental Axis, composing neighborhoods called North Wing and South Wing.

Costa established four configurationally types: residential, monumental, gregarious and bucolic. The residential is composed of buildings up to six floors and the others with buildings up to sixteen. The monumental stands out among the larger distance between the buildings, while the gregarious is denser, with taller buildings and closer. The bucolic corresponds to vegetation that permeates the entire city, especially in residential areas and on the edges of the lake.

The plot of the city was composed of a hierarchical road system, with slower roads inside the housing sectors (road system like cul de sac) and higher speed out of them. The aim was to prevent undesirable flows of vehicles inside the residential areas and allow the free transit of pedestrians in public spaces and under the buildings through the pilotis.

The residential areas would be composed of superblocks with dimension of 240 x 240m, with residential buildings, primary school and kindergarten inside. An outer band would be intended for commercial buildings and at the confluence of four superblocks, would be community facilities (secondary schools, theaters, churches and recreational areas). Currently, much of the land for such facilities is empty.

The proposal for the local commerce provided a linear block of twinned shops located on the banks of the road system. The shops would open doors into the superblock, while the side facing the road would be designed to service access and parking area. This setting has changed in so far as that the city was being built. In the South Wing, the blocks have been given the front facing the service road and North Wing were built smaller blocks, separated and with openings in all faces.

The proposed residential sectors resembles the Neighbourhood Unit, however in Brasilia the equipment for collective use are not inside the superblocks, but parallel to the road system that articulates. “This interface promotes an exchange that transcends neighborhood relations by creating spaces of mediation between the resident domain and the domain of the citizen” (Ferreira and Gorovitz, 2009, p. 22).

In the internal organization of superblocks, Costa (1991) allowed that the deployment of the buildings were free and varied, but established some basic principles to follow: overall dimensions uniform maximum, up to six floors with pilotis; peripheral band lined with 20m wide; and separation of pedestrians and vehicles traffic. These characteristics have enabled the residential sector to present a uniform structure even with variations in size and shape of buildings, installation of the blocks and finishing materials used.

Although the configuration of the residential areas is fairly homogeneous, there are variations in the use of its public spaces. There are superblocks that remain empty or with few people in their public spaces in most of the time (e.g.: 109S, 207S, 408N and 412S), while others have a more intense use both on the edges and in the kernel (e.g.: 308S, 209N, 315N and 113N).

Spatially, the superblocks vary regarding the deployment of the buildings, the treatment gap, the composition of the openings in the facades, the degree of visual permeability and movement at ground level etc. The freedom deployment of residential blocks and the changes that have occurred over the deployment process of the city allowed the formation of public spaces with various configurations, sometimes more propitious to movement and permanence, sometimes less.

### 3. Method

The method developed to analysis the superblocks departed from some assumptions discussed in the literature on space and human behavior. Typically, the public spaces considered of quality are those that allow people with different characteristics, isolated or in groups to develop various stationary and movement activities.

There are several speculations about the spatial attributes responsible for co-presence. Hillier and Hanson (2003) call attention to accessibility, considering that more integrated spaces empowers the
movement of people. Other authors emphasize the tendency for smaller spaces and with better defined boundaries become more welcoming and more conducive to concentration of people and stationary activities (Holanda 2002) (Tenorio 2012).

The visual permeability between spaces is also considered a major factor in the safety and encouraging movement between places. For Jacobs (2007), the sense of security arises from the possibility of contact between people inside and outside of buildings. According to Gehl (2006) this contact is viable to the fifth floor, which is generally applicable to superblocks whose templates do not exceed six floors.

Whyte (2009) believes that the public spaces should have activities that attract people and provide conditions for them to stay. Varied activities, concentrated in the same area imply greater presence of people than if they were dispersed, because the diversity of uses in the same area will attract a wider audience and with different needs and expectations (Jacobs 2007) (Whyte 2009) (Holanda 2002) (Tenorio 2012).

Another important aspect is the presence of various types of building standards in the same urban area (Jacobs 2007) (Holanda 2010). While Jacobs (2007) refers to the age of the buildings, Holanda (2010) deals with other attributes (overall dimensions, whether they have or not pilotis, elevator and underground garages, lot sizes and building area etc.). In both cases, the variations of the buildings are seen as factors that affect the value of the property and the potential audience. The more varied are the characteristics, the more diverse the audience.

Many of the mentioned spatial attributes are presented in more than one discourse, though with different emphases. The Theory of space syntax (Hillier and Hanson 2003), for example, consider the system of barriers and permeabilities to movement as the main factor responsible for the way people move in places. However, there is evidence that several attributes are responsible for urban vitality.

More recent work using other analytical variables associated with SS. Holanda (2002) divides the analysis of space on three levels: spatial patterns, encounters system and non-spatial socioeconomic categories. In interpreting the spatial patterns it relies not only on topological aspects applicants in syntactic studies (integration, predictability and convexity), but also the geometric attributes (number and size of open spaces). Tenorio (2012) in turn, extends the set of analytical variables incorporating functional aspects, bioclimatic, esthetic and economic in spatial analysis.

In this work we chose 13 variables for analysis of superblocks. The evaluation is divided into two of the three levels suggested by Holanda (2002): spatial patterns and encounters system. Each level consists of variables that arise from the spatial attributes that hypothetically favor the presence of people in public spaces and social representing the vitality of those areas (Table 1). In this case, the social attributes are used to validate the “virtual community” (Hillier, Burdett, et al. 1987) raised by spatial patterns.

Spatial patterns will be measured from analytical techniques coming from SS and other urban studies. Accessibility will be assessed by measuring global integration (Rn) and local (R3) obtained from the axial maps (Hillier & Hanson, 2003) of the road system of cars and pedestrians of superblocks. The amount and size of open spaces will be obtained in full and empty map and convex map (Hillier & Hanson, 2003). The amount of public space with treatment as well as the variety and distribution activities will be obtained from the land use map. The visual connection between public spaces will be assessed by measuring visual integration (Turner, 2004) and visual connection between public and private space, the extension of the windows on the facades and the amount of them by convex space (Holanda, 2002). The building standards types will be assessed from a combination of other variables: age of buildings, number of rooms by units, type of vertical circulation and parking.
Table 1: List of variables and analytical categories used to evaluate the superblocks.

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The encounters system comprises the analysis of the subject and activities. The attributes will be assessed in terms of quantity, variety and distribution in time and space, from field surveys presented in behavior and flow maps. The first includes people and their stationary activities and the second comprises the pedestrian traffic count and major routes of passage. The stationary activities will be considered in accordance with the classification of Gehl (2006):

1) *Necessary*: involve obligations, work or tasks that are less dependent on conditions of space and time to complete. Examples: buying, selling, caring for someone, waiting for the bus, waiting for someone, washing the car.

2) *Optional*: directly depend on the will of the people and the conditions that public spaces provide. Examples: physical activity, watching someone or some event, eating, drinking, smoking, reading, walking, using mobile phone.

3) *Social*: those that involve interactions between people and also depend on the conditions that public spaces provides. Examples: pranks, conversations, games, dating.

The study of people and their stationary activities was conducted during Spring, over a weekday (Tuesday through Thursday) and on a Saturday in six shifts between 8:00 am and 06:00 pm each day. The measurement of the pedestrian traffic was carried on only one day of the week, in one of the busiest periods (7:30 am to 9:00 pm). In each superblock, six points were chosen to record flows for 15 consecutive minutes.

The data will be compared using the statistical tool Principal Component Analysis (PCA) (Jolliffe 2002). The PCA allows better visualization of differences in a dataset, it synthesizes an extensive
database in just a few key components. The components are orthogonal to each other and formed by a linear combination of the original variables. The first two components are the most used to obtain the graphics by having the highest percentage of representation in the differentiation of objects in analysis.

The PCA can also be used to evaluate the relevance of analytical variables, as each adds a certain weight of each component in the formation. Higher the coefficient, greater the representation of the variable relative to the others.

4. Results

Spatial patterns analysis

1. Accessibility

1.1 Accessibility for vehicle

Regarding the axial map of the Federal District (DF) (Figure 1), the superblocks located in the North Wing have higher levels of global integration (Rn) therefore, greater potential for movement of cars than the superblocks of South Wing. In the axial map of the Pilot Plan, the values of global integration and local (R3) are larger in the range of superblocks "400" and accessibility is almost symmetrical in the two wings.

In the residential sector, the road system in "tree" implies poor accessibility to the whole city. The routes are always more integrated in the superblock entrance and from that point, accessibility for cars only decreases. The mobility and seizure of the highway system for persons in vehicles are easier in the context of PP as a whole than inside the superblocks (Holanda 2010).

1.2 Accessibility for pedestrian

In all superblocks is large the number of possible routes for pedestrian traffic. However, there are variations in the amount of axes and in integration values, depending on the size of the open spaces and the number and extent of the obstacles that the superblocks present. In most of them, axes more integrated are concentrated in a certain area, usually at the center (Figure 1). These areas are more accessible and with more potential to the presence of people.

The superblocks 209N, 408N and 315N have greater amount of possible routes. The 412S although it has many buildings without pilotis also presents many axes, due to the size of the open areas and the existence of short buildings. In 109S, 207S, 308S and 113N, the small number of axes is the result of many gaps between the blocks and public spaces.
2. Public free space

2.1 Amount of public free space
The superblocks analyzed have lots of open spaces. The building percentage area ranges from 12% (412S) to 20% (308S) of the total area.

2.2 Dimension (medium convex space)
The convex spaces of superblocks have on average similar dimensions, this is due to frequent use of rectangular floorplans arranged parallel to the sides of the superblocks (Figure 2). The special cases correspond to 109S with very large open spaces, with an average of 3.174m², and 207S, with an average of 1.342m². The 207S, despite having the lowest average value of convex space, has very large spaces in relation to others, as in 109S. In the two superblocks, the buildings occupy the edges and leave free the central area.
3. Public free space with treatment

The superblocks have a lot of free spaces however only a small portion has infrastructure to support social or sporting activities (Figure 3). The percentage of spaces with treatment varies from 2.1% (408N) to 19.4% (308S), the other spaces are paved areas and green areas.

4. Visual connection between public spaces

In much of the superblocks the pilotis of the buildings are more segregated spaces (Figure 4). This is due to number of barriers in the ground level (stair tower, elevator, concierge, party room and gaps). Comparing the map of visibility with free spaces, we note that much of the leisure and sports are located in areas more integrated.
The highest values of average visual integration correspond to the superblocks 408N and 412S, and the 109S and 207S the smaller. The 412S while possessing high visual integration average, it has many segregated spaces such as parking areas located between buildings without pilotis. In the 109S and 207S there are lots of gaps between pilotis and free spaces.

5. Visual connection between public and private space

5.1 Windows extension
The superblocks 308S and 412S have buildings with windows on only one of the facades (Figure 5). In 109S, 113N, 315N and 408N predominate buildings with windows on two sides of the blocks. However at 209N and 207S there are buildings with windows in almost all facades.

In general, the amount and length of walls with windows are higher in the North Wing superblocks than in South Wing. This is due to the differences of floorplans taken in residential and commercial buildings of the two neighborhoods. In South Wing buildings have higher amount of blind facades, which result in more public spaces visually disconnected from the interior of buildings.
5.2 Windows by convex space
The superblock 207S stands out for the largest proportion of facades with windows by convex space, about four facades, in the remaining, this ratio falls to about one or two.

6. Activities within the limits and around

6.1 Variety
There is little variation in the types of uses (residential, commercial, service, religious, educational, mixed, leisure and sport) within each superblock and immediate surrounding area (up to 100m limit) (Figure 6). All of them have six to eight types of activities, however, the amount of plots (batches and building blocks) is quite different between them.

In 308S the number of parcels exceeds all other blocks. This is because its neighborhood is formed not only by superblocks, but also by small lots with single family homes and commercial buildings.

Commercial use and mixed – South and North Wings, respectively – occupy the second place of importance in the composition of land use. In “between superblocks”, North Wing, mixed use arises from the coexistence of shops and homes available in the upper floors of the same buildings.

6.2 Distribution in space
In general, the distribution of activities in superblocks follows the logic of the Neighborhood Unit: the core is residential and has eventually schools and kindergartens, and the periphery houses local businesses and other uses. The 109S, 207S, 113N and 209N does not have activities on one of its sides, as the 308S, 412S, 315N and 408N have activities in all its limits.

7. Building standards types
There are 12 kinds of building standards in the evaluated superblocks, however, the variations are small. Older buildings with gated parking, elevator and 3 bedroom apartments predominate. In 113N and 315N all buildings have the same pattern, the 109S, 207S, 412S and 408N have 2 or 3 kinds of building standards, and 209N and 308S have 4 and 6, respectively. The most significant changes result from the number of rooms per unit.

For superblocks “400”, Costa devised a more economical building standard, however, the adopted types did not differ much from the rest. The 412S despite having the simplest building standards
types (small apartment with no lift and no covered parking lot) also has several buildings on pilotis and larger apartments. The 408N although it has not the same amenities of the others (elevator and garage) also has large apartments.

**Analysis of encounter system**

8. **Number of people**
Considering the sum of people, at all times of the two days observed, the superblock that presented in its public spaces the largest number of people was 113N, followed by 308S, 209N and 315N. Already 207S, 109S, 408S and 412S showed the lowest levels of co-presence.

9. **Variety of people**

9.1 **By genre**
The 113N and 315N are the superblocks with greater balance between genders, either the number of men and women than in relation to the number of children. They have the highest average of people by gender (221 and 198 persons, respectively). In the others, the average varies between 90 and 160 people or so.

9.2 **By age group**
The distribution of persons by age is quite unbalanced. In all superblocks the presence of adults is large, while the amount of children and the elderly is low. The highest average and lower coefficients of variation correspond to 113N and 308S.

10. **Distribution of people in time**
The number of people throughout the day is not uniform. Three of the eight superblocks had a greater number of people during the week than on the Saturday (308S, 209N and 408N). In most of them there is a higher incidence of people around 18 hours in the two days observed. The 308S, 113N and 315N have higher means and lower coefficients of variation.

11. **Distribution of people in the space**
All superblocks had a higher number of people in the public spaces than the ground floor of buildings (Figure 7), however, in some of them the percentage of use of pilotis is considerable: the 113N has 39% and 207S, 32%. These superblocks have significant gaps between open areas and pilotis, making them more sheltered from passing traffic.

The spatial distribution of people although quite diverse, has some similarities. Usually the most used places are situated next to shops, schools and bus stops, or are leisure and sport places, or spaces with benches and shaded places. The extensive lawns without urban furniture, parking lots and areas near the commercial blocks with few doors and windows in general are less frequented.
12. **Passing activities**

The passing activities occur more often in superblocks “100” and “300” and in the east-west direction (Figure 8). Therefore, the potential of motion suggested by axial maps (DF and PP) was not confirmed: greater integration in the North Wing’s superblocks and in rows “400”. The main passage routes are typically located on the outside sidewalks, contradicting also the suggested potential for movement in axial map for pedestrians: greater integration within the superblocks.

In most of the superblocks, the flows have the origin or destination in bus stops, subway stations (only in South Wing) and the entries of underpasses that cross the road axis. In superblocks with schools (308S, 113N and 408N), the flows are also encouraged by such equipment.
13. Stationary activities

13.1 Amount of activities
The superblocks 308S, 113N, 315N and 412S showed a greater variety of activities.

13.2 Type of activity (necessary, optional and social)
The amount of activity by type range between 19 and 28 (optional), and between 8 and 12 (social and necessary). The 113N, 315N and 412S have the largest amount optional, social and necessary activities, respectively.

13.3 Occurrence
The superblocks 113N, 308S, 315N and 209N had the highest occurrence of activities considering the three types together. Given that the social and optional activities are the best to represent the presence and use of spaces of superblocks, we associate both values. Thus, the sequence of the superblocks by performance (highest to lowest) is: 308S, 113N, 315N, 412S, 109S, 209N, 408N and 207S.

13.4 Distribution of activities in time
Most activities take place on Saturday in most superblocks, only three (308S, 209N and 408N) have more activities during the week. The amount of activities throughout the day is not uniform, however, there is a higher incidence of activity at 16 and 18 hours, in most of the blocks. Social activities occur most at 18 pm, necessary at 10 am and 18 pm, and optional at 8 am. The best performances correspond to 113N and 308S, which have both large mean and small average coefficient of variation.

13.5 Distribution of activities in space
The necessary activities most frequent (trading of food and objects) typically occur along the commercial blocks, at bus stops and near the entrance of the superblocks. The most common optional activities (walking with dog and exercising) occur on outside sidewalks and sports equipment places. Social activities usually take place in leisure and sport spaces, in the pilotis of the buildings near the entrances, near to newsstand, entrance of the blocks, and shaded areas with benches. The leisure and sport spaces are the places with the greatest variety of activities, especially those that concentrate various equipments (315N), are situated close to the shopping areas (209N and 308S).

Principal Components Analysis: setting versus ownership
The principal components 1 and 2 obtained from the transformation of the variables were good
percentage of representation: 60% and 83%, respectively. In the evaluation of the spatial patterns of superblocks, the building types, the percentage and size of open spaces were the attributes of lower coefficient. On the other hand, accessibility and visual connection attributes are the main values for differentiation of superblocks. In the encounter systems, the attributes of greatest importance are the global and average values of variety, quantity and distribution of people in space and time, as well as the occurrence and activity distribution. The social attributes measured by coefficients of variation were less relevance.

Positive values of PC1 are related to variables that have a ratio of the larger the value, the better the social and space performance, thus the superblocks with higher values in Figure 9 (Graphics a, b) have better performance.

![Figure 9: Graphic (a) two principal components of spatial patterns and Graphic (b) encounter systems of superblocks. In red, superblocks with negative values that have not changed in the two graphs in relation to the first component. In yellow superblocks that reversed positions. In blue superblocks with positive values in the two graphs.](image)

The superblocks 113N, 315N, 209N and 412S grouped in the center of Graphic (a) are more similar spatially. The 408N is isolated from the group, having the highest positive values and therefore better performance in space. The 207S, 109S and 308S isolate themselves from the group with different spatial patterns. The 207S and 109S, besides staying further away, they have more negative values on PC1, which corresponds to the worst space performance.

In Graphic (b) the superblocks are more dispersed than in the previous graph, i.e., they have higher differences in social appropriation. The 207S, 109S, 315N and 209N have been preserved in a similar position in relation to PC1. The 207S and 109S have the worst social and space performance, while the 209N and 315N showed good performances in the two analytical levels. In these cases, there was a correlation between the spatial and social performances, while in the superblocks 308S, 113N, 408N and 412S, an inversion.

Several factors may be linked to the lack of correlation between the spatial and social attributes of those blocks. In the case of the 308S, despite having spatial attributes like the 109S and 207S, it differs a lot compared to the amount of distributed activities nearby. The 113N, in turn, despite having a set of less favorable spatial attributes to social appropriation, it has lots of families with children living on the court. The 412S and 408N stand out spatially by high levels of accessibility and visual connection, but have lower population densities.

These cases show the need to review some other variables used and incorporate the space-like density of blocks. Variables of SE measures visual integration demonstrated more revealing that accessibility measures (physical integration).
5. Conclusion

The main objective of this research was to discover and elucidate spatial attributes that favor, or not, the different social phenomena found in public spaces in residential areas of the Pilot Plan of Brasília. Contrary to general criticism preaches about the city, the article demonstrates that there is presence of "urbanities" in superblocks, though punctual.

The analysis of the subjects and activities demonstrated that there is not a uniform distribution in time and space, even in the busiest superblocks. According to the literature, this reality is characteristic to places less favorable to public life, however, the various forms of social ownership that happen on the superblocks proved the correlation between spatial configuration and human behavior.

Some assumptions have been proven in this study: high equipment availability favors urban social practices in public spaces, the visual connection between spaces invites the passage and encourages the stay; diversity and concentration of activities attracts a larger audience for public spaces. Moreover, to evaluate the performance of superblocks sociological some features are less relevant: accessibility, number and size of free space; variety of types and building standards.

The results corroborate assumptions and raised many other questions. Little has been explored about the real motivations that attract or not, people for those spaces. Future research may include other spatial attributes (e.g. the impact of weather conditions, specially the quantity of shaded spaces) and other non-spatial attributes (e.g. the socioeconomic profile of the users, residential densities).

By "inventing" the superblocks, Costa proposed buildings loose in abundant green areas and zoning activities. Today there are many people living on commercial buildings; service activities and informal commerce proliferates inside the superblock, people prefer to walk on the external sidewalk instead of crossing the pilotis of buildings. The space conditioned certain practices and the practices also changed the spaces. Survived some spatial qualities and other opportunities to improve them have been lost, or not yet exploited (Branco 2006).

References


