STUDY OF THE APPROPRIATION OF SQUARES IN FLORIANÓPOLIS, BRAZIL

Gabriela Yoshitani da Luz, Larissa Miranda Heinisch, Vanessa Goulart Dorneles, Fábio Lúcio Lopes Zampieri, Vera Helena Moro Bins Ely

Universidade Federal de Santa Catarina, Brazil

Abstract

This paper presents an analysis of environmental and behavioral conditions of three different squares of Florianópolis (SC, Brazil). This is an exploratory study which aimed to analyze and compare the different appropriation of open spaces, seeking to raise factors that influence the behavior of the users. The methods used were visual mapping and behavioral mapping. They are typical methods used in Post Occupancy Evaluation and are considered Systematic Observations of spaces with the goal of understanding the dynamics of appropriation. The final results of each method were registered in the form of georeferenced thematic maps using the program GvSIG. With this program it was possible cross the information of the two methods for pre-defined areas of the three squares. Relevant aspects concerning the appropriation of each square could be analyzed from the crossing of the data, since the physical characteristics of the environments influence people's behavior in space, as well as establish associations between the relationship of different users and the activities performed at the environment. It was noticed for example that the areas with the largest number of users performing activities of permanence were the best evaluated by the visual mapping and were also where the playgrounds were.

Keywords: Appropriation, open space, behavior, post-ocupancy evaluation.

Introduction

Open spaces are configured as important urban elements, either because they contribute to the environmental quality and landscaping of the cities (BARTALINI, 1986), or because they are environments that encourage socialization and practice of leisure activities of citizens, very important factors for the life quality and well being.

Therefore, such spaces should have good environmental conditions, in order to allow the permanence and effective appropriation of the people in a democratic way.

Scannell and Gifford (2009) define appropriation as the link between an individual and places that have emotional and symbolic values for him, creating feelings of attachment, identification or possession belonging to the site.

When the space awakes safety and comfort for users, creates this connection, encouraging the permanence and appropriation of these in space.

Thus, the research presented in this paper aims to analyze the physical conditions and appropriation of three different squares in Florianópolis looking for assess factors that influence user behavior in open spaces.

To perform this analysis, characteristic methods of Post Occupancy Evaluation (POE) were used. The methods used were Visual Mapping for systematic observation of the areas and analysis of environmental quality, and Behavioral Mapping, in order to understand the dynamics of appropriation.

The final results of each method were recorded in the form of thematic maps georeferenced using the program gvSIG. With this program it is possible to cross the information of the two methods by pre-defined sectors of the three squares.

From intersection of data, it was possible to analyze the relevant aspects regarding the appropriation of spaces assessed, since the physical characteristics of the environment influence the behavior of people in the spaces, and establish associations between the relationship of different users with different activities performed on the environment.

The quality of open spaces

According to Gehl (2010), the quality of open spaces is directly responsible for the existence and diversity of life in the city because good spaces attract more people and thus promote more opportunities for the occurrence of its appropriation.

In accordance with Hunt (1991), human beings have many needs that influence their interaction with the environment and with other people, called spatial needs.

These needs can be divided into three categories: **physical needs**, related to physical health, safety and comfort of users in the environment; **informational needs**, relating to how the information is determined, subdivided into perception and cognition, and **social needs**, related to the promotion of privacy control and / or social interaction (DORNELES, 2006 apud HUNT, 1991).

Such needs can influence the appropriation, as they are spaces characteristics that humans require for their use and sense of well being, so were used to define the categories evaluated in visual mapping method, which will be explained later.

Case studies

Open spaces are public streets, squares, sidewalks, parks, beaches, among others. For this study, it was decided to analyze squares since they are the most common spaces with function of appropriation and permanence in urban contexto and also have intermediate scale for the application of the methods, since it is possible to have visual control of different positions .

Then three squares located in the city of Florianópolis were chosen as study objects, each of which having different urban contexts and spatial configurations, and are presented below.

Square Getúlio Vargas

The Praça Getúlio Vargas is located in the central portion of the city of Florianópolis, in an area dominated by residential buildings and small businesses.

With much vegetation, the square has a playground, a snack bar and a central fountain, with predominantly gravel floor and presenting minimal depressions.

Square Santos Dumont

The square Santos Dumont is located next to the main entrance of the campus of the Federal University of Santa Catarina, in the district of Trindade.

It has many levels and staircases, which divide their living areas, playground, stretching station for the elderly and a bar (now disabled). It is also heavily wooded, although with major maintenance problems.

Besides the closeness to the university, in its surroundings there are the two main shopping centers of the district, which concentrate many offices, shops, supermarkets.

Square Bento Silvério

Located in the district Lagoa da Conceição, the Square is known for the Bento Silverio handicrafts fair that takes place there every weekend.

The district, being farther from the center of Florianópolis, has its own centrality, which concentrates services and trade, and the square is located studied in this area.

The square, that is too little wooded dn with not much readable boundaries, has playground, and a few seating areas.

Method

To relate the spatial conditions of the objects of study with its appropriation, it was chosen two commonly used methods in Reviews Post Occupation: Mapping and Visual Mapping Behavior, the first focused on the observation of the environment and its environmental quality, and second, the analysis user behavior.

As mentioned in the introduction, the data obtained with the application of the two methods are organized in the form of maps, generated from the gvSIG (free software Geographical Information Systems). This software is a tool used for digital GIS that allows the realization of complex analysis, integrating data and enabling the crossing of such information in a cartographic way.

Visual Mapping

The visual mapping, according to Rheingantz et al (2008), evaluates the adequacy of space and its equipment and identify positive and negative points in the spaces. For this research, the assessment was made from categories, subdivided into criteria, de-

veloped by the authors to evaluate the physical, sensory and social spaces that together represent qualities of the environment necessary for public spaces.

To apply this method, the evaluation was made by sections to facilitate the visualization and therefore the evaluation of the spaces that make the square (see figure 01). The definition of the sectors was performed according to the physical or functional environments, for example, a sector corresponding to the facility access and elderly, that have the same type of flooring and visual language.

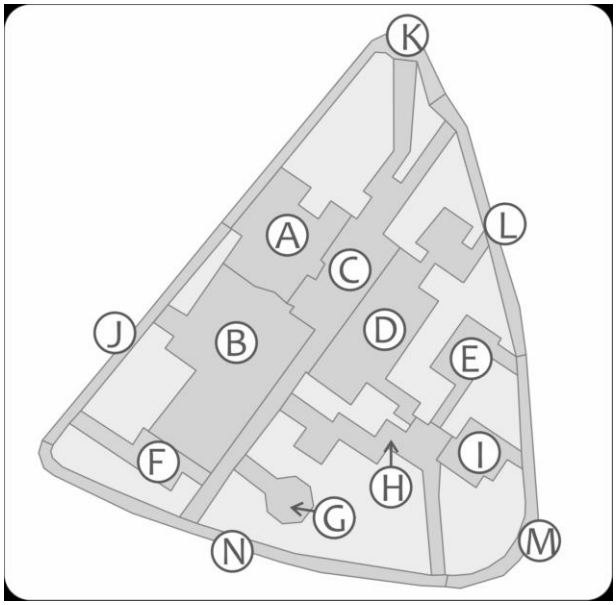

Figure 1. Example of sectorization of the Square Santos Dumont.

To conduct the evaluation of each sector, were made registration tables of the perception of the researcher, as illustrated in Figure 02. For each square were made 3 tables, one for each category (physical, sensory and social). To evaluate each criterion, initially it was thought to use the Likert scale, however the use of this scale conditioned the definition of positive notes. So it was decided for a graphic scale, as suggested by Ribeiro (2000), where each criterion is painted in a linear space determined by the feel of the researcher / user, where the left side represents a bad perception and right side a good perception. Researchers must record their perception painting the placeholder during its evaluation in place, and after, for the treatment of this annotation data is checked with a ruler and measure your registered on a scale of 0 to 10, in order to give a score for each sector . When the measure had fractions of millimeters was considered as a note the further value. This assessment is related to the sense of well-being and comfort of the user, being classified as bad a space that has characteristics that cause discomfort or disturb the user-evaluator. It is worth noting that this analysis is a completely qualitative approach, which is up to the researcher / user assign values according to each criterion for each sector according to

their perception. For this reason it was chosen a preference scale that could suppress the importance of the score assigned and value the opinion of the researcher / user.

The following are explained the categories and criteria that were used and the points evaluated in the observation.

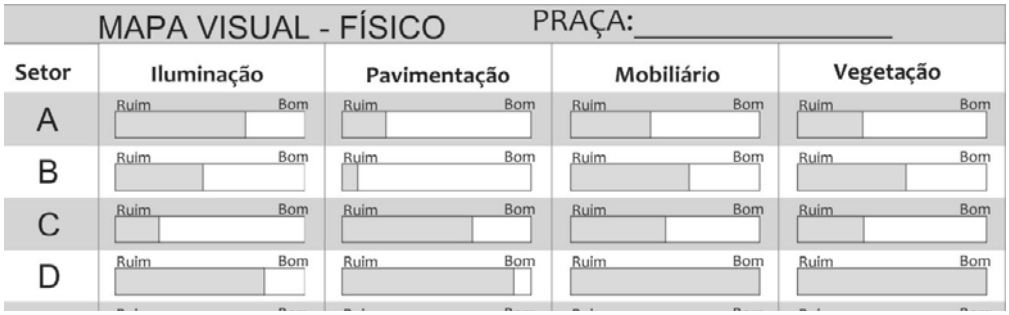

Figure 2. The auxiliar table for the application of visual mapping - physical criteria.

The physical category is subdivided into criteria: lighting, flooring, furniture and vegetation, and sought to assess the condition of the infrastructure of the square. Were observed if the spaces had good natural and artificial lighting if the paving was regular, non-slip and comfortable (an example of uncomfortable floor is the gravel, which hinders the mobility of wheelchair users and makes many of gaps and holes) if the furniture was in good condition and well distributed (large areas without living spaces commit rest during shift), or if the vegetation allowed visual control, shaded seating areas and had no roots exposed or low branches in areas of displacement.

The category sensorial evaluated smells, sounds and visuals, which also influence the well being of the user, a more subjective. It was observed if there were pleasant odors, such as blooms, or unpleasant, such as sewage or waste if there was any positive sound stimulus such as, for example, fountains, or whether vegetation could spread the noise of the surroundings.

The social category is linked to the sense of security in place and co-presence of people. It was observed characteristics such as the visual control of space and the presence of other users in the square.

For each of the nine evaluation criteria it was developed one map. After this, another map was drawn for each of the three categories with the average value of its attributes, generating more 3 mappings. At the end, it was created a mapping synthesis with an overall average, by sectors. Altogether 13 thematic maps were generated by square.

Behavioral Mapping

The behavioral mapping aims to assess appropriation and territoriality of the users in the environment (Moore, COSCO, 2010). In this experiment it was sought to verify the types of users and their activities at different periods of the day.

To observe whether there were changes in the appropriation according to time, the mappings were made on weekdays and weekends, morning and evening shifts, and different schedules for each period, totaling 12 records per square.

To perform the mapping it was counted with the participation of at least two investigators on site. The registration was carried out in a graphical and manual map previously developed by the researchers for each observation period, based on the work developed by the group GAE of Federal University of Rio de Janeiro. (AZEVEDO; RHEINGANTZ; TÂNGARI, 2011).

In this way it was recorded each type of user (child, man, woman, old or older) noting also the activity that the user performed. Thus, maps were created by classifying users activity, gender (see Figure 03) and age, who assisted in the evaluation and comparison of the use of the square as time and day of the week.

Figure 3. Behavioral Mapping by gender (child, woman and man) from Square Santos Dumont. Graphic scale in meters.

With the support of software gvSIG it was also possible to develop maps of user counts by sector, to verify which sectors were more appropriate. Thus, there have been three types of crossing data: overall count of users (see Figure 04), user count in activities of permanence and user count in displacement. These mappings helped in the visualization of the sectors most used and appropriate and also to distinguish which sectors had more activities permanence and displacement, since the transportation activities consist not necessarily in an effective appropriation of space.

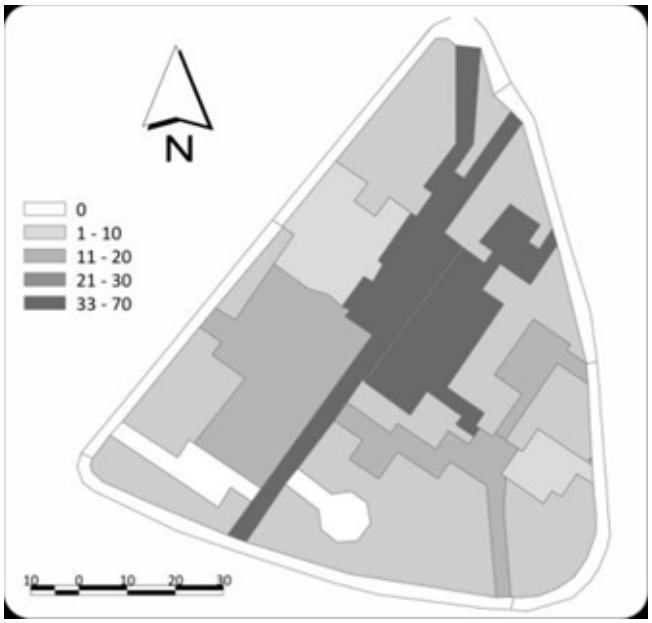

Figure 4. Example of map of user counts by sector in Square Santos Dumont. Graphic scale in meters.

Results

The results obtained with the two methods explained above consist of maps represented in GIS for better visualization of the data collected. Thus for visual mapping maps were performed for each category and then conducted a synthesis map that represents the average value for each category assigned by sector. The intent of this synthesis was to provide an overview of the environmental quality of each sector of each square analyzed, where darker colors correspond to better environmental quality in relation to sectors with lighter colors.

For the method map behavioral maps were made according to each type of user and their activities.

The following will be presented brief comparisons between the maps of the synthesis method of visual mapping and map for behavioral activity of permanence for each of the squares, from which it was possible to establish a relationship between the issue of environmental quality and ownership of open spaces analyzed.

Square Getúlio Vargas

Comparing the two mappings of the square, it was revealed that the most used sector was also one of the best evaluated. In this sector is located the playground.

Square Santos Dumont

Comparing the two mappings of the square, it was revealed that the two most used sectors also had positive evaluation in visual mapping. The mostly used sector

is where the playground is. However, another sector that is one of the best valued had few users, a remarkable feature, as it is where is the stretching station for the elderly. It is believed that the lack of shading limits its use for the periods of early morning and late afternoon.

Square Bento Silvério

Comparing the two mappings of the square it was possible to note certain homogeneity in the analysis, both in mean visual mapping as the number of users at all times.

The most used sector, where the playground is, was one of the best evaluated, although no sector has achieved average score above 5.0.

Conclusions

From the crossings of the maps was possible to see that the sectors best assessed by visual mapping, in other words, those considered the most pleasant by the evaluators were effectively the most used by the users to activities of permanence.

It is also important to note the unanimity of the playground areas being the most used. This may be related to better furniture conditions and shading.

Despite the area dedicated to children being the most used, the mapping by age revealed that users of adulthood are the great majority of users, which indicates that the best conditions and maintenance of furniture attract these users.

Among the members in activity of permanence, the majority are male, which may indicate that women feel insecure in such spaces, and therefore do not appropriate the squares.

The extremely small number of elderly users also drew the attention of the authors, showing that the poor condition of the squares end up inhibiting the appropriation of users in this age group.

Regarding the application of the methods, it was found that the behavioral mapping could be recorded in a more dynamic way, indicating the displacement of people, for example, and visual mapping could include aspects of environmental comfort and configurational characteristics of squares.

Despite these limitations of the research, it was possible to verify that some of the main problems of appropriation and identify space “playground” as main attractor of users for the three case studies and that the maintenance and quality of the pavement and furniture are major influencers in the appropriation of spaces.

References

Azevedo, G. A. N., Rheingantz, P. A., Tângari, V. R. (2011). *O Lugar do Pátio Escolar no Sistema de Espaços Livres: uso, forma e apropriação*. Rio de Janeiro: UFRJ/FAU/PROARQ.

Bartalini, V. (1986). Áreas verdes e espaços livres urbanos. In: *Paisagem e Ambiente – Ensaios*, v.v.1e2, p.p. 49-54.

Dorneles, V. G. (2006). *Acessibilidade para idosos em áreas livres públicas de lazer.* Dissertação (Mestrado) – Universidade Federal de Santa Catarina, Programa de Pós-Graduação em Arquitetura e Urbanismo.

Gehl, J. (2010) *Cities for people***.** Washington: Island Press.

Hunt, Michael E.(1991). The design of supportive environments for older people. In: *Congregate Housing for the elderly*. Binghamton, NY: Harworth Press.

Moore, R. C., Cosco, N. G. (2010)**.** Using behaviour mapping to investigate healthy outdoor environments for children and families: conceptual framework, procedures and applications. In: Catharine Ward Thompson, Peter Aspinall, et al (Ed.). *Innovative Approaches to researching landscape and health. Open Space People Space*. London: Taylor & Francis.

Ribeiro, J.L.D. & Nodari, C.T. (2000). *Tratamento de Dados Qualitativos: Técnicas e Aplicações.* FEENG, Porto Alegre.

Rheingantz, Paulo Afonso [et al]. (2008) *Observando a qualidade do lugar: procedimentos para a avaliação pós-ocupação.* Rio de Janeiro: Universidade Federal do Rio de Janeiro, Faculdade de Arquitetura e Urbanismo, Pós Graduação e Arquitetura.

Scannell, L., Gifford, R. (2009). Defining Place Attachment: A Tripartite Organizing Framework. *Journal of Environmental Psychology*, v. 30, p. 1-10.