

# OBSERVING THE URBAN SPACE: A PROTOCOL TO ANALYSE STREET FURNITURE IN PUBLIC SQUARES

Laura GOUVEA, Claudia MONT'ALVÃO  
 Laboratory of Ergodesign and Usability of Interfaces LEUI  
 Pontifical Catholic University of Rio de Janeiro, RJ, Brazil – PUC-Rio  
 lauragouvea7@gmail.com, cmontalvao@puc-rio.br

In wider research, in progress, a study was performed, using an Ergonomic approach, to understand the relationship between street furniture and its users and also the importance of its existence in a built space named “plaza”. This paper presents the first phase of an analysis focusing in physical aspects of some public plazas, where an observation protocol was developed. This tool was used in field research, and its results validate its utility in research in environmental design area.

## CONTEXT

Recently it has become more commonly understood that successful parks and open spaces such as plazas, streets and public gardens are lively and well-used by people (Francis, 2003). Urban design, or in Moughtin's (2003) words “the art of building cities” is the method by which man creates an environment that fulfills his aspirations and represents his values.

Urban design, as defined by Carmona et al (2010), is not simply an interface. According to these authors “it encompasses and sometimes subsumes a number of disciplines and activities: architecture, town planning, landscape architecture, surveying, property development, environmental management and protection, etc.”

Continuing this idea, to Bonametti (2000), urban landscape is a reflection of the relationship between man and nature, and it can be interpreted as an attempt to organize the surroundings, using a natural landscape as a result of an observation of the environment and the individual or collective experience.

Francis (2003) determines that “successful public spaces are ones that are responsive to the needs of their users, are democratic in their accessibility, and are meaningful for the larger community and society”.

In many countries, the restructuring and renewal of urban spaces are very important issues. These places constitute the “image” of the city, places which citizens meet their friends and can perform leisure activities. Open spaces, trees and greenspaces have come to be regarded as green infrastructure, a living system in contrast to the engineered structures of gray infrastructure (Wolf, 2003).

As ergonomists, we understand that the city is a space that must be studied, once events, objects and activities are developed in this context. When a public space does not attract nor harbor its users, these places tend to be idle.

An ergonomic evaluation, considering physical aspects of a plaza will be carried out, aiming to answer the main question of this research: what is the relationship between street furniture and its users, and what is the importance of this experience in the urban space called a *plaza*?

From the results, obtained by observation, and other techniques, we believe that it is possible to evaluate the real importance and influence of street furniture in plazas and its users.

A specific area of Rio de Janeiro city was chosen, and the user's opinions are the starting point of the research.

## ERGONOMIC APPROACH IN BUILT ENVIRONMENT

### General aspects

In a brief research, it was possible to verify that only a few studies about interventions or research in plazas were available, focusing street furniture. Searching ergonomic literature, plazas, squares and public gardens are not frequent main topics.

Aspects such as environmental perception and orientability are usually the first observed when ergonomic research is carried out (Ribeiro & Mont'Alvão, 2005). It is extremely important to find out what and how to observe the environment. It is necessary to understand the activities that are performed in the environment before choosing the best technique for a field survey.

According to these authors, it's also important to understand human behavior, once it is through humans that actions occur in a determined space. Nevertheless, each subject observed during a field research will perform a distinct action, in their own way. These aspects of human differentiation, when analyzed, will make the research meaningful.

### Field research in urban space

Urban planning has a main characteristic: the capacity of turning a *space*, into a *place*. At this moment, it is possible to identify the interface among architecture, urbanism, and design, where architecture is responsible for construction and infrastructure; urbanism deals with limits and flow; and design, the project of objects that complements this scenario, all in the same proportion.

These objects that are placed in public spaces are references for users/ neighbors, and its visitors. They have, at the same time, the role of creating an identity of a visual language in the space, conceptualized in cultural aspects of a society or community.

One question in this research, related to its objective, is identifying the importance of urban space to the population/ users of a city. Therefore, street furniture is a common bond between users and urban spaces in a city.

### Street furniture and plazas

As defined by many authors, the term “street furniture” covers several objects that are installed in street, roads, and public spaces, for various purposes. It includes benches, shelters, street bins, among other objects.

Street furniture plays different roles in a city. Besides its main function – providing for the demands of its users, making a place comfortable – these objects are also able to inform, educate, and reduce vandalism.

This research intends to comprehend the real role of urban furniture in a public space. Along with understanding how these objects influence human action. Nevertheless, it is also necessary to take into account social and aesthetic issues, beyond functionality. Street furniture can, for example, increase pride for the area, once it turns spaces more comfortable, attractive and enjoyable.

It is true that these objects’ arise was fundamental to city’s development, once it allowed the collective performance of social activities. Despite this, they were also responsible for the concept of “the city image”, real, as much as symbolic.

Lynch (1960) defines this aspect as *imageability* “the quality in a physical object which gives it a high probability of evoking a strong image in any observer. It is that shape, color, or arrangement which facilitates the making of vividly identified, powerfully structured highly useful mental images of the environment.”

Plazas exist since the Greek-roman period, the spring of urbanism as a capable science to organize spaces and flow is dated in the end of XIX century, after Industrial Revolution.

It is just after the acceptance of urban space that emerges the necessity to install urban furniture in public spaces. This urban evolution was a fundamental step in the progress of the cities.

So, street furniture defines the society’s behavior? Or, on the contrary, does inhabitants’ actions define the furniture in a city?

Literature points that maybe the first object – that could be identified as street furniture – came out from a functional or aesthetic necessity, to a certain population. Other authors believe it arose to fulfill the needs of a certain group’s necessity. Nevertheless, both hypotheses are still motivations to choices in street furniture nowadays.

The urban planner professional is not apt to produce a public urban space if they do not consider the future wishes of the users that will enjoy this space. Likewise, the implementation of these objects cannot be a random decision. The place where each object will be installed must be intentional and conscious, determined by a previous study, in a

way that all objects together can exploit to the maximum each object and its functions.

## METHOD

### Defining a scenario

Rio de Janeiro was chosen as the scenario; a city that receives more frequent and higher number of visitors every year, and has a permanent population of 6.320.446 inhabitants (IBGE, 2011).

This city will also host world events, and the gentrification of public areas is very important, since it helps to promote the image of the city to investors. It is a governmental priority for the governor and the mayor to promote big leisure areas.

Urban restructure is considered crucial to improve living condition for Rio de Janeiro inhabitants. A better public space implies social development, as safety to its users. These guidelines also consider green spaces as a way to preserve and promote the comfort of the environment. According to the Rio de Janeiro municipality, the city has 1,274 plazas.

All these spaces were verified by researchers in loco, or using *Google earth* tool. To define a place as *plaza/ Public Square*, it must have at least one function to its users. The space must be a public area, and must satisfy at least one social need of that neighborhood.

The result of this first analysis was that the concept of *plaza/ Public Square*, considered by the researchers in this case, is not the same as used by the municipalities. For example, a green space with a bust is considered a plaza to the municipality.

The 1,274 plazas in Rio de Janeiro city are scattered across 13 big regions. The first step to carry out the research, was selecting only one area - the South Zone was selected for analysis.

This area was determined considering some characteristics:

- The area where the city was established as a formal city;
- Where the oldest plazas can be found;
- The main touristic, leisure and cultural area;
- Large diversity of social groups;
- The highest economic activity;
- Diversity of occupancy – living, working, services and/or commerce;
- The area with the highest Human Development Index in the city.

The South Zone has 111 plazas, in 18 neighborhoods. Considering this number, only 43 could be considered as plazas according to the parameters of the research described above.

### Proposing a Protocol

Then, these 43 plazas were selected for the second step of the research – they were classified in 5 distinct aspects (culture, sports, well-being, landscape and leisure). These 5 aspects are based on De Angelis's (2000) work that proposes a

method to determine, register, diagnose and evaluate public squares.

When all 5 aspects were considered, only 8 plazas were considered “complete” for the second step of the research.

At this point, to continue the research, the team decided that a more specific protocol was needed, since the one used in the second step was based on the criteria, but it suggests scores, that is a subjective tool for analysis.

So, a new protocol (Table 1, after *References*) was developed considering and evaluating the following characteristics:

1. Users: frequency and intensity in age groups (in a determined period) – identifying users in order to identify the need of a specific type of street furniture;
2. Street furniture: models and quantity – distinct objects can lead users and can also propose or present new activities in the space;
3. Surroundings: proximity of institutions and buildings, such as churches, hotels, museums, schools – different institutions in the proximity of the plaza can attract users for convenience;
4. Sectorization: Green areas, leisure areas with good access – a plaza with a good circulation area and access can be just a path, not exactly a living area;
5. Usage: commercial, residential or services - activities developed in nearby areas of a public space has a straight relation in the way that it will be used;
6. Transport: proximity to bus stops, taxi stops, subway access, cycle paths – several transport modes use plaza spaces, attracting and modifying the users’ actions in this space;
7. Safety: public illumination, policing and management of access – the image of “public safety” that the space conveys to a user can be critical to its usage.

### Testing the Protocol and its results

All 8 plazas - named A to H - were visited on two typical days, during the same time interval. Considering and evaluating all aspects mentioned above, all data was collated, trying to identify any relationships among the plazas.

The general aspects observed were:

- Only in plaza F were all types of users identified: older and young people were more frequent than children, disabled people or pet owners. Only adult users were observed in all plazas;
- Plaza B is the one with a the largest number of seats;
- Playgrounds, hygiene equipment and games/chess tables were seen in all plazas;

- Courts and exercise machines are furniture found in just a few plazas;
- Plaza D was the only one in which all street furniture considered could be found;
- Plaza C has a majority of living aspects. None of them has a museum nearby, but all of them have a school;
- Plaza E has a significant lack of equality when considering its sectioned areas. Plazas B and G have a better balance in their area;
- Plazas B and G have all types of usages in their surroundings; plazas A, C and D are strictly residential, while E, F and H have commerce and residential activities nearby;
- Plazas C and G have all types of transports around, but on the other hand, D and H have no relation in transport modes;
- Plaza B was the only one that had a police booth; all of them have good illumination at night time, walls and railings were seen in plazas C and E.

### Crossing data

After the first evaluation of the obtained data, 4 of 8 plazas were excluded, for the next step of the research. The following criteria were used:

- Plazas A and H – were excluded because they have not shown significant results in most categories evaluated.
- Plaza E – was identified as a park and not a Plaza, and did not fit the profile sought by the research.
- Plaza F – the main aspect was the diversity of users identified on site. However, this factor could only have been taken into account if the protocol was applied at different days and times. This was not the case.

As a result, plazas B, C, D and G were selected as the closest to what the research is attempting to analyze: it must present all 7 characteristics, to be considered a complete Plaza.

A brief description of each one can be considered: Plaza B (fig.1) – diverse usage in the nearby, well-distributed sections, good security, proximity to transport modes, diverse street furniture.



Figure 1 – Plaza B

Plaza C (Fig. 2) – prevalence of residences, close to the beach, safety railing, transportation nearby.



Figure 2 – Plaza C

Plaza D (Fig.3) – large variety of street furniture, residential area, but not close to transport access.



Figure 3 – Plaza D

Plaza G (Fig. 4) – mixed usage, close to several transport modes, close to the beach.



Figure 4 – Plaza G

## EVALUATING THE PROTOCOL AND NEXT STEPS

The proposed protocol enabled researchers to identify the main physical characteristics of each Plaza, so that their location and living aspects could be classified.

Through the protocol it was possible to draw a profile of each Plaza, with its main aspects, prioritizing street furniture and their users.

It is a useful tool when we need mapping of several aspects of a public space, but it can be adapted to be used to

analyze other outdoor spaces also. The collected data are easily obtained as observed aspects are basically quantitative. For a more precise survey, we suggest the use of a more refined technique such as site plans and sketching.

Aiming to complete collected data, in this research, an interview was also conducted with a representative of the municipality. Opened questions were discussed, to better understand the management and government decisions about all 8 plazas.

After analyzing interview results, Plaza D was set as the plaza to be studied in the next phase of this research, to answer the question mentioned before: what is the relationship between street furniture and its users, and what is the importance of this experience in the urban space called *plaza*?

This plaza presents essential aspects that will allow the research to be conducted: a large diversity of street furniture, users that are related to the plaza, and activities that varies according to the user. Plaza D comprises all these characteristics.

## REFERENCES

- Bonametti, J. H. (2000). O impacto da ação do IPPUC na transformação da paisagem urbana de Curitiba a partir da área central. São Carlos: UFSC, 2000.
- Carmona, M. et al. (2010) Public Places Urban Spaces, Second Edition: The Dimensions of Urban Design. Architectural Press, 2 edition, 408 p. 2010.
- De Angelis, B. L. D. (2000) *A praça no contexto das cidades o caso de Maringá, PR*. Tese (Doutorado em Geografia Humana). Universidade de São Paulo, São Paulo, 367 p. 2000.
- Francis, M. (2003) Urban Open Space: Designing For User Needs (Landscape Architecture Foundation Land and Community Design Case Study Series). Island Press, 96 p. 2003.
- IBGE Cidades: Rio de Janeiro, RJ. Retrieved from. IBGE website: <http://www.ibge.gov.br/cidadesat/link.php?uf=rj>.
- Lynch, K. (1960). The Image of the City. Harvard-MIT Joint Center for Urban Studies Series.MIT Press, Cambridge. 201 p. 1960.
- Moughtin, J. C. (2003) Urban Design: Street and Square. Architectural Press; 3 edition, 320 p. 2003.
- Prefeitura do Rio. Armazém de Dados/Instituto Pereira Passos – IPP. Retrieved from Instituto Pereira Passos website <http://www.armazemdedados.rio.rj.gov.br>
- Ribeiro, L. G., Mont'Alvão, C. R. A Ergonomia no Ambiente Construído: Teoria e Prática: Ergodesign do Ambiente Construído e Habitado: Ambiente Urbano, Ambiente Público, Ambiente Laboral.1 ed. Rio de Janeiro, RJ : iUsEr, 2004, p. 87-108
- Wolf, K. L. 2003. Ergonomics of the City: Green Infrastructure and Social Benefits. In C. Kollin (ed.), *Engineering Green: Proceedings of the 11th National Urban Forest Conference*. Washington D.C.: American Forests.

Table 1 – Protocol proposed for observation of public spaces

<b>PROTOCOL FOR ASSYSTEMATIC OBSERVATION OF PUBLIC SPACES</b>									
<b>PLAZA'S NAME:</b>									
<b>HISTORIC DATA:</b>									
<b>LOCATION:</b>									
<b>FORMAT/ SHAPE:</b>				<b>AREA:</b>					
<b>DATAE</b>				<b>HOUR OF VISITING:</b>					
<b>GENERAL CATEGORIES GERAIS OF EVALUATION</b>									
<b>culture</b>		<b>sports</b>		<b>Well-being</b>		<b>leisure</b>		<b>landscape</b>	
<b>CLASSIFICATION OF USERS:</b>				<b>INTENSITY OF FREQUENCY:</b>					
<b>Age groups</b>		<b>yes</b>	<b>no</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
<b>Babies/ kids</b>									
<b>Young people/ teenagers</b>									
<b>Adults</b>									
<b>Elders</b>									
<b>Disabled</b>									
<b>Pet owners/ Animals (birds, small monkeys)</b>									
<b>STREET FURNITURE</b>				<b>SURROUNDINGS</b>					
<b>Objects and equipments</b>		<b>N°</b>		<b>Place</b>		<b>yes</b>		<b>no</b>	
<b>Seats (per person)</b>				<b>School</b>					
<b>Playground</b>				<b>Beach</b>					
<b>Equipments for adults</b>				<b>Hospital</b>					
<b>Furniture for older people</b>				<b>Church</b>					
<b>Hygiene equipments</b>				<b>Open fairs</b>					
<b>Monuments / busts</b>				<b>Tourism</b>					
<b>Table for games (4 persons)</b>				<b>Museum</b>					
<b>Court</b>				<b>Hotel</b>					
<b>SECTORS</b>				<b>SURROUNDINGS</b>					
<b>Total area (aprox. )</b>		<b>%</b>		<b>Usage</b>		<b>yes</b>		<b>no</b>	
<b>Green areas</b>				<b>Commercial</b>					
<b>Flow/ circulation area</b>				<b>Residential</b>					
<b>Leisure areas</b>				<b>Services</b>					
<b>TRANSPORT</b>				<b>SAFETY</b>					
<b>Transport modes</b>		<b>yes</b>	<b>no</b>	<b>alternatives</b>		<b>yes</b>		<b>no</b>	
<b>Bus stop</b>				<b>Walls or grating</b>					
<b>Taxi stop</b>				<b>Police booth</b>					
<b>Subway station</b>				<b>Night illumination</b>					
<b>Cycleway</b>				<b>Flowers kiosk</b>					