THE HUMAN BEHAVIOUR IN BUILT SPACE
POST-OCCUPANCY EVALUATION OF AN
ASSISTED CHILDREN’S PLAYGROUND

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EXTENDED ABSTRACT
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INTRODUCTION

Nowadays, think about the children's playgrounds and how important they are in the healthy growth of children is essential in order to build spaces that fit their needs and be able to promote their development.

Currently, in urban areas of greater density of population, increased the social unrest with the safety of children. The children's plays and their interaction with the places, objects and people are now relegated to assisted places which seek to stimulate the various aspects of healthy development. These sites are also known as assisted children's playgrounds.

These assisted children's playgrounds have become spaces more and more responsible for promoting learning and contact with new experiences and challenges while ensuring the monitoring and control of users.

This work concerns in the analysis of a assisted playground which represents a new concept in our society, and it’s the reason why it’s program hasn’t yet many references or specific bibliography. This analysis is specially based on the functional requirements of this case study, with some references to other relevant fields, particularly the studies of the relation Environment / Behaviour, Environment Behaviour of English Studies.

This study aims to draw lessons and ideas which can provide some guidelines to correct mistakes and make improvements to the space in analysis or to provide guidance for future projects with similar programs.

CASE STUDY

The assisted children’s playground named as 'Bichinhos Carpinteiros', located in the commercial area MadeiraShopping in Funchal, in operation since August 2006, is the case study.

This space is reserved for the temporary reception of children aged 2 to 12 years, essentially allowing parents to satisfy their needs of consumption and leisure, while providing their children a fun experience in a space which was specially built for them.

In addition to the temporary reception of children during their leisure time, it is also possible the performance of parties in this space.

This playground belongs to a group with frequent presence in the commercial centers of the Sonae group, providing a service to its customers and employees.

This service is paid per hour and as it doesn’t perform any educational program, it is recommended that children stay does not exceed the 4 consecutive hours, time taken as sufficient for their parents to satisfy the aforesaid needs.

This playground has an extended timetable, similar to the other mall stores, opened from 10 am until 23 pm, extending until midnight on Fridays, Saturdays and holiday eves.

Closing only on the 25th of December and 1st of January it is always a safe resource for other situations where parents have no where or who to leave their children, even when performing tasks outside this mall.
JUSTIFICATION

As both Bronfenbrenner and Soczka (cit. in Neto e Malho, nd) defend, child development requires spaces progressively oriented to practices outside their home environment, enabling them to make contact with other people (adults and children) with different life contexts.

However, the habits of everyday life became much different with the social changes occurred during the times and children increasingly play less on the streets, which has even become an activity endangered in many cities around the world.

The growing perception of insecurity felt in large cities affects the children to indoor and assisted spaces, originating organized and planned times to play, which diminish their autonomy and means with their levels of motor and emotional development.

The spacial limitation imposed by adults, is the reason why children have only access to a few different spaces. The children's playgrounds are presented as the few places outside the school environment that promote social interaction of children and therefore they should be carefully designed so that they can properly fulfill their role.

The children's playgrounds and spaces for socialization and leisure, should provide children with experiences that contribute to their growth as people, satisfying their physical, emotional, intellectual and social needs.

From the architectural point of view, in this type of places for children should be given particular attention to its image, because it is largely responsible for the security given to parents and for the self-confidence given to children.

The important key in this kind of space is to promote the autonomy of children, offering a wide variety of stimulus and ensuring that they can explore them safely.

NEW PROJECT PRACTICES

All human activities require adequate space to their implementation and in order to better play their role, architects need to give more attention to the demands and needs of users for whom they project, contemplating psychological factors of behaviour and satisfaction.

POEStudies

Post Occupancy Evaluation (POE) is a tool of support of the development of projects. Its main objective is to measure the extent which each project meets the functions for which it was drawn and fulfils the needs and expectations of its users.

As suggested by the name, it is an instrument applied during the occupation, so that the information gathered and knowledge acquired are intended to ‘feed’ new projects or to correct deficiencies.
The relevance of these studies assumes that any space should be built on constant evaluation from the constructive and spacial point of view, or form the satisfaction of its users (Ornstein, 2006), with the aim of approaching the architecture to the reality for which it will be project.

Allowing the creation of projects set guidelines for new buildings, these studies gain special importance when the practice of adoption of standard buildings becomes common.

These studies seek to establish ways of communication between architects and users, in order to a more participatory, qualified and conscientious project.

The programs more similar with a playground, which have already been the target of POE studies, are the environments for early childhood education, more specifically, kindergartens, day-care and schools, school grounds and playgrounds.

Although it is not known any study related to children's playgrounds with operating characteristics similar to the space in study, which provide the assisted casual and temporary care of children, there are some aspects and guidelines common to all spaces for children.

ENVIRONMENTAL PSYCHOLOGY

According to Gifford (1997, cit. in Gunther, nd), Environmental Psychology is "the study of transactions between individuals and physical space in which individuals modify the environment and in its turn, behaviour and experience are affected by this."

The psychological cycle of people in environments begins with perception.

PERCEPTION

The perception of the built environment by users, allows the identification of the potential of this environment, the ability to facilitate or inhibit certain behaviours, taking as' a factor of relevance for the analysis of the environment to fruition, and indicating the scaling qualitative aspects of typological categories, incidence and relations, warning about the demands and expectations of improvement, with a view to development, update and future projections' (Monzéglio, cit. in Elali, 1997).

There are several theories to explain the perceptual process, some focusing on the perceptual process and other the environment.

By understanding as the most appropriate for studies related to children´s playgrounds, this analysis will give special attention to the studies of the Ecological Theory more commonly known as the Theory of Affordance.

Focusing on the environment, this theory emerged in the 50th, with the author James Gibson, who defends that perception is a direct result of stimulation that comes from the environment. The information that people need to perceive the environment is already contained in the pattern of stimulation, not requiring processes of reconstruction and interpretation by the observer. Sets of possibilities and limitations of action should be directly perceived, without effort or cognitive engagement.
The term *affordance* is then used to express all the possibilities that the environment gives to a individual, explaining, for example, if you can climb, jump, walk or run on a surface.

The *affordances* depend on environmental characteristics but also on the body scale and capabilities of the agent.

For the occurrence of an adjustment of behaviour it is important that decisions about the possibilities of action depend on the recognition of what individuals can do bodily, as its capacity for movement and limitations (Pellegrini, 1996, *cit. in* Oliveira e Rodrigues, 2006).

**SECURITY**

The children’s playground areas are one of the fields of intervention more sensitive and more responsibility for architects.

And this because the demand of giving a "sense of place" must be reconciled with the promotion of appropriate relations of interaction between children and between them and the space itself, in a safe environment. Finding the balance between safety and entertainment value is a challenge for all professionals involved in the design and maintenance of these spaces.

The analysis and projection of such spaces is important to distinguish the concept of "risk" of "danger" to the extent that risk is an essential factor of creativity and human development, while the danger factor is the one to remove, caused by dissociation between the needs of children and the environment around them.

The use children give to a playground necessarily involves elements of risk, once the risk stimulates children's development and at the same time is a attraction factor. The action, discovery and groping the risk limits are part of the process of human development (Barreiros, nd).

The exploration of environment and projects within certain limits of security seems to be essential for children to learn to act adjusted to that environment which presents always some risk, however does not present danger.

So, besides acting in the primary prevention based on the control and removal of possible sources of danger, it is also necessary to interfere on the conducts, implicitly or explicitly directing individuals to safe behaviours, involving only controllable risks.

**LEGAL AND REGULATORY FRAMEWORK**

This case study, as well as all the buildings in our country must respect the *Regulamento Geral das Edificações Urbanas* (RGEU).

The document which regulates and establishes the security conditions to observe in the location, siting, design and functional organization of playgrounds and recreation facilities and related equipment and surfaces impact is the DL No. 119 / 2009 - 19th May, repealing the previous DL 379/97 - 27th December.
Apart from the above Decree-Law, there are other normative documents and references with applications in places for children, concerning the safety of equipment and toys.

**METHODOLOGY**

The methodology adopted for this study includes a technical assessment of the performance of the building, removal of the attributes and behaviour patterns of its users and, at last, proposals for intervention in the short, medium and long term in the case study or in other buildings and setting project guidelines.

In the multimethodology approaches carried out evaluations of the built environment, the main methods currently used to collect data are the observations, surveys, interviews and questionnaires.

The observations allow to capture characteristics of both the space itself or its users; surveys allow essentially assist the analysis of the physical characteristics of space, the interviews provide preliminary data describing the space and questionnaires to identify and evaluate in a fast and structured way, the needs and satisfaction of users.

**Technical Evaluation and Performance**

In this chapter are evaluated the parameters of the physical environment through various techniques such as surveys of the size, temperature, noise, construction processes and materials, furniture and renovations. It's also here that there is a compliance with the standards and performance and suitability of materials.

In the case of this children’s playground in study, as it is located within a commercial structure with peculiar characteristics, which directly interfere with its operation, are initially analysed aspects of the location of the shopping mall in the city itself and its internal organization.

![Figure 1 - General plan of the playground](image-url)
Later evaluated various technical aspects of the craft under review, including:

<table>
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<tr>
<th>Building systems</th>
<th>Survey of changes made in the area and the materials used in its construction and decorative elements; Comments on the behaviour and suitability of materials and references to the main identified problems</th>
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<tr>
<td>Accessibility</td>
<td>Analysis of the accessibility of this children’s playground, as well as within its area; compliance with the DL No 123/97, 22nd May</td>
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<tr>
<td>Functionality</td>
<td>Combination of furniture with architectural space, as well as design and distribution of spaces used for storage, among others.</td>
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<td>Environmental comfort</td>
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<td>Fire Insurance</td>
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<tr>
<td>Furniture</td>
<td>Removal of the fixed furniture (defined in draft) and mobile operator acquired by the recess, in order to assess its suitability, durability and versatility.</td>
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**BEHAVIOURAL STANDARDS**

Through behavioural studies can be identified dissatisfaction, changes in habits and needs of the users of a space.

The behavioural and cognitive maps allow to know the users' understanding of the environment and analyse the environmental influences on human behaviour, their perceptions, reactions and stimulus.

In children’s spaces the behavioural and cognitive maps (drawing) gain particular importance as it is difficult to get some success from questionnaires.

The representation of space for children comes from the experiences of the environments in which they interact. The environmental changes are very important to the socialization and development of children. A careful analysis of the different environments that they attend allows a better understanding of the potential and limitations that introduce each of them.

The ideas and opinions of children themselves about the environments in question are extremely important, because when only adults were involved in the planning of places for children, there is a risk of seriously restricting the potential use of these spaces.

According to Hart (1987, *cit. in* Elai e Fernandes, 2008) since three years old, when they start to make cabins / houses and move the position of furniture and other objects, the children are showing interest in participating in defining their own areas.

, no one is more appropriate to express an opinion about the organization of places for children than children themselves.

Since the perspective of this study is mainly focused on the architectural characteristics of the space, the related studies of user behaviour will be discussed in a very superficial way, particularly directed to identify the needs and demands of children to better attend such spaces and to identify ‘affordances’ coming from choices made in the design and
spatial organization, recognizing the need for these studies were conducted by teams of multidisciplinary work.

**Behavioural and cognitive maps**

In addition to the 'informal', objective observations were performed with two groups of children, aged 3 to 6 years, in accordance with the highest percentage found in the table of ages of the craft on frequency analysis.

The children were left to play freely for about 1 hour (the average length of stay in this space, as calculated in the time table of stay), during which their behaviour was recorded. At the end of that time they have been asked to participate in the Wheel Game, which raised issues relating to their preferences and desires in relation to the playground. After recording the answers of children they were asked to draw the playground in study, as well as the desires announced. These drawings may help to identify the aspects of the environment that they prefer more and consequently the ones that they despise.

To obtain a wider range of data for analysis and contemplation, in addition to the two groups of children invited, were questioned on their way out of the playground, about 120 children of different ages, about their occupational preferences and desires for the space in analysis. The children's responses were then grouped into themes in order to facilitate their interpretation.

From the observations and surveys results the children's preference for new technologies, followed by entertainment and toys and imitation activities. In relation to their desires, many children shew difficulties in their expression, prevailing answers related with a greater variety of games and toys, as well as the opportunity to develop outdoor activities in a 'park with slides and swings'.

**Questionnaires applied to Employees**

This questionnaires included closed questions essentially directed to assess the degree of satisfaction and comfort in the space, the needs they face in their daily use and some aspects of children's behaviours, and open questions aimed at obtaining their suggestions intervention and improvement.

**Questionnaires applied to Parents**

The questionnaires directed to parents, as indirect users of this area, mainly intended to determine the degree of satisfaction with issues related to the operation of this assisted playground, as well as the recreational activities developeded, also intending to evaluate the reasons inherent to the use of such service.

**PROPOSAL ACTIONS AND PROJECT GUIDELINES**
Very briefly, the interventions in this playground should increase the diversity of stimulus and activities, in order to more effectively contribute to the healthy development of the children who attend this space.

So, it should bet on the versatility of space, both in terms of shape and formal organization, or the furniture and materials selected.

Regarding the configuration of such spaces, it is suggested, for easier viewing of all the space and therefore greater control behaviour, the adoption of more regularly plans with the access point and entry control located at one end.

The children's preference for electronic equipment and new technologies is a reflection of the sedentary habits of the population, especially within the contexts of children's life, it is suggested the incorporation of educational programs which promote physical activities.

Among the main demands set by the children for this playground, is the contemplation of an outer space, like ‘park with slides and swings’. So, the ideal would be that the playground could include assisted indoor and outdoor spaces, which increase their occupational diversity.

Given the diversification of activities and stimulus, and also to attract the eldest children, the advantage of ceiling height permit incorporate combined equipments with towers, platforms, slides and climbing elements, on the existing spaces.

Size, shape and scale of space, quantity and quality of toys and equipment available, gender and age of the children involved are the main features to consider when projecting playgrounds.

The combination of space qualified differently (as the size, shape and material) increases the possibilities of using the area for children and allows the performance of different activities, providing multiple events.

The children's playgrounds could be assisted through policies that allow the sporadic use of space by other family members, organizing, for example, once a month, activities to develop together by adults and children. In the questionnaire given to parents was posted a question about his interest in these initiatives, to better assess the validity of its promotion, and as result all expressed a favourable opinion to that effect.

The organization of physical space influences the behaviour of those who use it, and it is possible also in the case of children’s playgrounds to organize different environments according to what it aspires.

CONCLUSION

The exercises performed in such studies require training of observation and its results are difficult to implement in the architecture. However, as they were field exercises, performed in the space, have the advantage of establishing a closer relationship with the environment facilitating the perception of two-way relationship between people and spaces that they experience. Reading behaviours requires a close discussion with professionals in the field of psychology.
For proper approaches and interventions, it is important that training in various courses and occupations associated with construction include the analysis of human behaviour and motivation of people.

The idea that the spaces that are designed exclusively for children should provide them experiences which they don’t have on other sites, raises the issue of child's ability to distinguish a place that you can perform certain activities and experiences in security and outside the risk associated with such activity has already reached levels that make it impractical.

The children's playgrounds limited and closed, are far from ideal for the development and socialization of children, becoming only as a safe alternative at times when parents can not accompany them, as well need to satisfy their consumption needs.

This space should not be understood as a repository for children, thus their stay is limited.

The children's playgrounds should neither be an alternative to a school or preschool not as the only alternative as a place for fun, because they require many more growth factors that may be found only in contact with diverse environments.

The ideal would be to diversify the supply of spaces for play and recreation, not only for children but including offers for the whole family, being directed to the living generations.