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The usability of architectural spaces: objective and subjective qualities of built environment as multidisciplinary construction.

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Abstract

"Usability" is present in all interactions between user and object. As well as a product, for the built environment this concept has been presented throughout history by different classifications, such as functional, technical, aesthetic and economic architectural qualities. Architecture expresses its three-dimensional condition through the man possibility of entering the interior and moving to perform daily activities. Ergonomics in architecture arises by the possibility of knowing the users, their biological, social and psychological aspects, and contributes to planning, design, evaluation of tasks, jobs, products, environments and systems. In several areas of knowledge, "usability" is a research object, named "ease of use" in response to the trinity "user - task - physical environment". Since the lack of specific measurement techniques, was perceived, this article introduces the concept of "usability of architectural spaces" as a multidisciplinary construction. Held through the literature review in "architecture, ergonomics, environmental psychology, engineering, interior design, accessibility and universal design". This work presents the analysis, selects and organizes the main dimensions (objective and subjective) and spatial categories of the built environments. Aims to contribute to usability assessments, as support for new environment projects and readjustment of existing ones, such as theoretical and technical grant to scientific research.

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1. Introduction

Usability is present in everything that requires the interaction between user and object, in order to adapt projects and perform adjustments, which can be anything from an internet site or the built environment occupied by human being. Their roots are in cognitive science, psychology and ergonomics and the human-computer interaction study. In the '80, the term "usability" replaced the "use-friendly" expression. Nielsen [68] points that "usability and usefulness" are complementary to compose the "quality of use". Bevan (1995) [1] defines as "the highest interactivity level afforded to a product with respect to the user", which attributes can be verified in the project stage, was summarized as "the ease in using particular product", or defined as "the measure in which a product can be used by specific users in order to achieve the specific goals with effectiveness, efficiency and satisfaction in a specified context of use" [68, 67]. Currently, "usability" is inserted into different contexts, as socio-political issues, trade and production quality standards, consumer satisfaction and responsibility of the supplier; the user interaction with desktop environments, education, health, leisure and community and technological context [3].

Within the framework of the architectural space, the concept is not unknown, and came throughout history as architectural qualities, functional, technical, aesthetic and economic boundaries of the built environment [4,5,6,7,8,9,10]. However, researches involves mostly working environments, information engineering dimensions, interaction design, product evaluation and ergonomic analysis [11,12,13,10]. Given the lack of specific measurement instruments, new usability precepts could be transported to architectural scale in order to suit the in response to individuals needs and skills [13,11,10,14].

2. Usability and architectural space: a multidisciplinary construction

The space is one of the architectural properties and the architectural space expresses the condition of this three-dimensional, through the man possibility of entering and moving himself in this interior [44]. Vitruvian architectural thought based on multidisciplinary was considered universal during different approaches and epochs [5]. The usability concept of built environment, was first discussed in the treatise entitled "De Architectura", at the beginning of the Roman Empire, in which Vitruvius describes on three qualities served by architecture systems: "firmitas, venustas and utilitas" - "solidity, usefulness and beauty" [5,10].

"Solidity" focuses on the constructive aspect, the structural system on physical wrap, technologies and the quality of the materials [5,8]. "Usefulness" is about creating spaces and scales to meet users requirements and how they relate to spaces. According to Vitruvius, "when the arrangement of the environments is correct and does not present obstacles to use, and each building category is assured its suitability and property" [5,8]; "beauty" refers to aesthetic concerns, in order to encourage contemplation and enjoyment [5]. In this context, architectural quality is presented as integration between the functional quality (spatial organization of activities) and technique, which treats of climate regulation (environmental comfort), aesthetics as a symbolic function associated to form, yet, the economy [10]. The "built environment" refers to the building or public space, covered or uncovered environment [15] organized and animated, constituted a kind of aesthetic and physical, psychological and informative, designed to please, serve, protect and unite the people in the exercise of its activities [9]. Usability in architecture is often understood as the functionality or the buildings ability to carry out the tasks envisaged for it, to its efficiency, practical utility or value to the user, considering the financial resources available.

Recent surveys identified factors, cultural, situational and contextual user experience important to base the understanding of usability of the built environment [11,10,16, 17, 19,5,18]. In this perspective, space usability becomes more comprehensive, to assess how people utilize the functions to meet their needs and your experiences [20,21,22] adding to functionality, technological and climatic constraints, symbolic, aesthetic and ergonomic, user needs and expectations, the economic issues and investment returns. Thus, the construction of a static image or constant of built environment usability study would be impossible, which reaffirms its multidisciplinary scope. Some specific aspects of man & built environment have been structured over time with different names and methodologies, but common goals [23,3,20,10].

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