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Walking in users'shoes: visually impaired spatial cognition and perspective in architectural design

Abstract

Why and for whom we design?

Visually impaired user perspective;
User-Centered Design process;
The philosophy of design for all;
Open-search experiment;
Seeing through the "eyes" of visually impaired;
Visually disabled spatial cognition research and architectural design;

Background:

Relevant theories, prior research and current thinking regarding the visually disabled underlying "*spatio-cognitive ability, that is, the ability to understand space and to manipulate it mentally.*" (Passini et al., 1990)

"*People with severe visual impairments are capable of learning a complex route through an urban environment both quickly and efficiently, and that their levels of spatial knowledge and their abilities to process such knowledge becomes equivalent to those of sighted individuals within a short time-frame.*" (Golledge et al., 2000)

"*The visually impaired, regardless of the nature of their visual handicap, are able to complete the spatio-cognitive operations associated with wayfinding.*" (Passini et al., 1990) "*The lack of prior visual experience does not prevent the acquisition of spatial knowledge.*" (a certified orientation and mobility - O&M - instructor)

Any **spatio-cognitive deficiency theory** which assume that fundamental spatial abilities are absent in blind and visually impaired people, **must be rejected.**

Because of sensory impairment, the blind and vision impaired face life with **greater challenges**; the need to concentrate more intensely to match their performance with architectural and sensory cues, "*puts a restriction on their ability to experience architectural and urban spaces as a stroller ("flâneur"). Thus, they try to build a different but possible way to experience the emotion: autonomy, understood as the ability to manage one's own life in the first person.*" (Afshary et al., 2018).

Afshary, G., Garofolo, I., Svetina, M., Zupancic, T. (2018): User Experience study for a sound understanding of the interaction between the visually impaired and the environment, Annales, Series Historia et Sociologia, 28.
Golledge R.G., Klatzky R.L., Loomis J.M. (1996): Cognitive Mapping and Wayfinding by Adults Without Vision. In: Portugali J. (eds) The Construction of Cognitive Maps. GeoJournal Library, vol 32. Springer, Dordrecht
Passini, R., Proulx, G., and Rainville, C. (1990): The spatio-cognitive abilities of the visually impaired population. Environment and Behavior 22 (1), 91-1 18.

WALKING IN USERS' SHOES: VISUALLY IMPAIRED SPATIAL COGNITION AND PERSPECTIVE IN ARCHITECTURAL DESIGN

The environmental contribution to the process of wayfinding.

"*The shaping of the question is part of the answer*"

- How the built environment lend himself to exploration. What kind of experience architecture offers to someone with low vision or without vision?
- What is the impact of the environmental legibility/ complexity on visually impaired wayfinding behavior and performance?
- Which physical/ perceptual barriers or facilitators are directly linked to the design and layout of the building?

How much information about environment is necessary before an individual without vision can find his way confidently and independently?

PURPOSE: discussing architecture with a direct enriching experience.

- To discover the way design decisions affect **the visually disabled level of ability and autonomy.**
- To link and detect connections between environmental characteristics and wayfinding performance (cognitive-architectural analysis).

A valuable opportunity to observe deficits of a setting that alter **the visually impaired wayfinding performance.**

Output:

Which elements of the setting were used most often, the nature of information handled by the various modalities, the areas that challenged the spatial awareness of the visually impaired and influenced on their performance such as walked route length and journey time, and the in-door/out-door environmental conditions which limited or supported the access and mobility of the blind and partially sighted people.

Visually impaired involvement in design: (re)organizing the space from their perspective

Interdisciplinary qualitative approach through methodologies that promote a more collaborative research ambience and encourage a more reflexive approach to participatory research.
The creation of design that is responsive to the blind and partially sighted feedback.

Design Criteria which echoes in the perspective of:
improving the compatibility between the spatial environment and the visually impaired wayfinding behavior, strategies and cognitive perceptions, thanks to **A HYBRID INDOOR AND OUTDOOR NAVIGATION SYSTEM** that through the combination of colour,light and the visual/tactile differentiation of material **cuts the darkness** and **breaks the silence**.

A system that goes hand in hand both with architectural elements of the setting and the visually impaired experimental pattern, and as a **visual/haptic thread can be felt underfoot, detected by a long cane, perceptible by hand and seen by weak eyesight.**