Towards Quantifying the Impact of the Built Environment on Human Experience: Elements of Experimental Design

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I. EXTENDED ABSTRACT

It has always been argued that the built environment affects our thoughts, feelings, and performance (De Young, 2013). However, this interrelation between the built environment and neuroscience, and the extent of how the built environment influences human performance have not been fully understood yet. As people spend more than 90% of our time indoors (Höppe, 2002), there is a crucial need to assess the built environment and how it influences human performance and responsiveness. Few research studies explored architectural design characteristics (e.g., way-finding cues) and their effect on the emotional and psychological responses of human beings (Edelstein et al., 2008). However, most of the current research is focusing on evaluating the impact of individual design features (e.g., color, size) rather than taking a holistic approach to understand and quantify the combined impact on human experience. Hence, there is a lack of research in quantifying the influence of design features on human experience. The goal of this research is to quantify the impact of an identified set of architectural design features on human physiological states, and provide empirical evidence with further insights on the interrelations between architecture and neuroscience. Towards the vision to quantify the impact of design elements on human experience and performance, this paper reports the findings on the initial phase of the research that sheds light on the required elements of the experiment design. These elements include architectural design features (e.g., topological connections in spaces), the sensations they result in human beings (e.g., sense of spatial orientation), parameters (e.g., activation in middle frontal gyrus) and technologies (e.g., EEG) that can be used to measure such sensations that should be used in the experiments. A triangulation based approach has been followed to identify the elements of the experimental design, including a rigorous literature review, crowdsourcing based elicitation from general public and expert feedback with focus groups conducted with architects in practice. Initial findings reported in this paper suggest that architectural design features that are associated with the same physiological sensation and parameters can be grouped for the quantification phase of the research.

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2. REFERENCES

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