The Impact of Biomorphic Design on the Memorability of Interior Environments
A Preliminary Study

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I. EXTENDED ABSTRACT

This preliminary study tests three hypotheses that address these conference themes: the relationship between spaces and memory, as well as emotion, empathy and neuroesthetics in the built environment. The first hypothesis is that images of environments primarily containing elements of biomorphic architectural design are more intrinsically memorable than images of environments that primarily contain elements of formal rectilinear minimalist design. The second is that architectural design elements are expected to impact intrinsic memorability through their effect on participants' feeling of pleasantness. It is also expected that as visual attention to the architectural design elements increases, the intrinsic memorability of those architectural elements also increases.

To explore these hypotheses, this study compares the memorability of interior environments that are designed using a biomorphic design approach, inspired from organic shapes and forms (Kellert et.al, 2008), with interior environments designed using a formal rectilinear minimalist design approach, characterized as simplified designs with "rectilinear" forms, the use of boxes, and the rejection of ornament and decoration. This study measures three things and assesses them using linear-regression and signal detection analysis. First, it measures intrinsic memorability of designed environments, using a cognitive memory task to see which types of design images are more memorable. Second, it measures participants' points of view, using a Likert Scale questionnaire, to assess participants' emotional responses to biomorphic design and formal rectilinear minimalist design. Third, it measures participants' visual attention, using eye tracking technology, to identify which specific design elements the participants are? looking at.

Intrinsic memorability describes how much a visual stimulus can be remembered regardless of the individual differences between observers (Bainbridge, 2013). In this study, the intrinsic memorability of designed environments will be operationalized through displaying images from interior environments. It has been shown that some images are consistently more remembered or forgotten than others (Isola et al., 2011); there is something intrinsic about the content of an image or photograph that increases or decreases its memorability. Theoretical studies have attempted to explain the biological significance of how biomorphic design positively impacts human recognition and memory (e.g. Feuerstein, 2001 and Joye, 2007). Considering human environmental cognition process, factors that influence intrinsic memorability of designed environments include the aesthetic and preference aspects of environmental design, as well as the contribution of visual attention in perceptions of place.

If the findings of this preliminary study show that biomorphic design positively impacts intrinsic memorability of designed environments more than formal rectilinear minimalist design, this suggests that a biomorphic design approach leads to more memorable environments. This methodology can be applied to similar questions, such as clients' preferences for design elements, differences between demographic groups, or wayfinding cues.

2. REFERENCES

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Hasti Mirkia is a doctoral candidate in the Design Studies Department and Environmental Design Research Program at the University of Wisconsin-Madison studying the impact of environmental design elements on human memory. In 2012, she started her interdisciplinary doctoral studies, and her dissertation topic researches the impact of environmental design elements on human emotion and memory in interior spaces. Her research studies include topics on applying psychophysics and data analysis research methodology in design studies.

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