Experiential Design – Rethinking relations between people, objects and environments

• Paper / Proposal Title:
Wearable brain imaging and spatial perception – can this be a tool for exploring effects of interior space upon mood?

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• Abstract (300 words):

Theme: Psychology and interior environments

The purpose of the research was to gather brain data non-invasively while participants were viewing different qualities of digitised interior space to understand whether particular representations of interior environments activate areas in the brain associated with negative/positive emotion. This is part of research in progress of a more significant study exploring the potential application of wearable brain imaging technology (near-infrared spectroscopy, fNIRS) to inform spatial and affective research. The aim is to explore what impact particular formations of interior space (both real and digitised) has upon experience, emotion and neurological responses within the brain.

The paper will present an experimental case study which involved design educated and non-design educated participants viewing digitally represented interior space while wearing brain-imaging head gear (fNIRS - NIRx). The equipment monitored hemodynamics in the prefrontal area known for positive and negative emotion responses (Hoshi, et al, 2009). During the experiments participants were asked to rank the imagery
using a talk aloud affective scale, as to how the spatial environments made them feel. NIRS data was compared with the scaled talk aloud responses.

Significantly, the findings revealed that particular qualities of digitally represented spaces elicit pleasant and unpleasant responses across all participants. More generally, the data showed a trend in cohort specific outcomes, with design educated participants preferring high ceiling spaces while non design educated participant’s preferring wide horizontal spaces. Further, initial outcomes of the study support in principle the use of fNIRS as tool for both real and digital spatial research. In particular, it was observed that specific forms of digitised spaces illicit significant emotional responses which are linked to distinct hemodynamic change.

• Author(s) Biography (200 words each):

Marissa Lindquist is an architect and lecturer at the School of Design, Queensland University of Technology. In 2008 she was awarded the National Dulux Study Tour for emerging architects in Australia. Marissa has been recognized for her creative practice through publication within the 2012 Venice Biennale Australian Pavilion. In 2017, Marissa was the recipient of the Women in Research Scholarship QUT. Marissa is currently undertaking her PhD focusing upon neuroimaging, architecture and emotion.

Tony Williams is Adjunct Professor at University of Newcastle (School of Built Environment and Architecture), and Director of Governance and Performance at University of Wollongong.

Graham Kerr is Professor within the faculty of Health, Queensland University of Technology and member of the QUT Institute of Health and Biomedical Innovation and Australian Neuroscience Society.