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PRESENTER ABSTRACTS
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Spatial Manifestations of the Human Psyche: Architecture Based On Neurological Theories Of Aesthetic Experience & Environmental Preference

ASHLEY BROOKE BIREN

Ryerson University, Department of Architectural Science, ashley.biren@ryerson.ca
Toronto, M5B 2K3, Canada

A cognitive approach towards architecture could unleash a new frontier in contemporary architectural discourse - the emergence of a sensory environment designed to stimulate the human senses and provide neurological nourishment for building occupants. This research aims to revive the fractured relationship between mind, body and space through an exploratory study of architecture driven by neurological theories of aesthetic experience and environmental preference. With the foregoing in mind, a conceptual project was created using a spatial narrative derived from psychosocial values of space, coupled with a responsive exterior facade that generates sensory variability of light, form and movement using human computer interaction technologies. With the intent of furthering the dialogue between architecture and neuroscience, this investigation demonstrates how architects could manifest theories of psychology and neuroscience into built environments, and in turn, foster occupant well-being through spatial agencies in tuned with the human psyche.

1. ABSTRACT

Architecture's fractured relationship with the human psyche deprives occupants from satisfying their needs and desires in the built environment. Architects continue to design static unresponsive objects deemed insensitive towards the dynamic nature of inhabitants. Yet, human beings favor an empathetic infrastructure that perceives, adapts, and changes in relation to their individual idiosyncrasies. A cognitive approach towards design must be implemented within the conceptualization and formulation stages of architecture, allowing for a revitalized relationship between the mind, body and space. The aforementioned method is applied towards a theoretically based visual arts studio located within the downtown core of Toronto, Canada. The design aims to spur neurological nourishment using both static and responsive architectural gestures based on neurological theories of aesthetic experience and environmental preference. The building embraces passive modes of architectural interaction coupled with active modes of emotive spatial adaptation intended to enhance the occupants' well-being and fulfill their corporeal desires.

On a macro level, the architecture reveals a spatial narrative embodying the psychosocial values of space including perceptual problem solving (V.S. Ramachandran & W. Hirstein, 1999), biophilia (Wilson, 1993), the creation of a hearth (Konner, 1982), coherency, mystery, enticement (Kaplan & Kaplan, 1982), prospect and refuge (Appleton, 1975). The micro level bares the sensory variability of light, form and movement articulated by a responsive exterior envelope - a facade comprised of sensing, actuation and control systems that acknowledge the occupant and change in real-time. The active skin consists of autonomous pneumatic silicone modules that expand and contract in response to body temperature, fostering the inhabitant's increase or decrease of stimulus levels depending on the variation of light and form within the environment (Heerwagen, 2000, 2008a). Adaptive floors capable of reconfiguring itself for individual, collaborative work and exhibition are allocated in designated regions for the occupants to control. As the spatial agencies of both the macro and micro level converge, a multi-sensory space that is in tuned with the human psyche is unveiled. The intelligent building embraces a user-centric approach towards design that ignites human senses and encourages occupant well-being. As architects, we must revolutionize our soulless buildings into landmarks for the senses, imparting neurological nourishment for the mind and body in a newfound sensory architecture.

1.1. ILLUSTRATIONS

Figure 1: The six diagrams below illustrates a design form-finding tactic executed on a macro scale. Each architectural gesture forms a spatial narrative based on the following psychosocial values of space:

- A. Perceptual Problem Solving & Ambiguity
- B. Connection to Nature
- C. The Hearth
- D. Legibility/Coherency
- E. Mystery/Enticement/Peril
- F. Zoned Spaces for Prospect & Refuge

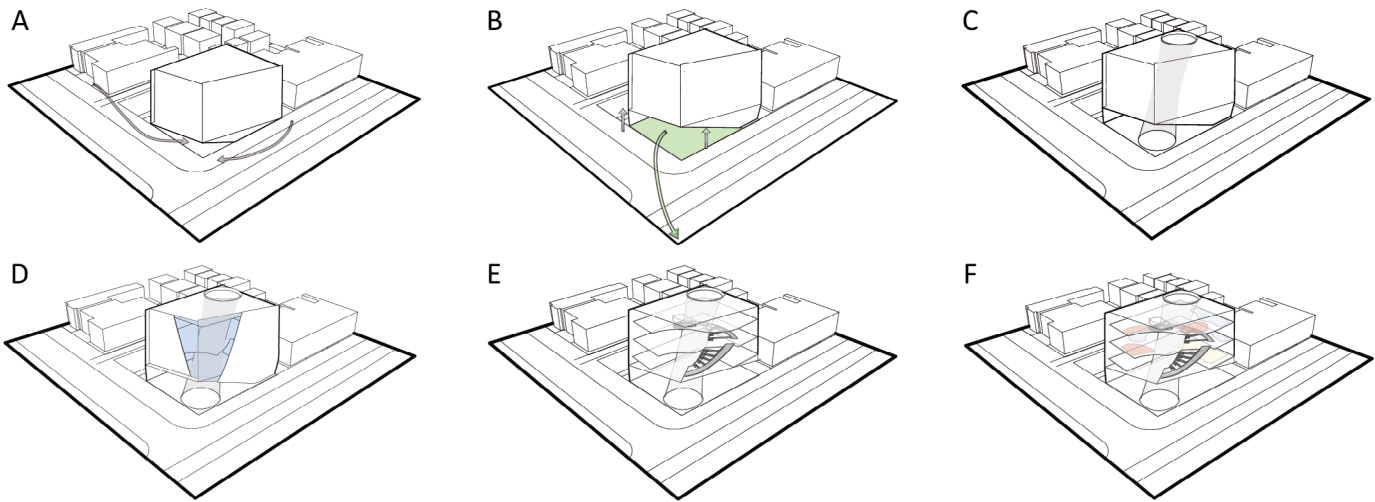
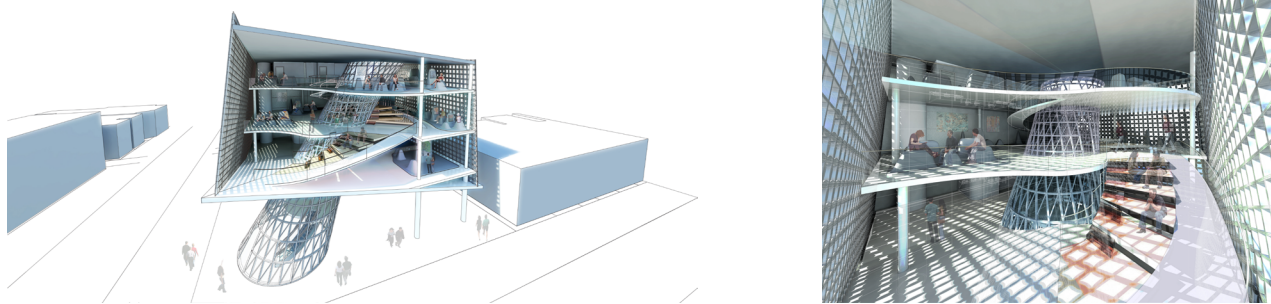


Figure 2: The interior perspective on the bottom left showcases the implemented architectural gestures on both a macro and micro level. The interior visualization on the bottom right illustrates sensory variability, moderate degrees of complexity, and a sense of refuge coupled with high prospect in the building's atrium.



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3. AUTHOR BIO

Ashley Brooke Biren is an architecture graduate student at Ryerson University where she earned a undergraduate degree in architectural science in 2011. During her bachelor studies, she held positions of AIAS Ryerson President as well as AIAS FORUM Sponsorship Chair at the American Institute of Architecture Students. Prior to attending graduate studies, Ms. Biren worked on a wide variety of projects within the retail and residential sector at Kasian Architecture and Interior Design, an award winning international firm located in Toronto, Canada. As a current graduate student, she is engaging in research that investigates responsive and interactive architecture catered towards enhancing occupant well-being. Ms. Biren's thesis will concern neuromorphic architecture that embodies human kinesis, specifically targeting the physical and psychological effects of kinesthetic empathy. As a former dancer and choreographer, she aspires to enrich the experience of architecture through the potential of dance.