

REEMA KADRI

MSc DIGITAL DESIGN AND INTERACTIVE BUILT ENVIRONMENTS

INITIAL THESIS PROPOSAL

TITLE:

**AMBIENT PARAMETRIC DESIGN; AN EXPLORATION
OF GENERATIVE DESIGN INTEGRATIVE OF
EXPERIENTIAL DEPTH**

BACKGROUND:

PROBLEM STATEMENT

AIMS AND OBJECTIVES:

1. Research: Potentials and implications of generative design in perception of space and experiential depth through visual perception, symbolic/sacred geometry, tactile qualities of surfaces, and acoustics;
2. Design: experimental design(s) which explore the incorporation of ambient design strategies and meaningful form within parametric design

METHODOLOGY:

1. Understanding 'Parametricism' and Generative Design
 - a. History of Generative Design
 - b. Paradigm shift in architecture towards computational and parametric design (theories behind shift, how it is evolving, and its sociological effects)
 - c. Potentials and limitations of generative design
 - d. Towards a future of parametric and computational approaches to design
2. Exploring human psychophysical analysis through affective design
3. In-depth case studies exploring the theories, implementation, and evolution of parametric architecture

4. Exploring parametric form finding in contemporary architecture
5. Developing ideologies for parametric form integrative of experiential depth based on established and proposed ambient design strategies
 - a. Human perception; significance of visual and experiential aestheticism (through patterns and visual/tangible textures of surfaces)
 - b. Incorporation of sacred geometry and cultural symbolism in generative forms
 - c. Experiential depth in spatial qualities achievable through parametric design
6. Generatively designed spaces, forms, and geometries as an embodiment of research conclusions and hypotheses

BIBLIOGRAPHY AND SOURCES *(TO BE DEVELOPED)*:

1. "Architect's Brain: Neuroscience, Creativity, and Architecture," Harry Francis Mallgrave
2. "Brain Landscape: The Coexistence of Neuroscience and Architecture" - John P. Eberhard
3. "In the Edge of Science: The Role of the Artist's Intuition in Science" in the "Visual Mind: Art and Mathematics", Perry, C. (1993)
4. "The Mathematical Way of Thinking in the Visual Art of Our Time" in The Visual Mind: Art and Mathematics," edited by M. Emmer, MIT Press 1993
5. "Proportion: Science, Philosophy, Architecture," Taylor & Francis (1999)
6. "Contagious Architecture: Computation, Aesthetics, and Space," Luciana Parisi
7. "Does the Built Environment Influence Physical Activity: Committee on Physical Activity, Health, Transport," Transportation Research Board, Institute of Medicine (of the National Academies)
8. "Emergent Neural Computational Architectures Based on Neuroscience: Towards Neuroscience-Inspired Computing," Stefan Wermter, Jim Austin, David Willshaw
9. Works by "Isabella Pasqualini":
 [<http://people.epfl.ch/isabella.pasqualini/publications?lang=en&cvlang=en>]
 ""Seeing" and "Feeling" Architecture: How Bodily Self-Consciousness Alters Architectonic Experience and Affects the Perception of Interiors"
 "The Riddle of Style Changes in the Visual Arts After Interference with the Right Brain"

LIST OF PREFERRED SUPERVISORS:

1. Dr. Tsung Hsien Wang
2. Dr. Mark Meagher
3. Dr. Chengzhi Peng

Note: Other topics of areas of interest:

1. *Transformable Surface Design; Exploring Generative Design in Fabricable and Interactive Contexts; (output: prototypes of fabricable and transformable surfaces that could accommodate for interactivity of many natures; e.g. facades, interior partitions, furniture, etc...)*
2. *Fractals, Fibonacci & The Golden Ratio in Generative Design; Seeking Sense, Depth and 'Order' in Seemingly Chaotic Geometries*
3. *Designing Interactive Environments for Health and Well-being: Smart Healing Spaces (and carry on with a design-based thesis for this; outcome: smart healing space prototype)*