

LB/009/104/06

409

**LOOKING BEYOND FORM - EXPLORING THE MULTI-SENSORY QUALITY  
OF ARCHITECTURE**

A DISSERTATION PRESENTED  
TO THE FACULTY OF ARCHITECTURE  
OF THE UNIVERSITY OF MORATUWA  
FOR M.SC. ARCHITECTURE FINAL EXAMINATION

**LIBRARY**  
UNIVERSITY OF MORATUWA, SRI LANKA  
MORATUWA

72<sup>05</sup>  
72(043)

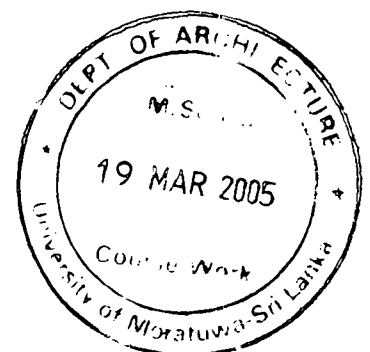
KELUM PALIPANE  
DEPARTMENT OF ARCHITECTURE  
UNIVERSITY OF MORATUWA  
SRI LANKA  
MARCH 2005

University of Moratuwa



85482

85482



85482

## DECLARATION

I declare that this dissertation represents my own work, except where due acknowledgment is made, and that it has not been previously included in a thesis, dissertation or report submitted to this University or to any other institution for a degree, diploma or other qualification.

Signed: *UOM Verified Signature*

(Kelum Palipané)

Signed, Supervisor: *UOM Verified Signature*

(Architect Jayanath Silva)

## ABSTRACT

As with most aspects of human perception, architecture is usually perceived through a visual syntax. Though the dominance of vision cannot be undermined, authentic architectural experiences consist of human encounters and bodily confrontations grasped through all the elementary senses including audition, touch, smell and taste. This is architecture of experiential events as apposed to that of image or form.

It can be observed that most contemporary architecture has been created to be objects of immediate persuasion with the impact of the visual image kept in mind. Though they may be visually seductive in two-dimensional representation (as in drawings and photographs), the uniformity, flatness of materials and the absence of a multi-sensory experience soon create a psychological weariness in the minds of those who work, live and visit these places.

This dissertation explores the auditory, touch, smell and taste dimensions of space, and consequently of architectural space through selected case studies. A literary study was conducted to set the theoretical dimensions from which key characteristics of multi-sensory spatial awareness were identified. Selected case studies were then analysed using the body as a tool of measurement while walking the space, focusing on the identified characteristics. The intention of the study was to create awareness of the significance of the subtle role played by the elementary senses in architectural spatial perception.

It becomes evident through the case studies that multi sensory spaces can arise due to a variety of reasons both intentional and circumstantial. Though the contribution of each sensory modality was important in creating a rich experience, some spaces were seen to incline towards a predominant sensory modality that helped articulate the space distinctly within the perceptual realm. Even though the phenomenological aspect of perception was not stressed in the dissertation it was soon realised that this approach could not be avoided as experiences are inadvertently linked to the acts of recollecting, remembering and comparing.

What was discussed in this dissertation and realised through the case studies, enhance the understanding of the role of the senses in spatial perception and how this contributes to strengthening ones experience of self as well as place.

## ACKNOWLEDGEMENTS

I would like to thank the following people for helping me realize this work.

The Dean of Faculty of Architecture Professor Nimal De Silva. The Head of the Department of Architecture, Architect Vidura Sri Nammuni for encouraging us to tread where we dared not to. The coordinator Dr. Upendra Rajapakse for his initial insightful comments. And I am especially indebted to my Supervisor Architect Jayanath Silva for his personal interest, commitment and guidance right through out the completion of this work.

I also wish to express my grateful thanks and appreciation to the following people. Architect Prassanna Kulatilaka for his valuable comments and showing this study can be more than just an academic exercise. Deep appreciation is also extended to Professor/ architect Juhani Pallasmaa for providing an invaluable source of information. Architect Chris De Saram for his generous and valuable comments. Architect Vijitha Basnayake for his time and comments and Mauli De Saram for lending me her valuable time and providing access to her beautiful home.



I also wish to thank Darshan for his help and guidance, and Maduwanthi for her insightful comments.

And most of all, I sincerely acknowledge the support given to me by my parents right through the completion of this work.

<b><u>CONTENTS</u></b>	<b><u>PAGE</u></b>
<b>Declaration</b>	i
<b>Abstract</b>	ii
<b>Acknowledgements</b>	iii
<b>Contents</b>	iv
<b>List of Illustrations</b>	vii
<b>Introduction</b>	1
<b>Chapter 1/ Possible Factors Contributing to the Loss of Consideration of the Sensory in Contemporary Architecture.</b>	<b>5</b>
1.1. Defining Architectural Space and its Modes of Perception.	5
1.1.1. Architecture of Experiential Events.	5
1.1.2. The Perception of Architectural Space.	7
1.2. Social Trends toward the Visually Seductive.	11
1.2.1. The Impact of Globalisation on Aesthetics.	
1.2.1.1. Art, Literature and Consumer Culture.	13
1.2.2. The Role of the Mass media.	15
1.3. Architecture of Image.	18
1.3.1. Architecture Beyond its Essence -The Popularity of Stylistic Design.	18

<b>Chapter 2/ Multi-sensory Spatial Perception</b>	<b>22</b>
2.1. The Human body as a Perceptual Tool -Sensation and its Aspects.	23
2.1.1. Thresholds of Consciousness.	23
2.1.2. Sensory Adaptation.	24
2.1.3. The Dominance of Vision in Human Sensory Experience.	25
2.2. Perception and Analysing of Sensory Information.	27
2.2.1. Perceptual Organisation and the Gestalt Theory.	27
2.2.1.1. Gestalt Principles of Visual Organisation.	27
2.3. Spatial Perception through the Elementary Senses.	30
2.3.1. Vision and Spatial Perception.	31
2.3.2. Sound and the Auditory Dimension of Space.	37
2.3.3. Tactile Spatial Perception.	44
2.3.3.1. Kinesthesia-Movement and Bodily Action.	47
2.3.4. Smell, Taste and Spatial Perception.	48
2.4. Other factors contributing to Perception.	52

<b>Chapter 3/ A Sensorial Analysis of Architectural Space through Selected Case studies.</b>	<b>54</b>
3.1. Framework of Analysis.	54
3.1.1. Aspects of Architectural Space Perceived through Sound.	55
3.1.2. The Significance of Touch and Kinesthesia in Architectural Space.	55
3.1.3. The Smell and Taste of Architecture.	55

3.2.	Analysis of Case Studies.	57
3.2.1.	Case Study One.	57
3.2.1.1.	The Spatial Experience in Reference to the Framework.	57
3.2.1.2.	Analytical Sensorial Diagrams.	64
3.2.2.	Case Study Two.	66
3.2.2.1.	The Spatial Experience in Reference to the Framework	66
3.2.2.2.	Analytical Sensorial Diagrams.	71
3.2.3.	Case Study Three.	72
3.2.3.1.	The Spatial Experience in Reference to the Framework.	72
3.2.3.2.	Analytical Sensorial Diagrams.	79
	<b>Conclusion</b>	<b>81</b>
	<b>Bibliography</b>	<b>87</b>



University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)

## LIST OF FIGURES

Figure no.	Description	Page no.
Chapter One-		
1.	Stepping stones-signifying architecture of muscles.	5
2.	Weathering and decay fulfil the human need to read time through architecture.	6
3.	Tadao Ando's Chapel on the Water-signifying architectural 'space'.	7
4.	The Great Mosque Djenn, Mali-Architecture is a product of its culture.	8
5.	Movement is an essential ingredient in experiencing architecture.	8
6.	Hill town, Southern Italy.-Architecture possesses a unity with site and culture.	9
7.	An internal courtyard at the Ryon-Ji shrines of Kyoto, Japan-Architecture possesses symbolic meaning.	10
8.	Modern offices offer little natural lighting to at least indicate the time of day.	11
9.	This scene could be anywhere-an example of homogenous western culture spread through globalisation.	12
10.	St Giles Cathedral-Light through stained glass creating a powerful visual effect.	13
11.	Bill boards in New York's Times Square-Image is commodity in contemporary society.	14
12.	Information in the form of images has become the primary mode of knowledge distribution.	15
13.	The onslaught of advertising images.	16
14.	Video arcades with fantastically loud sounds, create hyperkinetic places that overwhelm the senses.	16



15.	Le Corbusier's Chandigarh is often criticized as been too inhuman.	18
16.	Alvar Aalto's Saynatsalo Town Hall in Finland. An example of regionalism of Modernism.	19
17.	Piazza d'Italia in Louisiana. And example of Post-modernism displaying the imitation and parody of multiple styles.	19
18.	The Guggenheim Museum at Bilbao by Frank Gehry.	20
Chapter Two-		
19.	Peripheral awareness of the cycles of day and night, the movement of sunlight and shadows are provided by an open window.	24
20.	The ambiguous figure devised by the Danish psychologist Edgar Rubin to demonstrate figure and ground.	28
21.	In perceiving the pyramids their Gestalt forms dominate.	29
22.	Mind space.	30
23.	Vision emphasizes individuality as it cannot be shared.	31
24.	Peripheral vision is involved with the perception of movement-of self and the surrounding environment.	32
25.	Binocular cues are used to focus on nearby objects.	33
26.	Temple at Karnak-the columns representing the concept of relative size.	33
27.	The eclipse of the moon-representing the concept of overlap.	34
28.	The sharp figure against the backdrop of hazy mountainous landscape represent the concept of aerial perspective.	34
29.	The sunflower heads illustrate the change of texture from course fine with increase of distance.	34
30.	The sound of thunder creates a perimeter of experience for the body -an acoustic horizon.	37
31.	Petra in Jordan. The active agents would generate a distinct soundscape in the sandstone environment.	40
32.	Glazed windows create a separation of the senses.	40

33.	Glass separating the two different acoustic environments of the street and shop interior.	41
34.	Space with reflective surfaces are described as being acoustically 'wet' or 'live'.	42
35.	To touch something is to confirm its existence.	45
36.	Touch also concerns with confirming the person as well, in being present to experience this, and feel this way.	45
37.	A person walking or standing is in permanent tactile contact with the ground.	45
38.	Through haptic encounters, the feeling of place is constructed within the persons mind.	46
39.	As the body is moves through spaces that a person encounters, the kinaesthetic sense assures that the body and movements reflect the form and size of the space experienced.	47
40.	The smell of cooking food from road side vendors can act as attracting forces drawing movement towards them.	49
41.	The unpleasant smell from a drain can be a distractive force inducing movement away.	49
42.	Smells generated by weathering timber illustrate the passage of time.	51
43.	Drawing done by child showing the importance of the face in the child's schema of essential human characteristics.	52
Chapter Three		
44.	The main entrance to the inner sanctum of the Ponnampalavaneswarar Temple at Kochikade.	57
45.	Entrance door with bells.	57
46.	A distinctive soundscape is created as a result of fully granite interior.	58
47.	Entrance steps to sanctum with film of water for ablution.	59
48.	Bells closest to reaching level, shine with repeated touch.	59
49.	Side-entrance to sanctum; a threshold separating two different temperature spaces.	60

50.	Prayer points are indicated by a carved stone.	60
51.	The body encounters subtle heat spaces created by oil lamps, contrasting with the ambient coolness of the inner sanctum.	61
52.	Paving of outside pathway around the sanctum.	61
53.	Granite paving inside sanctum.	61
54.	Carrying offerings around individual shrines become a kinesthetic experience of the space.	62
55.	Oil stains represent use and time.	62
56.	One encounters the circumstantial smell of freshly cracked coconuts used as offerings near a shrine.	63
57.	The texture and the streaks of colours on the granite create oral sensations.	63
58.	Diagram depicting auditory sensations experienced at the Ponnampalavaneswarar Temple.	64
59.	Diagram depicting some haptic sensations experienced at the Ponnampalavaneswarar Temple.	64
60.	Sectional diagram depicting the temperature spaces felt by the body at the Ponnampalavaneswarar Temple.	65
61.	Diagram depicting the olfactory sensations experienced at the Ponnampalavaneswarar Temple.	65
62.	The Fort Railway station.	66
63.	A train appearing in the distance, expanding the auditory horizon.	66
64.	The station almost empty between the arrivals of trains.	67
65.	With the arrival of a train the station is flooded with sudden waves of disembarking people, dominating the auditory landscape momentarily.	67
66.	Two large bird cages fixed under each of the two flights of the crossing bridge add the unexpected sound of birds to the soundscape.	67
67.	Hard stone paving create echoes of ones own footsteps.	68

68.	Walking the linear span of the platform one feels the length of the train that has not yet arrived.	68
69.	A steel bridge provides a cross over between platforms.	69
70.	The tactile connection to the ground on the bridge reveals the ridges of the bus board used for the flooring. The edge of the steps shines as silver, worn and polished through use.	69
71.	Some points of the railway track are stained more with oil than others implying a sense of temporality and narration.	70
72.	A transition from smooth paving to rough is felt through the feet as ones walks across the platform.	70
73.	Diagram depicting auditory sensations experienced at the Fort railway station.	71
74.	Diagram depicting haptic sensations experienced at the Fort railway station.	71
75.	The Maui Residence as seen from outside.	72
76.	Sound of footsteps generated by the railway sleeper flooring, allows one to trace the space above.	72
77.	Zinc alum roof generates a distinct soundscape when in contact with rain.	73
78.	One's feet can trace the patterns of the rough stone paving at the entrance lobby.	74
79.	The feel of the density of tiny rocks as opposed to the smooth wide sleepers creates a momentary tactile shock.	75
80.	The re-cycled narrow timber staircase with its rounded smooth edges adds to a sense of comfort with its feel of use.	75
81.	The passage of time is also represented by the textural changes on the brick and concrete surfaces caused by climbing plants and their roots.	76
82.	Pockets of warmth felt by the skin are created by sunshine in courtyards	76

83.	Some areas on walls are peeled back revealing layer upon layer of textures.	77
84.	A powdery, dry earthy taste felt in the mouth as one feels the brick texture, can be identified as an oral sensation linked to touch.	78
85.	The textured copper garage doors create a sour oral sensation in the mouth.	78
86.	Diagram depicting auditory sensations experienced at the Mauli residence.	79
87.	Sectional diagram depicting the auditory sensations experienced at the Mauli residence.	79
88.	Diagram depicting haptic sensations experienced at the Mauli residence.	80

