

**“Towards a Cohesive City”:
Coherence' of Built Fabric And User-perception on Urban
Environment**

R.R.M.C. Bambaradeniya



A Dissertation presented to the Department of Architecture, University of Moratuwa for the final examination in M.Sc.(Architecture)

University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Department of Architecture

University of Moratuwa

Sri Lanka

April 2006

ABSTRACT

'Cohere' is a need of man and so his environment too should be coherent. By the same need of 'cohere', of human habitation, make the surrounded environment entirely urban day by day. The process of Urbanization adds up built elements to the city and creates the Built Fabric which is the layer of built elements interwoven by infrastructure and human activities etc. Coherence of built fabric make city well composed, which creates user-perception on urban environment a 'whole', and thereby making it well integrated with its habitable living-built mechanism.

From 'Pragmatic Space' to 'urban space' (Existential Space) people have lived through the dimension of time. From the caves to mega-cities it is a continuation which added up many 'new' elements to the people's surrounding. The change of the space surrounded therefore becomes a complex-urban-space which people's perception on space has become a combination of different elements. As time goes by, in an additive transformation, 'building anew building' is not only 'building it individually new' but, integrating the 'new building' in 'existing built fabric'. Present day, contemporary Sri Lankan urban environments have become collection-of-disintegrated-individual elements which do not facilitate human cohabitation (Ex: Colombo Fort) due to these individually thought and built building which has been created many restrictions physically and psychologically, by destroying city's character, identity and flow of human activities. This is mainly due to the lack of understanding as to what coherence is and how to get about achieving it.

The wholeness in user-perception in a city, makes it work: Simply, if the perception of users, of city is 'a whole', by the means of its built fabric, the human co-habitation with built environment and the flow of functions will happen effectively. Therefore making 'the sense of whole' in user perception on urban built environment is the goal. To create sense of whole in perception, the physical built elements (Paths, Nodes, Buildings, city edges etc.) should be coherently integrated. The Coherence could be achieved in two ways: how it physically arranged as cohered(Physical Coherence) and how to make psychologically perceived by user as cohered(Psychological/Experiential Coherence).

Declaration Note:

I declare that this dissertation represent 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 any other institution for degree, diploma or other qualification.

UOM Verified Signature

~~R.R.M.C.Bambafadeniya~~
Department of Architecture
University of Moratuwa
Sri Lanka

UOM Verified Signature


Dr. H. Munasinghe
Dissertation tutor
Department of Architecture
University of Moratuwa
Sri Lanka



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk



ACKNOWLEDGEMENTS

This study would not have been possible without the help of many people and I would like to take this opportunity to thank to;

Dr. H. Munasinghe – the dissertation tutor who helped me throughout this study with so much encouragement and his faith in this effort.

Prof. Samitha Manawadu – for the inspiring discussions and support



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations

Dr. Upendra Rajapaksha –for his valuable comment and guidance.

I would also like to thank my brother for lending me his computer when I was really stuck with technical difficulties, and all the friends who were around,

and specially to my father and mother for the invaluable support rendered.



CONTENTS

PAGE

ACKNOWLEDGEMENT

ABSTRACT

LIST OF FIGURES

INTRODUCTION

1

1. CHAPTER ONE: Urban Environment and User-Perception

7

1.1 Space and Perception

8

1.1.1 Pragmatic or Primitive Space

11

1.1.2 Perceptual Space

12

1.2 Individualism to Urbanism

13

1.3 Urban Environment and Perception

14

1.3.1 Existential Space

14

1.3.2 The Urban Space and Perception

15

1.4 The Image of the Urban Environment and its relationship with User-Perception

17

1.4.1 Structure and Identity

18

1.4.2 Imageability

18

1.5 The Elements of Built Fabric: Architectural attributes of a city on User-Perception

20

1.6 The goal: Imageability and 'sense of wholeness' in user perception

25

2. CHAPTER TWO: Coherence in an Urban Environment

27

2.1 Coherence: 'The link of Elements' towards wholeness in user perception.

29

2.2 The Urban Coherence: A media of Integration of Urban Environment

30

2.3 A typology for Coherence in an Urban Environment

32

2.3.1 Physical Coherence

32

2.3.2 Experienced Coherence

37

<u>3. CHAPTER THREE: The Case study: Identification of Elements of Built Environment in Kandy city</u>	41
3.1 Introduction to Kandy: Elemental changes of Built fabric and affect to the Urban Environment of City	43
3.1.1 Macro Context	43
3.1.2 Micro Context	46
3.1.3 Historical Elemental Changes and development of city's Built Environment	47
3.2 The 'Elements' of Kandy	54
3.3 The User perception and its physical elements of Built Environment:	68
3.4 Sense of Wholeness in Kandy	69
<u>4. CHAPTER FOUR: The Analysis : Role of Coherence of built Fabric in Kandy City</u>	70
4.1 Relationship between role of coherence and built fabric in Kandy.	71
4.2 Making an Image: Role of coherence of built fabric in user perception on urban environment in Kandy.	72
4.3 Toward a Cohesive Urban Environment: Integration for Development	85
CONCLUSION	89
LIST OF REFERENCES	91

List of Figures

Fig. a: PERCEPTION AND SPACE	1
Fig. b: COHERENCE	2
Fig. 1: Delphi an Old City	9
Fig. 2: Space and Perception	10
Fig. 3: Continuum of Human Spatial Relationship	11
Fig. 5: Pragmatic and Primitive space	11
Fig. 6: Perceptual Space	12
Fig. 7: Existential Space	14
Fig. 8: Individualism to Urbanization	15
Fig. 9: The spatial structure of Qmarakama settlement, illustrating some of the Structural features of the 'lived' or 'existential' space of the Trobriand Islanders	16
Fig. 10: Structured Elements	18
Fig. 11: The two-way process	19
Fig. 12: The Path	21
Fig. 13: The Edge	21
Fig. 14: The Segment	22
Fig. 15: The Node	23
Fig. 16: The Landmark, Germany	24
Fig. 17: 'Composing the Whole'	25
Fig. 18: A. Levels of the vertical structure, specially as they apply to urban spaces	29
Fig. 18: B. Components of the horizontal structure of existential space.	29
Fig. 19: Place which have gained authenticity by being lived-in: Treorchy, South Wales and Kensington Market, Toronto, USA.	31
Fig. 20: A places to remember, early ages of Rome.	32
Fig. 21: Proximity	33
Fig. 22: Symmetry	34
Fig. 23: Plan of a 'Church'	34
Fig. 24: Common Enclosure	34
Fig. 25: Galle Fort	35
Fig. 26: Permeability	35
Fig. 27: Permeability	36



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Fig. 28: Repetitions of built Elements	36
Fig. 29: Similarity	37
Fig. 30: Similarity In height, scale and window lines In The Netherlands	37
Fig. 31: Familiarity of Urban dwellers to the city	38
Fig. 32: Temple of Tooth, Kandy	39
Fig. 33: Delkanda Pola (Market) cohere the linier physical space without and built structures.	40
Fig. 34: 'Kandy' in Sri Lanka	43
Fig. 35: 'Kandy' Map Showing Natural and Built Setting	44
Fig. 36: Kandy: Built Elements	45
Fig. 37: Cohesive core of Kandy	46
Fig. 38: Kandy Map 1621	49
Fig. 39: Kandy Map 1765	50
Fig. 40: Old Kandy City Concept 1815	51
Fig. 41: Kandy Map with Grids 1815	52
Fig. 42: Dalada Veediya	55
Fig. 43: D.S.Senanayake Veediya	55
Fig. 44: Inner road (Yati Nuwara Veediya)	55
Fig. 45: Main streets and paths	56
Fig. 46: Streets Edge in D.S Senanayake Veediya	57
Fig. 47: Lake Edge	57
Fig. 48: Edges in Kandy	58
Fig. 49: Sacred District	59
Fig. 50: Busy, Packed, Commercial District	60
Fig. 51: Less Dense Peripheral District	60
Fig. 52: Districts in Kandy	61
Fig. 53: Nodes along Dalada Veediya	62
Fig. 54: Nodes of Kandy	63
Fig. 55: Queens Bath	64
Fig. 56: Queens Hotel	64
Fig. 57: Cargill's Building	64
Fig. 58: Old Walawwa remaining	65
Fig 58a Kataragama Devalaya	65

Fig. 59: St. Paul's Church	65
Fig. 60: St. Anthony's Church	65
Fig. 61: Old Post office	66
Fig. 62: Clock Tower	66
Fig. 63: Bahiravakanda Mountain Statue	66
Fig. 64: Landmarks in Kandy	67
Fig. 65: Kandy from Hilly Mountains	69
Fig. 66: Study Segments	73
Fig. 67: Segment 01	74
Fig. 68: Repetitions along arcades, Trees, Lake edge Decoration and path creating coherence	75
Fig. 69: Repeating elements inside of the arcade cohere with outside, due to similarity of scale and accessibility	75
Fig. 70: Udawatta Kale mountain cohering with Main Focal Landmark, The temple of tooth	75
Fig. 71: Symmetry of path, proximity of landmark, path and common enclosure cohere the whole segment and by with activity.	75
Fig. 72: The Image: Cohered elements create the sense of whole between dramatic city elements.	75
Fig. 73: Segment 02	76
Fig. 74: Node and Edges in Commercial Core Building Edges decrease permeability and accessibility in to the block, result segregation	77
Fig. 75: Building in Commercial Core The Similarity of scale of buildings cohere the edge and activity, while closeness between objects limit it.	77
Fig. 76: Segment three	78
Fig. 77: Clock tower Node The Landmark (Clock tower), Node, Common Enclosure (Bahiravakanda) are cohered because of the proximity, permeability, accessibility	79
Fig. 78: Bahiravakanda and the city edge The Common enclosure (Bahiravakanda acts as an edge and cohere with the city's elements due to close proximity and visual accessibility.	79

Fig. 79: Kataragama Dewalaya	78
Fig. 80: Walawwa at Yatinuwara Veediya	78
Fig. 81: A pillar of Dehigama Walawwa Remaining	78
Fig. 82: A mosque at Kotugodella Veediya	78
Fig. 83: Small Church in down town	78
Fig. 84: The 'Colamba' Veediya: The height cores the block as an entity	79
Fig. 85 Raja Veediya: Connection from Commercial Core to Sacred area	79
Fig. 86: The streets at Commercial Core The perspective ends up from a mountain, so that it coheres giving the basin feeling.	80



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk