AN ANALYSIS OF THE HORMPHOLOGY OF AN URBAN ENVIRONMENT OF SRI LANKA, USING 'SPACE SYNTAX'

A.M. Binduhewa

Dissertation submitted in fulfillment of the requirements for the degree Master of Science (Architecture)

Department of Architecture

University of Moratuwa

Sri Lanka

2006

95731
# Contents

Declaration ................................................................. i  
Acknowledgement ....................................................... ii  
List of Illustrations .................................................... iii  
Introduction .............................................................. v  
Chapter one: Urban Morphology for Analyzing  
Urban Environments ..................................................... 1  
1.1 The urban environment .............................................. 1  
1.1.1 The city ............................................................ 1  
1.1.2 The city form ..................................................... 2  
1.2 Study of urban form (Urban morphology) ....................... 4  
1.2.1 Introduction to urban morphology ............................ 4  
1.2.2 Recent developments in urban morphology ................. 5  
1.2.3 Human aspect of urban form and architects contribution 6  
1.3 Urban environment, its impact on human activities and behavior 7  
1.3.1 Understanding of social and space relationship .......... 7  
1.3.2 Understanding of ‘What architecture adds to building’ 8  
1.4 Related research and theories on social and space relationship 8  
1.5 The city form and social understanding - reference to related research/ Theories 10  
1.5.1 Elements of good city form ................................... 11  
1.5.2 Design of responsive environments and urban design principles 12  
1.5.2.1 Permeability ................................................... 13  
1.5.2.2 Vitality - Places that are vibrant, safe, comfortable, varied, fun, and active ........................................... 13  
1.5.2.3 Variety - A successful place also offers a mix of activities to the widest range of possible users ........................................... 14  
1.5.2.4 Imageability and legibility as significant qualities of the city 14  
1.5.2.5 Robustness .................................................... 16  
1.6 Space syntax for the study of urban environments ............ 16  
1.6.1 The basis for the identification - space syntax urban environments ...................................................... 16
Chapter two : Space Syntax as a Method to Analyze the Urban Environments

2.1 Introduction - Space syntax
2.1.1 What is 'space syntax'?
2.1.2 Space syntax - definition
2.1.3 Origin of the Space syntax
2.1.4 Why? Syntax of space need for the urban developments

2.2 Space syntax as a morphological approach to analyze urban environments and its significance

2.3 Social constraint and configurational possibility in Space syntax
2.3.1 Space syntax as plausible model for predict spatial cognition

2.4.1 Spatial configuration / morphology
2.4.2 Spatial cognition

2.5 Space syntax theory
2.5.1 Study the morphology of urban environments
2.5.2 Representation of urban environment
2.5.3 Understand the morphological structure using space syntax
2.5.4 Basic spatial elements to represent urban space

2.6 Morphological representation using axial maps
2.6.1 The axial map
2.6.2 Axial representation through colors

2.7 Morphological properties that can measure using space syntax
2.7.1 Morphological properties of the axial representation
2.7.2 Distance and human understanding
2.7.2.1 Cognitive distance and human perception

2.4.1 Spatial configuration / morphology
2.4.2 Spatial cognition
2.5 Space syntax theory
2.5.1 Study the morphology of urban environments
2.5.2 Representation of urban environment
2.5.3 Understand the morphological structure using space syntax
2.5.4 Basic spatial elements to represent urban space
2.6 Morphological representation using axial maps 32
2.6.1 The axial map 32
2.6.2 Axial representation through colors 32
2.7 Morphological properties that can measure using space syntax 34
2.7.1 Morphological properties of the axial representation 35
2.7.2 Distance and human understanding 36
2.7.2.1 Cognitive distance and human perception 37
2.7.3 Global integration and local integration 37
2.7.4 Understanding the morphological measures 38
2.8 Concluding remarks - the theoretical framework used by space syntax 39
2.9 Application of space syntax tools in urban developments 40
2.9.1 The sectors and the contribution of space syntax 40
2.10 International implications of space syntax, in the field of urban design 43
Case study 1 43
Case study 2 49

Chapter three: An analysis of the Morphology of an
Urban Environment of Sri Lanka, using
Space Syntax special ref. to Pettah, Colombo 54
Case study — Pettah, Colombo
Case study — Pettah, Colombo
Conclusion 71
Bibliography 73