### SPACE PLANINING FOR URBAN DWELLINGS IN SRI LANKA

N. M. C. D. Bandara

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

Department of Architecture

University of Moratuwa Sri Lanka

June 1996

95740

### **Abstract**

The history speaks only about the buildings built on the ground. This is obvious and easily justifiable in a context where ample space had to be matched against limited requirement. In other words, excess surface space was available when compared with the need for space.

Unless the building was put up as a monument, it way not at all required to use the vertical space. Later, with the social, economical and cultural implications of the industrial revolution, it was felt that the urban space is facing a threat of scarcity. The movement of people and activities towards cities created a huge demand for urban space but the effective space that a city could provide was limited and scarce. To bring in some light for this crisis, the architects were compelled to generate more space in two ways, firstly by being innovative on the usage of surface space and secondly by encroaching into vertical space in absence of having freedom to extend horizontally.

All in all, space today, either urban or rural, is a scare resource – once utilized cannot be reversed unless an extreme cost is incurred. To avoid the repercussions in the future, it is the prime responsibility of the Architect to run all his ideas and creations through this bottleneck before having the things off the ground. The objective of this study id to set a up a simple space planning process that could be adopted in generic terms and to establish the application in urban dwellings in Sri Lanka.

#### Deceleration

I declare that this dissertation represent my own work except where due acknowledgement 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 or a degree, diploma or other qualification.



## **UOM Verified Signature**

NMCD Bandara

# **UOM Verified Signature**

Architect Hiranthi Pathirana

Principal Supervisor



### Contents

| Acknowledgements |  |    |  |
|------------------|--|----|--|
| List             | of illustrations   | 06 |  |
| Intro            | oduction   | 07 |  |
|                  | Topic explanation and observations   | 07 |  |
|                  | Aims and objectives  | 09 |  |
|                  | Scope and limitations of the study   | 10 |  |
|                  | Method of study  | 10 |  |
| 1.0              | What is space and how it is captured?  | 12 |  |
| 1.1              | What is 'Space' in Architecture?   | 12 |  |
| 1.2              | Natural space Vs created space   | 14 |  |
| 1.3              | Why, how and by whom the space is created?   | 16 |  |
| 1.4              | What is the expected by an architect in creating space?  | 17 |  |
| 1.5              | How the space is captured?   |    |  |
|                  | University of Moratuwa, Sri Lanka.  1.5.1 Physical volume - Actual space Electronic Theses & Dissertations | 18 |  |
|                  | 1.5.2 Psychological volume - Space 'seen' and Space 'felt'   | 20 |  |
|                  | 1.5.3 Space as a part of a large whole   | 23 |  |
|                  | 1.5.4 Potentiality of a space  | 24 |  |
| 2.0              | Creating space in architecture   | 25 |  |
| 2.1              | Assess the available space / input - What is available?  | 26 |  |
| 2.2              | The purpose of change demanded - Why should it be changed?   | 27 |  |
| 2.3              | Set up the objective - To what should it be changed?   | 27 |  |
| 2.4              | Set up the process - How could it be changed?  | 27 |  |
| 2.5              | Create, assess and refine the output - Arriving at the end product?  | 28 |  |
| 2.6              | A new space is created - Is the change successful?   | 29 |  |
| 3.0              | Planning space   | 29 |  |
| 3.1              | The concept of space planning  | 29 |  |
| 3.2              | Pros and cons of space planning  | 34 |  |
| 3.3              | When, where and how a space plan could be used   | 36 |  |

| 3.4    | Gener        | al methodology of space planning                             | 36 |
|--------|--------------|--|----|
|        | 3.4.1        | Identifying inputs   | 37 |
|        | 3.4.2        | Identifying ground rules                                     | 38 |
|        | 3.4.3        | Identifying the project requirement                          | 39 |
|        | 3.4.4        | Setting up the project objective                             | 39 |
|        | 3.4.5        | Criteria matrix  | 40 |
|        | 3.4.6        | Adjacency and visual connectivity matrix                     | 41 |
|        | 3.4.7        | Bubble diagram   | 42 |
|        | 3.4.8        | Value management   | 47 |
|        | 3.4.9        | Space plan off the ground                                    | 49 |
| 4.0    | Urbar        | a space, urban man and urban house in Sri Lanka              | 52 |
| 4.1    | Recog        | nizing urban space in general                                | 52 |
| 4.2    | Recog        | nizing urban space in terms of dwellings                     | 54 |
| 4.3    | Adopt        | ing an urban space for a dwelling - restrictions and freedom | 55 |
| 4.4    | An url       | ban man  | 56 |
| 4.5    | An url       | ban house  | 57 |
| 4.6    | Space        | planning in urban dwellings, generic analysis on, Sri Lanka. | 57 |
|        | 4.6.1        | Identifying inputs Electronic Theses & Dissertations         | 58 |
|        | 4.6.2        | Identifying ground rules lib.mrt.ac.lk                       | 60 |
|        | 4.6.3        | Identifying the project requirement                          | 62 |
|        | 4.6.4        | Setting up the project objective                             | 64 |
|        | 4.6.5        | Criteria matrix  | 66 |
|        | 4.6.6        | Adjacency and visual connectivity matrix                     | 68 |
|        | 4.6.7        | Bubble diagram   | 69 |
|        | 4.6.8        | Value management   | 69 |
|        | 4.6.9        | Space plan off the ground                                    | 70 |
| Case   | studies      |  | 71 |
|        | An ap        | artment in Colombo   | 71 |
|        | An in        | dividual house in Colombo city limits                        | 81 |
|        | An in        | dividual house in Colombo suburbs                            | 89 |
| Conc   | lusion       |  | 96 |
| Biblio | Bibliography |  |    |

### Acknowledgements

I take this opportunity to thank you all who encouraged me and helped me in many ways in making this project a success.

Tutors

Dr. Upendra Rajapakshe

Architect Hiranthi Pathirana

Year Masters

Architect Gamini Weerasinghe

Architect Arosha Gunasinghe

Architect Jayanath Silva

Sylvia and Austin Fernando

Eroshi and Seniya Samarasekera

Rumal and Niranjan Waidyakularathne

Jyothi and Ramakrishnan Iyer

Ganeesha and Lakith Leelasena

Pubudu Perera

Missaka Warusawitharana

Isurunath Bulankulame

Santhushya Fernando

Tharanga, Suki and Kasun

Suha and Malla

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

Thank you, again.

## List of illustrations

| Illustration<br>No | Title   | Page |
|--------------------|---|------|
| 01                 | Change of space with changes in factors that determine the space.                             | 13   |
| 02                 | Life cycle of a space   | 15   |
| 03                 | Pictorial study to establish relationship between Scale, Emphasis and Proportion              | 19   |
| 04                 | Pictorial study on how 'Space seen' and 'space felt' differ from the actual space             | 22   |
| 05                 | Space as a part of large whole  | 23   |
| 06                 | The process of transforming natural space to created space                                    | 30   |
| 07                 | Model of adjacency and visual connectivity matrix i Lanka.  Electronic Theses & Dissertations | 42   |
| 08                 | A stack diagram Www.lib.mrt.ac.lk   | 45   |
| 09                 | A proportionate bubble diagram  | 46   |
| 10                 | Space planning process illustrated graphically  | 50   |
| 11                 | Pictorial study of urban space in Colombo and Galle   | 53   |
| 12                 | Pictorial study of urban spaces in terms of dwellings   | 55   |
| 13                 | Graphical presentation of objective setting up  | 65   |
| 14                 | Schematic layout of housing units in King's court   | 73   |