

ARCHITECTURE IN HARMONY WITH NATURE:

An Examination of Implications of "Physical context" in creation of Form

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

A Dissertation

Submitted to the Department of Architecture of the

University of Moratuwa in partial fulfillment of the

requirements for the degree of

Master of Science

in

Architecture



University of Moratuwa, Sri Lanka
www.lib.mrt.ac.lk

Handwritten notes in the bottom right corner.

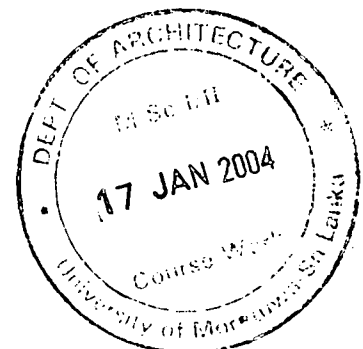
85430



University of Moratuwa

Purnima Jayasekera

January 2004



85430

ACKNOWLEDGEMENT

The attempt to express gratitude and convey sincere thanks in words to so many who helped, assisted, inspired, and guided me in making this dissertation a reality is an arduous task. However I humbly thank all of them from the bottom of my heart for their lavishly extended co-operation.

First and foremost I am duty bound to express my thanks to Archt Vidhura Sri Nammuni, head of the department of Architecture, for guiding me properly from the 5th year, to gather, and enhance the knowledge in compiling this dissertation.

A very special thanks to Archt Prasanna Kulathilake senior lecturer, and course co-ordinator, for his invaluable suggestions and inestimable support given to arrange the facts in a systematic and coherent order from the very inception, and the co-operation extended to prepare the format.

Sincere thanks to,



- Archt Arosh Gamage supervisor of my dissertation, for scrutinizing, providing resources from the very initial stages, till the completion. It is with gratitude that I mention her co-operation and assistances was decisive in moulding this dissertation.
- Archt Suthumina Rathnamalala, for the valuable advices given at the initial stage.

Hearty thanks to all my friends who contributed in what ever manner possible. Special tributes are due to - Chanika, Amali, Sonali, Suranga, Sisara, Dauphadi, Dhanika and Samantha for advising guiding discussing encouraging and assisting me throughout.

Last but by no means least, to my parents and my brother for their continuous guidance, encouragement and the blessings extended all the time.

DECLARATION

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

UOM Verified Signature


J.P.P Jayasekera

TABLE OF CONTENTS

	Page No
ACKNOWLEDGEMENT	I
DECLARATION	II
LIST OF PLATES	VI
LIST OF FIGURES	IX
ABSTRACT	X
INTRODUCTION	
0.1 The study	01
0.2 Importance of the study	03
0.3 Intention of the study	04
0.4 Methodology	05
0.5 Scope and limitations	06
1.0 CHAPTER ONE: "FORM" AS A "PHYSICAL ENTITY" WHICH EXPRESSES REAL MEANING OF "ARCHITECTURE".	
1.1 Architecture - Definition	08
1.2 Architectural expression	09
1.3 "Form" as a expressive media in Architecture	11
1.4 Constituents of architectural form	14
1.4.1 Orientation	14
1.4.2 3-D Composition	15
1.4.3 Plan configuration	16
1.4.4 Hierarchical order of spaces	16

1.5	Generative factors of Architectural form	17
1.5.1	User	18
1.5.2	Activity pattern	19
1.5.3	Purpose/ Function	20
1.5.4	Context	21
1.6	Concluding remark	26

2.0 CHAPTER TWO: CHARACTERISTICS OF "PHYSICAL CONTEXT" IN CREATION OF ARCHITECTURAL FORM

2.1	Interpretation of physical context	28
2.2	Man-made environment	29
2.2.1	Character or Spirit of man-made environment	30
2.2.1.1	Patterns of locality	30
2.2.1.1.a	Patterns of organization of masses	31
2.2.1.1.b	Patterns of sequence of spatial progression	35
2.2.1.1.c	Patterns of activity	36
2.2.1.1.d	Patterns of Architectural style	38
2.3	Natural environment	39
2.3.1	Character or Spirit of natural environment	40
2.3.1.1	Natural systems	41
2.3.1.1.a	Physical order - Geography	41
2.3.1.1.a.1	Land	42
2.3.1.1.a.2	Water	44
2.3.1.1.a.3	Plants	41
2.3.1.1.b	Cosmic order	46
2.3.1.1.b.1	Ecology	46
2.3.1.1.b.2	Climate of locality	47
2.4	Concluding remark	48

3.0 CHAPTER THREE: HARMONIZING WITH "NATURAL ENVIRONMENT" IN THE CREATION OF "FORM"	
3.1 Harmonization - completing the pattern of the place	50
3.2 Harmonization as a method of responding to the context	51
3.3 Identifying the pattern of the "Natural context"	52
3.3.1 Symbolic patterns of natural context	54
3.3.1.1 Volume	55
3.3.1.2 Scale and proportions	56
3.3.1.3 Balance	57
3.3.1.4 Rhythm	58
3.3.1.5 Repetition	58
3.3.1.6 Hierarchy	59
3.3.2 Visual patterns of natural context	60
3.3.2.1 Topographical conditions	60
3.3.2.1.a Site Geometries	65
3.4 Responding to the pattern of the "Natural context" in creating "Form"	
Case Studies	67
3.4.1 Boulder Gardens - Kalawana	68
3.4.2 Kandalama hotel - Dambulla	75
3.4.3 Subhodhi - Piliyandala	83
3.4.4 Blue waters - Wadduwa	89
CONCLUSION	95
BIBLIOGRAPHY	97

LIST OF PLATES

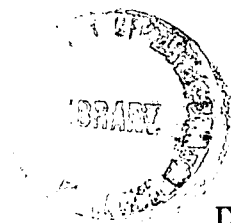
	Page
1. Plate 01 - Pyramid of Giza, Egypt.	11
2. Plate 02 - "Form of built", Sydney Opera House.	13
3. Plate 03 - "Form of none built", Spanish steps.	14
4. Plate 04 - Acropolis, Athens.	15
5. Plate 05 - Composition of form, Villa Savoye, Poissy.	15
6. Plate 06 - St Peters, Rome.	16
7. Plate 07 - A building in a context of water body Sydney Opera House	25
8. Plate 08 - "Sacred rock of Athens", Acropolis hill.	25
9. Plate 09 - Different cohesive patterning systems.	31
10. Plate 10 - Centralize organization.	32
11. Plate 11 - Villa Hernoza, Spain.	33
12. Plate 12 - Clustered organization, Grand axis, Paris	35
13. Plate 13 - Different spatial experiences, Venice.	36
14. Plate 14 - Different spatial experiences, Venice.	36
15. Plate 15 - Water front, Venice.	37
16. Plate 16 - Town Square, Tello.	38
17. Plate 17 - Trees in rural environment.	40
18. Plate 18 - Tree in deserted environment.	40
19. Plate 19 - Rural site.	43
20. Plate 20 - Sloping site.	43
21. Plate 21 - Flat land.	44
22. Plate 22 - water fall in the site of falling waters, before the design	45
23. Plate 23 - Falling waters by frank Lyoid Wright	45
24. Plate 24 - Talisen West by Frank Lyoid Wright	45
25. Plate 25 - Cosmic order changes the character of a place	46
26. Plate 26 - Cosmic order changes the character of a place	46
27. Plate 27 - Housing forms according to the climate.	47
28. Plate 28 - Housing forms according to the climate.	47

29. Plate 29	-	Housing forms according to the climate.	47
30. Plate 30	-	Variations of volumes in natural contexts.	56
31. Plate 31	-	Variations of volumes in natural contexts.	56
32. Plate 32	-	Rhythms found in natural contexts.	58
33. Plate 33	-	Rhythms found in natural contexts.	58
34. Plate 34	-	Repetitions in natural contexts.	59
35. Plate 35	-	Hierarchy by size, in a composition	59
36. Plate 36	-	Falling Waters by Frank Lyoid Wright	61
37. Plate 37	-	Falling Waters by Frank Lyoid Wright	62
38. Plate 38	-	The Great wall of China.	63
39. Plate 39	-	The Red rocks amphitheatre, Collorado.	63
40. Plate 40	-	Mortuary Temple of Queen Hatsheput, Thebes.	63
41. Plate 41	-	Building in flat dessert, Teliesien West.	64
42. Plate 42	-	Spanish Province of Gastellon.	64
43. Plate 43	-	Built form - Boulder gardens	71
44. Plate 44	-	Built masses with nature, Sri L-Boulder gardens	71
45. Plate 45	-	Restaurant, L-Boulder gardens	71
46. Plate 46	-	Open terraces - Boulder gardens	71
47. Plate 47	-	The entrance - Boulder gardens	72
48. Plate 48	-	water stream soon after the entry - Boulder gardens	72
49. Plate 49	-	Reception - Boulder gardens	73
50. Plate 50	-	Path through the jungle - Boulder gardens	73
51. Plate 51	-	Restaurant, Cave made wide open area Boulder gardens	73
52. Plate 52	-	view of the swimming pool from the entrance Boulder gardens	74
53. Plate 53	-	Irregular pathways from through the Jungle	74
54. Plate 54	-	Built masses - Boulder gardens	74
55. Plate 55	-	Built masses - Boulder gardens	74
56. Plate 56	-	Distant View - Kandalama Hotel	75
57. Plate 57	-	Model - Kandalama Hotel	77
58. Plate 58	-	Building form - Kandalama Hotel	77

59. Plate 59	-	Distant view -	Kandalama Hotel	78
60. Plate 60	-	Composition -	Kandalama Hotel	78
61. Plate 61	-	composition with the context -	Kandalama Hotel	78
62. Plate 62	-	horizontality of building form -	Kandalama Hotel	79
63. Plate 63	-	Balance of the built form within the context		79
64. Plate 64	-	Entrance -	Kandalama Hotel	80
65. Plate 65	-	Entrance lobby -	Kandalama Hotel	80
66. Plate 66	-	The tunnel -	Kandalama Hotel	81
67. Plate 67	-	The climax -	Kandalama Hotel	81
68. Plate 68	-	Spatial arrangement within the context -	Kandalama	82
69. Plate 69	-	Spatial arrangement within the context -	Kandalama	82
70. Plate 70	-	Built form within the site -	Subhodhi	85
71. Plate 71	-	linearity of the built form -	Subhodhi	85
72. Plate 72	-	linear organization in the natural terrain -	Subhodhi	85
73. Plate 73	-	Entrance -	Subhodhi	87
74. Plate 74	-	From the entrance -	Subhodhi	87
75. Plate 75	-	The gloomy tunnel -	Subhodhi	87
76. Plate 76	-	Main space -	Subhodhi	88
77. Plate 77	-	Linking corridors -	Subhodhi	88
78. Plate 78	-	Linking corridors -	Subhodhi	88
79. Plate 80	-	Built form within the context -	Blue Waters	90
80. Plate 81	-	Built form -	Blue Waters	91
81. Plate 82	-	Glimpse of the building -	Blue Waters	92
82. Plate 83	-	Entrance porch -	Blue Waters	92
83. Plate 84	-	The main axis -	Blue Waters	92
84. Plate 89	-	Intermediate climax -	Blue Waters	92
85. Plate 90	-	Main space -	Blue Waters	93
86. Plate 91	-	Main space -	Blue Waters	93
87. Plate 92	-	View from the main space -	Blue Waters	93
88. Plate 93	-	View from the main space -	Blue Waters	93
89. Plate 93	-	Relationship with its physical setting -	Blue Waters	94
90. Plate 98	-	climatic responses -	Blue Waters	94

LIST OF FIGURES

		Page
1. Fig 01	- Housing development, Pavia, Italy.	33
2. Fig 02	- Varieties of clustered organizations.	34
3. Fig 03	- Topographical map of falling waters site .	60
4. Fig 04	- Ground floor Plan, Falling Waters.	61
5. Fig 05	- Lay out, Cornell University undergraduate housing, Italy, New York.	62
6. Fig 06	- Dominant linear longitudinal axis, Church at Assisi	65
7. Fig 07	- Organization of form accordance with levels	66
8. Fig 08	- Plan - Boulder Gardens, Kalawana	69
9. Fig 09	- Rough Section - Boulder Gardens, Kalawana	70
10. Fig 10	- Lay out plan Kandalama Hotel	76
11. Fig 11	- Plan - Kandalama Hotel	77
12. Fig 12	- Section - Kandalama Hotel	79
13. Fig 13	- Orientation of the building - Subhodhi	84
14. Fig 14	- Rough section- Subhodhi	84
15. Fig 15	- Section - Subhodhi	86
16. Fig 16	- Conceptual diagram - Blue Waters	89
17. Fig 17	- Plan - Blue Waters	90
18. Fig 18	- Section - Blue Waters	91



ABSTRACT

"Architecture"

- **"Many things in one". (Balance harmony of visible, invisible, tangible, intangible things)**
Antoniades, (1980:18)
- **"It should satisfy mans natural needs, Environment adjusting capabilities and his spiritual needs"**
Antoniades, (1980:31)
- **"it is to serve humanity"**
Antoniades, (1992:15)

Accordingly, Architecture should be a meaning full creation by the people, for the people. It is some thing more than a mere visual object. But today it is misinterpreted and produces mere "buildings" which can not term as "Architecture".

So, "Architecture", embodied a meaning and should be a purpose full creation. This meaning or the inherent idea of an architectural product communicated to the beholder through the "Architectural Form" which is the main expressive media of architecture.

"Architectural form" , by the way of its **orientation, plan configuration, composing** and through the **spatial arrangement** should be related to the what **function** it performs, to the **activities** taken place in it, to the **type of people (user)** who are going to use in it, as well as to the **context** which it is in (**Generators**).

Considering the theme "**Architecture In Harmony with nature**", (nature - Swabhawa or reality), if anything to term as "Architecture" it necessarily should harmonize with nature. According to Nammuni, V, there are two primary natures to harmonize, with **its** own and that of the place. (Own nature means true to the function it performs, to the type of user and to the activity pattern) The aim of this dissertation is to discuss about the "Architecture" which is harmonize with the "**nature of the place**", with its context (**physical setting**).