religionalians

## THE USE OF TECHNOLOGY AS VISUAL EXPRESSION IN CONTEMPORARY ARCHITECTURE

Thesis Presented For The Final Examination

M.Sc. (Architecture) And RIBA Part II

69286 um Thesis

ම්විත්වය මෙන්මුම විශ්ව විදහලය ම් ලංසංශ ඉමාරවදා 72"98" 72.01

PRASAD BOTEJUE FACULTY OF ARCHITECTURE UNIVERSITY OF MORATUWA SRI LANKA 1998

69286



## CONTENTS

	Page
Acknowledgments	L
List Of Plates	II
INTRODUCTION	1
CHAPTER ONE	
1. EXPRESSION AND TECHNOLOGY	7
1.1. Expression in Architecture	7
1.1.1. Meanings of Expression	8
1.1.2. Determinants in Architecture	9
1.2. The Nature of Technology in Building	11
1.2. 1. Building Materials	13
1.2.2. Building Structures	15
CHAPTER TWO	
2. THE AESTHETIC OF THE STRUCTURE	17
2.1. Essence of the Structural Aesthetic	17
2.1.1. The Structural Frame	18
2.1.2. The Structural Tube	19
2.1.3. Composite Structural System	20
2.1.4. Combined Tube System	22
2.1.5. Cable Structures	23
2.1.6. Tension Structure	24

3. CHANGES IN TECHNOLOGICAL EXPRESSION IN THE TWENTIETH CENTURY  3.1. The Machine Aesthetic  3.2. Modern Aesthetic  3.3. High-Tech Expression  3.4. Post Modern Aesthetic  42  CHAPTER FOUR  4. THE HYPE OF NEW TECHNOLOGIES  4.1. New Modernism  4.2. Deconstruction / Post Structuralism  4.3. Effects Of the New "Style"  4.4. Case Studies  5.4. Case Studies  4.4.1. Parc De La Villette  4.4.2. Wexner Centre for the Visual Arts  5.1. High-Tech and New Modern Aesthetic  Compared  5.2. Present Situation  66  5.3. Possible Approach for the Future  68  CONCLUSION  72	CHAPTER THREE	
3.1. The Machine Aesthetic 3.2. Modern Aesthetic 3.3. High-Tech Expression 3.4. Post Modern Aesthetic  CHAPTER FOUR 4. THE HYPE OF NEW TECHNOLOGIES 4.1. New Modernism 4.2. Deconstruction / Post Structuralism 4.3. Effects Of the New "Style" 55 4.4. Case Studies 55 4.4.1. Parc De La Villette 55 4.4.2. Wexner Centre for the Visual Arts 51. High-Tech and New Modern Aesthetic Compared 5.1. High-Tech and New Modern Aesthetic Compared 5.2. Present Situation 5.3. Possible Approach for the Future 68	3. CHANGES IN TECHNOLOGICAL EXPRESSION IN TH	Ε
3.2. Modern Aesthetic 3.3. High-Tech Expression 3.4. Post Modern Aesthetic 42  CHAPTER FOUR 4. THE HYPE OF NEW TECHNOLOGIES 4.1. New Modernism 4.2. Deconstruction / Post Structuralism 4.3. Effects Of the New "Style" 55 4.4. Case Studies 55 4.4.1. Parc De La Villette 55 4.4.2. Wexner Centre for the Visual Arts 55 CHAPTER FIVE 5. THE PRESENT DAY DILEMMA AND THE FUTURE 5.1. High-Tech and New Modern Aesthetic Compared 5.2. Present Situation 5.3. Possible Approach for the Future 68	TWENTIETH CENTURY	26
3.3. High-Tech Expression 3.4. Post Modern Aesthetic  CHAPTER FOUR  4. THE HYPE OF NEW TECHNOLOGIES 4.1. New Modernism 4.2. Deconstruction / Post Structuralism 4.3. Effects Of the New "Style" 55 4.4. Case Studies 55 4.4.1. Parc De La Villette 55 4.4.2. Wexner Centre for the Visual Arts Electronic These & Dissertations  CHAPTER FIVE 5. THE PRESENT DAY DILEMMA AND THE FUTURE 5.1. High-Tech and New Modern Aesthetic Compared 5.2. Present Situation 66 5.3. Possible Approach for the Future 68	3.1. The Machine Aesthetic	26
3.4. Post Modern Aesthetic  CHAPTER FOUR  4. THE HYPE OF NEW TECHNOLOGIES  4.1. New Modernism  4.2. Deconstruction / Post Structuralism  4.3. Effects Of the New "Style"  4.4. Case Studies  4.4.1. Parc De La Villette  5.5  4.4.2. Wexner Centre for the Visual Arts  CHAPTER FIVE  5. THE PRESENT DAY DILEMMA AND THE FUTURE  5.1. High-Tech and New Modern Aesthetic  Compared  5.2. Present Situation  66  5.3. Possible Approach for the Future  68	3.2. Modern Aesthetic	30
CHAPTER FOUR  4. THE HYPE OF NEW TECHNOLOGIES  4.1. New Modernism  4.2. Deconstruction / Post Structuralism  4.3. Effects Of the New "Style"  55  4.4. Case Studies  55  4.4.1. Parc De La Villette  55  4.4.2. Wexner Centre for the Visual Arts  CHAPTER FIVE  5. THE PRESENT DAY DILEMMA AND THE FUTURE  5.1. High-Tech and New Modern Aesthetic  Compared  5.2. Present Situation  63  5.3. Possible Approach for the Future  68	3.3. High-Tech Expression	37
4. THE HYPE OF NEW TECHNOLOGIES 4.1. New Modernism 4.2. Deconstruction / Post Structuralism 4.3. Effects Of the New "Style" 5.5 4.4. Case Studies 4.4.1. Parc De La Villette 5.5 4.4.2. Wexner Centre for the Visual Arts 6.0 CHAPTER FIVE 5. THE PRESENT DAY DILEMMA AND THE FUTURE 5.1. High-Tech and New Modern Aesthetic Compared 5.2. Present Situation 6.3 5.3. Possible Approach for the Future 6.4	3.4. Post Modern Aesthetic	42
4.1. New Modernism 4.2. Deconstruction / Post Structuralism 4.3. Effects Of the New "Style" 5.5 4.4. Case Studies 5.5 4.4.1. Parc De La Villette 5.5 4.4.2. Wexner Centre for the Visual Arts 6.0 CHAPTER FIVE 5. THE PRESENT DAY DILEMMA AND THE FUTURE 5.1. High-Tech and New Modern Aesthetic Compared 5.2. Present Situation 5.3. Possible Approach for the Future 68	CHAPTER FOUR	
4.2. Deconstruction / Post Structuralism 4.3. Effects Of the New "Style" 55 4.4. Case Studies 55 4.4.1. Parc De La Villette 55 4.4.2. Wexner Centre for the Visual Arts 60 CHAPTER FIVE 5. THE PRESENT DAY DILEMMA AND THE FUTURE 5.1. High-Tech and New Modern Aesthetic Compared 5.2. Present Situation 66 5.3. Possible Approach for the Future 68	4. THE HYPE OF NEW TECHNOLOGIES	45
4.3. Effects Of the New "Style"  4.4. Case Studies  55  4.4.1. Parc De La Villette  55  4.4.2. Wexner Centre for the Visual Arts  CHAPTER FIVE  5. THE PRESENT DAY DILEMMA AND THE FUTURE  5.1. High-Tech and New Modern Aesthetic  Compared  5.2. Present Situation  63  5.3. Possible Approach for the Future  68	4.1. New Modernism	45
4.4. Case Studies  4.4.1. Parc De La Villette  55  4.4.2. Wexner Centre for the Visual Arts  CHAPTER FIVE  5. THE PRESENT DAY DILEMMA AND THE FUTURE  5.1. High-Tech and New Modern Aesthetic  Compared  5.2. Present Situation  63  5.3. Possible Approach for the Future  68	4.2. Deconstruction / Post Structuralism	47
4.4.1. Parc De La Villette  4.4.2. Wexner Centre for the Visual Arts  University of Moratuwa, Sri Lanka.  Electronic Theses & Dissertations  Www.lib.mrt.ac.lk  5. THE PRESENT DAY DILEMMA AND THE FUTURE  5.1. High-Tech and New Modern Aesthetic  Compared  5.2. Present Situation  63  5.3. Possible Approach for the Future  68	4.3. Effects Of the New "Style"	55
4.4.2. Wexner Centre for the Visual Arts University of Moratuwa, Sri Lanka. Electronic Theses & Dissertations www.lib.mrt.ac.lk  CHAPTER FIVE  5. THE PRESENT DAY DILEMMA AND THE FUTURE  5.1. High-Tech and New Modern Aesthetic  Compared  5.2. Present Situation  63  5.3. Possible Approach for the Future  68	4.4. Case Studies	55
CHAPTER FIVE  5. THE PRESENT DAY DILEMMA AND THE FUTURE  5.1. High-Tech and New Modern Aesthetic  Compared  5.2. Present Situation  5.3. Possible Approach for the Future  68	4.4.1. Parc De La Villette	55
5. THE PRESENT DAY DILEMMA AND THE FUTURE 5.1. High-Tech and New Modern Aesthetic Compared 5.2. Present Situation 66 5.3. Possible Approach for the Future 68	University of Moratuwa, Sri Lanka. Electronic Theses & Dissertations www.lib.mrt.ac.lk	60
5.1. High-Tech and New Modern Aesthetic Compared 63 5.2. Present Situation 66 5.3. Possible Approach for the Future 68		
Compared 63 5.2. Present Situation 66 5.3. Possible Approach for the Future 68		63
5.2. Present Situation 66 5.3. Possible Approach for the Future 68	_	
5.3. Possible Approach for the Future 68		
CONCLUSION 72	5.3. Possible Approach for the Future	68
	CONCLUSION	72

**75** 

**BIBLIOGRAPHY** 

## Ī

Acknowledgements

Many have helped me in numerous ways to produce this thesis. I am indeed very grateful to them for all the support rendered.

Prof. Nimal De silva, Head of Dept. Department of Architectue, University of Moratuwa. Prof. Laksman De alwis, Archt. Ranjith Alahakoon, Archt. C.J. De Seram, Archt. Vjitha Basnayake and Dr. Ranjith Dayaratne for their invaluable advice and guidance.

Dakshina and Buddhika for their support.

Roshan and Daitha for the encouragement and support.

My special thanks also to Rashika for her continuous advice and support.

## **List of Plates**

- **Plate 1-1.** Sydney Opera House, Australia, a 1957 competition winning design by Jorn Utzon. (Source: Reaburn, Michael. *Architecture of the Western World.*)
- Plate 1-2. Multiple Meanings. The DUCK-RABBIT ILLUSION, CARTOON .(Source: Jencks, Charles. *Architecture Today*.)
- **Plate 1-3.** Crystal Palace, Joseph Praxton, 1851, London. (Source: Gympel, Jan. *The Story of Architecture*.)
- Plate 2-1. Buckminster Fuller's American Pavilion dome for the Montreal Expo, 1967. (Source: Reaburn, Michael. *Architecture of the Western World.*)
- **Plate 2-2.** Sikdmore, Owings & Merill: Sears tower, Chicago, 1969-73. (Source: Gympel, Jan. *The Story of Architecture.*)
- Plate 2-3. Gunter Behnisch, Freu Otto and Wolfgang Leonhardt: Olympic Stadium, Munich, 1968-72. (Source: Gympel, Jan. *The Story of Architecture*.)
- **Plate 3-1.** Walter Gropous and Adolf Mier: Fagus Factory, alfred-ander-Leine, 1910-14. (Source: Gympel, Jan. *The Story of Architecture*.)
- **Plate 3-2.** J.J.P.Oud: Housing estate, Hook of Holland, 1924 .(Source: Gympel, Jan. *The Story of Architecture.*)
- **Plate 3-3.** Phillip Johnson: GlassHouse, New Canaan, Connecticut (USA), 1949. (Source: Gympel, Jan. *The Story of Architecture*.)
- Plate 3-4. Ludwig Mies van der Rohe and Phillip Johnson: Seagram Building, New York, 1954-58. (Source: Gympel, Jan. *The Story of Architecture*.)
- Plate 3-5. Sikdmore, Owings & Merill: Lever Building, New York, 1972. (Source: Bagenal, Philip & Jonathan Meades. *The Illustrated Atlas of the World's Great Buildings*)

- **Plate 3-6.** Felix Candela: Restaurent, Mexico City, 1958.(Source: Gympel, Jan. *The Story of Architecture*.)
- Plate 3-7. Eero Saarinen: Trans World Airline Terminal, New York, 1956-62. (Source: Gympel, Jan. *The Story of Architecture.*)
- **Plate 3-8.** Le Corbusier: Notre-Dame-du-Haut, Ronchamps, 1950-54. (Source: Gympel, Jan. *The Story of Architecture.*)
- **Plate 3-9.** Frank Lloyd Wright: Guggenheim Museum, New York, 1956-59. (Source: Gympel, Jan. *The Story of Architecture*.)
- Plate 3-10. Renzo Piano & Richard Rogers: The Centre Pompidou, Paris, 1976. (Source: Reaburn, Michael. *Architecture of the Western World.*)
- **Plate 3-11.** Richard Rogers: Lloyds Bank, London, 1986. (Source: Tzonis, A. and Liane Lefairre. *Architecture in Europe*)
- Plate 3-12. Foster Associates, Ove Arup partners: Hong Kong and Shanghai Bank, Hong Kong, 1979-86. (Source: Gympel, Jan. *The Story of Architecture.*)
- Plate 3-13. Foster Associates: Willis Faber Dumas offices, Ipswich, England, 1975. (Source: Reaburn, Michael. *Architecture of the Western World*.)
- **Plate 3-14.** Foster Associates: Willis Faber Dumas offices, Ipswich, England, 1975. (Source: Tzonis, A. and Liane Lefairre. *Architecture in Europe*)
- **Plate 3-15.** Aldo Sossi: Residential Building, Kochstrasse, Berlin, 1989. (Source: Gympel, Jan. *The Story of Architecture.*)
- **Plate 3-16.** James Stirling, Michael Wilford & Associates: Extension to the Staatsgalerie, Stuttgart, 1977-84. (Source: Gympel, Jan. *The Story of Architecture*.)
- **Plate 4-1.** Vladimir Tatlin: Sketch of the Monument for the Third International, 1919. (Source: Gympel, Jan. *The Story of Architecture*.)



- **Plate 4-2.** Grank Gehry: Fish Restaurant, Kobe, Japan (Source: Papadakis, Andreas. Edited By. *Deconstruction in Architecture*)
- Plate 4-3. Grank Gehry: State of California Aerospace Museum, Santa Monica, 1982-84. (Source: Papadakis, Andreas. Edited By. Deconstruction in Architecture)
- Plate 4-4. Zaha Hadid: Fire Station for Vitra Company, Weilam Rhein, Germany, 1992-93. (Source: Gympel, Jan. *The Story of Architecture*.)
- **Plate 4-5.** Zaha Hadid: Kurfurstendamm 70, Office Project, Berlin, 1985. (Source: Papadakis, Andreas. Edited By. *Deconstruction in Architecture*)
- Plate 4-6. Behnisch & partners: Hysolar Institute for Solar Energy, University of Stuttgart, Stuttgart, 1987. (Source: Gympel, Jan. *The Story of Architecture*.)
- Plate 4-7. Coop Himmelblau: Rooftop Remodelling, Vianna, Austria, 1983-89. (Source: Tzonis, A. and Liane Lefairre. *Architecture in Europe*)
- **Plate 4-8.** Coop Himmelblau: Rooftop Remodelling, Vianna, Austria, 1983-89. (Source: Tzonis, A. and Liane Lefairre. *Architecture in Europe*)
- **Plate 4-9.** Bernard Tschumi: Parc de la Villette, Paris, 1983. Superimposition. (Source: Papadakis, Andreas. Edited By. *Deconstruction in Architecture*)
- Plate 4-10. Bernard Tschumi: Parc de la Villette, Paris, 1983. Detail. (Source: Papadakis, Andreas. Edited By. *Deconstruction in Architecture*)
- **Plate 4-11.** Bernard Tschumi: Parc de la Villette, Paris, 1983. Programmatic Deconstruction. (Source: Papadakis, Andreas. Edited By. *Deconstruction in Architecture*)

**Plate 4-12.** Bernard Tschumi: Parc de la Villette, Paris, 1983. Folie. (Source: Papadakis, Andreas. Edited By. *Deconstruction in Architecture*)

Plate 4-13. Peter Eisenman: Wexner Centre for the Visual Arts, Ohio, 1990. View of model. (Source: Papadakis, Andreas. Edited By. Deconstruction in Architecture)

Plate 4-14. Peter Eisenman: Wexner Centre for the Visual Arts, Ohio, 1990. Construction View. (Source: Papadakis, Andreas. Edited By. Deconstruction in Architecture)

**Plate 4-15.** Peter Eisenman: Wexner Centre for the Visual Arts, Ohio, 1990. Perspective view. (Source: Papadakis, Andreas. Edited By. *Deconstruction in Architecture*)

**Plate 5-1.** Gustav Eiffel: Eiffel tower, Paris, 1889. (Source: Harmet, A.Richard. Edited by. *The 1990 World Book Year Book*)

Plate 5-2. OMA: Checkpoint Charlie Housing, Berlin. Friedrichstrasse view. (Source: Papadakis, Andreas: Edited by. *Deconstruction in Architecture*)

**Plate 5-3.** Tadao Ando: Water Church, Hokkaido, Japan, 1988. (Source: Muraoka, Kimihiro. Edited by. *Pacific Friend*)

Plate 5-4. Tadao Ando: House, Japan. (Source: Niesewand, Nonie. Contemporary Details)