

**ARCHITECTURAL TYPOLOGICAL STUDY OF CORAL STONE  
MOSQUES OF MALDIVES**

**MOHAMED MAUROOF JAMEEL**

**DISSERTATION SUBMITTED IN FULFILLMENT OF THE  
REQUIREMENT FOR THE MASTER OF SCIENCE IN  
ARCHITECTURE**

**FACULTY OF BUILT ENVIRONMENT  
UNIVERSITY OF MALAYA  
KUALA LUMPUR**

**2012**

## **ORIGINALITY DECLARATION**

I declare that the work presented in this dissertation is, to the best of my knowledge, original with the exception of that acknowledged in the text. I also declare that no part of this dissertation, either in full or part, has been submitted to any other University for the purpose of postgraduate studies.

## ABSTRAK

Masjid warisan di kepulauan Maldives dibina dengan menggunakan batu karangan laut yang diambil dari terumbu karang di sekitar kepulauannya. Masjid lama tersebut mempunyai ciri ciri senibina indah dan unik dihiasi dengan gabungan ukiran batu karangan laut beserta ukiran kayu 'lacquer'. Walaupun, pembangunan pesat di Maldives telah membawa perubahan yang ketara dan banyak memansuhkan warisan keseniannya, masjid warisan ini masih ada yang utuh dan aktif digunakan. Belum banyak kajian yang dijalankan tentang masjid warisan ini, justeru penyelidikan ini dijalankan dengan objektif untuk mengenal pasti jumlah masjid yang masih ada, mengkaji keadaan fizikal, pengaruh rekabentuk serta menganalisa tipologi masjid-masjid tersebut.

Kajian kualitatif ini dijalankan dalam beberapa peringkat pemerhatian, penelitian, dan analisa. Pertamanya kajian telah mengenalpasti bahawa kerajaan Maldives mempunyai 203 tapak warisan yang mana 46 daripada tapak warisan tersebut mempunyai sebanyak 51 buah masjid lama yang masih aktif. Kajian juga mendapati bahawa terdapat 40 buah masjid daripada 51 buah masjid tua yang tersenarai adalah masih utuh dalam keadaan fizikal yang berbeza beza dan 18 daripada masjid tersebut adalah dibina sepenuhnya menggunakan batu karangan laut.

Keduanya, kajian mendapati bahawa ujudnya pengaruh 'geo-culture' dalam pembangunan budaya dan senibina di Maldives. Telah dikenalpasti yang ciri-ciri rekabentuk istimewa masjid masjid lama Maldives ada persamaan dengan beberapa masjid di daerah Asia Selatan, Timur Afrika, Asia Tenggara dan Timur Tengah. Ini membuktikan bahawa pengaruh senibina masjid di Maldives adalah percampuran antara beberapa budaya daripada negeri negeri persekitaran Laut India.

Ketiganya, kajian telah dijalankan untuk mengenal pasti tipologi bangunan dengan menganalisa 21 buah masjid dan merumuskan bahawa terdapat beberapa ciri ciri rekabentuk dan senibina yang dikongsi oleh masjid batu karangan laut tersebut. Kebanyakannya mempunyai pelan lantai segiempat tepat atau segiempat sama yang terdiri daripada *Dhaala*, atau kadangkala mempunyai Bilik Mihrab. Rekabentuk lain yang dikongsi adalah lantai yang tinggi dengan anak tangga yang dicorak, atap berlapis dengan siling 'coffer' dan *Laage*., Antara ciri ciri khas yang lain adalah ukiran batu karangan laut beserta tulisan kaligrafi Arab

Kajian ini juga diharap dapat meningkatkan kesedaran, akan uniknya rekabentuk senibina masjid warisan di Maldives, justeru itu akan juga dapat meningkatkan usaha pengurusan dan pemuliharaannya.

## ABSTRACT

Coral stone mosques of Maldives are ancient mosques assembled using finely shaped interlocking '*porite*' coral stone from the reef, that have architectural features with coral carvings and detailed lacquer work. These mosques are among the earliest surviving buildings in the country where its cultural heritage is vanishing fast due to rapid changes and development. Little is known about these mosques, and the purpose of this research is to identify the surviving mosques, their state of condition, the influences in their evolution, and to establish a typology in terms of architectural features.

The research uses qualitative research methods with multiple surveys and analysis and firstly identifies the surviving mosques and the state of their condition. The research finds that the Maldives government has 203 heritage sites in an unofficial list out of which 46 sites have 51 ancient mosques. The research also finds that 40 out of the 51 ancient mosques survive in different states of condition and 18 of them are confirmed as mosque made from coral stone.

Secondly, the research identifies specific geo-cultural regions in the Indian Ocean that have influenced the evolution of the culture of Maldives and compares architectural features of these regions to those of the mosque. The research finds that different features of the mosque have similarities with structures in the South Asian region, the East African region, the Southeast Asian region and the Middle East and establishes that the mosques are a representation of the fusion of many maritime cultures of the Indian Ocean.

Finally, 21 mosques are analyzed to identify typological architectural features establishing that the coral stone mosques of Maldives are a type of tropical mosque with a spatial plan form that has a simple rectangular or square prayer hall with a combination of antechambers called *Dhaala*, sometimes with a unique *Mihrab* Chamber. Typical architectural features include the raised coral stone platform, decorated rising steps, tiered roof form, coffered ceiling with recessed area called *Laage'*, post and beam structure, unique arched sliding doors, diagonal lattice work on windows, special coral carvings, lacquer work and calligraphy.

The research contributes to improve future protection and management of the mosques by raising the awareness about their uniqueness and the state of their condition.

## ACKNOWLEDGEMENT

It is my greatest pleasure to acknowledge and express my heartfelt gratitude to the following people, without whom this work is not possible. First of all I would like to thank my supervisor Associate Prof Dr. Yahaya Ahmad for the patient guidance, encouragement and expert advice he provided me throughout the study period. I am extremely lucky to have a supervisor with such a wealth of knowledge and experience who has such an inspirational and friendly personality. I would also like to thank all the staff at University of Malaya who helped me during my study at the University.

Secondly I would like to thank former Deputy Minister Mamdhuh Waheed, former State Minister Ahmad Naseer and staff of Heritage Department of Maldives for giving me the support and opportunity to coordinate the surveys and Mr. Deen for funding my research trips. I would like to thank Aminath Hassan for the initial telephone surveys and members of the field survey team (Zameer, Wiam, Sharim, Isha, Shuza and Muja) who took the hard task of assisting me on collecting site data and everyone else, who contributed to the survey. I would also like to thank Dr. Rosniza Othman for her advice and translation of the abstract.

I would like to thank the experts from the UNITAR workshop on Management and Conservation of World Heritage sites, Hiroshima, Japan, 2011, for selecting, Coral Stone Mosque of Maldives, as a case study to identify the issues related to a World Heritage Nomination and the experts from the 'Heritage of the Indian Ocean' conference, La Reunion, 2011, for commenting on the paper presented on Coral Stone Mosques of Maldives.

Finally I would like to thank my family and friends who supported me during my work.

## CONTENTS

Abstrak	III
Abstract	IV
Acknowledgement	V
List of Figures	VIII
List of Tables	IX
Abbreviation	X
Glossary	XI
List of Appendices	XII

### CHAPTER 1: INTRODUCTION

1.1 Introduction	1
1.2 Background	2
1.3 Statement of problems	7
1.4 Research questions	9
1.5 Objectives of research	9
1.6 Research process	10
1.7 Outline of research	12
1.8 Limitations of research	14

### CHAPTER 2: BACKGROUND AND LITERATURE REVIEW

2.1 Introduction	15
2.2 Heritage of Maldives	15
2.2.1 History of Maldives	19
2.2.2 Architectural heritage of the Islamic Era	26
2.2.2.1 Traditional mosque architecture	28
2.2.2.2 Vernacular Architecture	30
2.2.3 Heritage protection efforts of the past	31
2.3 Mosque architecture	34
2.3.1 Features of the Typical Mosque	38
2.3.2 Regional typologies of the Mosque	40
2.3.3 Typological studies of mosques	42
2.4 Coral stone for construction	43
2.4.1 Corals	44
2.4.2 <i>Hirigaa</i> or <i>Porite</i> corals	46
2.4.3 Coral stone construction in Maldives	47
2.4.4 Types of coral stone construction in Maldives	51
2.5 Areas of the geo-cultural region that influenced the culture of Maldives	53
2.5.1 Ancient South India	55
2.5.2 Malabar coastal areas of India	56
2.5.3 Other coastal regions of south Asia	57
2.5.4 The Minicoy and Laccadive group of Islands	58
2.5.5 Sri Lanka	59
2.5.6 Swahili coast of east Africa	59
2.5.7 Malacca straits regions	60
2.5.8 The Maritime regions of Arabia and Persia	61

<b>CHAPTER 3: METHODOLOGY AND SURVEY</b>	
3.1 Introduction	63
3.2 Research methodology	63
3.3 Literature reviews and Archival surveys	66
3.4 Initial survey	68
3.5 Field survey	70
<b>CHAPTER 4: COMPARATIVE ANALYSIS TO IDENTIFY THE INFLUENCES TO THE ARCHITECTURE OF THE MOSQUE</b>	
4.1 Introduction	80
4.2 Areas of the geo-cultural region that influenced the culture of Maldives	80
4.3 Comparison to identify the influences to the architecture of the mosque	82
4.3.1 Comparison with ancient south India	83
4.3.2 Comparison with the Malabar coast of India	84
4.3.3 Comparison with other coastal regions of south Asia	85
4.3.4 Comparison with the Minicoy and Laccadive group of Islands	86
4.3.5 Comparison with Sri Lanka	87
4.3.6 Comparison with Swahili coast of east Africa	88
4.3.7 Comparison with the Malacca Straits region	90
4.3.8 Comparison with the maritime regions of Arabia and Persia	91
4.4 Comparative analysis	92
<b>CHAPTER 5: ANALYSIS TO ESTABLISH THE COMMON ARCHITECTURAL FEATURES OF THE MOSQUE</b>	
5.1 Introduction	93
5.2 Analysis of the spatial form of the mosque	93
5.3 Analysis of architectural form, construction and ornamentation	96
5.4 Conclusions of the analysis	98
<b>CHAPTER 6: CONCLUSION</b>	
6.1 Introduction	101
6.2 Summary of interpretations and analysis	101
6.3 Conclusion and answers to the research questions	103
6.3.1 Influences to the evolution of the architecture	105
6.3.2 Architectural features of the coral stone mosques of Maldives	107
Bibliography	112
Annex 1: List and details of ancient mosques in the Unofficial Heritage List	118
Annex 2: Details of field survey of 21 coral stone mosques	123

## LIST OF FIGURES

- Figure 1.1 Research process
- Figure 2.1 Example of ancient travel routes in the geo-cultural regions of the Indian Ocean
- Figure 3.1 Diagram showing the process of research method
- Figure 3.2 Description of Ihavandhu Old Friday Mosque
- Figure 3.3 Description of Kelaa Old Friday Mosque
- Figure 3.4 Description of Nolhivaram Old Friday Mosque
- Figure 3.5 Description of Meedhu Old Friday Mosque
- Figure 3.6 Description of Huraa Old Mosque
- Figure 3.7 Description of Male' Old Friday Mosque
- Figure 3.8 Description of Male' Eid Miskiy
- Figure 3.9 Description of Kalhuvakaru Miskiy
- Figure 3.10 Description of Fenfushi Friday Mosque
- Figure 3.11 Description of Veyvah Old Friday Mosque
- Figure 3.12 Description of Bileddhu Old Mosque
- Figure 3.13 Description of Nilandhu Old Friday Mosque
- Figure 3.14 Description of Kudahuvadhu Old Friday Mosque
- Figure 3.15 Description of Guraidhu Ziyaaraiyy Miskiy
- Figure 3.16 Description of Fonadhu Old Friday Mosque
- Figure 3.17 Description of Isdhu Old Mosque
- Figure 3.18 Description of Kondey Old Mosque
- Figure 3.19 Description of Vadhu Old Friday Mosque
- Figure 3.20 Description of Hulhumeedhu Boadha Miskiy
- Figure 3.21 Description of Hulhumeedhu Fandiyaaru Miskiy
- Figure 3.22 Description of Hulhumeedhu Dhadivaru Miskiy
- Figure 4.1 Example of a South Indian Structure that is comparable to the mosque
- Figure 4.2 Example of a Kerala structure that is comparable to the mosque
- Figure 4.3 Example of a Burmese Lacquer work that is comparable to that of the mosque
- Figure 4.4 Example of a South Indian Structure that is comparable to the mosque
- Figure 4.5 Example of a Sri Lankan Structure that is comparable to the mosque
- Figure 4.6 Example of coral stonework in East Africa that is comparable to the mosque
- Figure 4.7 Example of a Structure in Melaka that is comparable to the mosque
- Figure 4.8 Example of a calligraphic work that is comparable to the mosque
- Figure 5.1 Coral stone mosque types
- Figure 6.1 Spatial features of the mosque

## LIST OF TABLES

Table 3.1	Summary of categories in the unofficial list of Heritage sites
Table 3.2	Revised analysis of the mosques identified in the unofficial list
Table 4.1	Comparative analysis of the features
Table 5.1	Analysis of spatial plan forms of the mosque
Table 5.2	Analysis of architectural features of the mosque
Table 6.1	List of surviving mosques and their state of condition
Table 6.2	Comparison of architectural features of the geo-cultural region to that of the coral stone mosque
Table 6.3	Analysis of the common features of the coral stone mosques of Maldives
Table 6.4	Common architectural features of the coral stone mosque

## ABBREVIATIONS

BCE	Before Common Era
CE	Common Era
EIA	Environmental Impact Assessment
GOM	Government of Maldives
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
ICOMOS	International Council on Monuments and Sites
ICT	Information Communication Technology
NCLHR	National Centre for Linguistic and Historical Research
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHC	World Heritage Committee

## GLOSSARY

<i>Atoll</i>	group of coral islands
<i>Cholas</i>	ancient Tamils from southern India
<i>Coir rope</i>	rope made out of coconut fibre
<i>Cypraea Moneta</i>	scientific name for Cowry Shell used for money in ancient time
<i>Dhaala</i>	Verandah like antechamber around the prayer hall of mosques
<i>Dikka</i>	raised tribune in mosque for Quran recital or prayer recitals
<i>El-nino</i>	climatic pattern in tropics that changes ocean surface temperature
<i>Faros</i>	small atolls that rise within large composite atolls
<i>Hirigaa</i>	porite coral or boulder coral
<i>Holhu Ashi</i>	raised platform and shelter found in Maldivian Islands
<i>Hukuru Miskiy</i>	Friday Mosque
<i>Indian Moira</i>	part of north Goa, India
<i>Kursi</i>	stand for the Quran in the mosque
<i>Laage'</i>	stepped recessed part in the centre of the mosque ceiling
<i>Loammaafaanu</i>	ancient copper plate chronicles of Maldives
<i>Mahavamsa</i>	the great chronicle of ancient Sri Lankan Buddhist history
<i>Maqsura</i>	enclosed area near Mihrab
<i>Masjid</i>	mosque
<i>Medrepore ashlar</i>	type of stony coral cut to neat blocks for construction.
<i>Mihrab</i>	part of the mosque facing towards Kaaba in Mecca
<i>Mimbar</i>	pulpit in the mosque
<i>Miskiy</i>	mosque
<i>Moodhuge</i>	house built on sea
<i>Odi Haruge</i>	shelters for boats
<i>Porites</i>	type of coral stone
<i>Redin</i>	according to Maldivian folklore, ancient mysterious people
<i>Rihaakuru</i>	Maldivian fish paste
<i>Sangam period</i>	ancient Tamil period in south India
<i>Thelhigaa</i>	coral rubble
<i>Veligaa</i>	sedimentary coral sandstone

## **LIST OF APPENDICES**

- Annex 1 List and details of ancient mosques identified in the unofficial heritage list
- Annex 2 Details of field survey of 21 coral stone mosques