

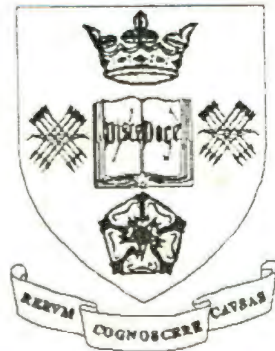
THE UNIVERSITY OF SHEFFIELD
SCHOOL OF ARCHITECTURAL STUDIES

IMPROVING WORKING PRACTICES IN THE
DESIGN AND CONSTRUCTION OF BUILDINGS
IN MALAYSIA.

DISSERTATION FOR THE MASTER OF ARCHITECTURE (MARCH)

JOHANNAD RADZI HJ. MOHD. YUSOF
2 SEPTEMBER 1997

**The University Of Sheffield
School Of Architectural Studies**



**Improving Working Practices In The
Design And Construction Of Buildings
In Malaysia**

Dissertation for the Master Of Architecture (M. Arch.)

Mohamad Radzi Hj. Mohd. Yusof

2 September 1997

Table Of Contents

Acknowledgements	i
Chapter 1:	1-5
Introduction	1
Aims And Objectives	2
Methodology	2
Background	3
Industrial Development In Malaysia	4
Chapter 2:	6-19
The Building Industry In Malaysia	6
The Size Of The Industry	6
Factors Influencing The Construction Industry	8
Problems Of The Construction Industry	10
Materials Shortage and Technological Problems	
Skilled Human Resources Problems	
Legal and Contractual Problems	
Financial Problems	
Other Issues	
The Need For Change	18
Chapter 3:	21-46
Industrialized Buildings In Europe	21
The Brief History	21
The Building Systems In General	25
Organisational Structure	
Technical Structure	
Planning Structure	
Dimensional Coordination	28
The Building Component	29
Components With A Purely Supporting Function	
Components With A Purely Space-partitioning Function	
Load-bearing Components With A Space-partitioning Function	
Components In The Form Of Cells	
Special Components	

Component Connections	35
The Close Joint	
The Open Joint	
Precision And Tolerances	37
Systems Used In Britain From 1960s To 1970s	38
The Reema System	
The Wates System	
The Bison System	
The Larsen/Neilsen System	
The Glasdon Modular System/ The CLASP Project	
Failure Of Industrialized Buildings In Britain	40
Chapter 4:	47-88
Recent Trends - Case Studies	47
Renewed Interest In Industrialized Buildings	47
Case Study 1 - Patera Building System	52
Case Study 2 - McDonald's Restaurants UK	59
Standardized Designs	
Already Designed And Manufactured (ADAM)	
Standardized Approval	
Concept Of Partnering	
Cost Reductions	
Standardized Contracts	
Case Study 3 - Hongkong Bank Headquarters	68
Case Study 4 - Lloyds Of London	76
Case Study 5 - Bracken House London	84
Chapter 5:	89-107
Assessment Of Approaches	89
Utilization Of New Technology	90
Utilization Of New Materials	92
New Procurement And Project Management	95
General Discussions On Building Process	96
Inception Stage	96
Conceptual Understanding	
Standardization	
Availability Of Technology	

Design Stage	97
Understanding The Client	
Developing The Brief	
Selecting The Principal Adviser and Designer	
The Procurement Route	
Developing The Design	
Performance Specification	
Construction Stage	99
Selection Of Contractors	
Selection Of Sub-contractors	
The Management Team	
Summary	101
Recommendations	101
Need For Innovations	
Impact Of Information Technology	
Utilization Of Materials	
Enhancing Human Resources	
Environmental Issues	
Development Trends	106
Conclusion	107
Bibliography	108

1

INTRODUCTION

The construction industry in Malaysia (and probably in many other countries) is characterised by the 3-Ds - Dirty, Difficult and Dangerous. This is mainly brought about by the predominantly labour intensive approach towards the construction industry practiced in the country which in the end entails problems like longer time requirements and waste of materials and human resources as well as lack of quality in the finished products. Whilst the country's other major economic sectors have advanced in the utilisation of modern technology, the construction industry still largely depends on the old methods of construction.

Studies done in some developed countries have shown that with proper planning and considerations during the design stage, most of these problems can be avoided (Kaming, Olomolaiye, Corbett and Harris, 1994). In the developed countries, design innovations which have been made possible with the use of advanced computers, a new outlook towards design criteria and considerations, the continued search for better materials and methods and relentless demands for

Introduction

higher standards and a “greener architecture” have resulted in some fine buildings. The atmosphere of manufacturing and production line efficiency has made the building process increasingly simple and manageable.

There is an ever widening gap between the developing countries like Malaysia and the developed nations in terms of design and construction methods, technological development and innovative use of building materials and manpower.

Aims And Objectives

It is the aim of this study to examine the various new areas, technologies, materials and methods, and try to relate them to the existing scenarios in Malaysia. To achieve this, the emphasis of the study will be towards showing the advantages of the new approaches, giving examples in the form of case studies. It is the objective of the study to collect, compile and evaluate various approaches so that they can be considered and adopted for use in Malaysia.