A STUDY OF THE TRADITIONAL CHARACTERISTICS OF YEMENI HOUSES IN THE PORT CITY OF ADEN AND MUKALLA: PERCEPTION OF ARCHITECTS AND STUDENTS

by

AQEIL AHMED BINTHABET

Thesis submitted in fulfilment of the requirements
For the Degree of
Doctor of Philosophy

February 2007

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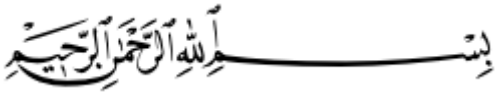
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Glossary of Terms

Aden: is a major port on the Red Sea and the economic capital of the Republic of Yemen.

Al-Akhdam: Yemeni citizens of allegedly African descent.

Al-Dakial: internal (in Arabic).

Al-Fewsh: a county near Aden.

Al-Hodeidah: a city in western Yemen, on the Red Sea.

Al-Sahil: coastal (in Arabic).

Al-Mansoora: a Region in Aden.

Al-Skaneah: residential (in Arabic).

AL-Wohdh: unity (in Arabic).

Ash Shihr: The first capital of the Qua'iti Sultanate, it is located about 60km from Mukalla.

Bab-al-Mandab: A strait located between Djibouti and Eritrea in Africa, and Yemen on the Arabian Peninsula. It connects the Red Sea to the Gulf of Aden and the Arabian Sea.

Foha: a country near of Mukalla.

Hadhramout: One of the prosperous ancient Yemenite kingdoms. irst millennium BC was on the Valley Banks between the chains of Mountain and the desert of the Empty Quarter the east of Yemen.

Hadrami: People who live in Hadhramout.

Himyarites: Ancient Yemenites were lived in Kingdom of southwestern Arabia, dating from late 2nd century BCE until 525.The were Himyarites originally a Semitic tribe, speaking their own language, Himyaritic.

Jebel Shamsan: Mountain in Aden.

Khoremakser: Region in Aden.

Laheg: Town about 44km from Aden.

Little Aden: Region in Aden.

Maalla: Region in Aden.

Majles: Arabic word means guestroom.

Marib: Capital of the Sabaean kingdom.

Mineans: Ancient Yemenites were of mixed Semitic/Hamitic stock and they lived in kingdom of Minean (20th century BCE).

Mukalla: Mukalla is the largest city of the eastern region of Hadhramout. It is one of important ports in Yemen.

Mokha: City lying on the southern tip of Yemen, near the entrance to the Red Sea.

Mushrabiyyah: an openwork wooden screen covering an opening or balcony.

Muza: City is identified with the famous al Mokha of the Islamic times.

Nabatanes: were of Arab origin, probably Bedouins out of the Arabian Desert, who settled, at least for a time, in a wild, mountainous land south of the Dead Sea.

Qamariyah: traditional Yemeni window in the upper floor of a house with coloured glass set in gypsum.

Qataban: is one of the ancient Yemeni states which throve on the bank of Baihan valley on the edge of the Empty Quarter near Hadhramout, Sheba, Maeen and Awsan.

Qua'iti Sultanate: Sultanate in Hadhramout in the 18th and 19th centuries.

Ras Isa: Town near to Al-Hodeidah about 50 km.

Sabanes: Ancient Yemenites were of mixed Semitic/Hamitic stock and they lived in kingdom of Sheba.

Saleef: Town is located south of Al-Hodeidah city about 20 km.

Sana’a: capital of Yemen.

Sheba: is a kingdom (8th century BCE - 275 CE) mentioned in the Qur'an and the actual location of the historical kingdom is disputed between Ethiopia and Yemen.

Sheikh Othman: Region in Aden.

Shibam: is located in the southeast of the country at the heart of the Wadi Hadhramout - an oasis extending 300 kilometers across the southern section of Yemen, the most expansive one on the Arabian Peninsula.

Ushah: Reed house.

Wadi: is a dry riverbed that contains water only during times of heavy rain.

SATU KAJIAN CIRI-CIRI RUMAH TRADISIONAL YAMAN DI BANDAR PELABUHAN ADEN DAN MUKALLA: PERSEPSI PARA ARKITEK DAN PARA PELAJAR SENI BINA

ABSTRAK

Penyelidikan ini cuba untuk memperkenalkan semula ciri-ciri rumah tradisional di kawasan bandar pelabuhan Aden dan Mukalla di Yemen. Kajian ini bertujuan menyiasat sudut pandangan responden dalam usaha untuk memberikan gambaran rumah-rumah, kriteria seni bina, ciri-ciri tersendiri dan tanggapan masa hadapan dalam pembangunan. Berikutan ini, ciri-ciri sebenar rumah di kawasan tersebut dapat diperkenalkan semula sebagai rujukan pada masa akan datang. Kajian bermula dengan maklumat asas tentang gambaran keseluruhan lokasi, keadaan geografi, suhu dan ekonomi bandar pelabuhan Aden dan Mukalla di Yemen. Kajian menerangkan jenis-jenis rumah di Aden dan Mukalla, kepelbagaian rumah tradisional di lima wilayah tersendiri di Yemen, rumah-rumah tradisional, masalah-masalah dan faktor-faktor yang mempengaruhi reka bentuk perumahan tradisional di Aden dan Mukalla. Kaedah kajian lapangan telah dipilih untuk penyelidikan ini dengan menyediakan soal selidik untuk mengenal pasti identiti seni bina, tahap kesanggupan, peringkat kesukaan daripada responden yang terdiri daripada arkitek tempatan dan pelajar seni bina. Semua maklumat yang dipungut daripada kajian dikumpulkan dan dianalisis menggunakan data kualitatif berdasarkan maklum balas jawapan positif atau negatif daripada responden. Keputusan menunjukkan bahawa kebanyakan kategori mempunyai jawapan yang positif berkenaan kepentingan nilai-nilai tradisional dalam mereka bentuk rumah. Ini menandakan bahawa pembangunan perumahan di bandar pelabuhan Yemen pada masa hadapan perlu mengambil kira elemen reka

bentuk tradisional dalam reka bentuk rumah. Sebagai kesimpulan, kajian ini menyarankan 6 garis panduan reka bentuk untuk pembangunan perumahan pada masa hadapan di bandar pelabuhan Aden dan Mukalla. Ini termasuk aspek rekabentuk berkaitan susun atur rumah, aplikasi rekabentuk tradisional, penggunaan bahan binaan tradisional, penerapan nilai-nilai Islam dalam rekabentuk rumah dan keadaan luaran rumah serta keselesaan terma.

A STUDY OF THE TRADITIONAL CHARACTERISTICS OF YEMENI HOUSES IN THE PORT CITY OF ADEN AND MUKALLA: PERCEPTION OF ARCHITECTS AND STUDENTS

ABSTRACT

The research attempts to study the characteristics of traditional houses in the port city area of Aden and Mukalla in Yemen. This involves a study on a perception of architects and students. The study intends to investigate the respondent's viewpoints, the level of willingness, level of preference and satisfaction in order to provide a description of the houses, architectural criteria, distinctive features and future conceptions for development. In this manner, the true characteristics of the houses in the area could be rediscovered for future reference. The study starts with literature description on the general overview of location, geographical divisions, climate and economy of the port city of Aden and Mukalla. The study describes the house types in Aden and Mukalla, variations in traditional houses in the five distinctive regions in Yemen, traditional houses, the problems and factors affecting the design of traditional housing in Aden and Mukalla. The field survey method has been chosen for this research by preparing questionnaires to identify the architectural identity from the respondents that includes professional architects and architectural students. All the information gathered from the survey are collected and analysed using qualitative data based on responses of positive and negative answers by the respondents. The result shows that most of the categories have positive answers on the importance of traditional values in house design. This indicates that the future housing development in the port city of Yemen must consider the traditional architectural elements in design. In conclusion, this study proposes 6 design guidelines and recommendation for future housing development in the

port city of Aden and Mukalla. This includes design aspects related to the house layout, the application of traditional design, the traditional building material, the Islamic values in house design, the exterior appearance of the house and thermal comfort conditions.

CHAPTER ONE

INTRODUCTION

1.1 Background

Yemen lies in the south of Arabian Peninsula that is in the southwest of Asia. Yemen is bordered in the north by Saudi Arabia, in the south by the Arab Sea and the Gulf of Aden, in the east by the Oman and in the west by the Red Sea (Dickins and Watson, 1998). According to Al-Habshi (2002), Yemen is principally divided into five regions: the mountain region, highland region, coastal region, empty quarters, and the Yemeni Islands. The country has varied topography and climatic conditions, but experiences no major seasonal differences throughout the year.

According to Matthews (1984) the old architectural style of Yemen is attractive and has dominated the early house's design. To the early travellers, these houses create a strong visual impact from the sea in the south. Sprawling rows of tower houses and detached dwellings along the coastal areas, in the mountains and highlands, and port cities of Yemen are some outstanding examples that give lasting impression about Yemen.

The difference of climatic conditions and topography of each region in Yemen plays a great role in the design and construction of the houses (Jerome, Chiari, & Borelli, 1999). For instance, the traditional house in the coastal region is characterized by an open planning concept to generate cross ventilation through the internal spaces. While in the mountain region, the house design is

dominated by the high towers and many windows in order to capture the sunlight to warm the internal spaces (Marchand, 2001).

In general, the architecture of the houses is greatly influenced by the nature of the regions. This is especially true since the building materials are mostly taken from the surrounding localities. A study by Al-Shebani (2000) shows that Yemeni traditional houses are commonly built using local materials such as mud and stone. In some cases, reed and brick are also used as secondary components in construction.

Peterson (1994) stated that these materials are the natural sources that could easily be found in almost all the regions in Yemen. Ragette (2003) and Colburn (2002) also stated that the indigenous technique of construction has been perfected with great skills throughout the centuries and many of the traditional buildings are still surviving in the rural countryside. Through these materials and their technique of construction, the characteristic of Yemeni houses design was naturally evolved over the years (Mustafa, 1990).

However, after the country independence in 1967, the influx of foreign investment, increase of urban population and massive building development had changed the scenario of architectural style of Yemen (Damluji, 1990). This is especially crucial in the area of port cities that became the major attraction for foreign settlement and rural-urban migration (Colburn, 2002). In the 70’s and 80’s, many imported architectural styles that have a mixture of Arabic, Indian

and European could be seen in individual houses all over the port cities of the Arabian Peninsula (Mahgoub, 1996).

Recent survey by Ibrahim (1998 and 1999) showed that the characteristic of Yemeni architecture that had been outstanding in those areas became the secondary preference among the houses' owners. According to Al-Madhagi (2000) there are very few attempts made by anyone to educate or promote the public on the importance of architectural identity and the significance of Yemeni design in housing development.

Against the backdrop of the above scenario, the research attempts to study the traditional characteristics of house design that is appropriate to Yemen. It involves a field survey among the respondents to identify the architectural identity, level of willingness, preference and satisfaction. In order to limit the scope of the investigation, the port cities of Yemen that had been mainly affected architecturally, are selected in this study. The port city of Aden and Mukalla have been chosen for special reference because of their importance as port cities in Yemen.

1.2 Statement of the Problem

Most of the modern houses in Yemen do not portray the true characteristics of local and regional styles of Yemen (Dresch, 1994). Majority of them were constructed since the 1970s and 1980s after the country's independence in 1967 as described by Damluji (1990). In an effort by the government to provide mass housing for the increased population, there was

little concern to promote the importance of housing design that reflects traditional Yemeni as shown in the study by Varanda (1994). The individual houses built by the foreigners along the port cities also did not make any serious attempt to rediscover the local identity.

The statement of problem of this research can be summarised as follow:

i. Owing to the population increase through the rural-to-urban migration after the independence, the Yemeni government's only priority was then to provide mass housing. There was little effort to promote the design aspect.
ii. The modern house's design does not only lack of local characteristics but also fails to respect the Islamic values in the internal spatial organisation.
iii. They were few Yemeni architects in the country during the 1970s and 1980s and most of them were from other Arab and European countries.
iv. The first architectural school in south of Yemen was only established in 1996 at the university of Hadhramout University for Science and Technology in Mukalla. The first batch of architectural students were graduated in 2001.
v. The problem of illegal housing settlement within the prosperous housing areas affects the appearance of the buildings. The house design is very basic and practical without incorporating the local characteristics.
vi. The Yemeni architects were mostly trained overseas and had limited knowledge about the local design.

1.3 Previous Related Research

Many works have been devoted by various researchers related to the traditional houses in Yemen and the Arabian Peninsula. Some of them are listed and briefly described as follows:

1. Al Shebani

Al Shebani (2000) has identified the behaviuor of space formation in Yemeni architecture. The study was about the relationship between the construction of the building materials and climate of some regions in Yemen. The study recommended that mud could be used as the main or secondary building material in most regions in Yemen. Some examples of the houses in the north of Yemen are selected to illustrate the case.

2. Almadhagi

Almadhagi (2000) identified the Yemeni architectural map according to the influence of the environment. The study demonstrated the types of houses according to the climate and determined the functions of some of the architectural components. Some examples of the houses in various areas in the north of Yemen were also described.

3. Damluji

Damluji (1990 & 1991) in ‘A Yemen Reality’ review of the buildings in the South of Yemen in a project named Damluji Salma documented the buildings’ design and determined the name of each architectural detail of the components. The glossary also gives simple definitions of the detail for reference.

4. Al-Bakri

Al-Bakri (1997) has identified the natural ventilation aspects in traditional courtyard's houses in the central region of Saudi Arabia. The study proposed several design solutions to achieve the maximum ventilation for houses.

5. Al Habshi

Al Habshi (2002) has identified the traditional architecture of Sana'a, the capital of Yemen. He studied the houses' form and basic layout in the area of Sana'a. The design characteristics of the houses are established for reference.

6. Al-Maghrby

Al-Maghrby (2002) has identified the spatial organization, layout and architectural development of the housing project in Yemen. In this study, a typical house design in the north of Yemen was chosen and compared to other similar types in the Arabian Peninsula.

7. Margariti

Margariti (2002) studied the city and the sea in the doctoral dissertation "Like the place of congregation on Judgment Day: Maritime trade and urban organization in medieval Aden (Yemen)" and the goal is to place the study of medieval Aden within the historiography of the urban center of the Islamic Middle East, the Indian Ocean and the medieval world.

8. Um

Um (1996) study on 'A Red Sea society in Yemen' described the house's

design, urban form and cultural dynamics in the 18th century port city of Al-Mokha. The purpose of the study is to illustrate the characteristics of typical house in Al-Mokha.

9. Lewcock

Lewcock (1986) studied the Hadhramonut Wad and Walled City of Shibam in Yemen by giving a review of the buildings in the Wad Hadhramonut. In this book he made comparison in building images between the old city of Hadhramout and the city of Shibam.

10. Matthew

Matthew (1984) studied the traditional solutions for houses in different regions in Yemen and the influence of climate on window design. It is book “A Commentary on Yemeni Traditional Houses” gives good reference on environmental aspect of house.

11. Kazier

Kazier (1984) studied “Shelter in Saudi Arabia and a review of the buildings and types of houses in Saudi Arabia.” The study identified the types of houses in different regions in Saudi Arabia and determined the name of architectural details that are used in Saudi houses.

12. Ayssa

Ayssa (1996) has made study on the traditional Yemeni windows design with respect to natural lighting. A review on the effect of natural lighting in Yemeni traditional houses in some regions in Yemen was observed in detail.

13. Mustafa

Mustafa (1990) studied “Yemeni Decorations on Islamic Buildings” in Yemeni cities. The study observed on the type of decorations found on several Yemeni-Islamic buildings. The elaborate decorative features are commonly on old building in Yemen.

14. Mahmood

Mahmood (1988) has identified “The Ancient Art of Architecture in Yemen, and studied the use of some of the building materials in architecture in Yemen and some architectural details that are used in old houses.

15. Pascal

Pascal (1998) studied “Dwellings of Sana'a” by giving a review of the typical house types and the architectural characteristics of houses in the capital of Yemen ‘Sana’a’. the detail of Qamariyah was illustrated has important shading device in design.

16. Djebrani

Djebrani and Al-Abed (2000) has identified the low-income public housing in the north of Yemen. The study identified the satisfaction level with neighborhoods in low-income public housing in Yemen and also the low-income public housing in the City of Sana’a, Yemen.

17. Al-Sabahi

Al-Sabahi (1994) studied the “Social Changes in Sana'a” and its impact on

traditional and modern architecture. The study covers the transformation of housing patterns in the city of Sana'a and Yemen.

In general many of above studies have focused on the traditional design and housing in general in different parts of Yemen and Arab Peninsula. None of the works mentioned had discussed, studied or investigated in aspects related to the traditional houses in port city area in Yemen. The significance of Yemeni port cities such as Aden and Mukalla as an important gateway to the country will be the main focus in this research.

1.4 Aim of the Research

The main aim of the research is to rediscover the true characteristics of traditional architecture of houses in Yemen with special reference to the port city of Aden and Mukalla. This involves 3 major parts of investigation as follows:

1. Part One: Literature Search

This part will cover the following topics:

- Overview of the location, geographical features, climate and economy of Yemen.
- Study of the traditional houses in Yemen.
- Review of the background of port city of Aden and Mukalla.
- Review on the problems and factors affecting the design of houses in Aden and Mukalla.

2. Part Two: Research Work

This part will cover the following investigations:

- Preparing the sample questionnaires to investigate the viewpoints and opinions from the selected respondents.
- Conducting a field survey in the port city of Aden and Mukalla.
- Making analysis of the data from the survey.
- Summarizing the result of the survey.

3. Part Three: Design Guidelines and Recommendations

This part will cover the following:

- To propose design guidelines and recommendations with respects to the characteristics of traditional houses for port city areas of Aden and Mukalla.

1.5 Objectives of the Research

In order to translate the above aim of the research into practical steps, the research purports to pursue the following objectives:

1. To study the types of traditional house design in the Arab countries and in Yemen in particular in the port city of Aden and Mukalla.
2. To investigate the problems and factors affecting the design of houses in Aden and Mukalla.
3. To search for appropriate architectural elements and to propose design guidelines and recommendations for future development in the port city of Aden and Mukalla in Yemen.

1.6 Hypothesis

The hypothesis of the research is that the true characteristics of the house in the port city of Aden and Mukalla can be rediscovered and appreciated among selected respondents through housing survey to determine their level of willingness to change, preference and satisfaction in house design.

1.7 Working Conceptual Model (Methodology)

The working conceptual model (methodology) of this research involves the initial background reading to identify the research problems and title of the study. From supervisors input and field study, the research question and hypothesis were made. Then, the research topic and appropriate methodology for the study were identified. The survey questionnaire was developed and tested by pilot study. The study involves a housing survey among the selected respondents. Four sections namely'' Section (A) Respondent's Background, Section (B) Traditional and Modern Houses in Coastal Area of Yemen, Section (C) House preferences and Section (D) Comments on Architectural Problem to help to identify the results. The results are then analysed to determine the research findings. Summary of conclusions and purpose design guidelines are recommended in this study (Figure 1.1).

1.8 Structure of the Thesis

The thesis consists of eight chapters. These are summarized below:

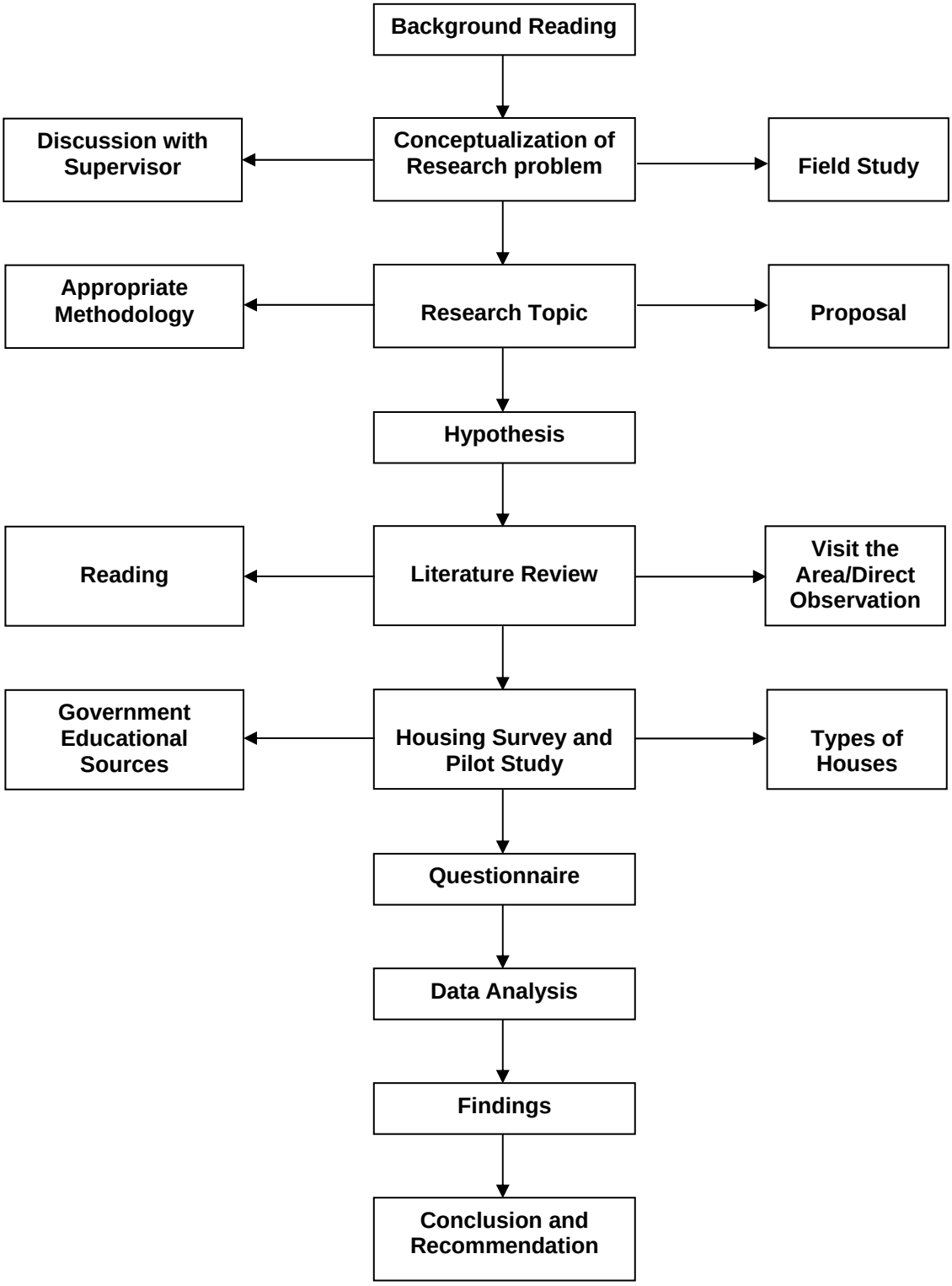

Figure 1.1: Working Conceptual Model (Methodology)

Chapter One: Introduction

Introduction of the thesis that focuses on the General Introduction; Background of the Study; Statement of the Problem; Previous Related Research; Aim and Objectives of the Research; Hypothesis, Working Conceptual Model (Methodology) and Structure of the Thesis.

Chapter Two: An Overview of Location, Geographical Divisions, Climate and Economy of Yemen.

This chapter provides relevant information on Yemen, History of Yemen, its Physical location, Geographical Divisions which includes Geographical Regions, Mountain Region, Highland Region, Coastal Area, The Empty Quarter, The Yemeni Islands, Climate and Economy.

Chapter Three: Traditional House Design in the Arab Countries and Yemen

This chapter discusses The Arab House Design, Geographical Condition, and Form of the Arab House and Courtyard house. It also discusses Yemeni traditional houses, Traditional House and Location and Traditional House and Building Material.

Chapter Four: The Port City of Aden and Mukalla

This chapter provides relevant information on Yemen ports, Yemeni city of Aden and Mukalla, Geographical Location, Climate, Historical, Economical Background and Modern Houses in Aden and Mukalla.

Chapter Five: Problems and Factors Affecting the Design of Traditional Housing in Port City of Yemen (Aden and Mukalla)

This chapter discusses the two types of traditional houses in the port cities namely courtyard house and Hadrami coastal house. Housing problems and factors affecting the design of houses in Aden and Mukalla are discussed.

Chapter Six: Housing Survey

This chapter discusses the preparation of the housing survey. It includes objective, hypothesis of the research, the research methodology, questionnaire used to gather data, research design, statistical method used and the statistical analysis procedure for the research.

Chapter Seven: Analysis of Result and Discussion

This chapter presents the overview of the data collection, synthesis of the data collected from the survey, Section A: respondent's background, Section B: traditional and modern houses in port city, Section C: houses preference, Section D: comments on architectural problems. Analysis of the results from the above sections are tabulated and discussed. This chapter seven also presents the review of the section A (location and house layout), section B (differences traditional and modern, preference of traditional and modern, and balcony and courtyard) and section C (house preference) and review of the findings.

Chapter Eight: Summary and Conclusion

This chapter presents a summary of the conclusions, key findings,

design guidelines and recommendations drawn from this study. Suggestions for further works are proposed.

CHAPTER TWO

AN OVERVIEW OF LOCATION, GEOGRAPHICAL DIVISIONS, CLIMATE AND ECONOMY OF YEMEN

2.1 Introduction

This chapter provides some information on Yemen and explains in detail the country background. The chapter presents introduction of history and physical location of Yemen in the Arab country and the world, geographical division by describing the five major regions**,** climate and weather conditions, history and lastly, the economy of Yemen are briefly discussed.

2.2 History of Yemen

Yemen is one of the important civilized centers in old oriental history (Nicholson, 1995). Historians witnessed that civilization developed in Yemen in the beginning of the flourishing civilization in the 10th century B.C (Atlas, 2004). Yemen is located in Asia specifically at its southwestern corner. This area is known as the Middle East. As such the Middle East is connected to Africa with Egypt as the link-point. With regards to the waterway and sea passages, Yemen directly links the Arabian Sea with the Red Sea. Indirectly, however, it links the Indian Ocean with the Mediterranean Sea (Al-Habshi, 2002).

Porter (1997) noted that because Yemen is part of the linkage between Asia and Africa, the marine navigation route of the West and the

round chain-lock between the continents and all seawater of the world, the significant importance of the port cities cannot be denied. Currently, it is located on the extending southern route of the Red Sea that connects Yemen with Aden Bay, Arabian Sea and the Indian Ocean (Barry Lane, 1991). In ancient times, the northern region of what is now the Republic of Yemen was considered part of the classical Arabian Felix “Happy Arabia.” Before the Christian era, the Minaeans and the Sabaeans, "whose kingdoms were the biblical Sheba" held sway in the region. Their economies bolstered by cultivation of frankincense and myrrh and trade-in semi-tropical spices (Encarta Encyclopedia, 2001). The Sabaeans had founded their kingdom by 950 BC was centered at Marib where they erected a large elliptical temple. They were primarily irrigation farmers and built a great dam across the Wadi Dhana to water an area of about 65 sq km (25 sq mi). The Sabaeans have left numerous carved inscriptions; an innovation that was introduced to the region as described by Marchand (2001).

To the north, the Minaeans founded their kingdom in the first millennium BC with the capital at Karna (present-day Sadah) were the chief traders of incense throughout Al-Hijiz before the Nabataeans eclipsed them in the 1st century BC. Further south were the kingdoms of Qataban that was in the late 5th century BC fell to the Sabaeans and Hadhramout. Netton (1986) describe that these southern kingdoms also participated in the lucrative incense trade. Shortly before the Christian era, the Himyarites who traded at Muza on the Red Sea Coast took over these kingdoms.

The location enables Yemen to function as a centre or meeting point for international trade and navigation of three continents, between the continents, and most countries of the Indian Ocean, the Red Sea and the Mediterranean Sea as noted by Barry Lane (1991). Yemen civilization arose in the midst of the three ancient civilizations: Egypt, Mesopotamia and the civilizations created along the Al-Sind Valley (Al-Habshi, 2002).

Many islands of strategic importance belong to Yemen. The islands are widespread along the coast stretching from the Red Sea and Aden Bay through the Arabian Sea and Indian Ocean. The islands stretch along the Strait of Bab-al-Mandab that is considered the most important passage of the Red Sea (Colburn, 2002). The islands such as Kamaran, Al-Zubair, Zoqar and Hunnish are located in the Red Sea. Socotra and Abdel-Kouri are situated in the Arabian Sea and Indian Ocean (Doe, 1992). Many old empires that controlled the international seawaters of Yemen and not Egypt would help administering freely the Red Sea and the coasts and shores of the Arabian Sea (Al-Habshi, 2002).

2.3 Physical Location

Yemen lies in the south of the Arabian Peninsula, south west of Asia between latitudes 12 and 20 degrees to the north of the equator, longitudes 41 and 54 degrees to the Greenwich (Dickins and Watson,1998). At the north Yemen is bordered by Saudi Arabia, south by the Arab Sea and the Gulf of Aden. On the east Yemen is bordered by the Sultanate of Oman, and west by the Red Sea (Figure 2.1).

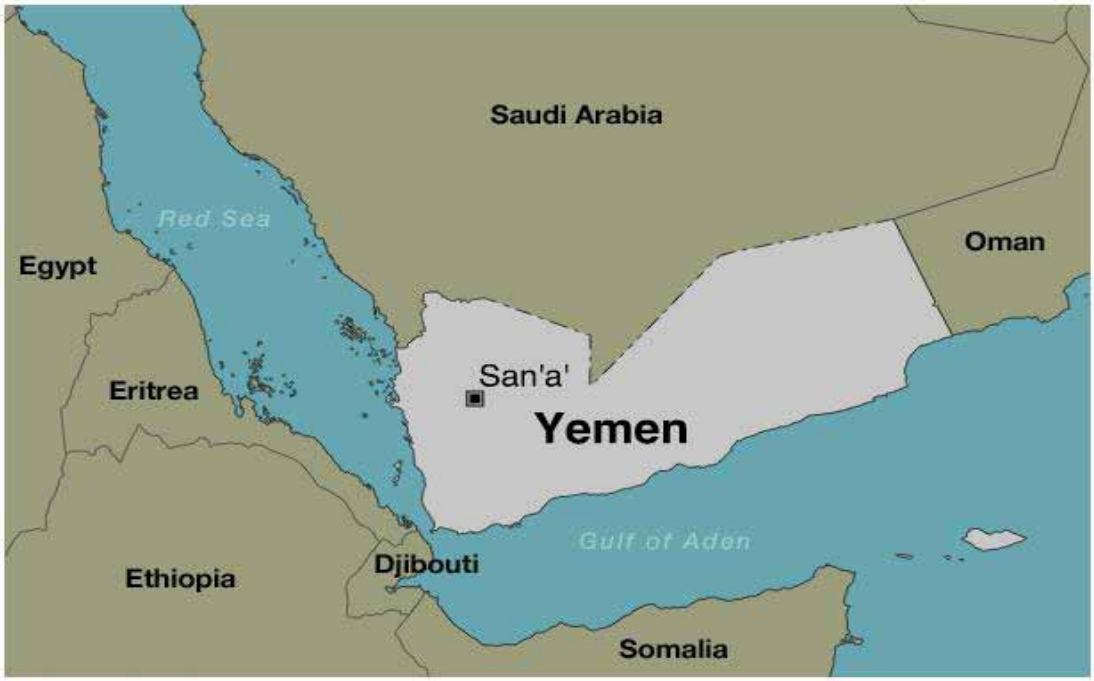

Figure 2.1: Map of Yemen.
Source: Marcandkaren (2004).

Yemen acquires its importance from the location as the entrance and exit (gate) of the Red Sea and the states around. Yemen is also important for the international navigation lines that pass cruising from the north or south as well as the main doorway to the countries of East Africa (Al-Habshi, 2002). The total area of the country is about 527,970 square kilometers excluding the Empty Quarter. The Republic of Yemen has a long Arab sea coast of 1200 km and a coastline of 700 km along the Red Sea. The population of Yemen is 17,000,000 (Ministry of Information - Yemen, 2000).

2.4 Geographical Divisions

Topographically, Yemen is divided into five major regions, mountain region, highland region, coastal area, the Empty Quarter, and Yemeni Islands. (Figure 2.2) shows map of Yemen and estates of all regions. They are briefly discussed below:

Figure 2.2: Map of Yemen and Estates of all Regions.
Source: Y.NET (2004).

2.4.1 Mountain Region

Mountain region is located in the West and it represents a large area of the country. The region stretches longitudinally from the North to the South and transversally from the West to the East. There are number of plateaus of considerable agricultural importance with large populations. The highest mountain in Arabian Peninsula is Prophet Shu'aib that is at 3766m above sea level is located in this region (Peakbagger, 2004). This region includes Sana'a, Al-Mahwit, Hajjah, Sa'da, Sa'da and Dhamar Governorates that are famous for their historical cities, mountainous villages, agricultural terraces and, ancient citadels, and old markets (Figure 2.3). The climate conditions are favorable for tourism throughout the year (Ministry of Planning and

International Cooperation , 2003). The temperature is moderate in summer (28 ^{O}C – 10 ^{O}C) and cold in winter (18 ^{O}C -10 ^{O}C) especially during the night and early in the morning.

Figure 2.3: Mountain Region.
Source: Y.NET (2004).

2.4.2 Highland Region

The area lies to the East and North of the mountainous heights parallel to the heights towards the Empty Quarter. The maximum height of this area is 1000m (National Information Center, 2002). This region includes most areas of Ibb and Taiz Governorates and considered as one of the most beautiful and riches regions for tourism throughout the year (Figure 2.4). The regions' climate is moderate during summer and winter with temperature from 11^{O}C to 22 ^{O}C.

Figure 2.4: Highland Region.
Source: Y.NET (2004).

2.4.3 Coastal Area

This area includes the costal plains overlooking the Red Sea, Gulf of Aden and the Arabian Sea (Barry Lane, 1991). The area is connected to each other forming a costal strip that extends from the Oman border south-west to Bab Al-Mandab. This strip then changes its direction northward to the border of Saudi Arabia, thus making up a distance of more than 2400km long. The width of these plains is 30km to 60km long (Al-Kadasi, 1994). This region includes Al-Hodeidah, Aden, Abyan, Shabwa and part of Hadhramout known as "Hadhramout Al-Sahil" along the coastal plains overlooking the Red Sea, Gulf of Aden and the Arabian Sea (Figure 2.5). The most important tourist places to visit are the historical and Islamic cities and the warm beaches from October to April when the climate is moderate in Aden and Mukalla. The coastal area especially the city of Aden and Mukalla will be the

focus area in this study. Further discussion about the coastal area and the port cities will be covered in the following chapter.

Figure 2.5: Coastal Area.
Source: Y.NET (2004).

2.4.4 The Empty Quarter

This region includes large areas of the Governorates of Al-Jawf, Mareb, Shabwa and part of Hadhramout known as "Hadhramout Al-Dakail"(Figure 2.6). The Empty Quarter archaeological ruins, desert tours and nomadic lifestyle make this region very distinguishable. Al-Ruba Al-Khali is part of the desert regions of Yemen that is permeated by some land plants especially on its edges intercepting with the plateau region through the seasonal wadies and sand roots (Stair, 2003). The temperature is hot in summer, up to 54 ^{O}C and cold in winter, down to –3 ^{O}C.

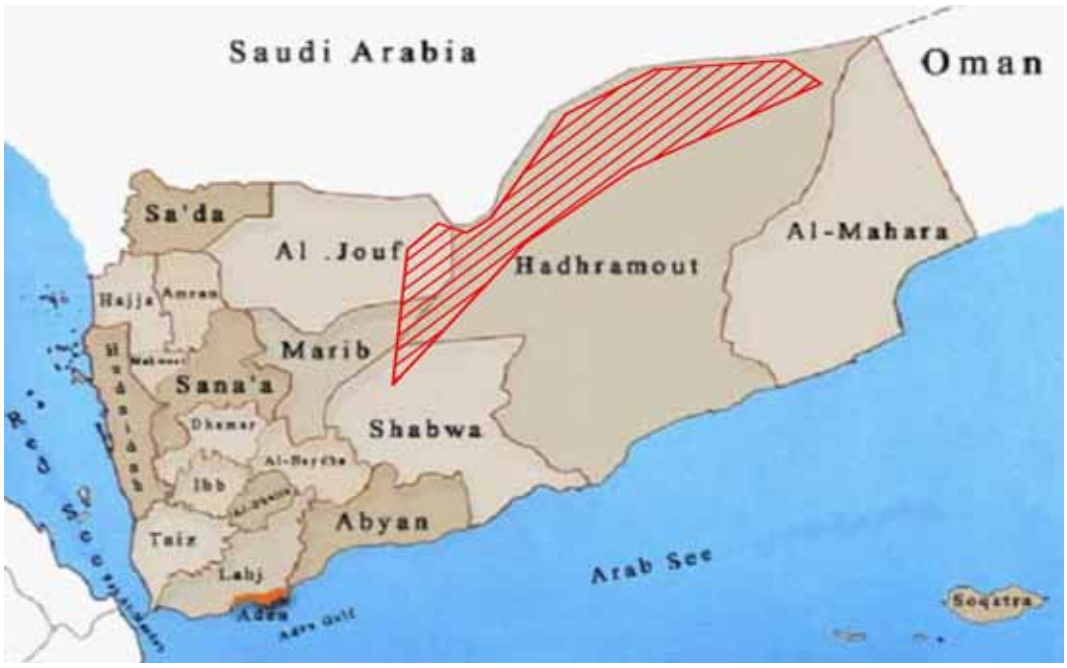

Figure 2.6: The Empty Quarter.
Source: Y.NET (2004).

2.4.5 The Yemeni Island

The Yemeni Island consists of islands scattered along the coast of Yemen. There are about 120 islands; most of the islands are located in the Red Sea and the biggest one is known as Kamaran Island (Davison, 1994). There are also islands located in the Gulf of Aden and the Arabian Sea; the largest of that is Soqatra (Figure 2.7). The climate of this region is almost similar to that of the coastal region. Kamaran Tourist Village is the first island camp in the Red Sea. Abdul-Kuri and the Al-Ikhwan Islands are the famous place for the diving and sea sport as described by FTI (2005).

2.5 Climate

Since Yemen is endowed with a varied topography, the climate in general also varies, although there are no major seasonal differences (Saba, 2004). There are two long seasons, summer and winter.