The Development of the Domestic Interior in Makkah, Saudi Arabia: From The Traditional to the Modern Way of Living

A Thesis Submitted to
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In the Name of Allah,
the Most Beneficent, the Most Merciful

Dedicated to:

My wife

ABSTRACT

In Saudi Arabia, the traditional architectural forms developed over a long period. The building techniques and design adopted not only satisfied the environmental needs of the population but also related to their cultural and religious requirements. However, the internal space of the Makkah house has seen great changes in since WWII in particular the more recent decades. In fact, modernization means that it is no larger possible to speak of the Makkah house as a separate entity within modern Saudi Arabia. New houses in Makkah are exactly like houses in the rest of Saudi Arabia. The traditional concepts of interior space making are being ignored. The vertical extension of the space, which is the most important feature of traditional houses in Makkah and provides the vertical order in the use of floors, has gone. The new arrangement, which is the same for all cities in Saudi Arabia, brings together all zones on a single floor in apartments.

Many factors have influenced the evaluation of contemporary interior space, such as the economic boom of the Kingdom of Saudi Arabia, new technologies, new building materials and methods, new international designer fashions imported from different countries. These social changes in Saudi society and the other factors have the result of producing new interior spaces of modern Makkah houses that are very different from the traditional ones.

Arab architecture has, through the ages, been a reflection of the environment and the characteristics of the civilization in which it appeared. Civilizations, in which the Arab architecture flourished, were the result of religious, social, cultural, political and physical interaction. These factors gave each society its distinguishing features that differed from age to age and place to place. Arab architecture has participated in expressing the relationship between man and nature. This can be seen in many examples of Arab architecture and it is clear in the Arab house that most of its elements were characterized by the harmonious relationship with natural settings externally, and internally by the organic relationship between the spatial layout and the lifestyle of the inhabitants. There are special features that distinguish Arab architecture from other styles of architecture around the world, for example its simple form and usage of local materials, with geometric decoration and calligraphy, also the

effective control of natural forces through climatic modifications. Above all, the Arab house became the embodiment of Muslim values in built form.

The researcher believes that the demands and conditions of modern life are different and adjustments need to be made, but equally, that the traditional way of doing things have merits that should not be wilfully discarded for the sake of temporary fashions. The problem is how to bring these divergent sets of criteria together. One approach is to establish design guides which are legally enforced. A classic instance of that is the so-called Parker Morris guideline for dwellings applied to public housing schemes in Britain during the 1960s and 1970s. Another, more theoretical approach is offered by the Christopher Alexander's concept of a pattern language. Using these two well established methods as a starting point the author seeks to find a set of criteria that will help ensure that the best qualities of Makkah's traditional architecture are in corporate in modern Makkah dwellings.

The main objective of this study is therefore to identify the type of internal space that would provide for the domestic needs of different-sized families in Makkah in a way that is commensurate with Arabic Muslim value systems. Both qualitative and quantitative methods were used in the research. In addition to a spatial and structural survey of traditional and modern houses an occupant' questionnaire was used to establish a rational data base for social attitudes and norms of a modern lifestyle.

For example, it was found that most of Makkah's modern flats contain four rooms and there are no different types of space which make them suitable for different size of families, so occupants are obliged to make contradictory decisions according to their priorities, which inhibit them from following Islamic customs. By studying the way that traditional architecture accommodates these demands, a basic set of spatial criteria was developed, founded on the use-pattern theories of Christopher Alexander and Parker Morris space standards. These became the basis for a new design guide for appropriate domestic building in Saudi Arabia developed by the researcher.

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PART I

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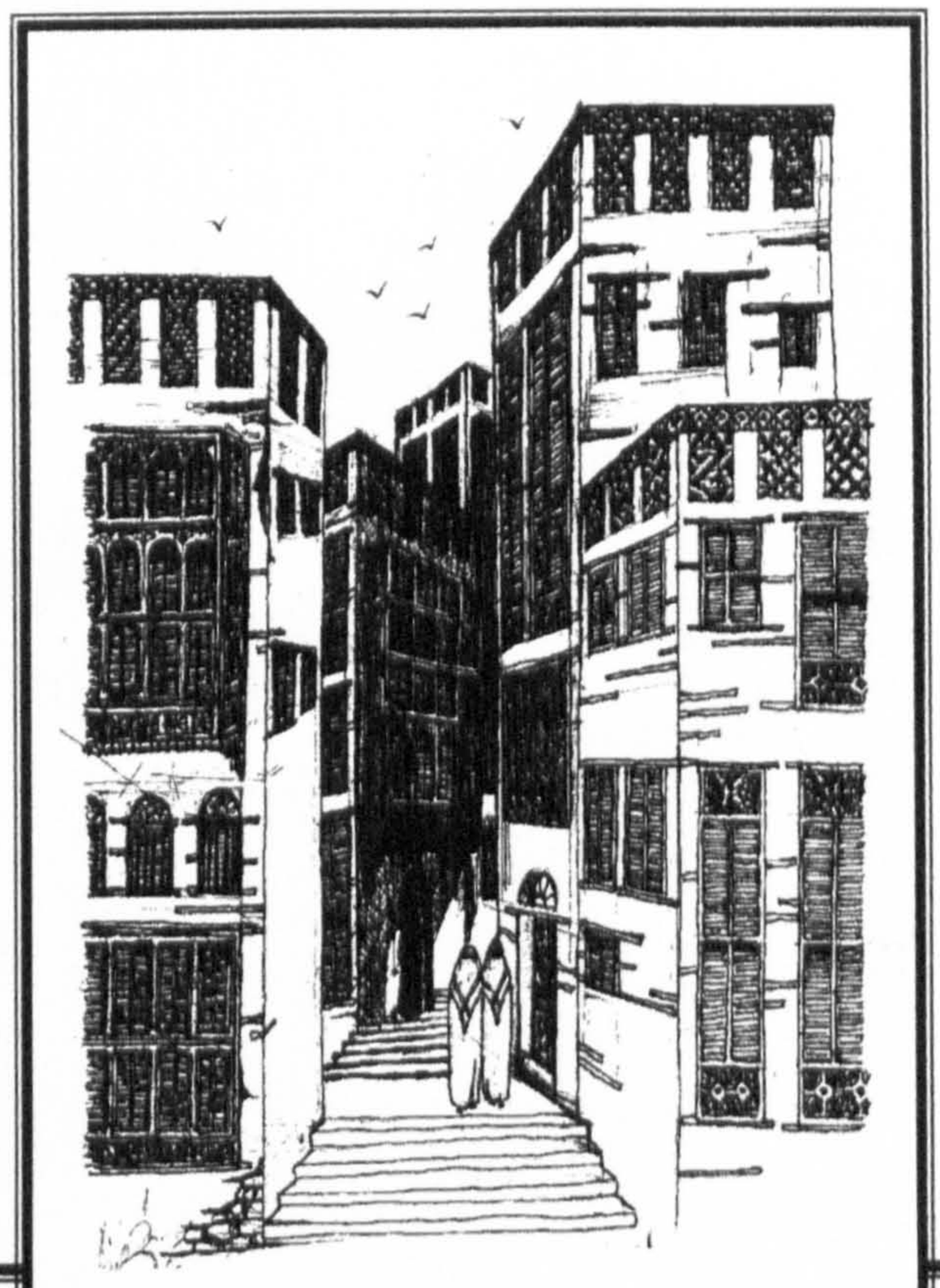

CHAPTER 1
INTRODUCTION AND STUDY DESCRIPTION

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1.1 Introduction

In Saudi Arabia, the traditional architectural forms developed over a long period. The building techniques and designs adopted not only satisfied the environmental needs of the population but also related to their cultural and religious requirements. Traditional architecture in Makkah developed from the use of local materials, such as stone and wood, which conditioned the structural form of building in the Makkah area.

Generally Makkah traditional houses are four to five stories high producing deep shadows and shaded streets while utilizing the limited space available for houses to accommodate large extended families. Similar to Arab houses in other areas, for example in Suakin, Baghdad, Sanaa in Yemen, Cairo and Jeddah in Saudi Arabia, the vertical extension in building is the most important feature of Makkah traditional houses, comprising a vertical order in the use of floor space as well. The lower floor is used for the male members of the family and their guests, with female guests being entertained on the first floor. The higher floors are for private use, as living rooms and for family gatherings, and bedrooms. Makkah and Jeddah provide the best examples of tall traditional buildings in Saudi Arabia. However, Makkah traditional houses have a special mixed style that includes a variety of elements especially related to interior design, which bring together international Islamic social and cultural expressions because of it being a world centre of pilgrimage. For example, some of the internal space names, wooden decoration, the decorated wooden boarding of the ceilings in some houses, gypsum decorations on the internal walls and on the top of bathroom doors. It is a traditional way of building that is under threat from the general modernization of Saudi society.

The internal space of Makkah houses has also seen great changes in recent decades. In fact, modernization means that it is no longer possible to speak of the Makkah house as a separate entity. Modern Makkah houses are exactly like houses in the rest of Saudi Arabia. The traditional concepts of interior space making are being ignored. An example of this, as will be seen later in chapter 6, is the vertical

extension of the space which is the most important feature of traditional houses in Makkah and provides the vertical order in the use of floors, such as separate zones for male guests, female guests, and family. This has now gone. The new arrangement, which is the same for all cities in Saudi Arabia, brings together all these zones on a single floor in apartments or at most two floors in the villas.

Since the unification of the Kingdom of Saudi Arabia in 1932, the discovery of oil and its consequences of economic revolution, cross-cultural influences and the introduction of different jobs have all been instrumental in opening the way for social change in Saudi society. As the extended family is the fundamental element of Saudi society, its transformation was an inevitable result of social change. With jobs easily obtainable in different regions of the vast country, the extended family began to give way to the nuclear family. It is important to emphasize the cultural influences of the early mass-produced housing of the 1950s in enforcing and encouraging such social change, as this housing provided a limited alternative for an extended family to reside in one household without sacrificing privacy and emotional comfort.[1]

Many factors have influenced the development of the contemporary interior space, such as the economic boom of the Kingdom of Saudi Arabia, new technologies, new building materials and methods, new international designer fashions from different countries, especially European and American design. The switch to electricity as the source of power can be considered one of the most important factors that have affected the design of interior spaces in Makkah houses. For example, air conditioning units have been responsible for changing the basic concept of interior space making. The *Kharijah*, (terrace) which was located on the upper floor and used to be an open and private space for family members and where women carried out domestic work is omitted and replaced by an open balcony without any privacy because of air conditioning. This enables all these tasks to be carried out inside the building.

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[1]Fadan, Y. (1983) The Development of Contemporary Housing in Saudi Arabia: A Study in Cross-Cultural Influence under Conditions of Rapid Change, PhD thesis, MIT, pp. 75-77

In addition the *Rowshan* or *Mashrabyyah* the open wooden screen that allowed cross-ventilation and privacy for family life from the outside has been replaced with small openings fitted with clear glass and aluminium windows. With the emergence of air-conditioning the environmental situation changed because by closing all the windows and doors the space is sealed, which means the inhabitants can have either ventilation or privacy, but not both at the same time. Moreover, the main traditional family living room (*Muakhkhar*), which used to be a large room with two or more *Rowshan* or *Mashrabyyah*, is usually replaced by a central living room sometimes without windows at all, so that the interior of the house has come to be a fully enclosed concrete box with glass and aluminium windows, and air conditioning. Other modern facilities like electric light have had an equally dramatic impact on the development of the interior space. These socio-technological changes in Saudi society and the other factors have had the result of producing a new conception of interior space in modern Makkah houses that are very different from the traditional one. (Figure 1.1)

Figure 1.1: Example of the current mixture of traditional houses and modern international style introduced to Makkah, Shap Aamer, Makkah

Whereas Makkah traditional houses were built according to the immediate needs of families, and therefore having been raised in size and composition most of Makkah's modern flats are composed of four rooms. These flats are designed as

final and complete units, a formula which does not work with different-sized families. Therefore occupants are obliged to make a number of contradictory decisions according to their priorities. This limitation has, for example, resulted in the unavailability of independent bedrooms for the children and consequently they have to use some other rooms, such as the living room or guests' rooms, to sleep and study. So, the link between the past and present is largely severed, in the form as well as the functions of interior spaces. This contradicts the traditional customs of the Makkah people and makes for inferior living conditions, especially in high-rise flats where most ordinary people live.

The researcher accepts that the demands and conditions of modern life are different and that adjustments need to be made in providing appropriate residence, but, equally, holds that this need not necessarily lead to the total rejection of traditional customs that had formed Makkah unique domestic heritage. The chaotic nature of the fashion driven house building activities of the recent decades in Saudi Arabia, Makkah included, poses a serious thereat to the traditional house culture and if unchecked many well destroy it completely. It is by now abundantly clear that social pressures in Makkah by themselves will not constrain this destructive process; this seems to be a strong case for the imposition of externally enforced measure such as western style design guide that permit the continuities of a basic Arab life style, while still enjoying the amenities of modern technology.

1.2 Problem Definition

1.2.1 Importance of the Subject

Every nation has its own traditions and social customs. The environment conditions these social customs in most matters of life. The Muslim community in Saudi Arabia has its own social customs, culture and traditions, which distinguishes it from other cultures and which have contributed to the formation of the speciality of housing communities in these societies. In describing traditional houses in an Islamic society we find that they are designed in a way that comprehensively fulfils the needs of the society and its identity within the context of a geographical setting.

For example, these houses were essentially concerned with ensuring complete privacy for the family as manifested in built form. Alexander pointed out, that "Privacy is most urgently needed and most critical in the place where people live, be it house, apartment, or other dwelling".[2]

I believe that it is important for the modern Arab architect to study the fabric of traditional housing so as to get to understand the Islamic way of life. The built experience of generations should not be neglected but should be investigated thoroughly in order to understand how best to construct liveable space for an Islamic community.[3] However, modern houses, especially in Makkah which is the focus of the study, have perhaps lost their identity and no longer satisfy the conditions for dwelling in accordance with Islamic customs. Fashionable competition and the need to show-off wealth have lead many to search for new types of space. This has led to the introduction of inappropriate cultural borrowing and the copying of American and European-style domestic built forms, with open spaces, some of which provided no privacy to the family, being systematically introduced.

This study is primarily concerned with the socio-cultural aspect of housing in Makkah city, which is seen as a deep-rooted phenomenon that tied people to the traditional value systems. This does not mean that the study has no interest in Makkah's physical identity, but it stresses the importance of an understanding the inter relationship of the environmental, social and physical identities of the Makkah houses. A study of human values is also significant for an understanding of peoples' needs because these needs are clearly expressed in the physical form of their houses.[4] Rapoport points to the importance of values in this respect. He states that:

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[2] Alexander, C. and Chermayeff, S. (1963) *Community and Privacy: toward a new architecture of humanism*, United States America Press. p.37

[3] Al Salafi, J. (1993) *Al-Asalah Wa Al-Tabea Al-Mahali Fi Amarat Al-Taif* [Originality and Local Style of Taif Architectural in Saudi Arabia], (Saudi Arabia, Makkah Press), pp. 1-5 (Arabic text)

[4] Al Naaeem, M. (1998) Continuity and Change of identity in the Home Environment: Development of Private House in Hofuf, Saudi Arabia, PhD thesis, University of Newcastle Upon Tyne (UK) p.24

> ... the values and rule systems of different groups help understand the urban forms which their choices produce. Values thus affect the definition of problems, and the data solutions proposed.[5]

Many studies have sought to investigate the social and physical values embodied in Saudi house forms, or the relationship between those values and questions of identity. For example Al-Soliman studied how social values expressed physicality in the housing environment in traditional and modern built houses.[6] Al-Naaeem investigated the degree of need of people to establish their identity, either individually or in groups, and the effects of that as reflected in the composition of private living space in Hofuf in Saudi Arabia.[7] Al-Afghani also studied the Saudi house in the past, present and future (a study of changes).[8] Hariri, too, studied the houses of central Makkah, with regard to the influence of Hajj.[9] These studies outline the principal cultural and social values comprising the modern Saudi environment and its architectural origins.

1.2.2 Research Questions

The main question addressed by this study is to what extent the modernization of housing that has occurred since the 1950s in Makkah is providing a sustainable environment for living according to Saudi customs. In particular it aims to address the following issues:

1- Do these new architectural forms create appropriate social space conditions for a Makkah lifestyle?
2- Do these changes in house form make a qualitative improvement in interior space for the maximum benefit and comfort for the occupants?
3- Do these modern spaces provide for the needs of different size Makkah families?

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[5] Rapoport, Amos. (1990) *Environmental Quality and Environmental Quality profiles*, In N. Wilkinson (Ed) Quality in the Environment. UK: Newcastle, Urban international Press, p.75
[6] Al Soliman, T. (1991) Social Values and their Effect on the Environment in Saudi Arabia, *A Recent Account, Journal of Architectural and Planning Research*, Jun, 1991:8, No.3, pp. 235-255
[7] Al Naaeem, M. (1998) Continuity and Change of Identity in the Home.
[8] AL Afghani, A. (1990) The Saudi house in the past, present and future: a Study of Changes. PhD thesis, University of Glasgow (UK)
[9] Hariri, M. (1986) Housing in Central Makkah: The Influence of Hajj, PhD thesis, University of Newcastle Upon Tyne (UK)

4- Do these new spaces fulfil social, psychological and identity needs for Makkah families?
5- What lessons can be learned from Arab Muslim architectural traditions, especially those of Makkah itself?
6- What architectural theories from the West are appropriate for the creation of a satisfactory domestic environment in an Arab city like Makkah?
7- What new design guidelines could be useful for ensuring a good quality modern domestic environment that could sustain living according to Saudi traditions, and how could this be implemented?

1.3 Study Aims and Objectives

The main objective of this study is to identify the type of internal space that would provide for the domestic needs of different-sized families in Makkah (newly married, small family, and big family...etc) in a way that is commensurate with Arabic Muslim value systems. Its particular aims are as follows:

1- To identify the properties of the traditional Arab Muslim house and its setting, the main features as well as the similarities between some of the traditional Arab house forms found in other countries, e.g. Suakin, Sanaa in Yemen, Baghdad, Cairo, Jeddah, and Makkah traditional houses etc., are explored as potential sources for creating a contemporary design language.
2- To study the interior space, lifestyle and furnishing of Makkah's traditional houses as a model for contemporary living.
3- To investigate the three historic phases of development of the Saudi Arabian house from traditional to modern in order to determine the nature of the changes and their socio-cultural implications. The first transformation began in the late 1940s to early 1950s. The second transformation came in the late 1970s. Finally the third transformation, took place from the late 1980s onwards.
4- To review the main findings of the study and their theoretical substantiation, and on the basis of these to propose guidelines for modern Saudi Makkah housing that is culturally sustainable.

1.4 Focus of Study

1.4.1 The Domestic Environment

For research into housing it is important to study aspects of the home environment fully in order to understand how this social and cultural system works.[10] This process of habitation, which is manifested in the physical setting and identity of a people, is described by Rapoport as follows:

> A system of setting that has particular environmental quality ...and which people choose within given constraints on the base of lifestyle (and ultimately culture) to match their ideals, values, images and so on, and to be supportive of their activities (including latent aspect), their lifestyle and so on.[11]

The environment of homes is a complex issue and this complexity stems from the ongoing interaction between many factors such as climate, topography and values. These factors are always interacting with each other and in order to understand these changes a full investigation of the whole system is necessary.[12]

The concept of culture was looked at as system after World War I by Malinowski[13]. He reported that all the factors which affect this system are interconnected and if one factor changes, it could affect the whole system. The goal of the whole system is to satisfy certain needs such as food, security dwelling, sex or even status. These new ideas of Malinowski have greatly affected anthropology and are known as

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[10] Economics and material are not in this study considered critical factors in the formation of culturally appropriate Saudi domestic architecture; it concentrates essentially on space-use and inhabitation.

[11] Rapoport, Amos. (1990) *Environmental Quality and Environmental Quality Profiles*, In N. Wilkinson (Ed) Quality in the Environment, Newcastle: Urban international Press, pp.75-83

[12] Dovey, K. (1985)'Home and homelessness' in ALTMAN I. & WERNER, C. (Ed) *Home Environments: Human Behaviour and Environment,* Volume 8. New York: Plenum Press, pp. 33-64. For more information about home environment see the following:

a) Duncan , J. (1982) *Housing and Identity,* U.S: Homes & Meier Publishers.
b) Lawrence, R. (1981a) The appropriation of domestic space: a cross-cultural perspective, in A. E. Osterberg, C. P. Tiernan and R. A. Findlay (Eds.) *Design research interactions.* EDRA 12 Washington, DC: Environmental design Research Association.
c) Rapoport, Amos. (1969) *House. Form, and Culture,* Englewood Cliffs: Prentice Hall: NJ Human Aspects of Urban form, Oxford: Pergamon.
d) Werner, C. et al. (1987) "Temporal aspects on home," in I. Altman and C. Werner (Eds.) *Home Environments: Human Behavior and Environment.* Vol.8. New York: Plenum Press.

[13] Malinowski, Bronislaw, (1884-1942) *The dynamics of culture change: an inquiry into race relations in Africa* /by Bronislaw Malinowski; edited by Phyllis M. Kaberry,New Haven: Yale University Press, London, H. Milford, Oxford University Press, 1945

"functionalism". Another idea which is similar to that of Malinowski was introduced by Radcliffe Brown[14] and is known as "structural-functionalism". The basic principle of this idea was that cultures are looked at as a function which keeps the social structure.[15] Vago pointed out the following:

> Structure refers to a system with relatively enduring pattern, and function refers to the dynamic process within the structure.[16]

After World War II, Parson developed the "system theory" in sociology, which states that the different parts of any system will always interact in order to satisfy certain goals which further balance the system. Abercrombie pointed out that:

> Societies or social systems are said to be in equilibrium when the forces acting within them are balanced and the society is consequently stable.[17]

According to Al-Naaeem, there are two levels at which the residential process in Saudi Arabia should be investigated:

a) At the settlement level: To measure the external constraints, physical and social, that may influence the planning system, house arrangement etc.

b) At house level: To understand the internal constraints, physical and social, that may influence the organization and use of spaces and their associated physical forms.[18]

All countries have their customs and culture, which could be changed over time, such as the maintenance of some of their customs and culture and the loss of some of these.

Historically most Makkah people hold fast to religious teaching on how to live their lives, concerning issues such as privacy, the design of traditional internal spaces which were built to the requirements of the residents were influenced by religion, custom, and culture hence the two zones in the traditional houses of Makkah (family zone and guest zone).

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[14] Brown, Radcliffe Alfred Reginald, (1881-1955) *Structure and function in primitive society: essays and addresses* / by Alfred Reginald Radcliffe-Brown: with a foreword by E. E. Evans-Pritchard and Fred Eggan, London, Cohen & West

[15] Hicks, D and Gwynne, M. (1994) *Cultural Anthropology*, New York, Harper Collins Publishers.

[16] Vago, S (1980) *Social Change*. London: Holt, Rinehart and Winston, p.44

[17] Abercrombie, N. et. Al. (1988) *The Penguin Dictionary of Sociology*, Penguin Books, p.89

[18] Al Naaeem, M. (1998) Continuity and Change of Identity. p.24

Traditional customs are changing and in some cases disappearing in Makkah city, but most families still maintain the basics of the old system, for example parents meet with their married sons or daughters and stay for several days or up to week. However, this custom is coming under threat, because the size of the modern house is no longer adequate for the aspects which are sacrosanct e.g. privacy.

One reason for the loss of their customs could be that the size of the parents' house is too small, for example the numbers of the rooms are not enough for special functions or private meeting. Another cause may be the fragmentation of the extended family, where the married sons or daughters live outside Makkah. Social communication, visits between friends and neighbours, is another aspect of Makkah's customs and culture that is weakening, especially by males because the men now tend to meet together outside the home environment.[19]

Despite these problems, relationships between the extended family members continue to be strong, as Rajab pointed out regarding the situation in Jeddah, which is typical for modern urban societies in Saudi Arabia:

> One of the criteria families applied to their choice of home was closeness to relatives in order to overcome the influence of the vast expansion of Jeddah that led to fewer visits between relatives. They also maintained their relationships through short visits, telephone calls and social occasions.[20]

In their architectural shape Makkah traditional houses were influenced by the hot dry climate, also the mountainous terrain and the wish to build as close as possible to the Holy mosque. This led to narrow streets and lanes between six to seven storey residential blocks which create shade and so reduce the heat. The elevations of the traditional houses were also influenced by climate, such as is found in the great openings at ground level covered by *Rowshan* or *Mashrabiyyah.* In addition the internal spaces were influenced by climate as in the case of the *Kharijah* (terrace),

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[19] A new phenomenon is where men pool together to rent a property in which to meet. These places are usually outside the city centre and consist of a courtyard, some rooms, services, and sitting area that are called *Isteraha.* As far as I am aware this social trait has not been studied before.

[20] Rajab, A. (1990) The Urban Development and the Female Social Network Relationship in Jeddah, Saudi Arabia. Master's thesis, University of King Abdulaziz, Jeddah. p.22 (Arabic text)

which were located on an upper floor. These spaces were used for activities such as sitting and sleeping on summer nights. So religion, custom, culture, climate and traditional materials all influenced the formation of the Makkah traditional house. (See chapter 4 and 5)

1.4.1.1 Islam and the domestic environment

Islam and the domestic environment have an old relationship as the religion of Islam is a complete system. The teachings of Islam are clear about all aspects of life. What is allowed for Muslims is called "Halal" (i.e. legal to do) and on the other hand what is not allowed is called "Haram" (prohibited) and these regulations are all found in the "Shariah". All Muslim take their regulations from "Shariah".[21] It is essential requirement for all those who run Islamic communities to be aware of the principles of *Shariah*. The main sources of *Shariah* include the following:[22]

1- The Quran "the holy book of Islam": The holy Quran contains all the instructions that were sent to prophet Mohamed (peace upon him). The Quran contains laws and regulations for all aspects of life e.g. social, economic, political... etc.

2- The *Sunna* "The sayings and teachings of the prophet ": *Sunna* is a further explanation of the verses of the Quran and shows Muslim how to perform certain duties or actions.

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[21] Human, M. (1980) *Thought about Islamic Architecture and basis of Holy Quran and Sunna.* Riyadh: Al-Sharief Printing. P.29

[22] For further information about *Shariah* see the following:

a) Khallaf, A. (1978) *Ilm Ghawa'id Al-Figh* (*The Knowledge of Figh Principles*). Kuwait: Dar AlQaban Press. Chapter 1, pp.20-94 (Arabic text)

b) Al Ashqan, M. S. (1395Ad) *Ghawa'id Al-Figh AlJaliah li AlMobtadeen* (*The Obvious in Figh Principles for Beginners*). Kuwait: Dar Al-Salafiah Press. Chapter 5 and 6, pp.63-128 (Arabic text)

Islam is practised not just in Mosques or homes but everywhere a Muslim might be and consequently the built environment must acquire specifications which satisfy these duties and action. However a Muslim can mix with people of all faiths or more. Regarding the built environment and architectures AL Afghani reported that there are five categories which include:[23]

1- Family requirements.
2- Hospitality requirements.
3- Orientation requirements.
4- Economic requirements.
5- General requirements.

- **Family requirements:** The parents of the family are responsible about its affairs. In an Islamic society boys and girls are separated in bed and also unrelated men and women. The man is responsible about the welfare of his family and also providing for them. He is also required to love and teach his children and raise them up with good manners. Privacy of all members of the family should be respected particularly in the bedrooms. Boys and girls are separated at puberty to keep at bay problems arising from their biological differences. The provisions of the separation between boys and girls as well as men and unrelated women require extra rooms and special arrangements.
- **Hospitality requirements:** The hospitality and respect of neighbours stem from the teachings and principles of Islam. Arabian society had always been known for its hospitality and Islam came to enhance these values. These values of course will require special housing arrangements in order to make the guests feel at home.
- **Orientation requirement:** These requirements are essential for Muslims e.g. the toilet seat should not face along a line of orientation to the Kaaba, as a matter of respect.

[23] AL Afghani, A. (1990) The Saudi house in the past, present and future: a Study of Changes. PhD thesis, University of Glasgow (UK) p.36

- **Economic requirement:** A Muslim should not at any time spend money extravagantly or without justification. Life should also be simple and society should be aware of materialistic values and understand their dangers.[24]

It is clear that the built environment of Islamic society should reflect the teaching and regulations of Islam, but with full respect for other people.

1.4.1.2 The Private Home

Makkah family members spend most of their time in this space, which is used for many activities such as resting, guest reception, reading, sleeping etc. For this purpose the family house is important in the urban environment. In addition all the required space must be available for the residents of a house to facilitate these activities, which will be appropriate to the customs and cultures of this society. For this reason it is important to find designers who understand the cultural values of Saudi society and its architectural requirements, to design for it in a modern way. We do not wish to ignore advanced techniques and technologies or modern building materials. Designers' should benefit from these technologies and use such developments in providing buildings suitable for the present in which we live. At the same time we must not forget the lessons from the past. Traditional domestic environments evolved in harmony with social customs and set a worthy example.

The present study will concentrate on private homes, which are the basic residential unit in Makkah city. As has been mentioned above, Makkah traditional houses were influenced by their physical surroundings and local culture. So Makkah traditional houses provided for the family needs; the women spent most of their time in these spaces and the men met their friends and guests in the guest zone. Modern Makkah houses are influenced by many factors, for example technology, new materials and people's knowledge of other cultures and architectural fashions, which were introduced by the modern media: television (satellite), magazines and the internet (see modern lifestyle, chapter 5, section 5.2). For that reason a new architecture has developed that is unrelated to local climate

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[24] AL Afghani, A. (1990) The Saudi house in the past, present and future: a Study of Changes. PhD thesis, University of Glasgow (UK) pp.37-46

and customs, and concerned mainly with expressing the latest fashion, for example large spaces and different shapes, including some spaces which have no meaning or function. Also the European based design for the interiors and exteriors of buildings pays no regard to important Islamic traditions such as gender separation and privacy, so no identity is provided for the two all-important zones of activity namely, the family zone and guest zone. Issues like these are the focus of this study.

1.4.2 Why Makkah?

Main reasons for the choice of location are:

1- The researcher is a fourth generation resident of the city of Makkah and knows the situation and the customs well.

2- Most studies of the city's residential architecture to date have focused on the central area of Makkah where Al Haram, the big Mosque is located, which is relevant to pilgrimage associated with Hajj. These studies treat the traditional houses in terms of their external form as part of the urban fabric and ignore the interior environment.[25] This latter aspect is very important because of the nature of the society and the family members live and spend most of their time in it, also most of their activities are based there. This study is the first to concentrate on the Makkah domestic interior space as it developed, from traditional to modern.

3- Due to the fact that Makkah people immigrated from many Arab and Islamic countries, for example Java, India, Morocco, Africa and other Arab communities, the city is also characterized by an unusually rich architectural heritage. This shows a mixture of building techniques and features that are unique in Saudi Arabia for their international Muslim heritage. (Figure 1.2)

4- Like the rest of Saudi Arabia, modern architectural trends after the oil boom led to a discontinuation of the construction of Makkah traditional houses, but again Makkah borrowed widely from other Arab nations as well as copying global architecture. This international character makes Makkah special within the Saudi

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[25] The only study (Master thesis) about *Rowshan* and Windows relevant to the interior design of Makkah traditional houses is by, F. AL Merhem, Umm Al Qura University, (2001)

context and important as a case-study of the Arab Muslim housing tradition and its possible future.

Figure 1.2: General view of traditional houses, Shaab Aamer, Makkah

1.4.2.1 The City of Makkah

The Holy city of Makkah has had its own ancient historical importance since Allah chose this isolated place in the middle of the mountains of the Arabian Peninsula as the home for the family of his prophet Ibraham and his wife and his son Ismael. As a consequence it came to be seen eventually as a place of Heavenly message to mankind and the centre of Islamic religion for the whole world.[26]

Makkah acquired a distinguished religious importance due to the presence of Harum (the big Mosque in Makkah), which is the prayer direction for all Muslims and their main pilgrimage destination. The holy Qura'an repeats the name of Makkah many times in different forms: Makkah, Bakkah, Mahbat Al Wahy, Al Balad Al Amin and Umm Al Qura.

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[26] Al Azromi, (1995) *Tareekh Makkah* (Makkah History). Saudi Arabia: Makkah Press. p.9 (Arabic text)

1.4.2.2 The Makkah's Growth

Through different ages, Makkah architecture has kept its unique characteristics and identity because it always related to the service of Islam. Methods of construction always followed the dictates of the Qura'an, never contradicting Islamic values and the need to follow traditions. Since the time of Ibrahim, 'Peace is upon him', buildings around the Holy Mosque *Al Kaaba* have respected the holiness and dignity of the Mosque.[27] (Figure 1.3)

Makkah before Islam

Al Kaaba has been, always, the most important and major building in Makkah. At first, there was no building development around *Al Kaaba.* After that, some tents were constructed to house its servants. (Figure 1.4) A more important point is that the characteristic houses form comes from the location of the Holy *Kaaba* and the desire to build and live close to it. The houses were a similar shape to *Al Kaaba* but they were never higher than it. The increase of population and hence the need for more houses obliged the people to increase the number of floors and the heights of buildings, but first they increased the height of *Al Kaaba* to more than two floors out of respect.

In the year 64 Hijra / 686 AD the height of *Al Kaaba* was increased to three floors to enable the construction of three-floored houses without overlooking *Al Kaaba.*

Makkah in Islam (1-36 H / 656-522 AD)

In the beginning of Islam and during its spread in Saudi Arabia and abroad, the main objective of the *Daawa* (teaching Islam) regarding the built environment was to create Muslim architecture rather than simply constructing building for shelter. Therefore once the basic forms were established there was little change in the types of buildings in Makkah. The planning system centred on a group of houses dispersed around the Holy Mosque. Around these houses there were tents scattered all over the seven mountains surrounding the Ibrahim Valley. (Figure 1.5)

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[27] Issa, M. (2001) Makkah Growth, *Seminar Proceeding Future Challenges of Built Environment, in Makkah and Madinah.* Umm Al-Qura University, Saudi Arabia, Makkah. pp. 147-155, (Arabic text)

In the year seventeen of *Al Hijra* ,and for the first time, Khalifa Omar bin Al Khatab demolished the houses around *Al Kaaba*. It was the beginning of a pattern of development that would remain for centuries to come, with the Holy Mosque expanding at the expense of residential areas surrounding it.

The intimate relationship of the Holy Mosque with the houses around it reflects its integration with the city of Makkah. The courtyard of the Mosque was the only open space used by people to practise their religious, social and cultural activities. This reflects the main issue of Islam, that life and religion are complementary to each other.

The Othman bin Afan[28] *Riwag* (Colonnade) was built in the Holy Mosque for praying. So it is clear that the mosque has been renewed and enlarged through consecutive ages. Of the changes within or around *Al Kaaba*, this is considered the most important element in the Holy Mosque followed by the *Riwags* around *Al Kaaba* and then the houses of Makkah, which form the background to the Holy Mosque that dominates the scene. No built form was ever allowed to compete with *Al Kaaba* in volume or importance. (Figure 1.6)

The old roads passing through the valley leading to *Al Kaaba* have affected the planning system, with ancient roads becoming the main roads in the planning system of the future city of Makkah. (Figure 1.7) Narrow twisting lanes branched out from these roads connecting all the houses and the main road as well. The Holy Mosque in the middle of Makkah therefore characterizes the planning system with main roads connected by narrow twisted lanes leading to clusters of houses in a mountainous terrain.

[28] Third prince of Muslims after prophet Mohammad

Makkah in the Amawyeen and Abasyeen Periods (40-656 H)

In the year 1229 AD Ibn Al Mijawr described that the houses of Makkah as built of stones and painted with whitewash and they were of lower height than *Al Kaaba*; they did not exceed two floors in height.

In 1503 AD. Ludovico di Urthema, visited Makkah and is considered the first European to document his observations about the city. He described Makkah as a beautiful place in spite of the absence of trees and greenery. Its population was about 6000 households and it used to get its supplies from Egypt, Yemen and Ethiopia through Jeddah. He also mentioned that *Al Kaaba* was built of red bricks instead of stone.

In the years 923-336 H / 1517-1919 AD the Ottoman Turks rebuilt the Holy Mosque in Makkah, and it was not changed again until the last Saudi enlargement. At the beginning of the 19th century the architecture of Makkah was recorded by a European author; in 1814 AD Burckhardt, visited Makkah and wrote his observations and drew a plan of Makkah as it was that time (Figure 1.8). In addition he described the houses of Makkah as they were situated in valleys and dispersed on the high lands, the hills of Makkah, especially in the area to the East of the Holy Mosque. He mentioned that the Mosque was the biggest building in the area and its courtyard was the only one in the city of Makkah. The courtyard was used to organize the social and religious affairs of the people. (Figure 1.9)

Makkah architecture then passed though an era of unrecorded improvement. In the 19th century the costs of buildings were increased as the number of pilgrims decreased due to wars. At the time most of the buildings in Makkah were located to the north of the Holy Mosque rather than to the south. There were still no public open spaces except the courtyard of the Mosque. As mentioned before the courtyard was used for all activities of religious and social ways of life. Also, there were shops along the main roads in Makkah in the 19th century.

Makkah in the Saudi Period (since1344 H / 1926 AD)

Since the first years of the Saudi régime, the population in Makkah has started to increase rapidly, in spite of the restrictions of the hilly terrain and severe weather; it is an important destination for Muslims from different parts of the world. (Figure 1.10) The last enlargement of the Holy Mosque by the Saudi family is considered the biggest in the history of the Mosque. The Saudis kept the old *Riwaqs*, which were built from stone by the Ottomans. New, *Riwaqs* were added; while the area of the Mosque was increased to accommodate the increasing number of pilgrims and visitors during 'Ramadan'.

Most of the traditional residences in the area around the Holy Mosque, due to their age and lack of information about them, were considered obsolete with the desire to invest in new building to cater for increasing numbers of pilgrims. The old buildings were indiscriminately demolished and new ones constructed, though they not compatible with the physical conditions of the area or with Islamic traditions.

New populated areas, with high density of housing and vehicles, were created. They were not appropriate to the new conditions for the lack of parking areas, while the narrow lanes are not suitable for traffic and services for this dense housing. All these changes have a negative impact on the characteristics and features of the planning and architecture in traditional Makkah. Modern Makkah has moved far from the architectural and urban forms of its traditions and in the process something precious has been lost.[29] There are two main phases of development:

Phase one: the early Saudi era (1925-1955)

This phase was begun after the Kingdom of Saudi Arabia united. At this point in time the government ruled all Saudi cities as a single unit, covering all aspects of urban management from the destruction of city walls to the development of water and sanitation services, and education. During this stage Makkah was growing on flat areas away from the mountains, towards the northwest, northeast, and south

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[29] For more information see the following:

a) Rafeea, M. (1981) *Makkah Fi Al-Qarn Al-Rabe Ashar Al-Hejri* [*Makkah in 20th Century*]. Makkah: Centre of Makkah cultural Press (Arabic text)

b) Al Sobaay, A. (1979) *Tareekh Makkah* [*Makkah History*]. Makkah: Centre of Makkah cultural Press. (Arabic text)

sides. At this time the houses that were built were mainly a continuation of traditional house forms with mud and stone as the principal construction materials.

Phase two: The First Development Plan for Makkah (1955-1964)

During this stage local urban planning measures were introduced. Many construction workers and architects came from other Arab countries to Makkah and all Saudi Arabian cities through their contracting firms. In addition western influence became apparent in new homes that were totally different from traditional Makkah houses. Many new residential areas were developed to the west, east, and south of the old city (Tantabawi, Al Maabdah, and Al Mesfalah). Under this plan, new building materials, such as cement and gypsum were introduced. Al-Hathloul, Saleh pointed out, that in *Hijaz*,[30] the first concrete house in the country was built in 1929 for the Zainal family and it was three stories high.[31] However, according to an elderly resident of *Hijaz*, Al-Bashawri, H.[32] the Zainal family –a rich Jeddah family- built their first concrete house in that city. The Al Bogari house, one of the first new houses in Makkah using new materials, was built at stage.[33]

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[30] *Hijaz* region is one of five regions in Saudi Arabia. The main cities in *Hijaz* region are Makkah, Jeddah, Al Madinah and Taif.

[31] Al-Hathloul, S. Development of the Contemporary Physical Environment in Riyadh. Al Benaa magazine, No.28 Vol.5, Riyadh, April-May 1986, p.81

[32] Al-Bashawri, H. 82 years old, and he knows many families in *Hijaz*.

[33] the researcher visited Al Bogari family, but they did not allow him any information or photographs.

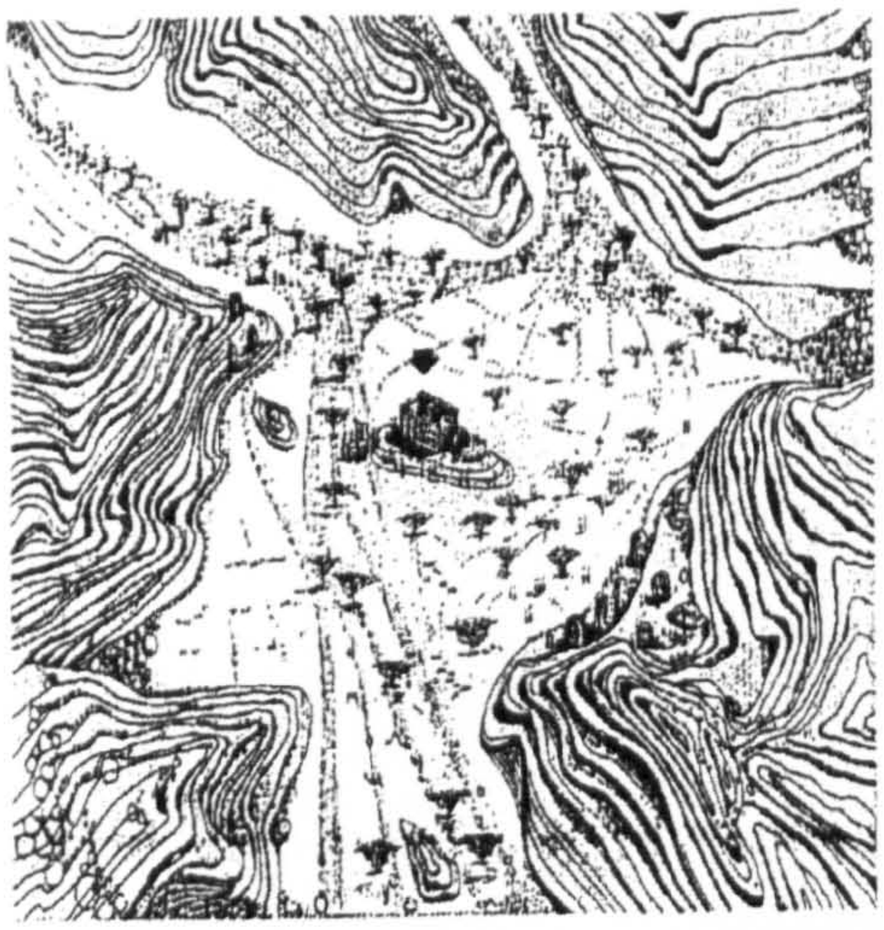


Figure 1.3: Architecture around *Al Kaaba* in the time of Ibrahim
Source: Seminar Proceeding: 'Challenges of Built Environment, In Makkah and Al-Madinah'. P.147

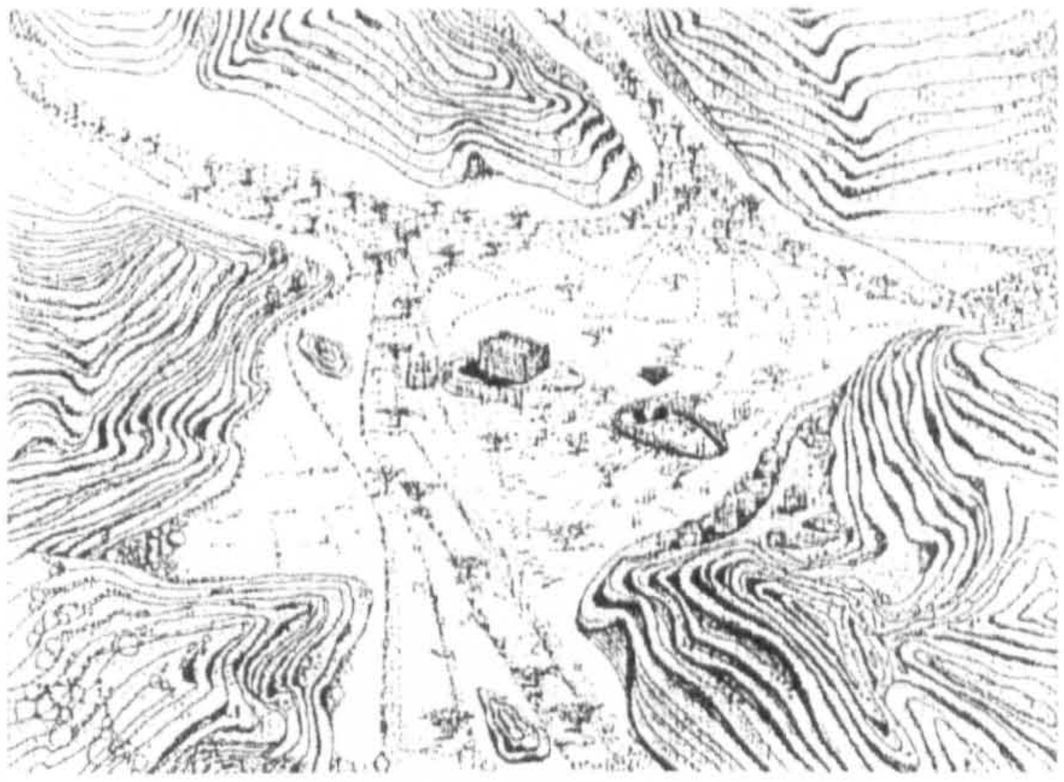


Figure 1.4: Architecture around *Al Kaaba* in the time of Gusai Allah bless him
Source: Seminar Proceeding: 'Challenges of Built Environment, In Makkah and Al-Madinah'. P.148

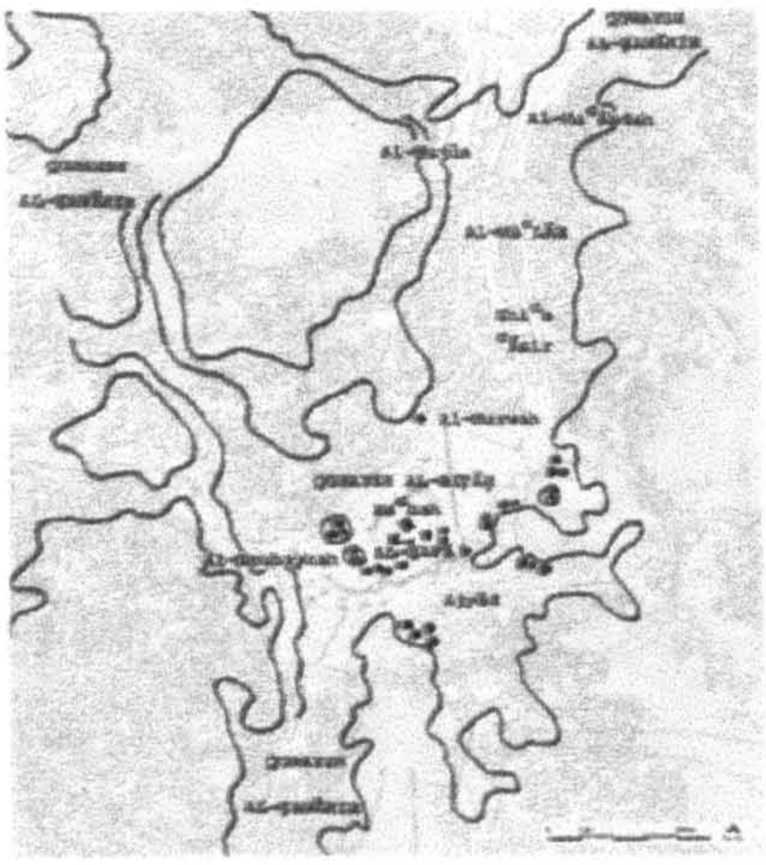


Figure 1.5: Planning system of Makkah at the end of Abaseen
Source: Seminar Proceeding: 'Challenges of Built Environment, In Makkah and Al-Madinah'. P.151

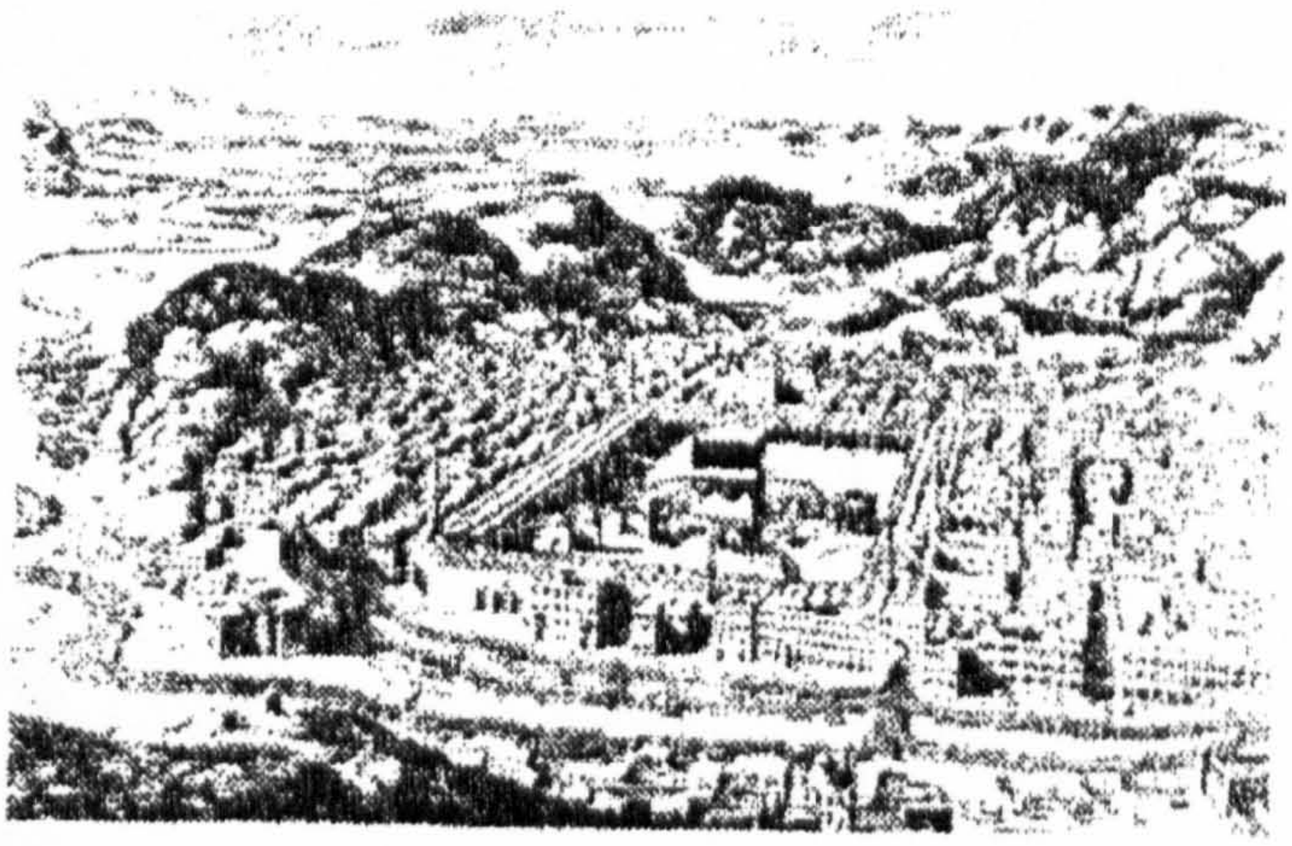


Figure 1.6: Makkah buildings around the Holy Mosque in the Ottoman period
Source: Farsi, M. 1982. and Seminar Proceeding: 'Challenges of Built Environment, in Makkah and Al-Madinah,. P.150

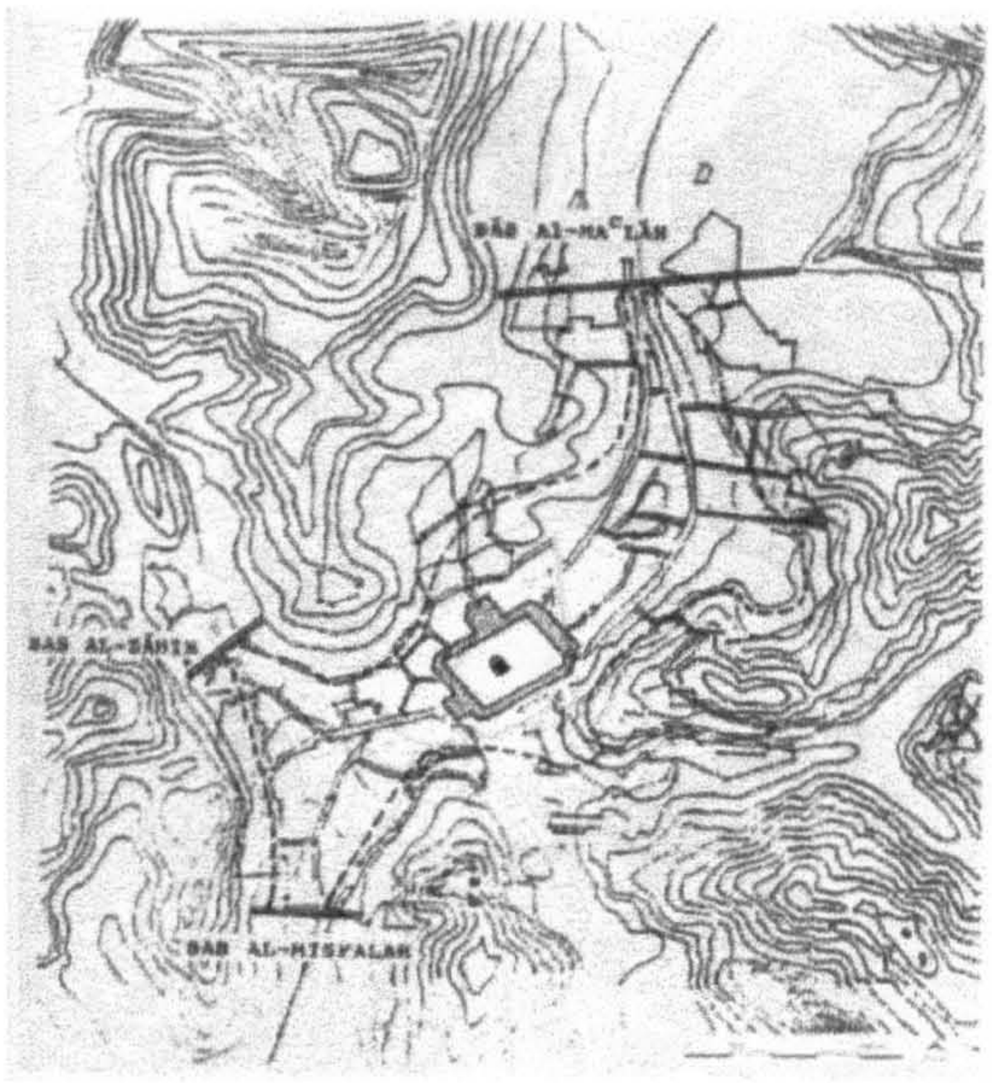


Figure 1.7: Planning system of Makkah at the end of Abaseen
Source: Seminar Proceeding: 'Challenges of Built Environment, in Makkah and Al-Madinah'. P.151

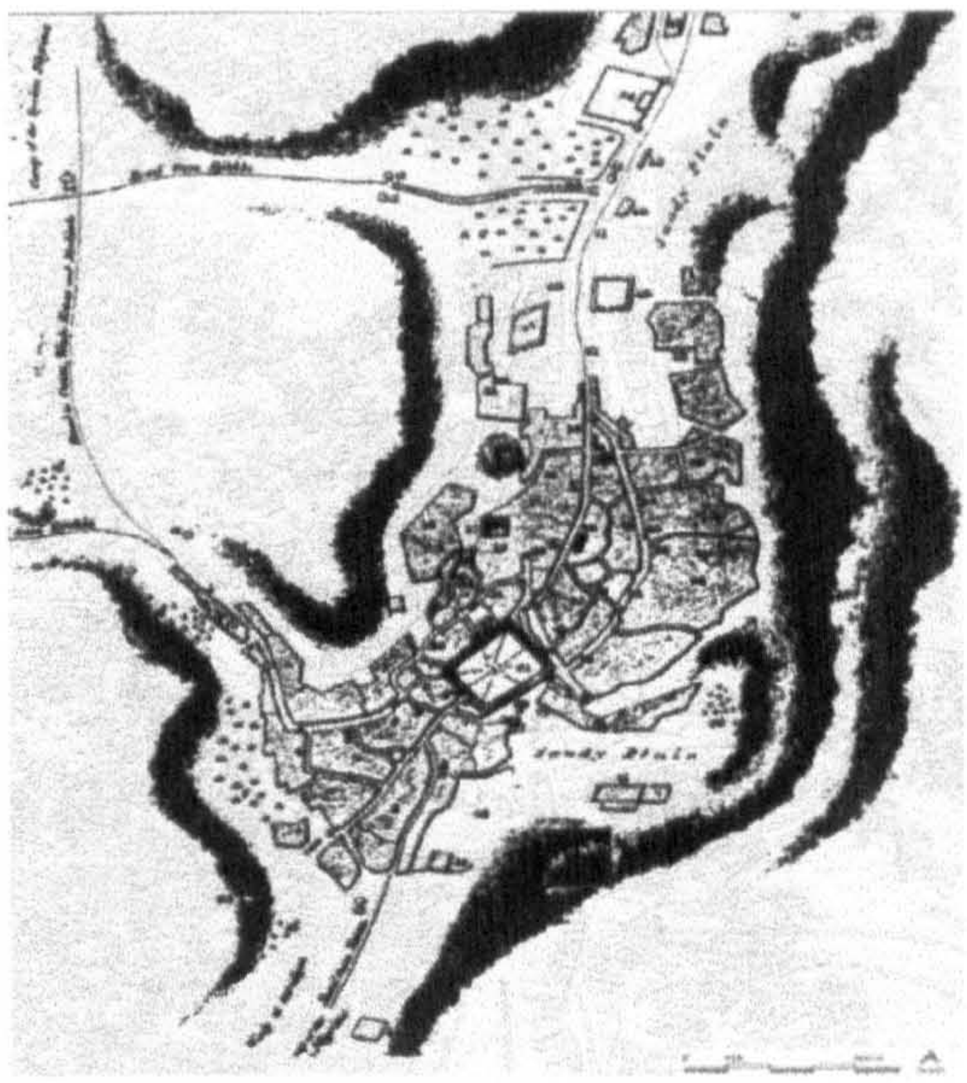
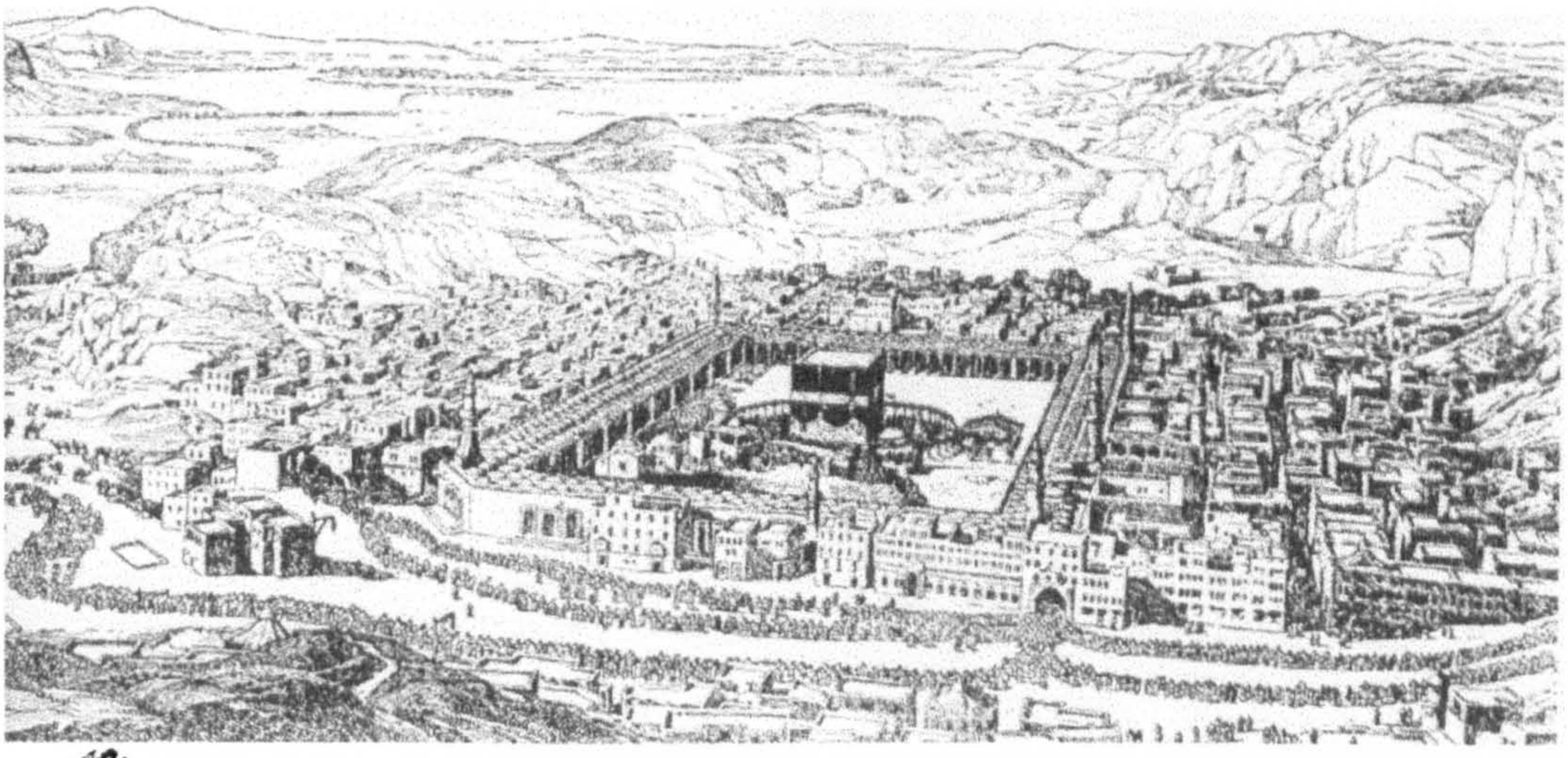


Figure 1.8: Planning of Makkah in the year 1814
Source: Seminar Proceeding: 'Challenges of Built Environment, In Makkah and Al-Madinah'. P.153



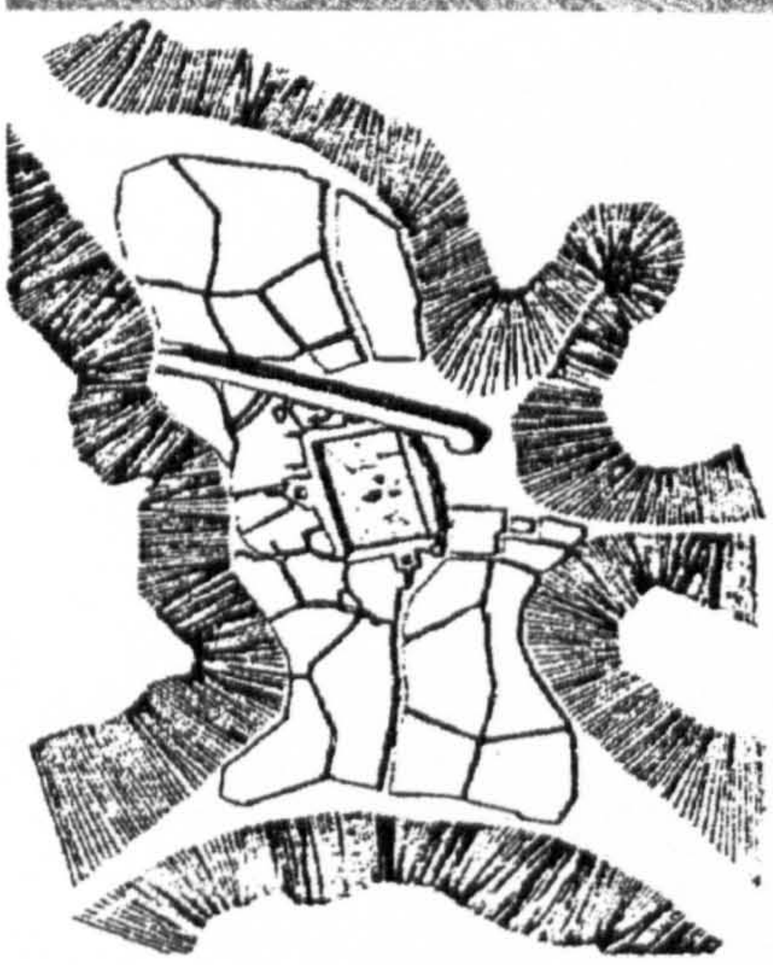


Figure 1.9: Makkah in the Amawyeen and Abasyeen Ages (40-656 H)
Source: Farsi, M. 1982

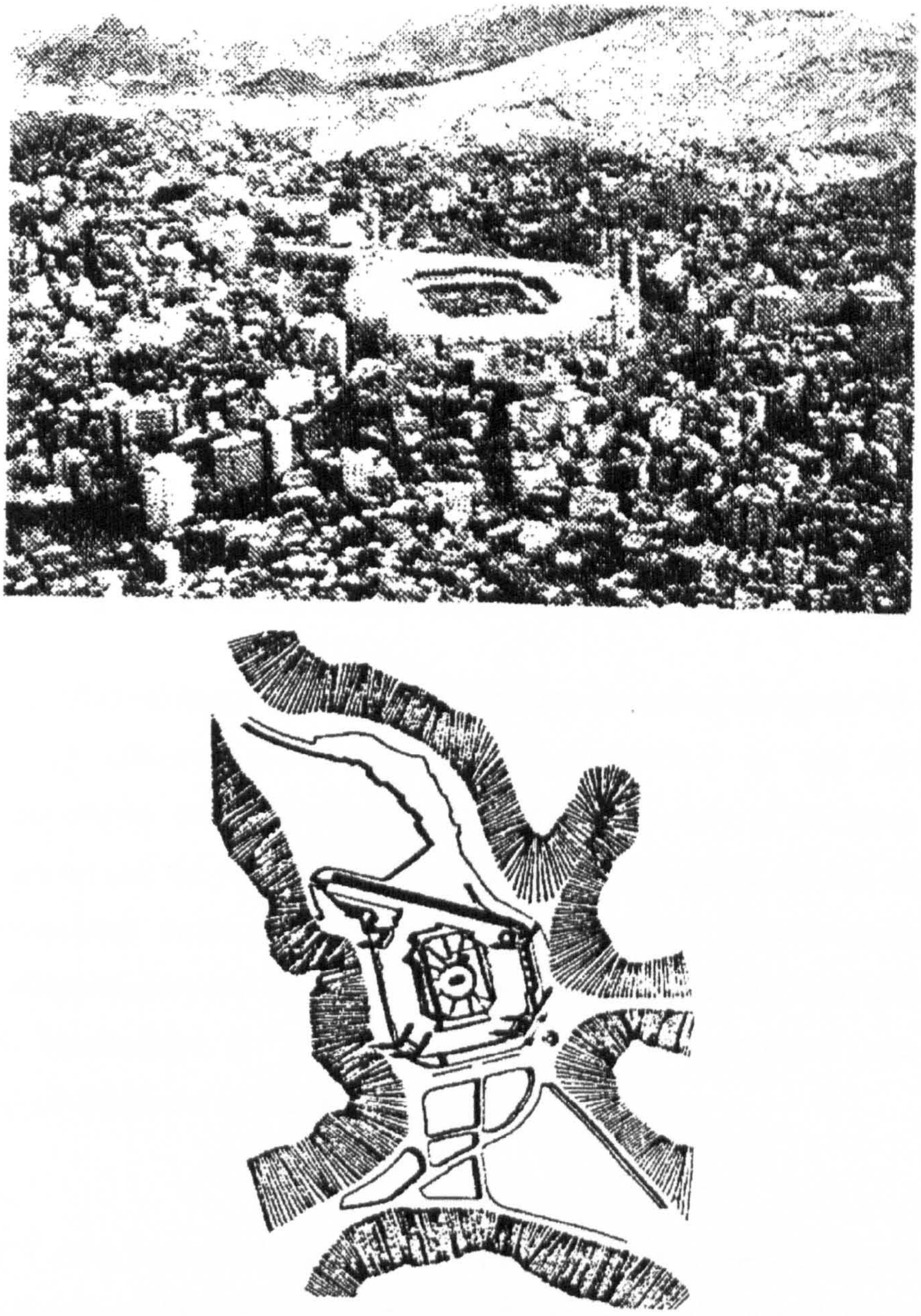


Figure 1.10: Makkah in the Saudi Period
Source: Farsi, M. 1982

1.5 The Structure of the Study

This thesis is separated into four parts that start with an introduction and a discussion of the methodology used. The second part focuses on the development of the traditional Arab house, the third part on the development from traditional to modern residences, and the final part deals with the formation of principles and theories to sustain future development. Each chapter opens with an introduction, followed by an analysis of the topic and ending with a summary.

Part One:

Chapter 1 (Introduction and Study Description) sets out the overall aims of the thesis, identifies the research questions and the object of study.

Chapter 2 (Methodology) selects methods of data collection and gives the reasons for choosing different approaches. The implementation of and difficulties encountered during the fieldwork are explained. The nature of the main survey (questionnaire) and the procedures for recording the built fabric are also dealt with and a framework established for developing appropriate tools to assist in the creation of appropriate and sustainable domestic environments for Arab and Islamic societies. Mechanisms for change such as theoretical parameters and design directions are discussed in this chapter

Part 2:

Chapter 3 (The Arab Traditional House) explores the important characteristics of the traditional Arab Muslim built form; how the vernacular developed in response to available building materials, the impact of the climate, and Islamic culture to produce a harmonious and sustainable living environment. The advantages of some of the traditional Arab house forms similar to Makkah traditional houses are discussed, for example those found in Baghdad, Sanaa in Yemen, Suakin, and Cairo in Egypt, and Jeddah, in order to establish reference points and models for the development of a sustainable modern Arab Muslim house form.

Chapter 4 (The Makkah Traditional House) identifies the major interior components of the Makkah traditional house such as the *Dehlize* (entrance hall), the

Maq'ad (sitting room), the *Majlis* (guests' reception), the *Suffah* (ante-room), the *Muakhkhar* (living room), the *Makhlawan* (resting place), the *Bayt alma* (water closet), the *Mabit* (night room), and the *Kharijah* (terrace). Their materials, furnishings and special place as an embodiment of the traditional Makkah lifestyle are discussed and compared and contrasted with residential arrangements in traditional Arab communities elsewhere. The basic plan typologies of the traditional Makkah house (simple plan, compound plan, and complex plan) are established.

Part 3:

Chapter 5 (From Traditional to Modern: development in Saudi Arabia since the oil boom) discusses the development of Saudi houses during the transitional period. This chapter starts by explaining the three stages of Saudi transformation. The First Transformation was in the late forties and early fifties. This period saw the introduction of the detached villa types and gridiron street pattern, mainly due to the influence of the Arabian-American Oil Company (ARAMCO). The Second Transformation came in the late seventies. Many of the social changes that occurred in Saudi society in this period were due to government projects. The Third Transformation began during the late eighties when rich households became more interested in international interior design.

Chapter 6 (The Modern House in Makkah) 37 case studies, comprising different types of modern houses in Makkah are discussed in terms of their performance as domestic environments in an Arab Muslim society. In each case the house is divided into two zones, a guest zone and a family zone, and the relative success of the interaction of the various spatial units within each zone is analysed.

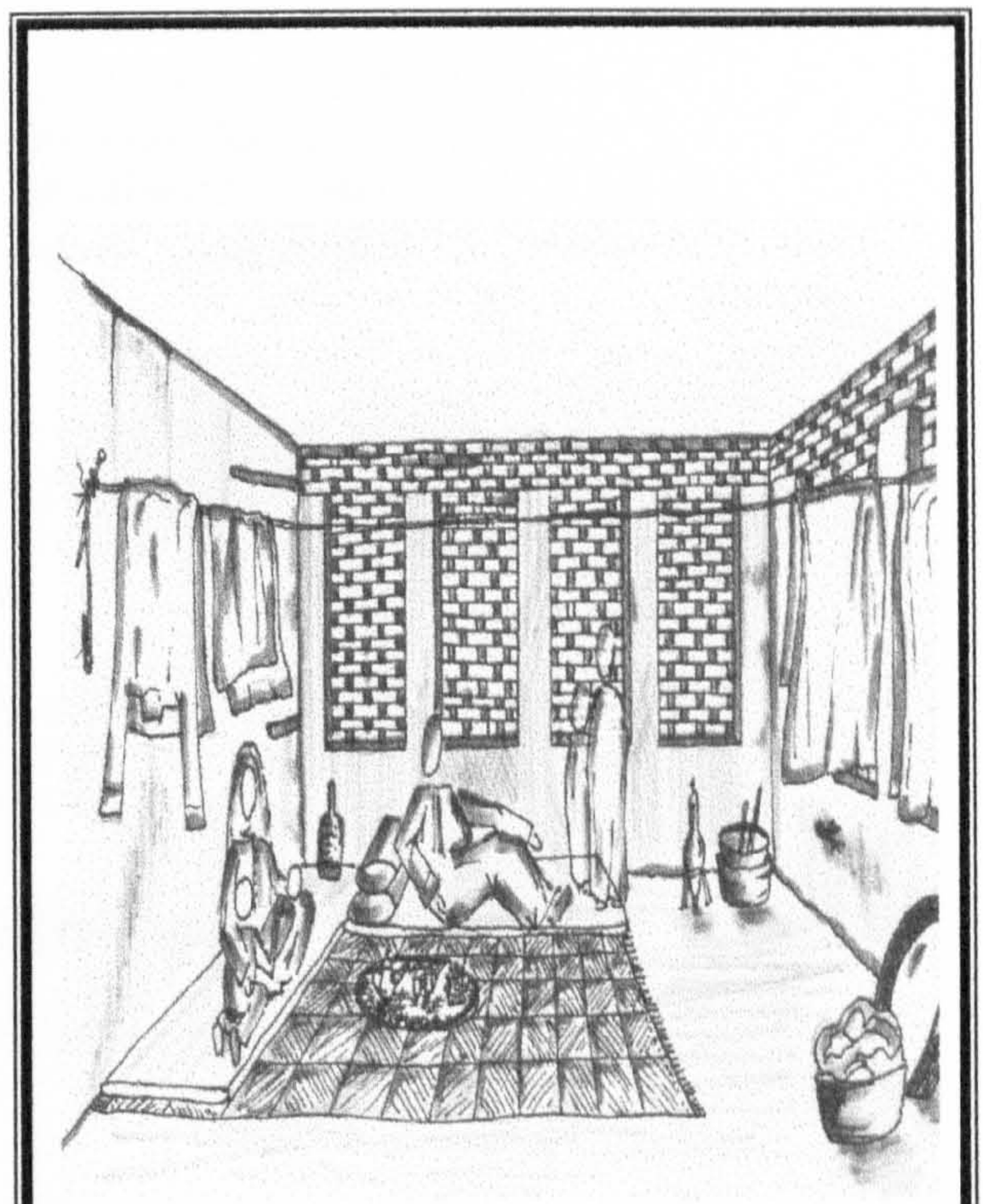
Chapter 7 (Findings of Main Survey and Recapitulation). The aim of this chapter is to review the main findings of the research regarding traditional and modern houses in Makkah. It analyses the results of the main survey (Questionnaire) in accordance with criteria established for domestic environments with respect to the internal space-use, the external space, atmosphere, and privacy. These conclusions are then correlated with those drawn from the spatial analysis in case studies in the previous chapter as a basic reference scale.

Part 4:

Chapter 8 (A Pattern Languages for a Modern Saudi House) It concentrates on the application of the theoretical models developed by Christopher Alexander (see chapter 2), in particular his Pattern Language. Those considered relevant to the requirements of the modern Saudi house, as outlined in chapter 8, are: *intimacy gradient: indoor sunlight, common areas at the heart of the house, cooking layout, couple's realm, dressing room, a room of one's own, bulk storage, light on two sides of every room, window place, and corner doors.* The development of Alexander's theories and his practice are discussed. The purpose of this chapter is to establish the criteria of the design of the interior environment for future Makkah families.

Chapter 9 (A Design Guide for the new Makkah Home). The purpose of this chapter is to establish new guidelines for designing modern Makkah homes that provide for local customs and family needs. It is, modelled on the British Parker Morris system, discussed in chapter 2 and applied to Makkah domestic requirements as outlined in chapter 8.

Chapter 10 is the concluding chapter which summarises the principal findings of the dissertation.



CHAPTER 2
METHODOLOGY AND FIELDWORK

2.1 Research Approach

2.1.1 Quantitative Approach
2.1.2 Qualitative Approach
2.1.3 The Approach Adopted

2.2 Establishing a Database: Fieldwork and Surveys

2.2.1 The Pilot study

2.2.1.1 Preparation for the major Field Trip
2.2.1.2 Testing of the Questionnaire
2.2.1.3 Collection of Data Information
2.2.1.4 The Selection of Case Studies of Traditional Houses

2.2.2 The Field Trip

2.2.2.1 Conducting the Questionnaire
2.2.2.2 Obtaining Visual Material for the Traditional Houses
2.2.2.3 Selection of Case Studies of Modern Houses
2.2.2.4 Interviews
2.2.2.5 Museums
2.2.2.6 Main Survey (Questionnaire)
2.2.2.7 The Aims of the Questionnaire
2.2.2.8 Computer Analysis

2.3 Mechanisms for Change

2.3.1 Theoretical Parameters
2.3.2 Design Directions

2.1 Research Approach

The two main approaches for research in social science are the qualitative and the quantitative approaches. The type of approach chosen for a particular study depends on the type of research and whether it is empirical, experimental, social, scientific ...etc. The credibility of any approach is judged by the reliability of the collected data, which are expected to support any explanations, inferences and predictions of the research. Some of the main decisions may depend on the outcome of these results and for these reasons it is vital to choose the appropriate approach to the research. The two main approaches will be explained in the following sections.

2.1.1 Quantitative Approach

As the name suggests this approach will deal with quantities and numbers. Ragin,[1] suggested that this approach involves the analysis of patterns of covariation for many cases and focuses on variables and relationships of variables in order that certain patterns of covariation are identified. The quantitative approach is used when the researcher wants to deal with a small number of variables so that the research area can be explained. This approach is used when the variables can be easily identified and controlled. Barhamain, stated that:

> Quantitative methods deal with the quantification of respondents' behavioural and personal characteristics. It [sic] is concerned with describing and measuring concepts or variables. By using quantitative research, the conceptual approaches to problem solving are explicit and fixed, using an agreed tool for measuring. Statistical tests are usually employed to indicate whether a particular relationship or the difference between groups is significant.[2]

It is very difficult to question hundreds or thousands of respondents and then try to categorize the different responses. Even using a precise technique of data collection, such as ticking boxes, it would still be difficult to have a clear certainty of the responses so that they can be easily be quantified and analyzed. This approach

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[1] Ragin, Charles C. (1994) constructing social research: the unity and diversity of method. Thousand Oaks, Calif.: Pine Forge Press, p.190

[2] Barhamain, S. (1997) Facilities Planning and Management for the Large-Scale Industry with a Particular Reference to a Typical Mega-Event, the Hajj, PhD thesis, University of Strathclyde, Glasgow. p.84

usually has a low response rate because of unanswered questions, which may not have been understood or were difficult or sensitive to answer.

2.1.2 Qualitative Approach

This method collects data by thorough investigation of the research subject. Ragin, stated the following:

> Qualitative research is a basic strategy of social research that usually involves in-depth examination of a relatively small number of cases. Cases are examined intensively with techniques designed to facilitate the clarification of theoretical concepts and empirical categories.[3]

The qualitative approach is suitable for collecting information about attitudes or perceptions. Patton writes:

> Put simple and directly, phenomenological inquiry focuses on the question: 'What is the structure and essence of experience of this phenomenon for these people?' The phenomenon being experienced may be an emotion - loneliness jealousy, anger. The phenomenon may be a relationship, a marriage, or a job. The phenomenon may be a program, an organization, or a culture.[4]

According to Maxwell,[5] the qualitative approach seeks insight and statistical analysis. On the other hand Mason[6] reported that this method might result in vague information even if the research was carefully carried out. In this approach the researcher is overtly part of the research process and his own actions or reactions might affect the respondents. Bogdan and Biklen stated that:

> Qualitative research has the natural setting as its direct source of data and the researcher is the key instrument. Researchers enter and spend considerable time in schools, families, neighbourhoods, and other locales learning about educational concerns..the data is collected on the premises and supplemented by the understanding that is gained being on location.[7]

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[3] Ragin, Charles C. (1994) *Constructing Social Research: the unity and Diversity of Method.* Thousand Oaks, Calif.: Pine Forge Press, p.190

[4] Patton, Michael Quinn (1990) *Qualitative evaluation and research methods* / by Michael Quinn Patton. 2nd ed. Newbury Park, Calif: Sage Publications, P.69

[5] Maxwell, J. A. (1996) Qualitative Research Design: An Interpretative Approach, London, Sage Publication. p.6

[6] Mason, Jennifer. (1996) Qualitative researching / Jennifer Mason, London; Thousand Oaks, Calif. Sage, 1996

[7] Bogdan, Robert. (1982) Qualitative research for education : an introduction to theory and methods Robert C. Bogdan and Sari Knopp Biklen, Boston : Allyn and Bacon, p.27

The qualitative approach can accept adaptability, flexibility and the reactions of the responses, addition of further inquiries, disregarding inquiries, which appear to be leading nowhere. Mason reported that the qualitative approach is rich but she also reported that there are working definitions for this approach which state that qualitative research is:

> - grounded in a philosophical position which is broadly 'interpretive' in the sense that it is concerned with how the social world is interpreted, understood, experienced or produced.
> - Based on methods of data generation which are flexible and sensitive to the social context in which data are produced (rather than rigidly standardized or structures, or removed from 'real life' or 'natural' social context, as in some forms of experimental method)
> - Based on methods of analysis and explanation building, which involve understandings of complexity, detail and context. [8]

The qualitative method is also an approach, which may be suitable if there is no previous research or data about the fieldwork. McCracken explains:

> When the questions for which data are sought allows [sic] the respondent to respond readily and unambiguously, closed questions and quantitative methods are indicated. When the questions for which data are sought are likely to cause the respondent greater difficulty and imprecision, the broader, more flexible net provided by qualitative techniques is appropriate.[9]

2.1.3 The Approach Adopted

For various reasons a mixture of methods, both qualitative and quantitative were adopted for this dissertation. The researcher distributed the questionnaire for the main survey and also carried out interviews and recorded historic examples. Exploring the internal space of traditional, transitional and contemporary home environments requires wide-ranging data from different sources. The following lines enquiry was pursued:

First: The researcher benefited from previous research regarding the traditional houses in Arab Muslim communities. This material comes mainly from books, academic articles and unpublished dissertations, and is the basis for the introduction.

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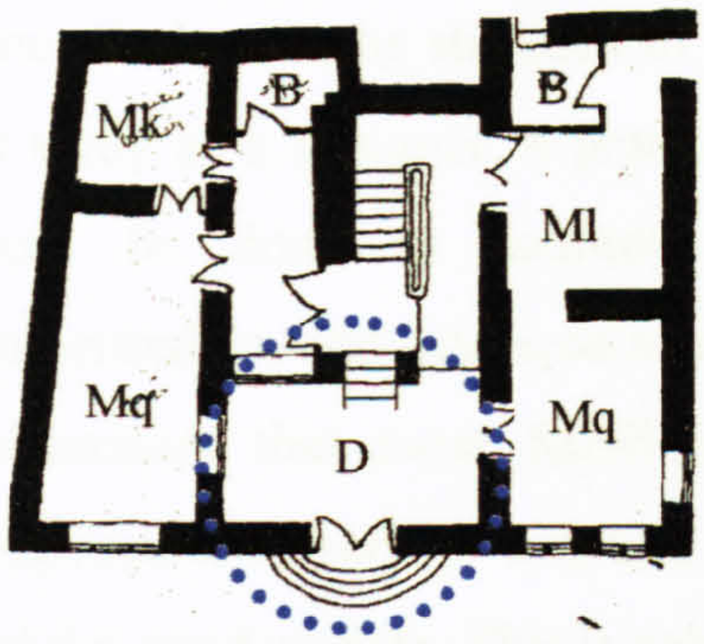
[8] Mason, Jennifer. (1996) *Qualitative Researching*. London; Sage Publications Ltd, p.4
[9] McCracken, G. (1988) *The Long Interview*. Sage Publication, London. p.17

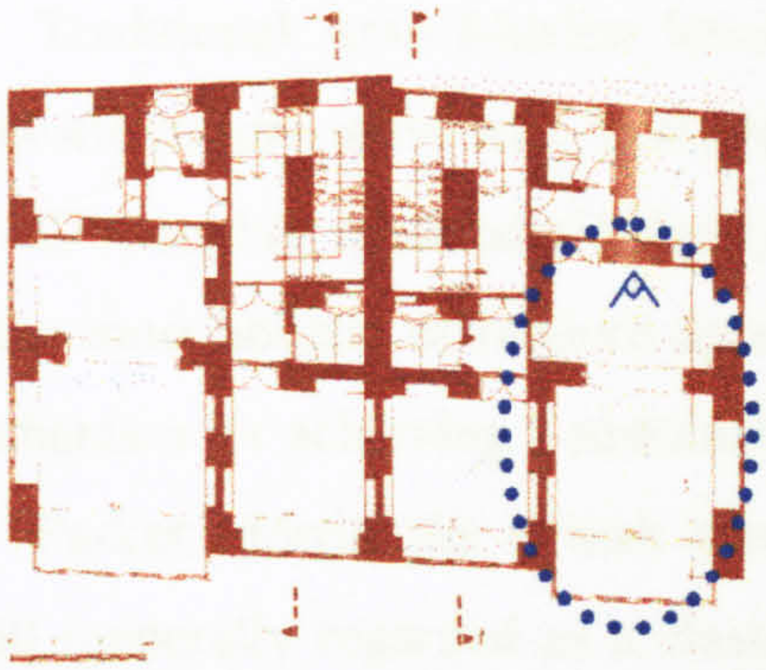
More attention was given to the nature and disposition of internal spaces, the extent of similarity and differences in those houses regarding their constructional elements and the social life that they represent; the purpose of this being a comparison with traditional houses in Makkah so as to create a vocabulary of built forms and a best practice model for domestic design in Arab communities.

The researcher has outlined the formal characteristics of traditional houses in Makkah using the local names of the internal spaces and the functions of each space in order to give the reader a good insight into the composition of the Makkah housing tradition and its modes of habitation. This will prepare the reader for the analysis of specimen houses in the case studies. Eight case studies were selected according to the availability of information on their physical properties, e.g. 36 plans, 12 elevations, 9 sections and 42 interior and exterior photographs. In-depth interviews were conducted with some residents in order to establish the social and cultural features of the houses as well as use of space (see section, 2.2.2.4). To understand the traditional practice of home furnishing and functions, museums were helpful (see section, 2.2.2.5). Because of the unavailability of interior photographs of many of the cases the researcher made sketches of some of the internal spaces based on the plans of these houses in order to help reconstruct the interiors, their furnishings and functions, as for example in Figure 2.1. Subsequently a number of the case studies were analysed in more detail according to their spatial arrangement type. The selection of the case studies depended on those houses about which the researcher was able to obtain information from their residents as well as having the opportunity of entering and photographing all the spaces. These case studies were clarified, following Fadan, [10] recording their plan type, into the following groups: a simple plan house, a compound plan house, and complex plan house. (See chapter 4)

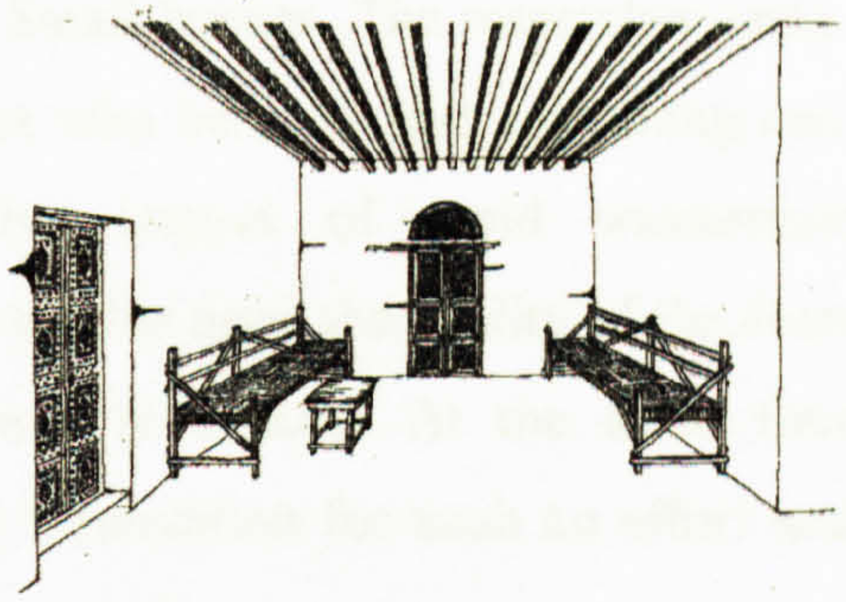
[10] Fadan, Y. (1983) The Development of Contemporary Housing in Saudi Arabia: A Study in Cross-Cultural Influence under Conditions of Rapid Change, PhD thesis, MIT



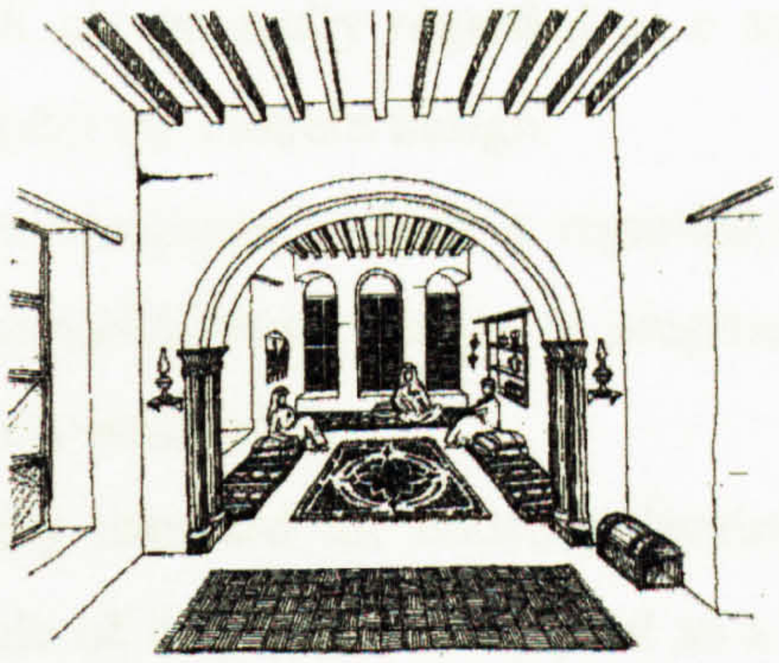
Ground floor, Al Qamah House



Ground floor, Omar Al Shorahi



Dehliz (entrance hall)



Majlis (Guest reception)

Figure 2.1: An example of sketches

Second: The aim of the modern sample was to identify the types of domestic internal spaces used at different times during this transitional period in Makkah, in order to trace the extent of the changes that took place and to determine whether these spaces have fulfilled the needs of the Saudi family. The researcher has identified and analysed 37 case studies of modern houses in Makkah, which include the main type forms, i.e. villas, semi detached houses and apartments. These types were built over the last thirty-five years, in the period between 1974 and 2004 (chapter 6, Appendix C).

Six case studies of modern houses were analysed in terms of the efficacy of their plan arrangement with respect to the traditional private/public zoning conventions, the guests' zone spaces (male reception, female reception, guests' dining room, and toilets) and the family zone spaces (living room, kitchen, master bedroom, children's bedrooms, multi-purpose room, clothes-washing area, storage, and bathrooms).

Finally: an attempt is made to establish new criteria for the design of the interior environment for the future Makkah family home that would ensure that new

homes live up to the standard of traditional Saudi houses. The researcher came into this study as a designer, a practical architect who believes that something can and should be done to counter the negative impact of rapid westernization, commercialism and inadequate professional service upon the quality of the domestic environment that most Saudi residents have to endure. At the same time he recognises the need for a sound theoretical formulation for such an effort and the need for good models. This is achieved in three ways:

- Traditional Arab Muslim houses, which are generally regarded as a superior domestic culture, serve as a 'best practice' model for modern design.
- Christopher Alexander's theory, 'Pattern Language', which is regarded as one of the most holistic of modern approaches to architectural design, is proposed as a mechanism for achieving a sustainable domestic architecture.
- Parker Morris, the British bench-marking standard for housing developed in 1960 (generally regarded as a classic example of its kind) [11] is adopted as a model for developing a design guide for modern Saudi residences.

By organising the findings of his research in this way the author hopes to make an original contribution to the subject both as a researcher and as a designer.

2.2 Establishing a Database: Fieldwork and Surveys

Fieldwork forms an essential part of a study like this concerned with the interior environment of houses in Makkah. In order to give a thorough understanding of the fabric of old buildings and their spatial arrangement, measured and photographic surveys were conducted. Likewise, a questionnaire survey was conducted for the modern residences to give a deeper understanding of the current habitation of these buildings. For the traditional buildings interviews of old residents supplemented and verified information gained from literature.

The researcher carried out several field study trips during the period of research. The process started with a pilot study which was meant to identify potential case studies

[11] Juliet Solomon (2003) Accessibility Planning and the Need for Benchmarking, Accessibility and User Needs in Transport, Scooping Study 7, London Metropolitan University, p.7. Adopted from: http://www.londonmet.ac.uk

for traditional Makkah houses. The researcher carried out an initial survey and collected specific information in preparation for the questionnaire. During the second trip, which was the main field study, the author identified and conducted case studies of modern houses as well as distributing and collecting the questionnaire. Since these, several short field trips have been conducted to consolidate and enhance the survey material, thus building a solid database.

2.2.1 The Pilot Study

This trip was undertaken during the period July-August 2001. The idea was to clarify the process of the research by testing it in situ and this trip was to prepare for the main field trip. Specimens of the questionnaire were given a 'dry run' and measured surveys of the case study traditional houses of Makkah were begun. In the following section the previously-mentioned aims will be explained.

2.2.1.1 Preparation for the major Field Trip

The researcher wanted to test the questionnaire and benefit from the results obtained so that the final form of the questionnaire could be prepared in time for the main field trip. It was essential to know that people understood the questionnaire or whether changes or adjustments would be needed before writing them in their final form in Newcastle ready for the main field trip. The main field trip was also intended to survey case studies of the traditional and modern houses and consequently the author wanted to choose the case studies and know their location. From past experience the researcher knew how much time and effort it took to collect information of this kind. The specification of the case studies during this trip reduced the amount of time necessary for the main field trip and gave an opportunity for a preliminary search for information from Arabic sources. This helped understanding the context of traditional and modern houses better and thus makes the research more efficient.

2.2.1.2 Testing of the Questionnaire

The draft form of the questionnaire was prepared and then taken to Saudi Arabia for testing. Forty copies of the questionnaire were distributed for completion and benefit from the observations of people. These observations identified problems with the

questions, difficulties in understanding architectural terms or similarities between some of the questions. Testing the questionnaire in this way was very useful, particularly regarding the comments and suggestions received as they helped the author in rephrasing the questions or making them easier and clearer for the general public. As a result the researcher could focus the questionnaire and refine its questions.

2.2.1.3 Collection of Data and Information

During this trip the researcher started to collect information and data related to the research. The information and data were collected from the municipality, government sources and libraries. The researcher also collected different plans related to the case studies as well as government documents and reports on state housing in Saudi Arabia. Finding exact information on houses built in Makkah during the 1960s and 1970s proved particularly difficult. The obvious source was the secretariat of the capital in Makkah, but the recording system for archives is not efficiently organised and not accessible to the general public. Employees at these centres were not very keen on this awkward task. As a result the researcher had to search dissertations other source for plans of buildings which were built in Makkah in the selected period, 1970 to the present. The researcher's attempts at obtaining archives from private architects offices proved very difficult and time consuming, due to pressure of work. It was also found that most of the houses in the private archives were built late in the period, during the 1990s and 2000s. Eventually, an adequate selection of case-studies was located at *Amanat Al Aasemah* (main Makkah Municipality).

The researcher found the library of the University of Umm Al Qura in Makkah particularly useful for Arabic references related to the traditional Arabic and Saudi houses. Another useful source was the library of the University of King Abdulaziz in Jeddah, while museums proved to be an important source of data for understanding the traditional home environment and home furniture.

2.2.1.4 The Selection of Case Studies of Traditional Houses

During this trip the author concentrated on choosing case studies of traditional houses of Makkah. This also proved to be problematic because most of the traditional houses in Makkah were either demolished or their traditional features had been changed. For example, the *Rowshan* is commonly replaced by aluminium or wooden window frames. This was done in order to benefit from the air-conditioning and because the new technologies required the reduction of the opening sizes. In addition to this many of the surviving houses, usually situated close to the Holy mosque, were changed internally as floors were separated and they were turned into flats in order to benefit from renting them or even to change them to hotels for pilgrims.

Before choosing the case studies the author met up with professor Abdulhameed Albis at the architecture department in the University of Umm Al Qura in Makkah. He is a keen student of the traditional buildings in Makkah. Professor Abdulhameed pointed out the difficulties of choice in traditional housing, due to significant internal changes, suggesting that research should concentrate, in the limited time available, on the buildings for which plans, elevations and sections already exist. Another complication was that these old buildings often vary considerably in size as traditional houses contained more than one family (see chapter 4 and Appendix A). All these factors influenced the eventual choice of case-studies.

The centre for research on pilgrimage and the department of architecture in the University of Umm Al Qura collects plans of traditional houses (plans, elevations and sections) and is the most important research centre for traditional buildings in Makkah. From the university collection came different specimens from the traditional houses in Makkah which were built at the beginning of the twentieth century. The Hajj Research Centre material is contained in a report published in 1983; which included 15 samples of Makkah traditional houses. The researcher further benefited from the School of Architecture, Umm Al Qura University, Makkah, which has a collection of unpublished reports on Makkah Traditional Houses. To this material the researcher added more examples from his own surveys. (see Appendix A)

After identifying a range of traditional house types a selection was made. The choice depended upon the building's size, the design concept and the house type. For example, it was found from the sample that in one case two houses, which were owned by two families who were related to each other, were connected by a bridge because of this kinship (Al Qamah Houses). In another case (Omar Al Shorahi Houses) four traditional houses were found within the same site boundary and this again meant that one family, or four related families, owned them. The researcher also included the houses which were owned by single families, and houses of rich families which seem like palaces so as to demonstrate the complexity of the spatial configuration of the traditional housing stock.

2.2.2 The Field Trip

The field trip was carried out in the period May-August 2002 and in that time the questionnaire was completed. The required basic information on the fabric of the selected traditional houses was collected. The principal aim of the field trip was to complete the main survey (questionnaire). An additional aim was to collect as many photographs as possible of the traditional case study houses and to identify potential case-studies of Makkah modern houses as well as carrying out ownership occupation interviews.

2.2.2.1 Conducting the Questionnaire

Following the pilot study, the questionnaire in its final format was translated into Arabic. The final production of the questionnaire in the form of booklets was completed in Saudi Arabia and about 500 booklets were printed. All of the questionnaires were distributed in Makkah because it is the focal point of the research, but the reactions of the residents to the modern houses, their problems, advantages or disadvantages as residences can be deemed valid for contemporary Saudi Arabia in general. The questionnaire was distributed among different groups of Makkah residents in order to maximize the results as much as possible. These groups will discuss later in section 2.4.1.

2.2.2.2 Obtaining Visual Material of the Traditional Houses

Photographic images of the interior spaces were considered essential as an up-to-date visual record of the interior spaces and to help the reader envisage what the interiors of the traditional houses are like. This also aided the spatial and material analysis, e.g. the treatment of the ceiling, internal walls, floor and the type of decoration that constitute an historic domestic environment. This part of the exercise was the most difficult, for most of the chosen case studies about which sufficient information was obtained e.g. plan, elevations and sections, because it was not possible to gain access to, or find information on the properties and their original fabric for the following reasons:

When the alterations were made to the interior spaces of these traditional houses floors were sub-divided either by wood or aluminium panelling and made into separate flats and subsequently rented either to poor people or foreign workers. The external features were also changed as air-conditioning units were installed in place of the *Rowshan*. The features of the windows were changed in most of those traditional houses by covering them with aluminium, in order to benefit from the new technology by keeping the cool air inside the building.

The use of modern materials, e.g. painting the internal walls with different colours in oil paint, has destroyed the features of the traditional whitewashed walls. Additional features such as lighting units on the walls as well as electrical switches, modern furniture and modern, western-style ceilings were introduced. Bathrooms were also furnished with modern hygienic equipment such as sinks and baths. The kitchens are outfitted with modern cupboards and cooking equipment.

Some of the houses were sealed-off and uninhabited. In one case the reason was the death of the owner and the disagreements among the beneficiaries over sale or demolition and benefiting from its value. Other reasons are family disagreements and these conflicts made it impossible to enter these houses or find their owners in order to obtain their permission. Moreover, finding the owners is very difficult as some live away from Makkah.

2.2.2.3 Selection of Case Studies of Modern Houses

Before identifying the case studies the researcher familiarized himself with the modern houses in question with the help of the lecturers of the architecture department in Umm Al-Qura University in Makkah, as well as some engineering officials. The researcher found that the modern houses currently in use are largely divided into three types: villas, semi-villas and apartments. Plans, elevations and sections of these modern houses were easy to obtain from some of Makkah's municipalities e.g. (Al Aziziah and Al Rusafah municipalities) or the owners of the houses themselves. The problem was how to obtain entry to those buildings in order to photograph the internal spaces and their furniture. It is difficult to enter any villa or flat, especially for taking photographs of the family zone as most people like to keep their privacy and in some areas they like to keep total privacy, as in bedrooms or the living room. For these reasons it was decided to include places belonging to close relatives and friends within the sample of house types. This was the easiest option for the researcher to gain access and obtain photographs.

2.2.2.4 Interviews

In-depth interviews were conducted with citizens of Makkah in order to get to know the social and cultural character of the community as well as their use of architectural space. The inhabitants were asked open-ended questions about the use and the function of their domestic inferior's spaces. They were also asked to describe their traditional and contemporary lifestyle (daily activities), and their experience of changes of process in the *Hijaz* region. The interviews were conducted with both males and related females. The researcher used a cassette recorder to record the informants, stories of their lifestyle and short notes were used for short interviews. The telephone was useful for obtaining quick information.

2.2.2.5 Museums

To understand the traditional home furniture and functions, museums were helpful. The researcher spent time in Arabdulrouf Khalil museum in Jeddah and Umm Al Qura museum in Makkah. Arabdulrouf Khalil museum has a collection of home interiors for different cultures e.g. (Europe, Morocco and different Saudi Arabia regions included *Hijaz* region). Umm Al Qura museum is smaller than

Arabdulrouf Khalil museum and has also collections of home interiors for *Hijaz*. The visits to both museums were very useful.

2.2.2.6 Main Survey (Questionnaire)

The questionnaire is one of the most widely used tools in conducting research, particularly in the field of social studies, as it is considered an easy method to obtain the relevant information. In order for the questionnaire to be satisfactory, it must be long enough so that more detailed results are obtained. This approach is a highly structured method for collecting data and the data can be of different types and nature and the questions will control the type of the data obtained. According to Dillman (1978) the contents of the questions can be classified into four different types: attributes, attitudes, beliefs and behaviour. The design of questionnaires needs a lot of preparation and thought as well as an understanding of data analysis. The types of questionnaire are usually classified into two different kinds, which are termed open questions and closed questions. Open questions have no optional answers and consequently the respondents have the freedom to write the answers in their own words. Closed questions are usually followed by multiple options from which the respondents can choose the option they think is applicable to the case. The answers to the open questions are very difficult to analyse but the answers of the closed question type are easy to quantify, save time and are straightforward. When it comes to choosing which type is going to be used, there are other factors that need to be considered e.g. available time, types of respondents, motivation of the respondents, and method of administration and question contents. Regarding the credibility of the qualitative research, the use of questionnaires is debatable. This approach should increase credibility, as the questions are the same for all the respondents, have no different wordings, have no change of sequence, no changes of emphasis or tone of words. Because of these factors, questionnaires tend to be free of any bias or effect by the researcher. Although this method is reliable, qualitative research is usually in need of explanation, probing, follow-up questions and these are not possible with the questionnaire approach. It should be added here that if a

question is not understood it could be answered wrongly or left unanswered and consequently the validity of the results could be undermined.[12]

Because the answers of the closed question type are easy to quantify, save time and are straightforward the closed question type was used. However, the questionnaire was distributed among different groups of Makkah residents in order to maximize the results as much as possible. One of the target groups was engineers for the whole municipality of Makkah; because of their speciality and their practical experience they are more likely to give accurate information that would be useful to the research. Another group was university students from the department of architecture as well as other departments. The third group consisted of government employees and retired teachers. The choice of these groups was made for the following reasons:

- Large numbers in these groups were of middle income, articulate enough to participate and accessible to the researcher in the time available.
- These groups were of different ages, expertise and social perspective.
- There were relationships between these groups and the sample of modern houses selected for spatial analysis because these people live in such houses e.g. (villa, semi detached and flat).

2.2.2.7 The Aims of the Questionnaire

The specific aims of the questionnaire may be summarized as follows:

- To establish the extent to which the modern houses satisfy the needs of the different families in the city of Makkah.
- To specify the architecturally related problems which they face in their homes.
- To determine how often residents have to resort to the use of screening devices for the windows and the roof terrace for keeping their privacy.
- To establish how much privacy there is for the family members when entertaining either male or female guests.
- To establish what the relationship is between internal spaces and the surrounding environment.

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[12] Dillman, D. A. (1978) *Mail and Telephone Surveys, the Total Design Method*, New York, Wiley

2.2.2.8 Computer Analysis

The analysis of the data was kept in mind during the preparation of the main survey. The SPSS program was used because it would be best program to analyse huge amounts of data.[13] A course regarding the SPSS program was attended by the author in order to understand the different facilities that the programme provides for analysing large amounts of data. Cross-tabulation and correlation were the main targets of the analysis. The outcome of the analysis is described in chapter 7 and copies of these (English and Arabic) questionnaires are included in Appendix C.

2.3 Mechanisms for Change

As mentioned, an attempt is here made to establish new criteria for the design of the interior environment for the future Makkah family home that will ensure that new homes live up to the standards of traditional Saudi houses.

Traditional Arab Muslim houses are internationally regarded as having achieved a superior domestic culture so would seem a natural choice as model for 'best practice' in modern house design in Arab countries. However, modernization is changing some of the traditional life environment of Arab people at a very fast rate and they stand to lose a precious inheritance. It needs to be controlled so that some of the good qualities of traditional Saudi culture can be retained in the creation of a new-style environment sympathetic to the identity of the Arab people. The designer, in particular the interior designer, can contribute to this. Two mechanisms or tools have been identified that may help guide this process: a sympathetic theoretical structure for the process of habitation and legally enforced design guides or 'rules' for controlling space-use in the domestic scene.

2.3.1 Theoretical Parameters

We are searching for a theoretical framework that encourages engagement with the traditional built form and culture. Assuming that a theory of house design has a useful role to play in the process of habitation, it remains to be seen what kind of theoretical framework is the most appropriate in the Arab context. Alexander stated:

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[13] For more information about SPSS program see: David de Vaus (2002) Analyzing Social Science Data, London: SAGE Publication Ltd Press

> In the unselfconscious culture a clear pattern has emerged. Being self-adjusting, its action allows the production of well-fitting forms to persist in active equilibrium with the system. The way forms are made in the self-conscious culture is very different. I shall try to show how, just it is as a property of the unselfconscious system's organization that it produces well-fitting forms, so it is a property of the emergent self-conscious system that its form fits badly.[14]

The researcher therefore started looking for a social theory, not to aesthetic one, and he found the works of Christopher Alexander particularly sympathetic and relevant to the Arab cause starting with his books 'Community and Privacy' and ending with 'Pattern Language'.

Alexander has, over many years, developed a wide range of theories in relation to traditional and modern architecture which he characteristically have sought to apply in very diverse countries and circumstances. According to S. J. Rajinder, the development of Alexander's design theory can be examined in three stages: The first stage deals with the development of his theory and it was at this stage that *Notes on the Synthesis of Form* was published. The second stage deals with the publication of *A City is Not a Tree*. The third stage is *A Pattern Language* and *The Timeless Way of Building*.[15]

In *Notes on Synthesis of Form* Alexander does not focus on providing the final solution but on methodology. In addition, his approach is to eliminate what he calls, 'the *misfit*' in the contemporary physical environment. Rajinder notes:

> Alexander was not interested in conventional solutions. His method included regrouping the misfit variables, working out a solution to each of these groups, and combining these group solutions into a new whole.[16]

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[14] Alexander, Christopher (1964) Notes on the Synthesis of Form. Cambridge, Massachusetts: Harvard University Press, P.55

[15] Rajinder, Singh Jutla. (1993) Christopher Alexander's Design Theory from Notes on the Synthesis of form. *Design Methods: Theories, research, Education and Practice*, 27:1-2, p.1

[16] Ibid. , p.2

Ingrid F. King[17] briefly discusses two projects from Japan, which represent some [degree] of compromise from Alexander's point of view, as well as projects in California, which can be viewed as an intended approximation to a process that involves collaboration with established building practice. However she agrees with Alexander that it is the reality of these buildings that underlines the deep meaning of the theory.[18]

Alexander and his team published the first volume *The Timeless Way of Building* and the second volume of the series, *A Pattern Language* which summarized his own research into the nature of architectural production within this conceptual framework and the 253 patterns that he and colleagues envisaged. Each pattern describes a timeless architectural problem or challenge. *A Pattern Language* can be divided into three main parts: towns, buildings and construction.[19]

> Each pattern describes a problem that occurs over and over again in our environment and then describes the core of the solution to that problem in such a way that you can use this solution a million times over without ever doing it the same way twice.[20]

In a Pattern language:

- A pattern solves a recurring contextual problem.
- A new context and new problem result.
- Patterns always work together to solve problems in a particular domain.
- This kind of collection of related patterns is called *A Pattern Language*

Alexander believes that there is a central quality, which is the root criterion of life and spirit in "all things". This quality is objective and precise, but it cannot be named. The search, which we make for this quality in our own lives, is the central search of any person. It is the search for those moments and situations when we are most alive.[21]

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[17] Ingrid F. King (1993) Christopher Alexander and Contemporary Architecture, Architecture and Urbanism Co., Ltd. Press, pp.68-72
[18] Ingrid F. King (1993), pp.64-68
[19] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language – Tones: Buildings: Construction*, New York, Oxford University Press, pp ix-xi
[20] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*,
[21] Alexander, Christopher. (1979) *A Timeless Way of Building*, New York: Oxford University Press

'Pattern Language' was originally conceived by Christopher Alexander and presented in his book, *A Pattern Language*, in an attempt to provide structure for a theory of living architecture. Alexander and his colleagues are dealing with architecture, but not in a formal aesthetic way and for somewhat different purposes. The patterns they advance are focused not on physical but more or on social use patterns and resultant formal arrangements.

Use Patterns of the kind that Alexander propagates are not simply abstract theoretical constructs but are based on experience. They capture what experts do and enable these solutions to be shared with everyone. However such 'patterns' do not simply give you a code you can use in your practice; they give you experience that remains in your head as a reference point or guide.

The researcher believes the importance of Alexander's book, *A Pattern Language*, is that it is useful as well as giving the experience that you carry in your head as a designer. In the following section the researcher discuss some of Alexander's theories that are particularly relevant to this study.

2.3.2 Design Directions

A physical control mechanism introduces the idea of a design guide that sets standards for the use of space, both in terms of ergonomics and custom. Ergonomically it comes from the Modern Movement demanding rational scientific design criteria. Parker Morris, the British bench-marking standard for housing developed in 1960 is adopted as a model for developing a design guide for modern Saudi residences. Juliet Solomon stressed the enduring qualities of this model:

> One of the first, best known uses of benchmarking standards [for Britain] was what came to be known as the "Parker Morris" housing standard.[22]

By channelling the findings of his research in this way the author hopes to make an original contribution to the subject both as a researcher and as a designer.

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[22] Juliet Solomon (2003) Accessibility Planning and the Need for Benchmarking, Accessibility and User Needs in Transport, Scoping Study 7, London Metropolitan University, p.7. Adopted from: http://www.londonmet.ac.uk

The Parker Morris committee drew up the influential 1961 report on public housing in the United Kingdom entitled *Homse for Today and Tomorrow*. As Parker Morris pointed out:

> We were appointed by the Central Housing Advisory Committee to consider the standards of design and equipment applicable to family dwelling and other forms of residential accommodation, whether provided by pubic authorities or private enterprise and to make recommendations.[23]

The general aim of the Parker Morris committee was to concentrate on the establishment of general themes, which would set the guidelines for the future. The report concluded by setting a minimum overall space standard for new homes to meet the quality of social housing which needed to be improved to match the rise in living standards, as well as to meet the different family size needs and it made a number of recommendations. Juliet Solomon states:

> It recommended a number of housing standards which it felt were a "reasonable minimum" for living space for a reasonable quality of life. These standards were at first voluntarily adopted but subsequently became mandatory. Sets of standards such as these could now be included in the category of "benchmarks".[24]

The thoroughness with which the committee prepared its report is exemplary. From 1959 twenty-four meetings were held, proceeding as follows:

- Early in 1959 were the first six meetings; they made a preliminary survey of the problems with which they were to deal. In addition they arranged to invite evidence, both in the press and by letter. At the request of the local authority associations, the Parker Morris committee had prepared a questionnaire, originally intended to help the associations in consulting their members, but which was also issued to many other organizations and persons.

They were very anxious to ensure that they became familiar with the diverse outlooks and problems of householders and the many professions interested in

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[23] Parker Morris (1960) *Home for Today and Tomorrow*, Ministry of Housing and Local Government , p. iv

[24] Juliet Solomon (2003) Accessibility Planning and the Need for Benchmarking, Accessibility and User Needs in Transport, Scoping Study 7, London Metropolitan University, p.7, from: http://www.londonmet.ac.uk

housing, and with variations in habit and opinion in different parts of the United Kingdom.

- In the summer of 1959 and the autumn of 1960 groups of committee members therefore undertook visits to towns and country areas in the United Kingdom, and they went over about 600 houses and flats put up since the war by private builders, housing associations, new town corporations and local authorities.[25]

In 1967 the Parker Morris standards became mandatory for all housing in new towns, extended to all council housing in 1969, although they had by then already been adopted by many types of council. The Local Government, Planning and Land Act ended the mandatory nature of the standards in 1980, as concerns grew over the cost of housing and public spending generally.

Among the standards is that:

- In one, two and three bedroom dwellings, one WC is required and it may be in the bathroom.
- A semi-detached or end of terrace house for 4 people should have a net floor area of 72 square metres.
- A dwelling for three or more people should have enclosed storage space for the kitchen of 2.3 cubic metres.

In the private sector the Parker Morris standards influenced the 1967 and subsequent standards set by the NHBC (Natural House Building Council), but were not adopted as written. However, although most public and private sector housing being built in Britain today fails to meet the Parker Morris standard for floor and storage space,[26] it is still regarded in the UK as model for the way in which it establishes a set of norms for creating decent living conditions for ordinary people in the modern age. I believe it is worthy of wider consideration in societies without any guidelines for the formation of a coherent, sensible modern housing culture as well.

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[25] Parker Morris (1960) *Homes for Today and Tomorrow*, p. iv

[26] Beverley N. West and Stephen Emmitt (2004) Functional design: an analysis of new speculative house plans in the UK. *Design Studies.* 25: 75-299

PART II

TRADITIONAL HOUSES

Chapter 3: The Arab Traditional House

Chapter 4: The Makkah Traditional House

CHAPTER 3
THE ARAB TRADITIONAL HOUSE

3.1 Introduction

3.2 Traditional Arab Houses: Main Features

3.2.1 Courtyard or *Sahan El Dar*
3.2.2 The *Iwan*
3.2.3 The Colonnade or *Riwaq*
3.2.4 The Entrance hall or *Dehliz*
3.2.5 The *Rowshan* or *Mashrabiyyah*
3.2.6 Wind-catchers or *Badgirs*

3.3 Decoration

3.4 Arab Traditional House Forms

3.4.1 Baghdad in Iraq
3.4.2 Suakin in Sudan
3.4.3 Sana'a in Yemen
3.4.4 Cairo in Egypt

3.1 Introduction

Arab architecture has, through the ages, been a reflection of the environment and the characteristics of the civilization in which it appeared. Civilizations, in which Arab architecture flourished, were the result of religious, social, cultural, political and physical interaction. These factors gave each society its distinguishing features that differed from age to age and place to place. As Amos Rapaport notes:

> The different forms taken by dwellings are a complex phenomenon for which no single explanation will suffice. All possible explanations, however, are variations on single themes: people with very different attitudes and ideals respond to varied physical environments. These responses vary from place to place because of changes and differences in the interplay of social, cultural, ritual, economic, and physical factors.[1]

The socio-cultural background of the society has always affected architectural forms and materials. The originality and identity of the forms are an extension of the environment. Every society has its own customs, traditions and environment. So the meaning of space differs from time to time and place to place.

The formal generator in Arab architecture is essentially the environment – it is an architectural landscape in which the human beings have sought to reproduce the configuration of the natural environment. We find this in all parts of the world where Arabs have lived. The question this dissertation seeks to address is, how may the Arabs continue to provide appropriate living conditions internally and externally for their societies, coping with modern requirements while remaining true to the traditions and customs of the Arab Muslim World?

The purpose of studying traditional Arab architecture is to investigate its character and features - the features that enabled Arab society in the course of history to create an architectural environment able to maintain contact with the unifying force of Islam.[2]

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[1] Rapoport, Amos (1969), *House Form and Culture*, Prentice-Hall, Englewood Cliffs, NJ.
[2] Jodi, M. (1998) *Al amarah Al arabiah Al islamiah: Khososiatoha – Ibtekaroha - Jamaliateha* [Islamic Arabic Architecture: Identity - Creativity – Aesthetics], Jordan: Amman Press. (Arabic text) p.60

Historically Arab architecture has excelled at expressing the relationship between man and nature. This can be seen in many examples of Arab architecture and it is clear in the Arab house that most of its elements were characterized by the harmonious relationship with natural settings externally, and internally through an organic relationship established between the spatial layout, the materials and the lifestyle of the inhabitants.

This chapter concentrates on the Arab architecture in different Arab states, Yemen, Egypt, Iraq, Syria, North Africa and some of the Gulf states, such as the Emirates, Saudi Arabia, Kuwait and Qatar. It establishes the cultural context for the study of Makkah houses (chapter 4) as well as identifying the architectural properties that may serve as an example for the modern design of domestic environments for Arab people.

3.2 Traditional Arab Houses: Main Features

There are special features that distinguish Arab architecture from other styles of architecture around the world, for example by its simple form and usage of local materials, with geometric decoration and calligraphy, also the effective utilization of natural forces through climatic modifications.

These elements, which are considered as special features of Arab architecture, will be briefly discussed here to show their importance in the study of all Arab architecture.

3.2.1 Courtyard or *Sahan El Dar*

The courtyard is called in Arabic, *Sahn ElDar*, *Hosh* or *Fina*. According to John Warren and Fethi[3] it is "a central open courtyard known as the *hosh* or *fina*". It is an open space surrounded by the walls of the main building. Paul Oliver describes the courtyard. He concludes:

[3] John Warren and Ihsan Fethi, (1982) Traditional Houses in Baghdad, p.44

> A courtyard is an outdoor space that has building, rooms or building elements around enough of its perimeter to give the space clear definition; the courtyard building consists of their outdoor space together with the built elements that surround it.[4]

Amos Rapoport mentions that the courtyard has been used in many cultures, such as Greek, Roman, Islamic, Indian, and Latin American, which may be due to the needs of the inhabitants, as follows:

> Courtyard houses, and separation of domains in general, are used in cultures which are *both crowded and hierarchic*, and the prevalence of such houses in all their manifestations, from the simple house of Jericho, through those of Greece, Rome, Islam, India, and Latin America, to the very complex *Jen* house of China, with its many courts, may be due to a similar need (Figure 3.1).[5]

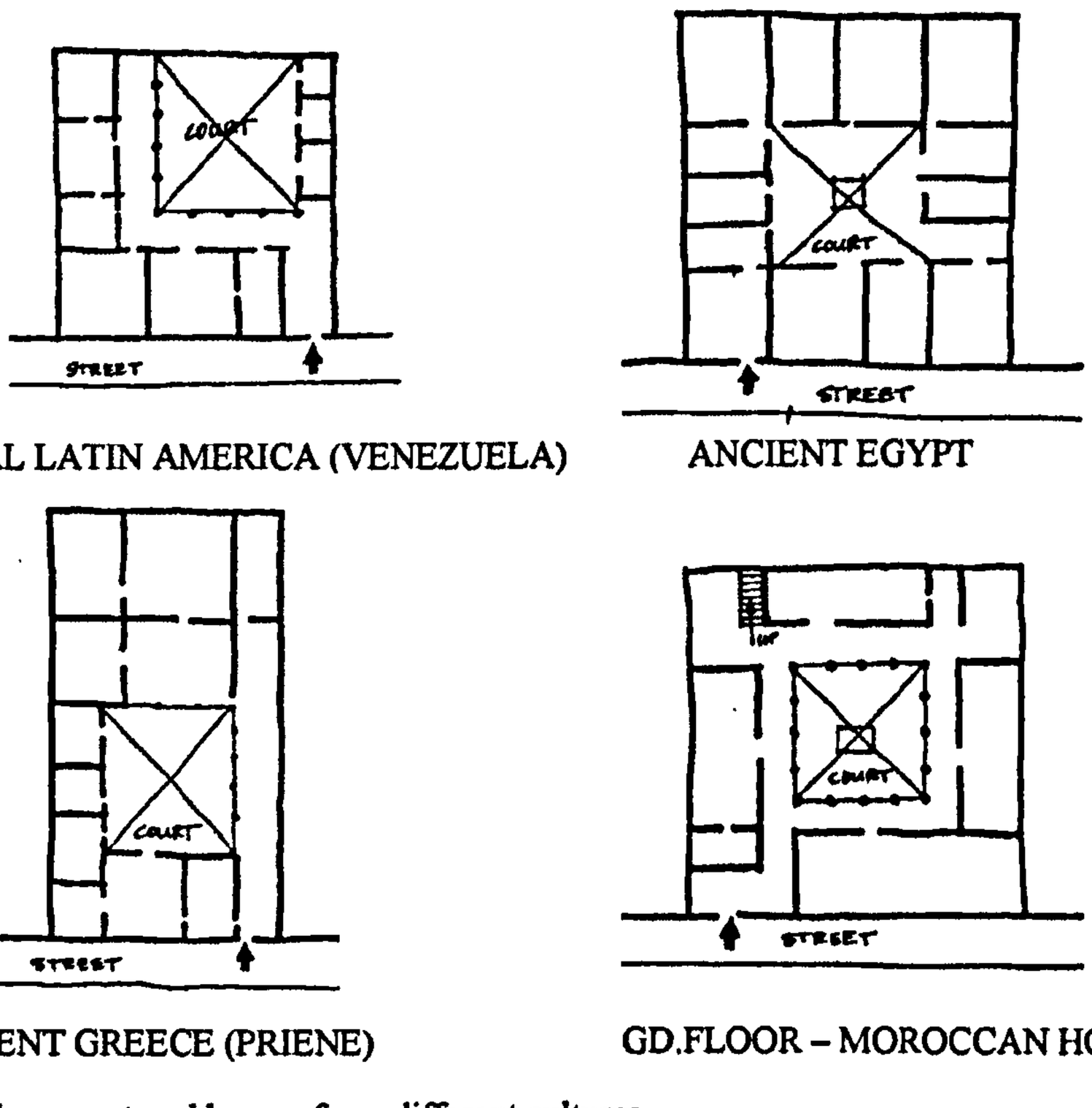

Figure 3.1: Four courtyard houses from different cultures
Source: Rapoport, 1969

[4] Paul Oliver, (1997) *Encyclopedia of Vernacular Architecture of the World*, Cambridge: University of Cambridge Press, P. 33
[5] Rapoport, Amos (1969), *House Form*. P.81

It is an important part of the building, which provides family privacy, where women spend most of their time with their domestic activities. The courtyard may also have a more specialized function; Warren and Fethi described the courtyard in a Baghdad traditional house as follows:

> The courtyard was the focus for all communication and the hub of life in the house. It was planted, possibly with trees, and probably had fountain or *shithirwan* placed at the centre, helping to raise the level of humidity and cool the air within the walls. The courtyard was also the focus of all movement. No one could move about the house from room or from level to level without in someway participating in the life of the courtyard and contributing to it, if only passively, observed rather than observing.[6]

The courtyard was already found in *El Gazeerah Al Arabiah*, the Gulf area, before Islam.[7] Examples of courtyards are found in Syria, where the floor of the courtyard was covered by stone and had a central rectangular pool, going back to the 16th century.[8]

In 1631 a famous man in Cairo, called Mohammad Al Haaj, built Al Kardaliah House. This house is one of oldest-surviving houses in Cairo. The house contains the courtyard, which is trapezoid in shape, as well as equiangular fountains (water pools) covered by white marble that were located in the middle of the courtyard.[9] In addition, all of the floors of the house were open to the courtyard, which provides privacy for the family members. Another very old courtyard house from the Ottoman period, built in 1648, is Al Suhaimi house in Egypt.[10] (Figure 3.2)

The basic form of the courtyard plan, such as is found in central Iraq or the rural houses of Egypt, *fellahin,* is a long, single-storied room on one side of the courtyard with the three other sides closed by a wall as high the building.[11] In addition the

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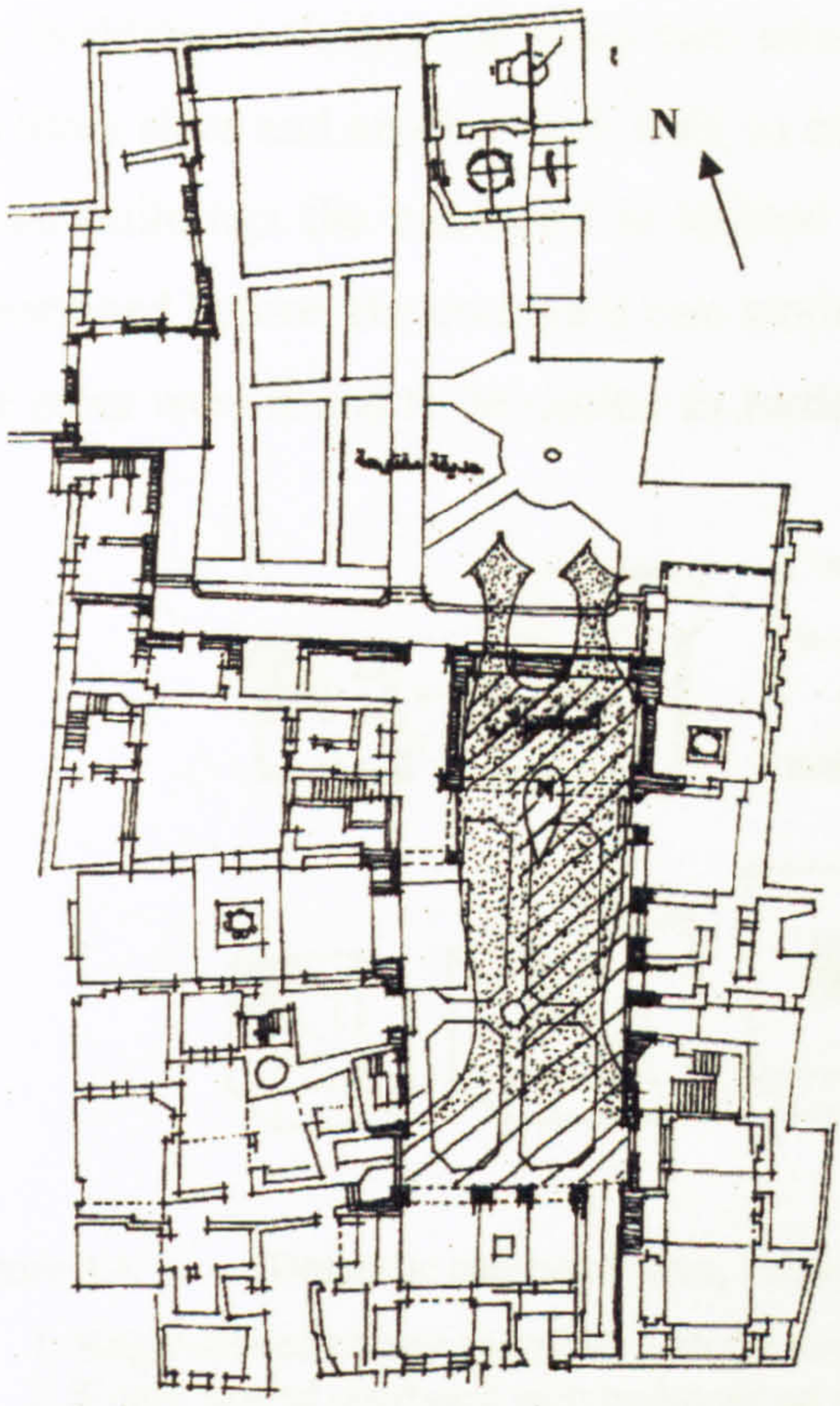
[6] John Warren and Ihsan Fethi, (1982) Traditional Houses in Baghdad, Ccoach Publishing, p.56
[7] Hariri, M, (1991) *The House in Islamic Architecture*
[8] Jodi, M. (1998) *Al amarah Al arabiah Al islamiah,* pp. 61-62
[9] Abdulhameed, M. (2000), Al Kardaliah house and art genius of Islamic architecture. *Baian Al thagafah Magazine,* 23rd Jolly, 2000: 28
[10] Abdulhameed, M. (2001), Al Suhaimi house in Ottoman period. *Baian Al thgafah Magazine,* 24th February, 2001: 58
[11] Paul Oliver, (1997) *Encyclopedia*

courtyard is very often two stories high although one also finds some that are two stories high on one side and one storey high on the other (Figure 3.3).



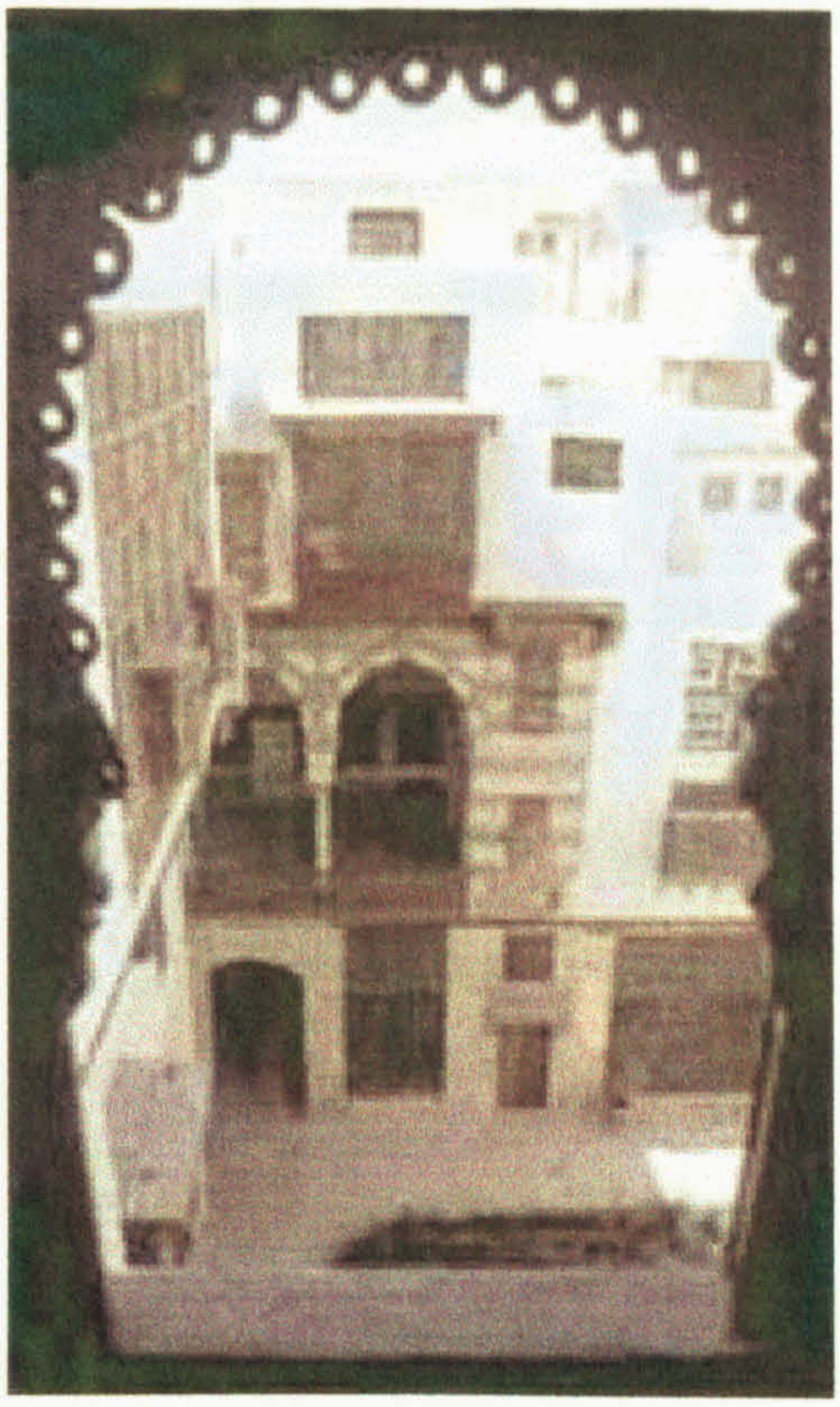
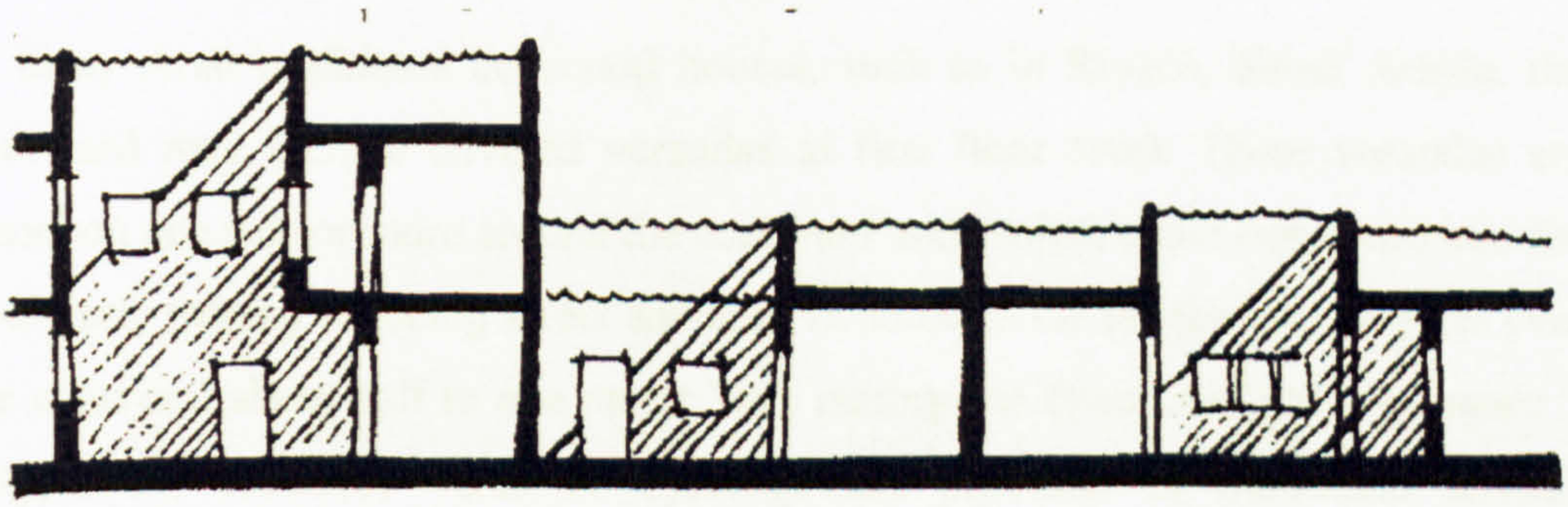


Figure 3.2: Al Suhami house, Egypt, Cairo 1648

Source: *left;* Al Wakeel and Seraj, 1998
Right, www.islamonline.net/arabic/arts/2001/01/article1.shtml



1 2 3

Figure 3.3: Courtyard heights

1. The walls around the courtyard were two stories high.
2. The walls were one storey on side, and two stories on the other side
3. One storey high on all sides

Source: Hariri, 1991, p.14

However, in Jordan the courtyard has a variety of forms as well, as seen in Figure 3.4. There are sometimes single storey rooms on two sides and with walls as high as the building enclosing the other two sides; some buildings have two-storied rooms on three sides and another high wall, as high the building, closing the fourth side. In some buildings the courtyard is located in the centre of the house. However, as mentioned before, the courtyard two stories high on one side and one storey high on the other were found to be similar in Jordan.

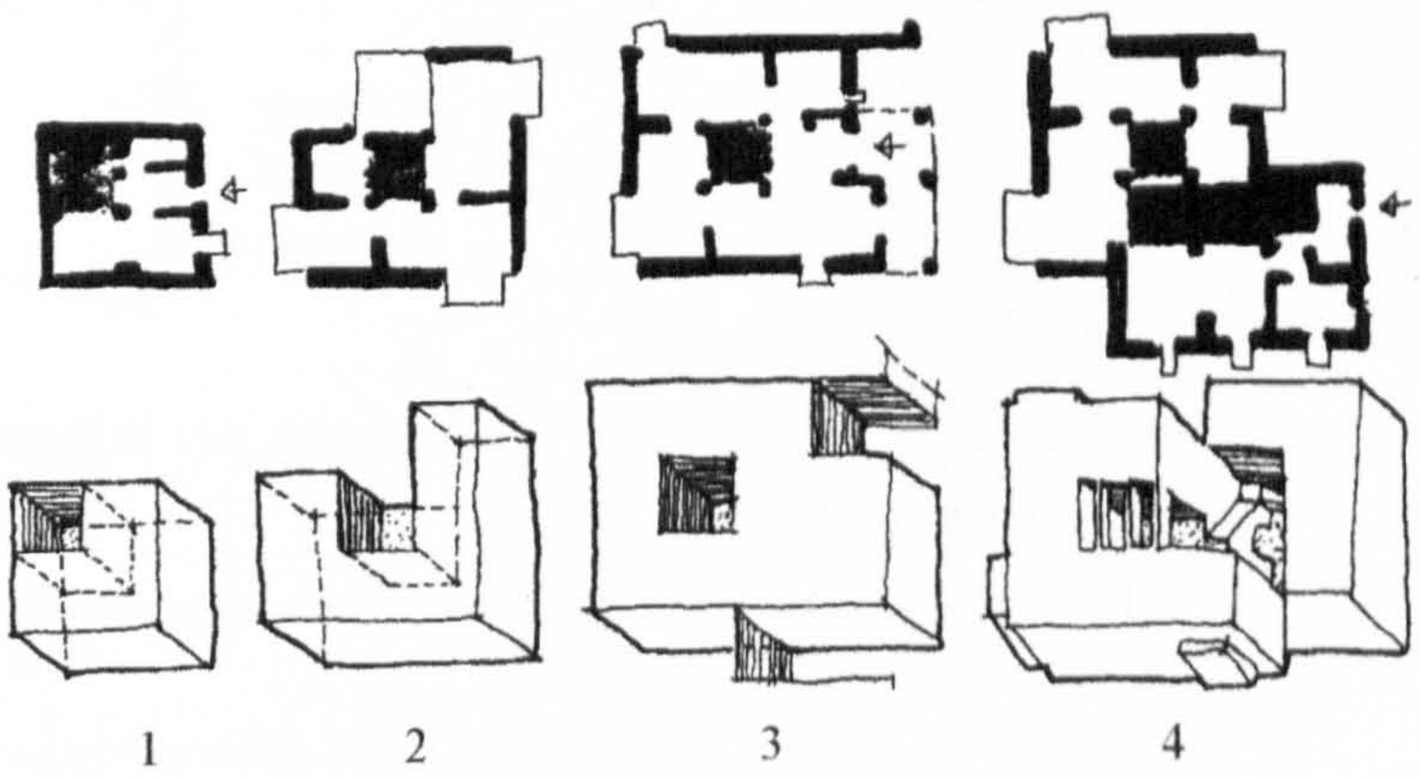


Figure 3.4: Domestic courtyard form, Jordan

1. Single-storied corner courtyard with the two sides closed by a high wall as high the building
2. Single-storied courtyard with buildings on three sides as a U shape and the other side open to the outside.
3. Single-storied central courtyard.
4. Single-storied central courtyard, one storey on one side, and two stories on the other sides.

Source: Ibrahim, 1987

In many Arab traditional courtyard houses, such as in Riyadh, Saudi Arabia, the courtyard may include covered verandas at first floor level. These verandas are found on one side or more around the courtyard and project about one metre into the courtyard, thereby reducing direct sunlight. In addition the terrace also projects over the courtyard about half to one metre, thus cutting out direct sunlight even more [12] (Figure3.5). However vents or openings are provided in traditional Riyadh courtyards, in the courtyard walls and all external walls on all floors and around the roof, in order to provide better ventilation. These vents are arranged in such way that it is impossible to look to into the house from outside. (Figure 3.6)

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[12] Hariri, M, (1991) *The House in Islamic Architecture, Courtyard house* , Saudi Arabial: Makkah Press

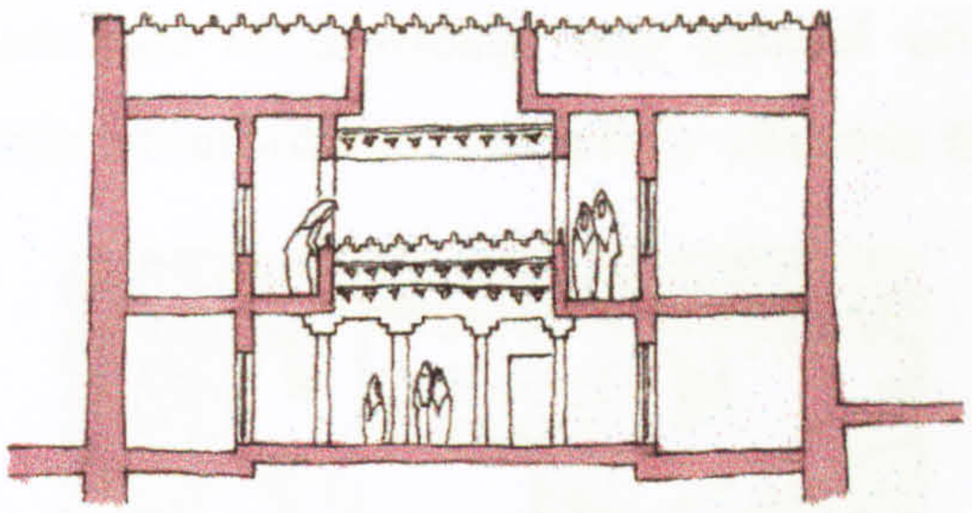
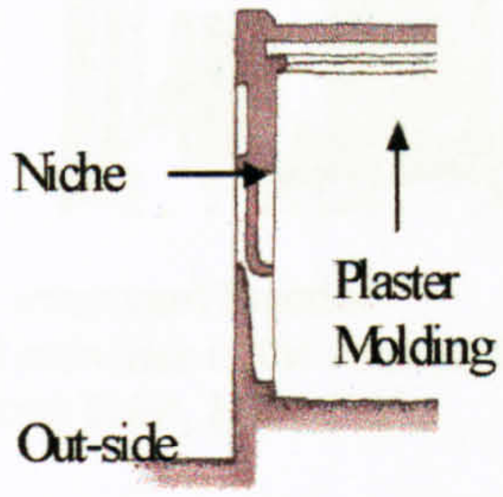


Figure 3.5: Courtyard includes covered verandas, Riyadh, Saudi Arabia
Source: Author drawing based on, Mousalli & others, 1977



Section detail of wall vent, Arabian Peninsula

Source: Authors drawing based on, Paul Oliver, 1997

Vents, opening in the courtyard and external walls, Riyadh, Saudi Arabia

Source: Facey. 1997

Figure 3.6: Vents on the walls, Riyadh, Saudi Arabia

In Arab courtyard houses the size of the courtyard is relatively proportional to the size of the building in which it is accommodated. In Middle Eastern and North African countries, even in small houses the size of the courtyard may vary by only a few metres. However courtyards can also be larger spaces, such as in the Farmsteads of North Africa and urban Caravanserai of Cairo.[13] There is no fixed area for the courtyard in Arab houses, they can be small, about $15m^2$, as well as large courtyards up to $90m^2$ in some buildings[14]

In the Arab house the courtyard has been used all the time as a private space for the family (Figures 3.7). It is usually located in the centre of the building and women spend most of their time in it and do their domestic activities there. In addition it provides a safe outdoor sitting area for adults and the elderly as well as a safe outdoor playing area for young children. Overhead shading in the summer can be achieved through deciduous trees or light coverings, for example cloth, palm fronds, or open-weave mats. On the other hand, courtyard housing has the additional

[13] Paul Oliver, (1997) *Encyclopedia*
[14] Hariri, M, (1991) *The House in Islamic Architecture*

attribute of providing easy general privacy, allowing for increased density of habitation without unhelpfully affecting the quality of life by being too restrictive.[15]

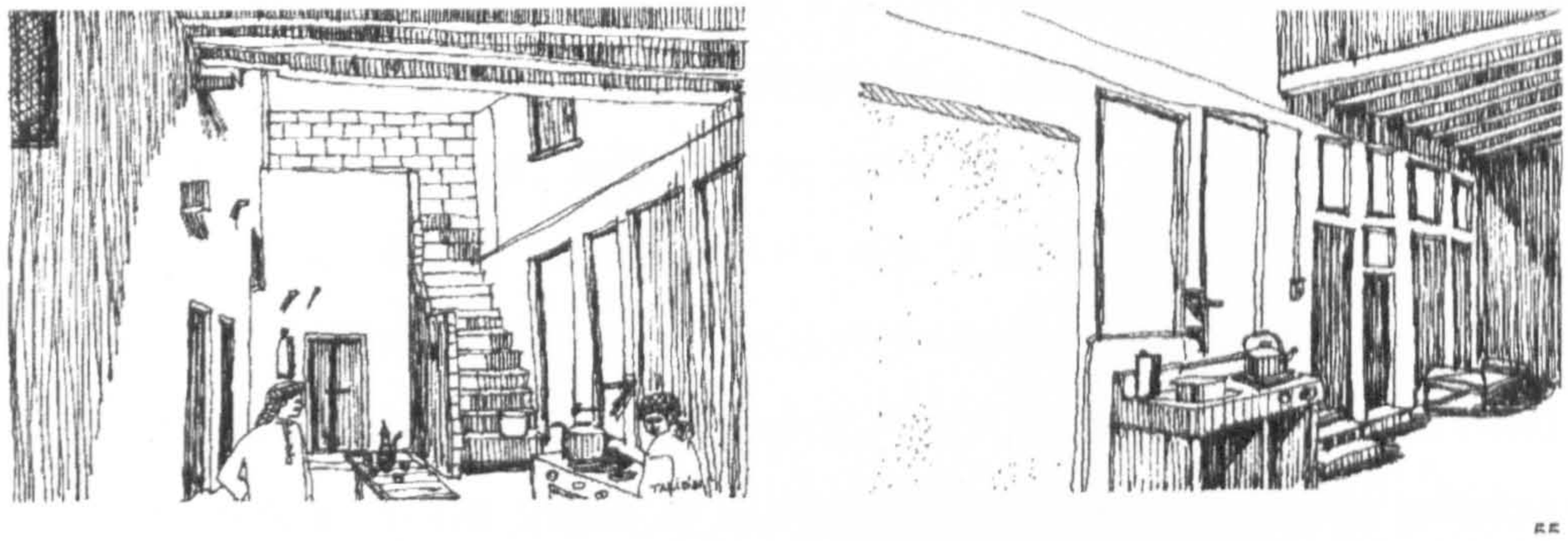


Figure 3.7: courtyard function
Household activities in the courtyard of a house in Dhahran, Saudi Arabia
Source: Kizer Talib. 1984, P.55

Courtyards are considered as a symbol of life and the centre of attraction in Arab societies. The formal arrangement of the house lays focus on it; it is the heart of the building. It is in contrast with the Western house, where the façade expression is on the outside, in the Arab it is a space where you can see all the façades of the building with their decorative features as well as openings leading to all rooms of the house.[16]

The courtyard is used to reduce the temperature of the hot summer days and enables the building to get sunlight in the winter to warm up the cold rooms. There is a belief that a courtyard in the middle gives the feeling of relationship to the sky.

The courtyard is also used for celebrations and other different occasions such as marriages. In all traditional houses, therefore, one finds a close relationship between the courtyard and the outside, an integration that helps the inside and outside to work together to fulfil the needs of the family. Another important advantage is the role of the courtyard in modifying climatic conditions day and night.[17]

In the hot-dry climate of the area the privacy and security requirements of the family produced a particular form of house: the courtyard house is the most common arrangement.

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[15] Corky, Poster. (1989), The Courtyard House, *Arid lands,* Spring/ Summer 1989: 28
[16] Jodi, M. (1998) *Al amarah Al arabiah Al islamiah,* pp.61-62
[17] Agab M. Views on Islamic Arts and Architecture in Algiers, (Cairo, Egypt Press 2002)

Climatically, the courtyard functions in three regular cycles, taking advantage of the diurnal range of temperature during the summertime. During the first cycle, the cool night air descends into the courtyard and fills the surrounding rooms, the coolness being absorbed by walls, floors, roofs columns, and ceilings as well as furniture. All of these are cooled at night and stay so until the late afternoon. However, the courtyard will lose heat by radiation to the sky at night. During the second cycle, the sun directly strikes the courtyard floor around noon. Some of the cool air begins to rise and also filter out of the surrounding rooms. In addition this action sets up convection currents in the rooms of the house, that may give further comfort. In other words the courtyard acts as a chimney. At noon the ambient temperature is very high outside. During the third cycle, in late afternoon, the courtyard floor and the inside of the house get warmer and further convection currents are set up, so that most of the cool air collected inside the rooms has spilled out by sunset.[18] (Figures 3.8, 3.9 and 3.10)

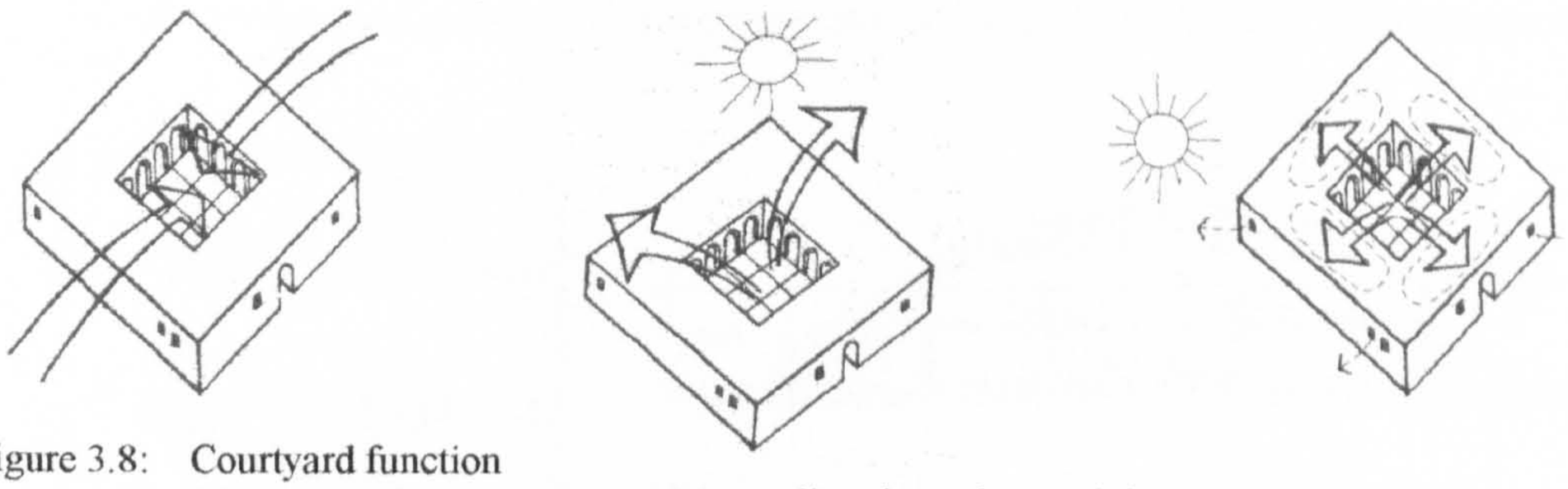
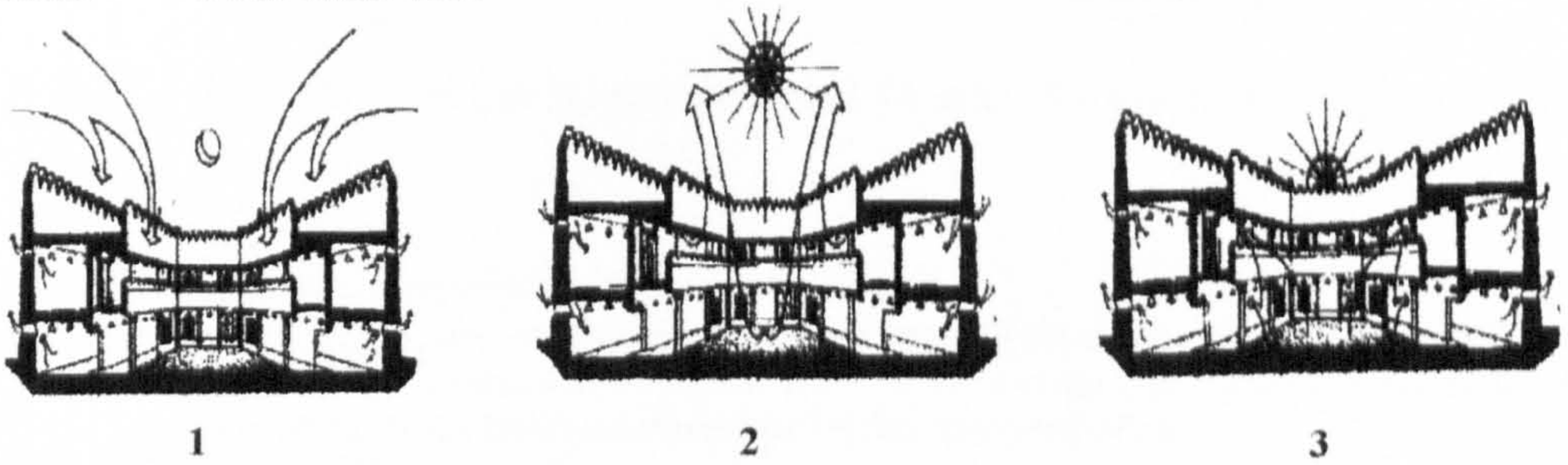


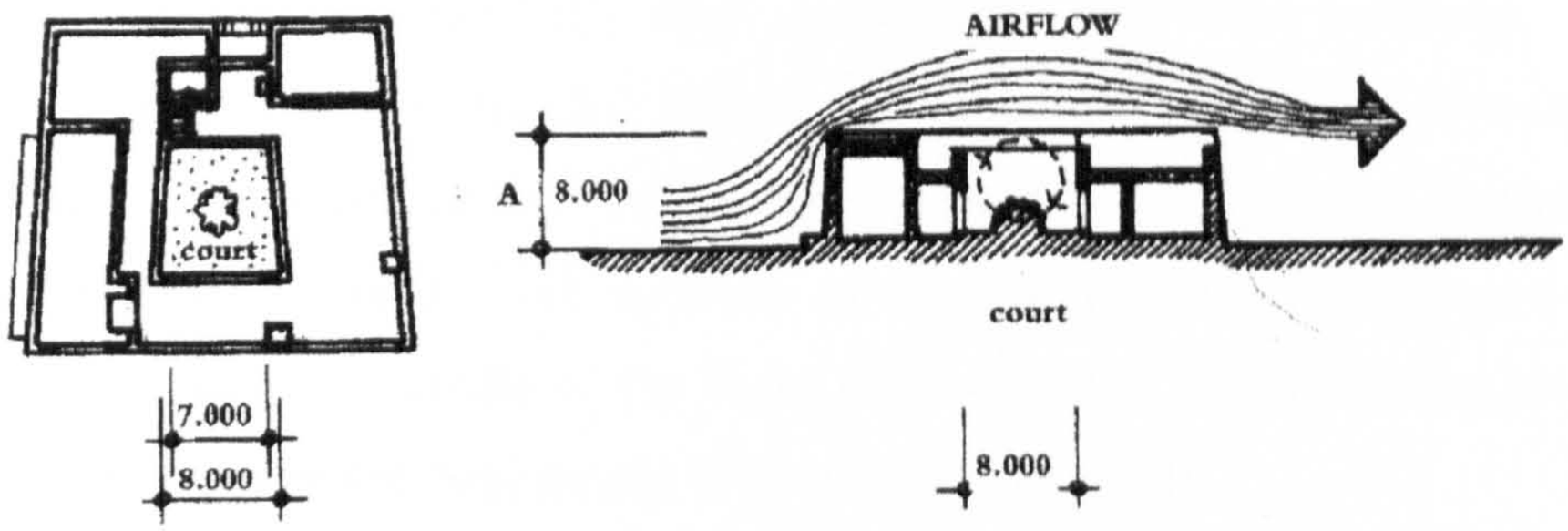
Figure 3.8: Courtyard function
Diagrammatic explanation of three climatic cycles at night, noon, and afternoon.
Source: Kizar Talib. 1984



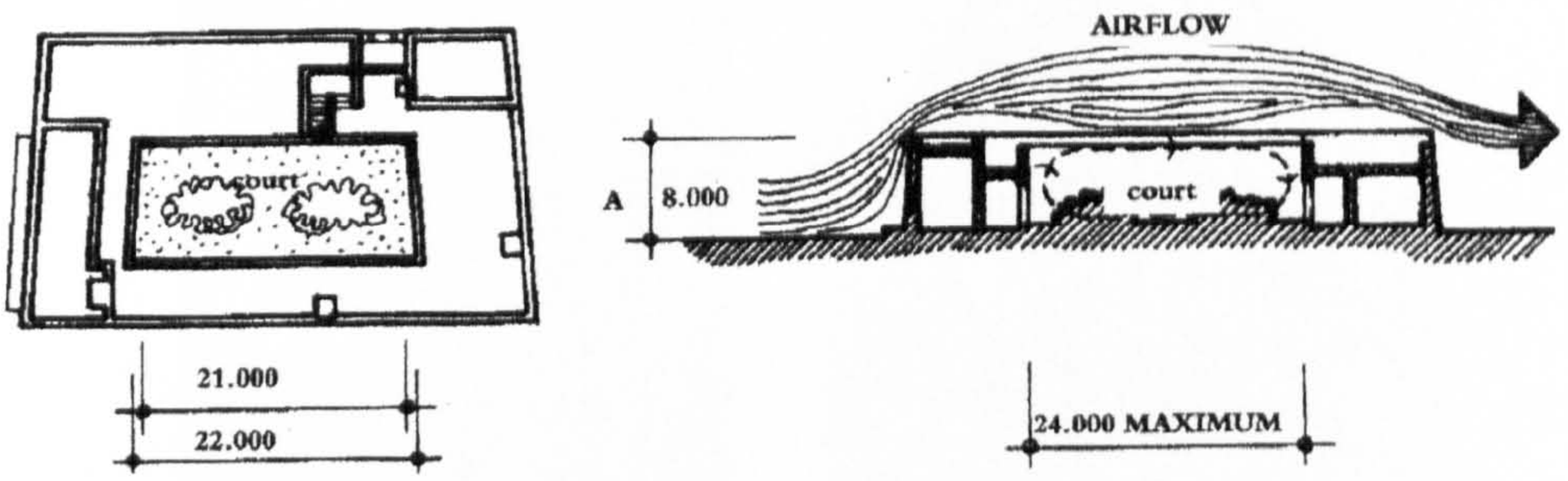
1. Night: courtyard and roof act as cool air sink.
2. Day: sun heats the courtyard; warm air raises creating chimney affect and pulls breeze through rooms.
3. Evening: courtyard and buildings retain heat then give it off as night air-cool.

Figure 3.9: Courtyard advantage
Diagrammatic explanation of three climatic cycles at night, noon, and afternoon.
Source: Facey. 1997

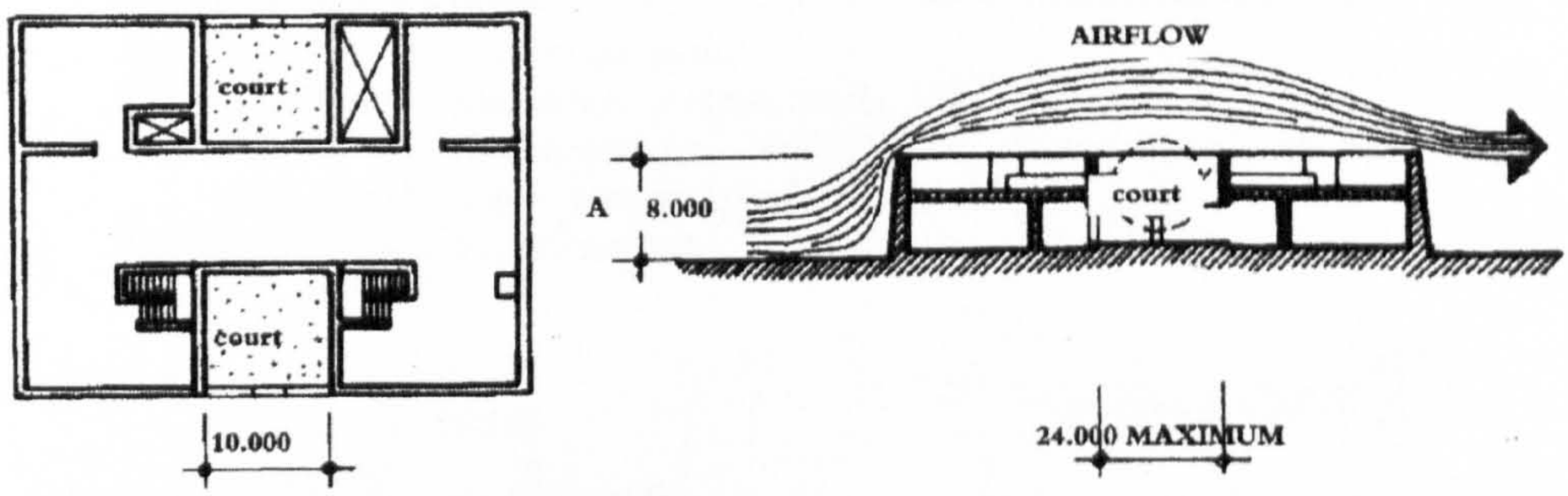
[18] Kaizer Talib, *Shelter in Saudi Arabia,* (New York, United States of America Press 1984)



A square central courtyard offers good protection from windblown dust and sand.



The depth of a rectangular courtyard should not exceed 3A unless the long axis is perpendicular to the wind.



The depth of a perimeter courtyard should not exceed 3A unless the long axis is perpendicular to the wind.

Figure 3.10: Wind and dust blowing over a courtyard house
Wind passing over creates a low-pressure zone in the courtyard. This sucks in eddies, but the low pressure can be counteracted by airflow through rooms into the courtyard created by well-placed apertures and by the courtyard effect.
Source: Facey. 1997

3.2.2 The *Iwan*

The *Iwan* is another characteristic feature of the Arab house. It is a hall surrounded by walls on three sides only and looks out into the courtyard. The *Iwan* was an intermediate zone with rooms between the privacy of the interior and the courtyard as a public area. Its floor level is usually higher than the floor level of the

courtyard. The *Iwan* normally takes a square shape in most buildings. The open part of it may have an arcaded façade. It is decorated with geometric and organic shapes. The upper part of it may be composed of ornamental decoration with Arabic letters carved from gypsum projecting beyond the surface, the walls matching with the frames of the doors and windows. The *Iwan* has always been very important in the Arab house (Figures 3.11 and 3.12).

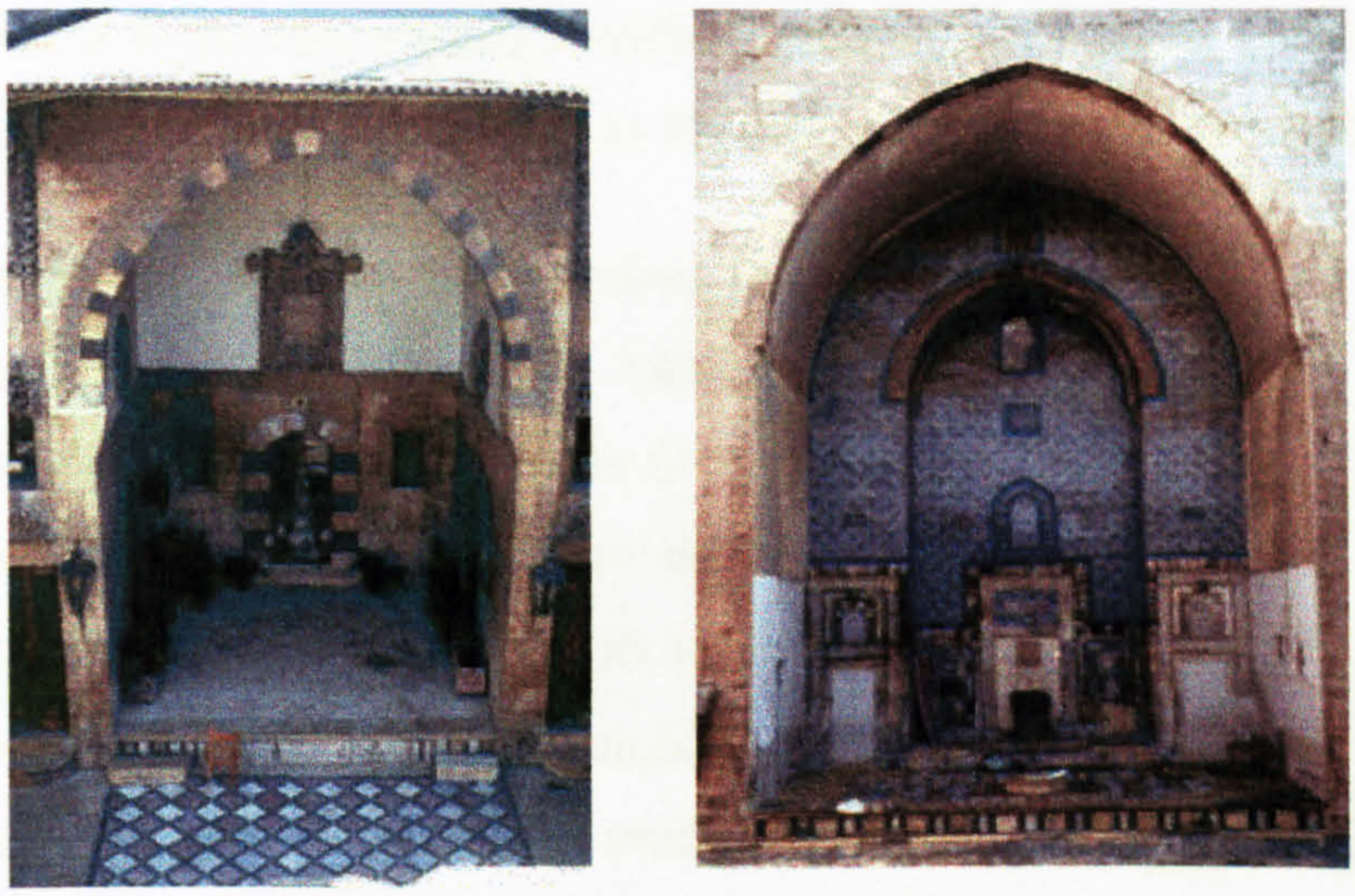


Figure 3.11: *Iwan* of Syrian house
Left; Ajak Basha House, Aleppo, Syria, 18th century
Right; Iwan on southern wall, Jinblat House, Aleppo, Syria, 17th century
It is decorated with geometric and organic shapes
Source: www. Archnet.org

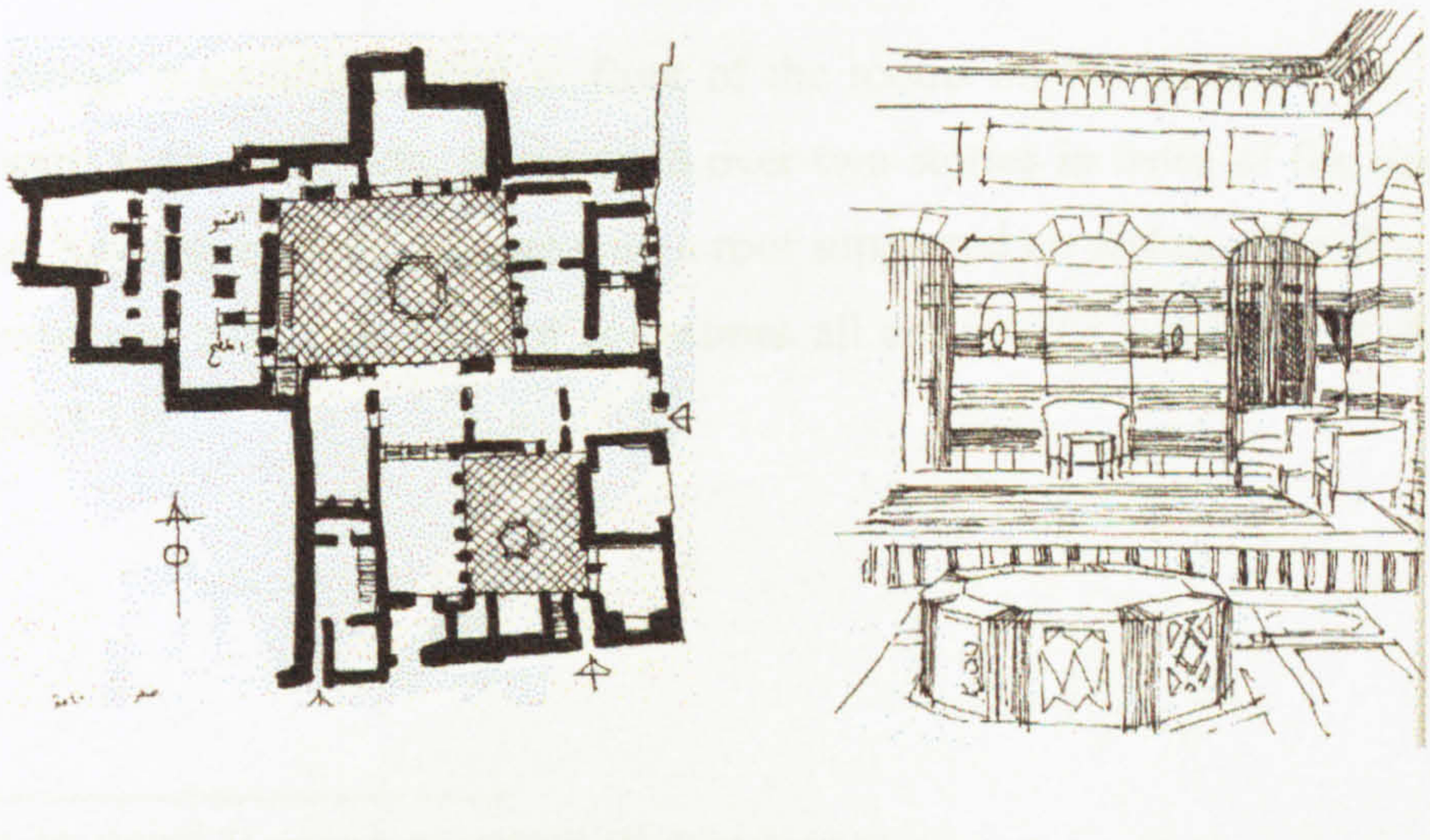


Figure 3.12: The fountain was located in front of the *Iwan,* Al Subaee house, Damascus.
Source: Ibraheem, 1987

The functions of the *Iwan*, other than being a point of distribution to many of the house elements, are those of sitting and sleeping during the siesta. In some buildings there is more than one *Iwan*. This found in Dar El Imara in Kofa and the houses of Eligesr Palace in Iraq. These were used to receive guests.[19] People in Mussel in Iraq used the *Iwan* in their traditional buildings as the front of the house, flanked by two rooms. The reason for the *Iwan* becoming open on one side was climatic, that is to provide shaded, ventilated space. It is a place where the family gathered for special occasions as well as for daily dining and receiving of guests.[20]

In Qatif, on the Gulf coast of Saudi Arabia, this space is considered to be a representative element of the architecture of the area, which seems to fit well with the climate and material as well as the culture of the farming community of the oasis. In its rural form the *Iwan* is part of a mud house, arranged a around a colonnaded courtyard with thick mud and wind-catchers (see section 3.2.6) as well as a terrace for sleeping[21] (Figure 3.13).

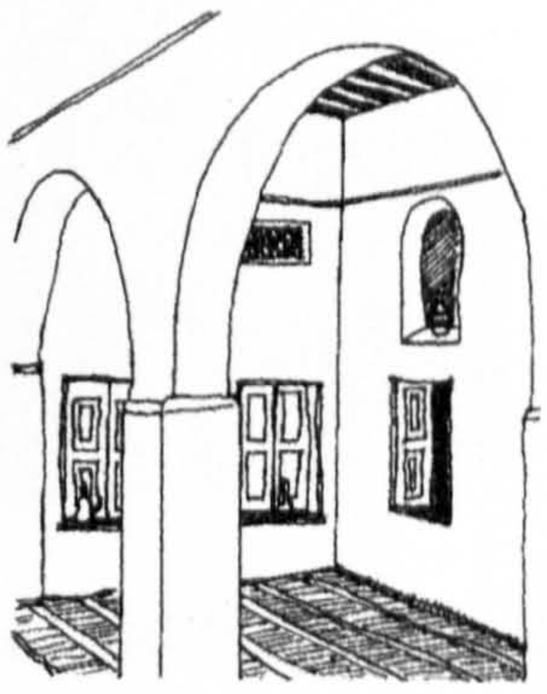


Figure 3.13: *Iwan* of house along Gulf coast
Source: Kizar Talib, 1984

3.2.3 The Colonnade or *Riwag*

The *Riwag* is usually located in front of the rooms on the ground floor. In some locations, such as Riyadh, it extended over two stories in front of the upper floor rooms, forming an open passage with a roof supported on arches. The *Riwag* could be found one side, two sides or sometimes all around the courtyard of the house. (Figure 3.14)

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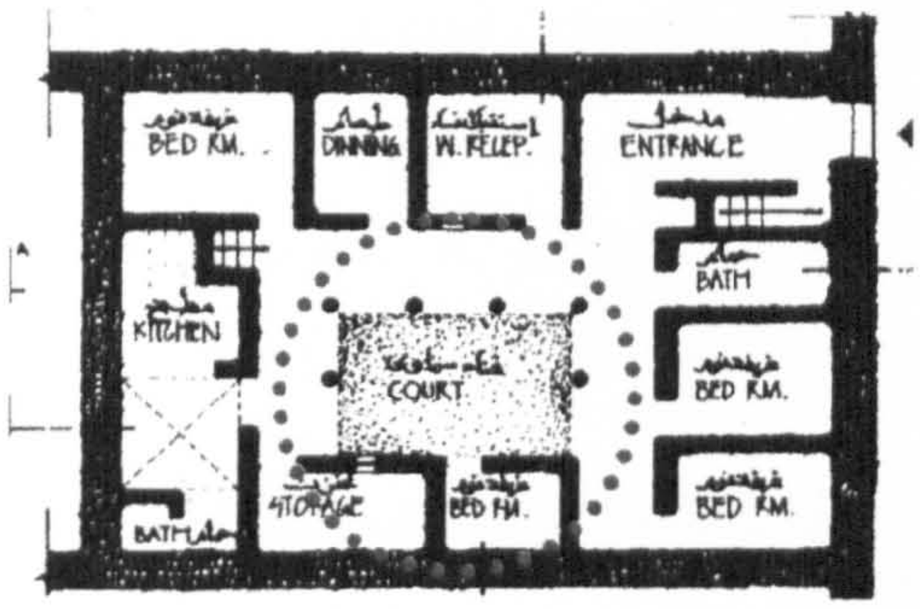
[19] Jodi, M. (1998) *Al amarah Al arabiah Al islamiah,* pp.63-64

[20] Yousif, Sh. *History of Iraqi Architecture in Different Ages*, (Ministry of culture and information, Press 1982), (Arabic text)

[21] Kaizer Talib, (1984) *Shelter in Saudi Arabia,* New York, United States of America Press



Ground floor First floor

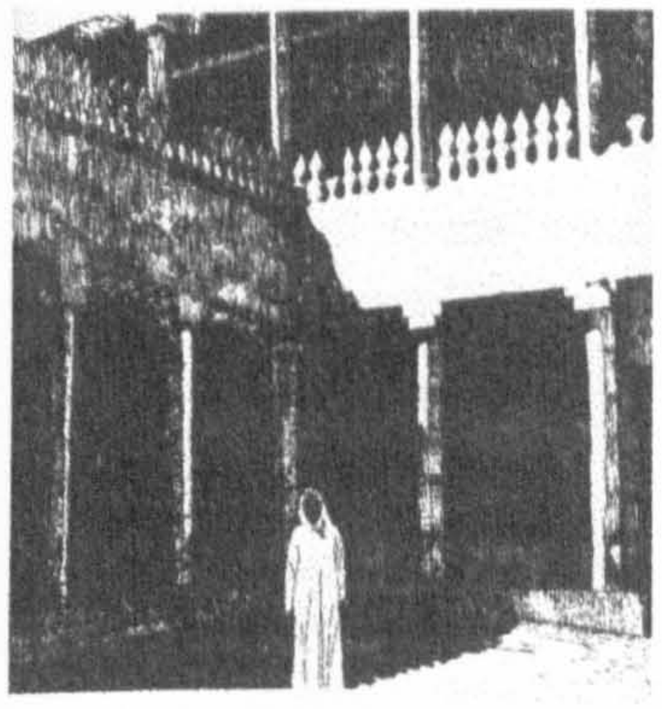


Figure 3.14: *Riwag* of courtyard house

Riyadh, Saudi Arabia
Porch was located in front of the rooms on ground floor and in front of the upper floor

Source: Mosali and Others, 1977

John Warren and Fethi discussed the colonnade structure in Baghdad traditional houses as follows:

On the upper floor the colonnade is always higher than the ground floor and often it is twice as high. Below it the structural mass is generally of brickwork with alternating solid and void giving strength and depth to the structure. Above, all is lightness, airiness and timber, rich with an intricacy of joinery delighting the eye and proclaiming the status of the householder.[22] (Figure 3.15)

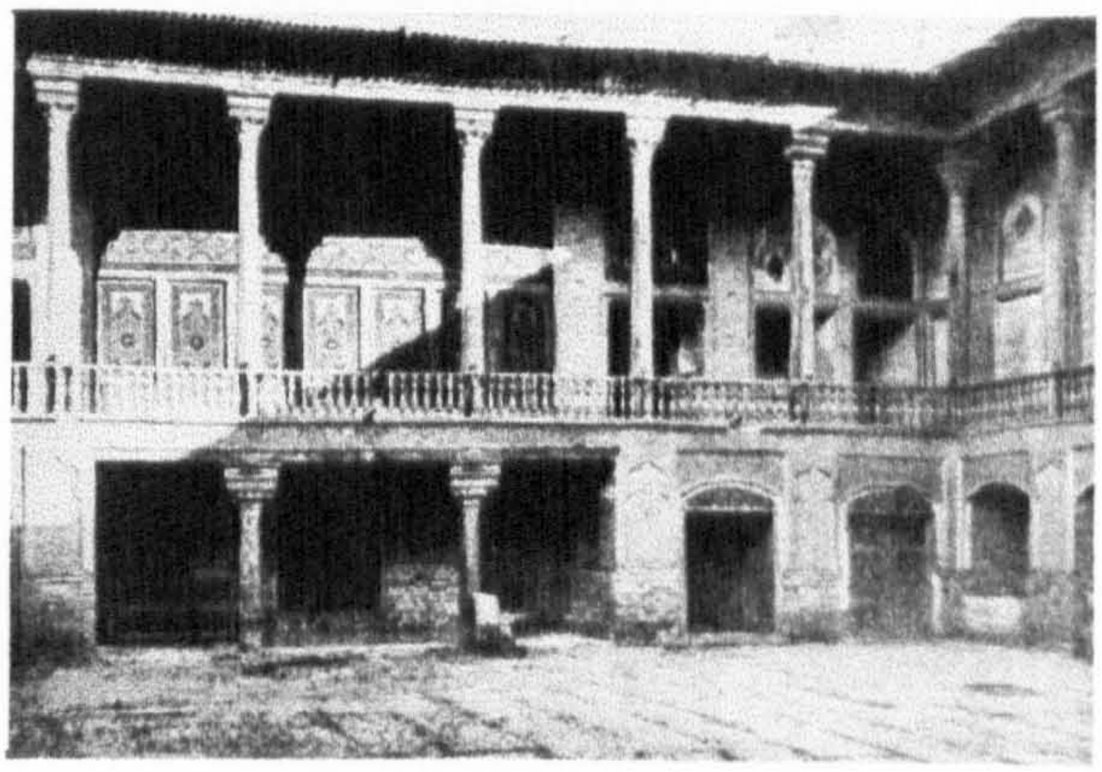


Figure 3.15: Colonnades in Baghdad traditional house
Source: John Warren and Ihsan Fethi (1982), p.65

[22] Warren and Fethi, Traditional Houses in Baghdad (1982), p.65

The main reason for colonnades (walkways) is to reduce the direct sunlight to the rooms and so keep the room temperature down in the summer. They also facilitate movement between the different elements of the house and protect the house from the rain in winter.[23] John Warren and Fethi also pointed out the following:

> It was a strictly established rule of traditional house design that the first floor was planned so that every room was always directly accessible from the colonnade.[24] (Figure 3.16)
>
> As the *Riwaq* fulfilled the role of linking the interior spaces of the house, it is an integral part of the aesthetic expression of the house.[25]

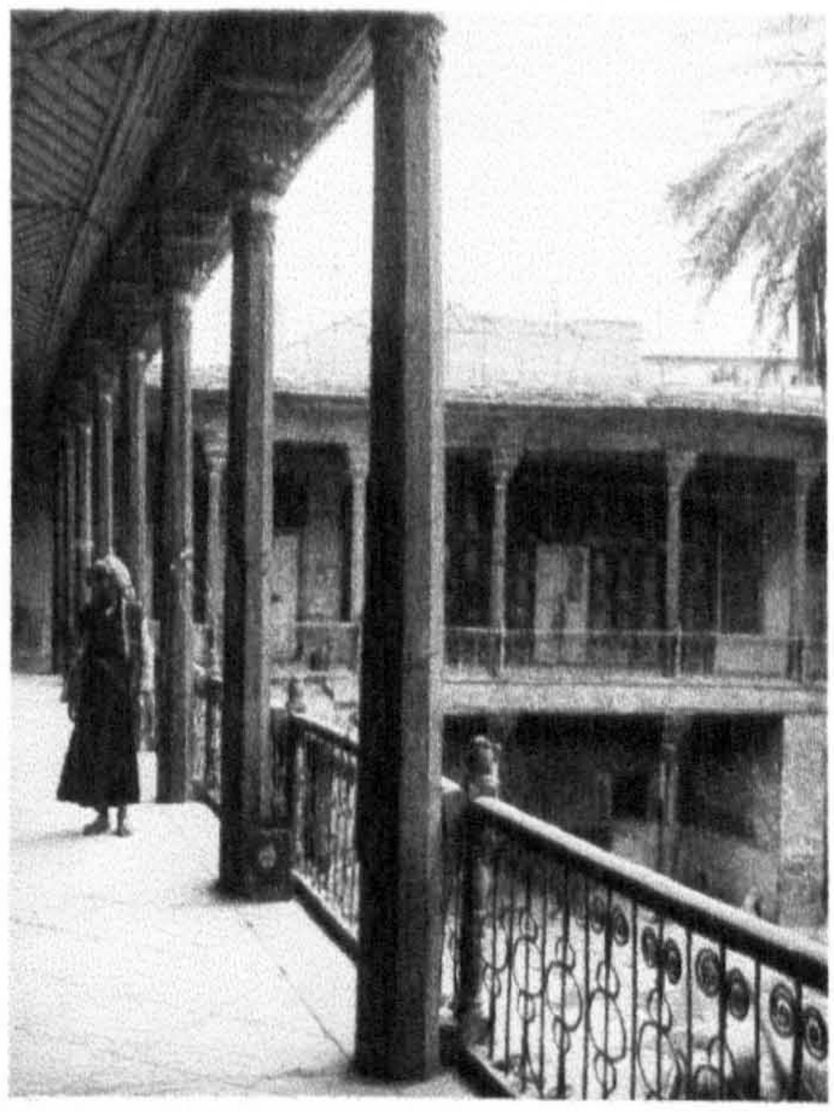


Figure 3.16: Colonnaded balcony around the central courtyard

Source: Warren and Fethi (1982), p.23

3.2.4 The Entrance Hall or *Dehliz*

This is a rectangular or L-shaped lobby connecting the house with the road. Sometimes the entrances are offset, in order to screen the interior from the gaze of strangers when the main gate is open. This is in accordance with the religion and traditions of Islamic Arab society.[26] The *Dehliz* area was found on the ground floor and was dedicated to men since women rarely had activities on the ground floor. The *Dehliz* was considered a waiting place for visitors and also as a place for study.[27] In addition the *Dehleez* used to be a place for elderly people, especially

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[23] Jodi, M. (1998) *Al amarah Al arabiah Al islamiah,* pp.63-64
Warren, John. and Ihsan, Fethi (1982) *Traditional Houses in Baghdad*, Coach Published. P65

[25] Agab M. E. *Views on Islamic Arts and Architecture in Algiers,* (Cairo' Egypt Press 2002), (Arabic text)

[26] Jodi, M. (1998) *Al amarah Al arabiah Al islamiah,* pp.66-67

[27] Ghaleb, A. *Cyclopedia of Islamic Architecture,* (Beiroot, Lebanon Press 1988), p. 190 (Arabic text)

merchants, and one of its most important functions was trade.[28] On the other hand it was used as a play area for children when the sun outside the house was too hot because it was the coolest part of the house, since it was usually sprinkled with water.[29] Warren and Fethi discussed the entrance hall in the large Baghdad traditional house in the following way:

> In the large house the entrance corridor was itself an important space, breaking out into a square or octagonal domed room (*dolan*). This was sometimes closed from the interior with a lockable door or was provided with a curtain, and a room might be provided off this lobby for a porter door. Masonry benches (*dakka*) were incorporated within wall niches, providing seats for the doorkeeper and the visitors' servants.[30]

3.2.5 The *Rowshan* or *Mashrabiyya*

A *Rowshan* or *Mashrabiyya* is first recorded in use in El Basra, in Iraq, in the first century of El Hijra (Arabic era) and then spread to other Arab towns.[31] The development of *Rowshan* or *Mashrabiyyah* in Saudi Arabia came from outside influences; those on the coast of the Red Sea are quite different in character from those on Arabian Gulf, which reflects the different cultural influences that affected each region:[32] Egyptian artisans worked on the West Coast but not the East, where skilled artisans came from the Indian Sub-Continent (Figure 3.17). During the Ottoman occupation of Saudi Arabia, architectural design and building technology were influenced by the activities of the Turkish garrisons. Intermarriage and the intermixing of cultures led to technology being transferred and the adoption of superior skills and materials and consequently an improved architecture in the Hijaz region.[33]

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[28] Al Gazawi, A. *Shatharat Al Thahab*, (Jeddah: Daar Al Manhal Press 1987), (Arabic text)

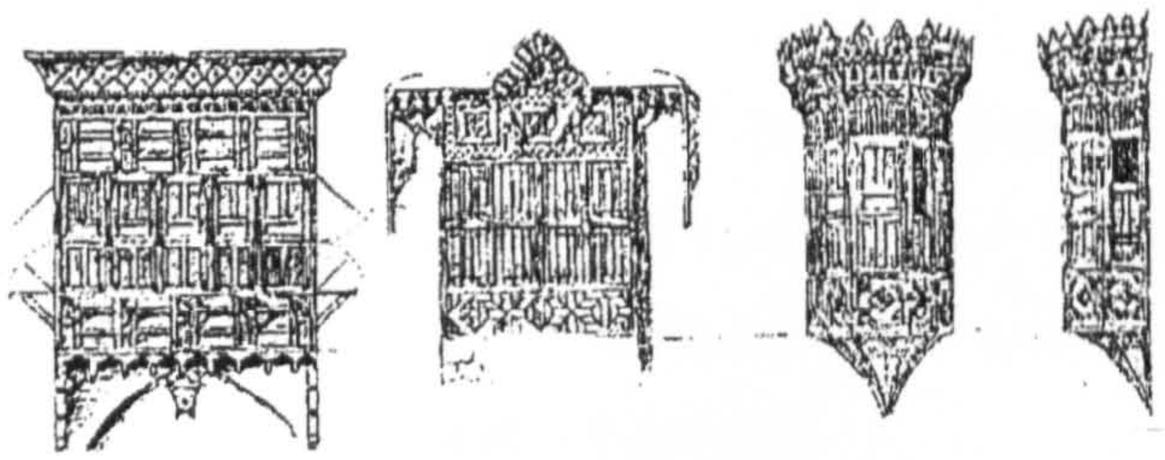
[29] Al layaly, S. (1990) The Traditional House of Jeddah: a Study of the Interaction between Climate, Form and Living Patterns, Ph.D. Thesis, Department of Architecture, University of Edinburgh

[30] John Warren and Ihsan Fethi, Traditional Houses in Baghdad (1982), p.50

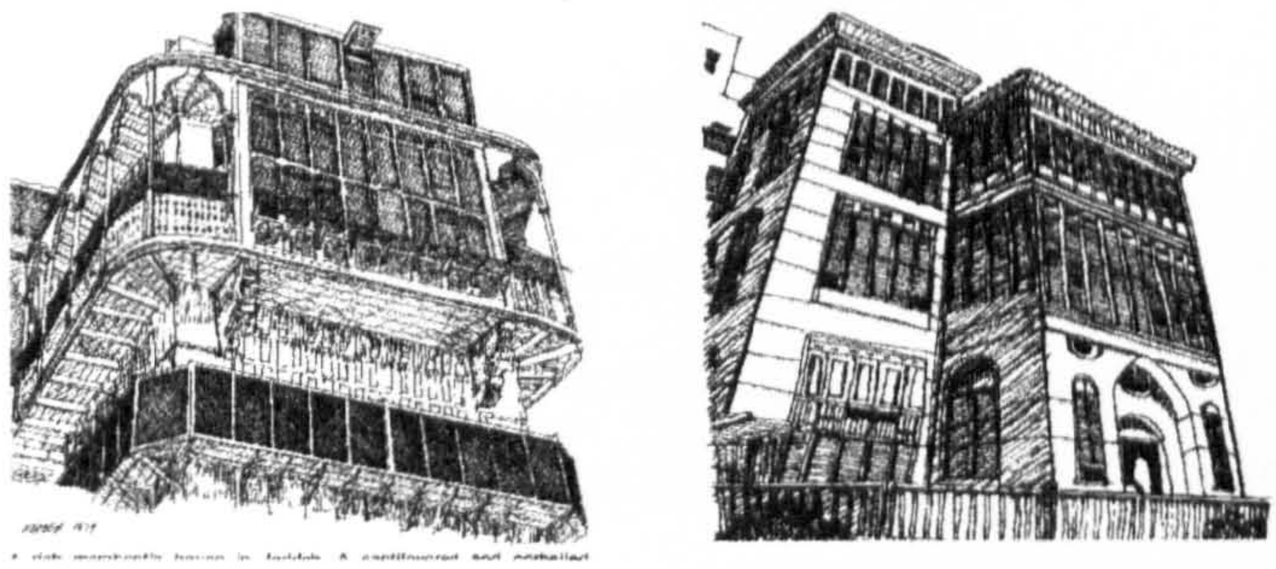
[31] Jodi, M. (1998) *Al amarah Al arabiah Al islamiah*, p.68

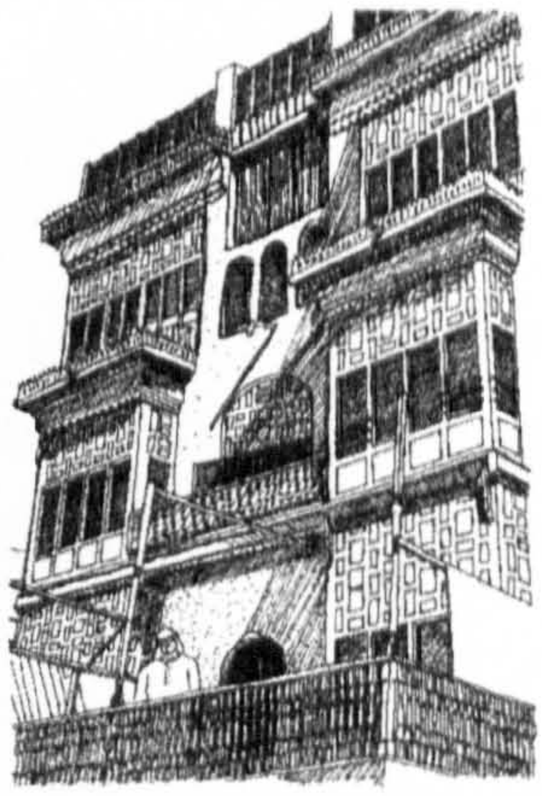
[32] Paul Oliver, (1997) *Encyclopedia* P.121

[33] Kaizer Talib, (1984) *Shelter in Saudi Arabia*

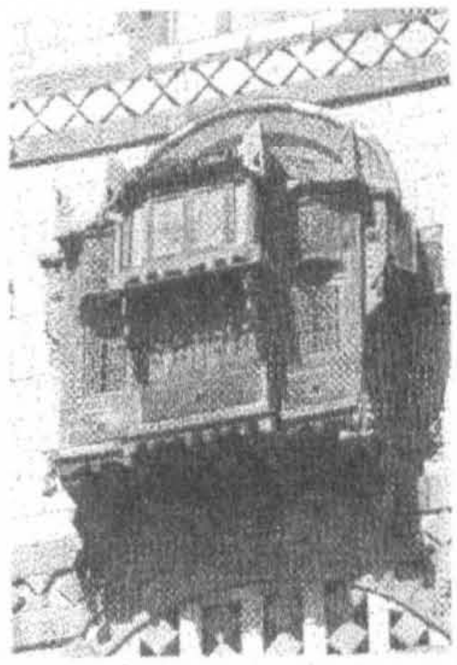


Rowshan or *Mashrabiyya*, pierced wooden screens, Sudan.
Source: Al Merhem, 2000

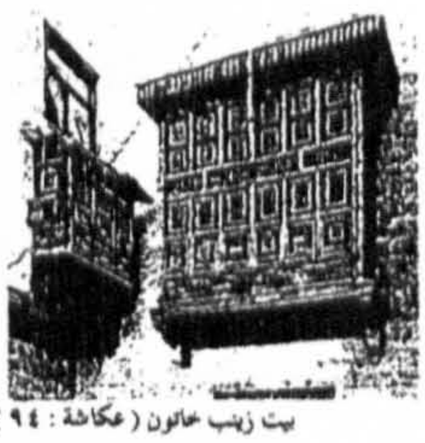




Rowshan or *Mashrabiyya*, pierced wood screens, Jeddah, Saudi Arabia
Source: Kaizer T, 1984



Rowshan or *Mashrabiyya*, Sanaa, Yemen
Source: Al Merhem, 2000



Rowshan or *Mashrabiyya*, Egypt
Source: Guillemette and Others, 1996

Figure 3.17: *Rowshan* or *Mashrabiyya*, pierced wooden screens in various Arab countries

A *Rowshan* or *Mashrabiyya* fulfilled two main functions. Pierced wooden screens allowed cross-ventilation as well as privacy to family life from the outside. As Paul Oliver explains that as follows:

> The use of screen windows or balconies has been a noticeable feature of Islamic Architecture ... In hot, humid climates screened balconies, (mashrabiyyat or rowshan) performed essential functions: gave privacy to occupants, the rooms by means of grilles.[34]

[34] Paul Oliver, (1997) *Encyclopedia,* P.121

Over time the *Rowshan* also became decorative and acquired popularity and prestige, especially in hot-dry places like Makkah and Madina where they are common to vernacular buildings (for more detailed discussion and information of the Makkah tradition see chapter 4).

3.2.6 Wind-catchers or *Badgirs*

The form of wind-catchers or *Badgirs* was very simple. It consisted of a vent facing towards the wind; the lower rooms are linked to these vents by chimneys through which the air is channelled.[35] They occur in both Arab Muslim and non-Arab Muslim cultures.

The feature pre-dates Islam, as shown by evidence on tombs from ancient Egypt where they existed by c. 200 BC. During periods of economic prosperity, the wind-catchers were fashionable in various regions. In Cairo during the 11^{th} – 14^{th} centuries, poets sang the praises of wind-catchers, whose proportions reflected their owners' status. In the Gulf ports, the wealthy houses were still crowned by great wind-catchers in the 19^{th} century.[36] In Al Bastakiah, in Dubai, the central courtyard as well as *Badgirs* feature prominently in traditional houses. Most Al Bastakiah traditional houses, having two floors, have two Wind-catchers in the one house. In addition most Al Bastakiah traditional houses have two floors, a central courtyard and three wind-catchers or *Badgirs* that serve three rooms located on the ground floor, bedrooms and the living room.[37]

The wind-catchers function as an air-cooling system that ensures ventilation; they catch the light breeze and direct it to the lower parts of the house. (Figure 3.18)

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[35] Paul Oliver, (1997) *Encyclopedia*, p.121
[36] Paul Oliver, (1997) *Encyclopedia*, p.121

[37] Al Wakeel, Sh & Seraj, M. (1989) *The Climate and Hot Regions Architecture*, Cairo, Egypt Press, (Arabic text)

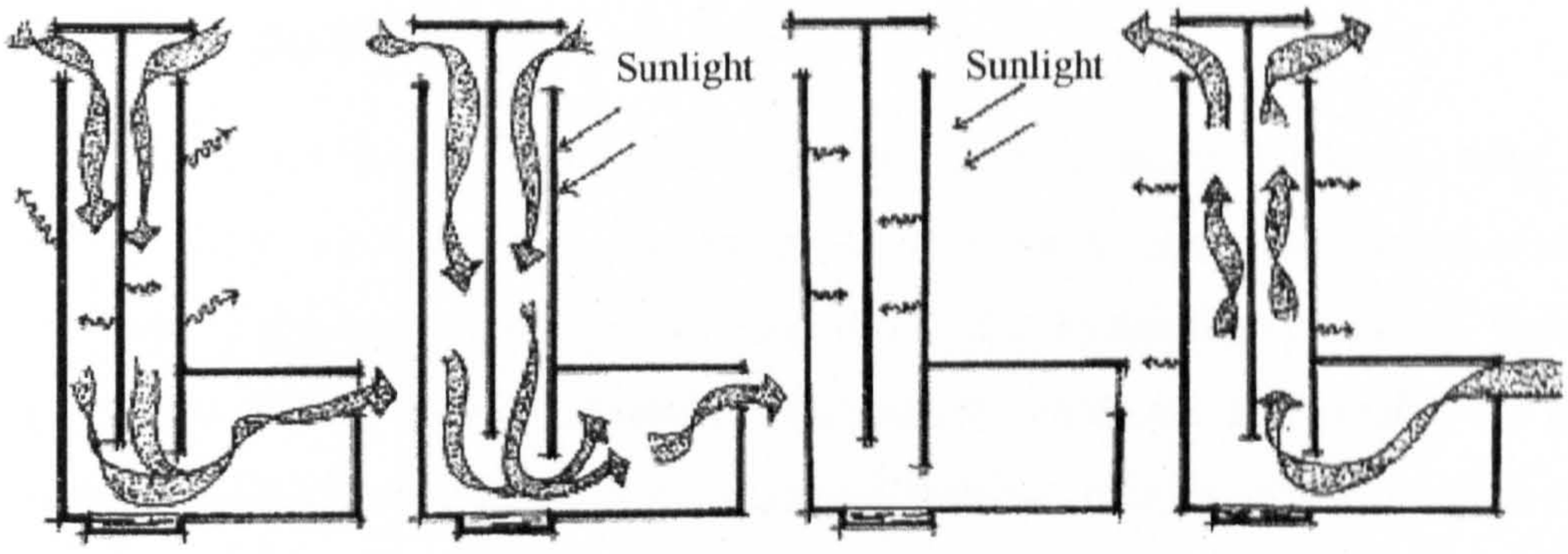

Figure 3.18: The function of wind-catchers over 24 hours a day in summer time
Source: Al Wakeel and others, 1989

In both hot-dry and humid climates wind-catchers also function as selective ventilators in vernacular architecture but are very different, with sliding wooden panels in the side walls of the house to control[38] the airflow that can close during sand storms. (Figure 3.19)

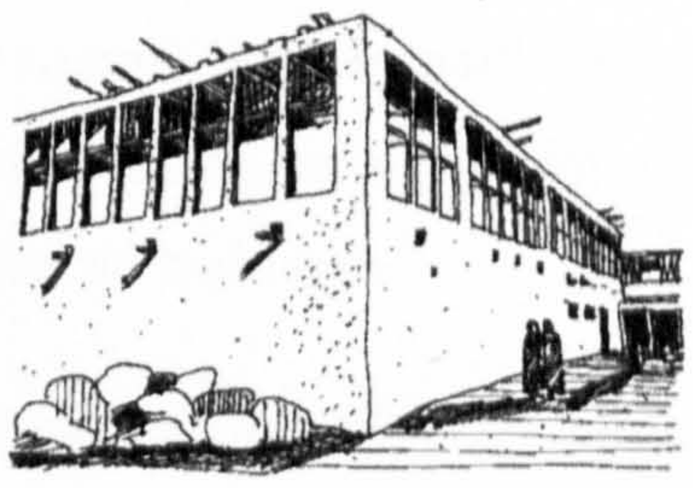

Figure 3.19: *Badgirs* in Qatif, Eastern of SaudiArabia
Source: Kizer, T. 1984

Warren and Fethi described the *Badgir* in Baghdad traditional houses as:

> Badgirs are essentially practical devices; therefore they were built in many forms. A great deal of ingenuity was expended in providing them and the ability of the householder to ventilate his cellars depended upon the orientation of the house and the extent to which its walls projected up into the main air-stream.[39] (Figure 3.20)

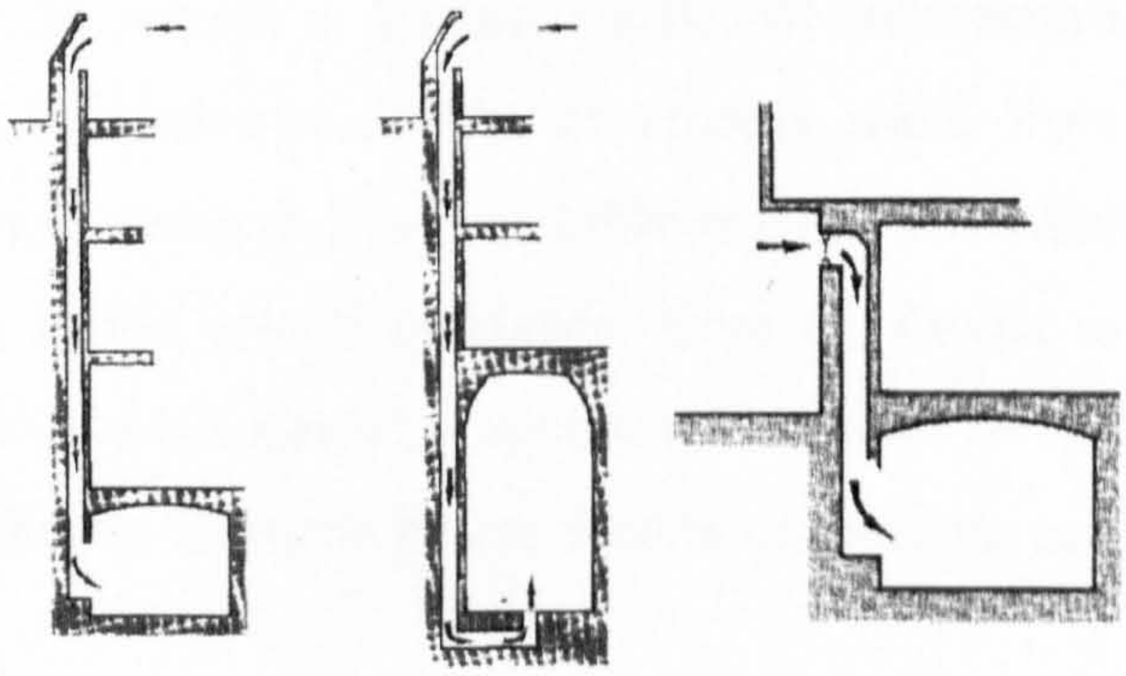

Figure 3.20: *Badgirs*, roof scoops and outlets in wall and floor
Source: John Warren and Ihsan Fethi (1982), p.86

[38] Kaizer Talib, (1984) *Shelter in Saudi Arabia*
[39] John Warren and Ihsan Fethi, Traditional Houses in Baghdad (1982), p.86

3.3 Decoration

Decoration forms an important part of the building forms in Mosques, religious buildings as well as residences. The reason for that was to cover the surface area in a meaningful way and so reduce the monotony and enhance the spectators' feeling of cultural solidarity as well as stating the owners' character and wealth. It thus ensured the identity of a space and expressed fashion. It is, in effect, hard to find any Arab architectural heritage without decorative elements. The Arab decoration was found in many craft arts such as plasterwork, carpentry, pottery, metals, and textiles. The decoration was used in geometric form graphics in the palaces and houses. Also other shapes were introduced in decorations such as stars, half stars, triangles, octagons and others. They were famous for writing on marble from those regions. There are many other examples found in the old buildings.[40]

Various geometrical design decorations of the Arab houses are used, both inside and outside: here we shall concentrate on the interior decoration of these residences.

Carved Plasterwork:

Gypsum-plaster and lime plaster were common on the coast and in mountainous regions for rendering both the exterior and interior faces of buildings, walls as well as ceilings. However, the arduous technique of lime-plaster is now abandoned.

The gypsum plaster fanlight called *Qamaria* can be seen anywhere in Yemen and is the most striking feature in Yemeni traditional architecture. It is located above the windows.[41] The *Qamaria* consist of screens made from coloured glass set in gypsum panels (known in San 'a as *takhrim* lace embroidery). The earliest and best examples are in the central highlands, from Al Tawila to Sana'a.[42] In the oldest examples, the (wooden frame) proportion of the *takhrim* reflects, in particular, those set on the alabaster fanlights by the double or multiple perforation models. (Figure 3.21)

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[40] Jodi, M. (1998) *Al amarah Al arabiah Al islamiah,* pp.20-40
[41] Jamal Mojahed, 'Qamaria: Magic of Yemen Architecture', *Al Thagafah magazine,* 16th August 2003:123
[42] Paul Oliver, (1997) *Encyclopedia,* (p.398)

Figure 3.21: *Qamaria*, Yemen
Source: Veronica Garbutt, 2002 and Jamal Mojahed, 2003

In the Najd region of Saudi Arabia, such as Riyadh and Unayzah, gypsum plaster was used in the interior for spaces such as the living and reception rooms. In contrast with the basic white walls of other rooms, the walls of the *Diwaniyah*, or reception room are covered with stucco or whitewash and decorated around niches and openings with gypsum plaster or clay patterns[43] (Figure 3.22). On interior wall surfaces rich decorative outlines surround niches that were used to display different sizes of coffee pots. The niches are located near the *Wijar*, the place where coffee was served (Figure 3.23). The decorative feature is quickly carved in the plaster with a putty knife, when it still soft (Figure 3.24).

Figure 3.22: Gypsum plaster used in an interior space, the *Diwaniyyah*, or reception room, Unayzah, Saudi Arabia

[43] Mousalli, M. and Others (1977) An Introduction to Urban Patterns in Saudi Arabia: the Central Region Art and Archaeology Research Papers, University of London Press p.45-46

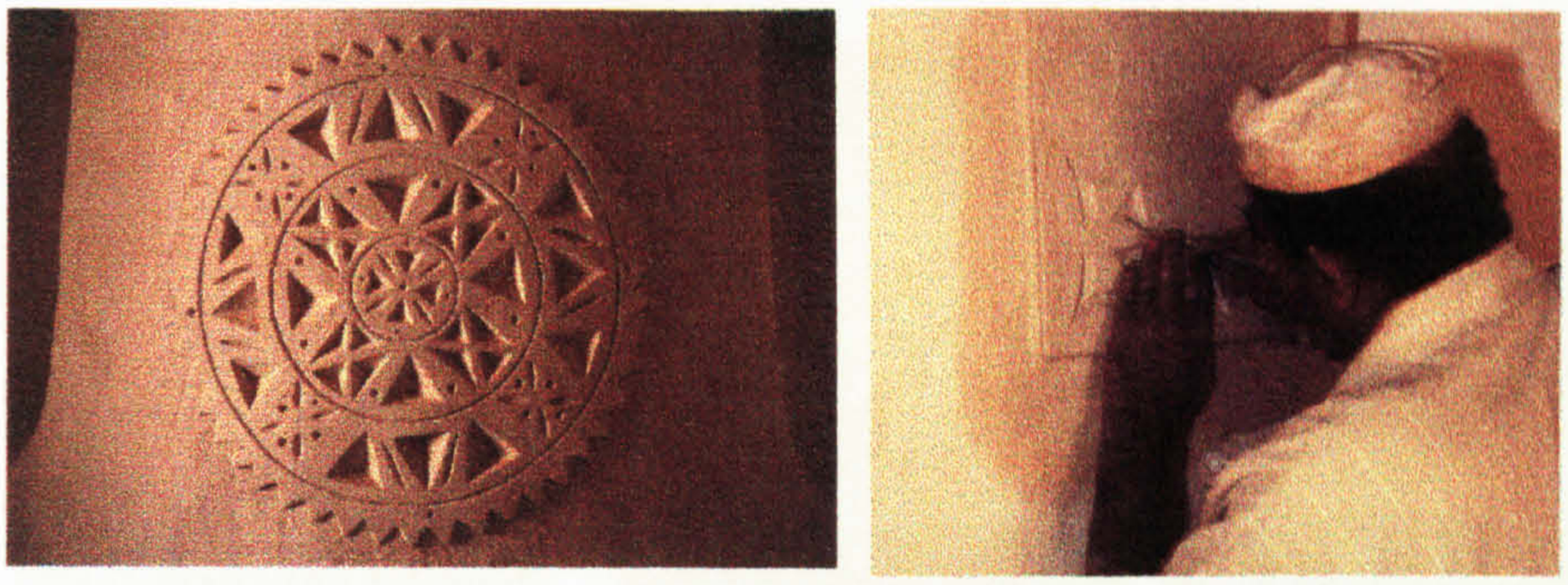


Figure 3.23: quickly carved the plaster with a putty knife, when it still soft
Source: Facey. 1997

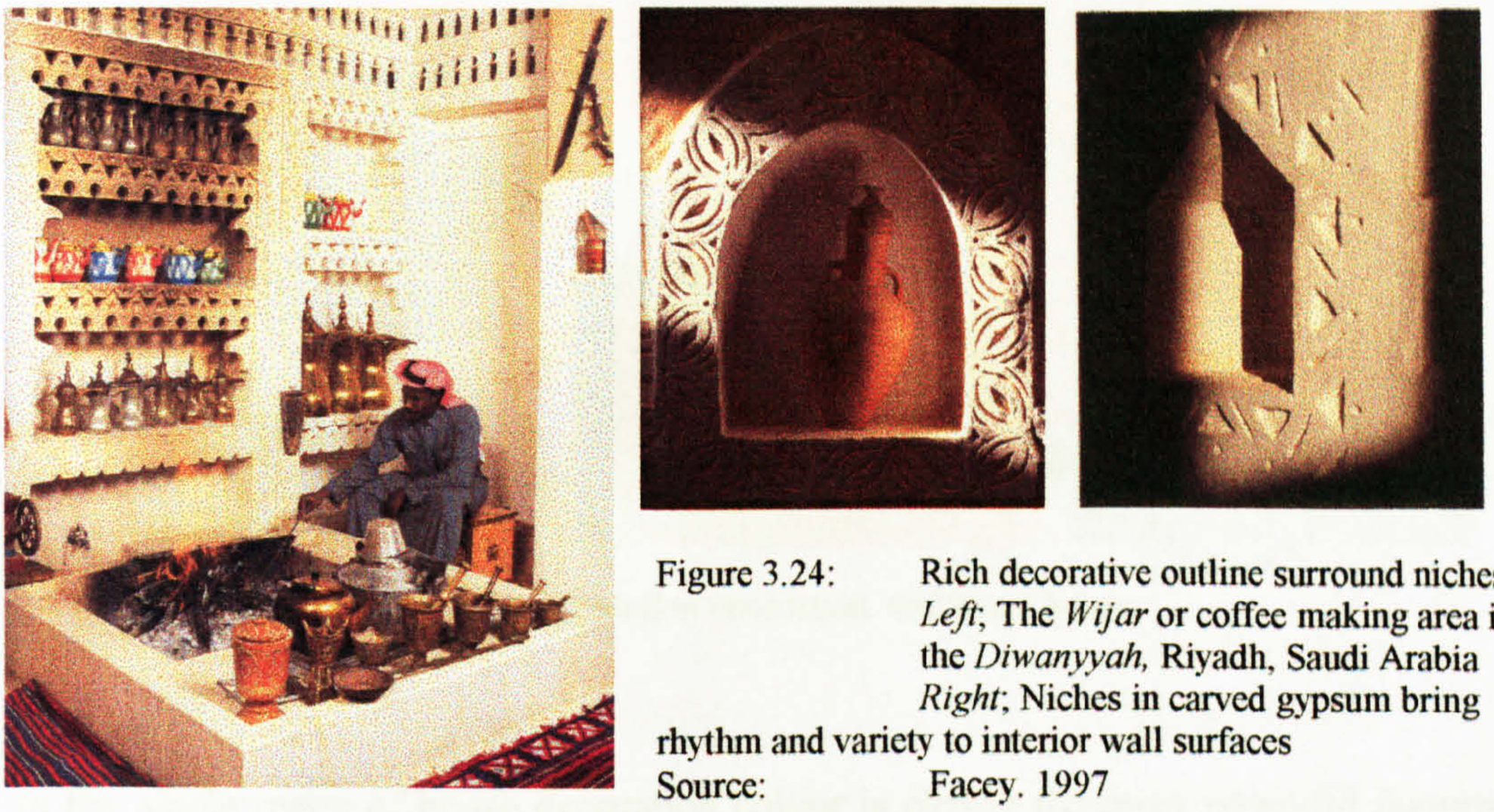


Figure 3.24: Rich decorative outline surround niches *Left*; The *Wijar* or coffee making area in the *Diwanyyah,* Riyadh, Saudi Arabia *Right*; Niches in carved gypsum bring rhythm and variety to interior wall surfaces
Source: Facey. 1997

Wood Decoration

In Arab houses, wood usually used for doors, jambs or lintels of openings, windows, and ceilings etc, is generally decorated with delicate geometric designs[44] (Figure 3.25). Also highly complex and decorative are the ventilation systems of the *Rowshan* or *Mashrabyyah,* which crowd the façades of some old Arab houses, as seen before in section 3.2.5.

[44] Mousalli, M. and Others (1977) An Introduction to Urban Patterns in Saudi Arabia

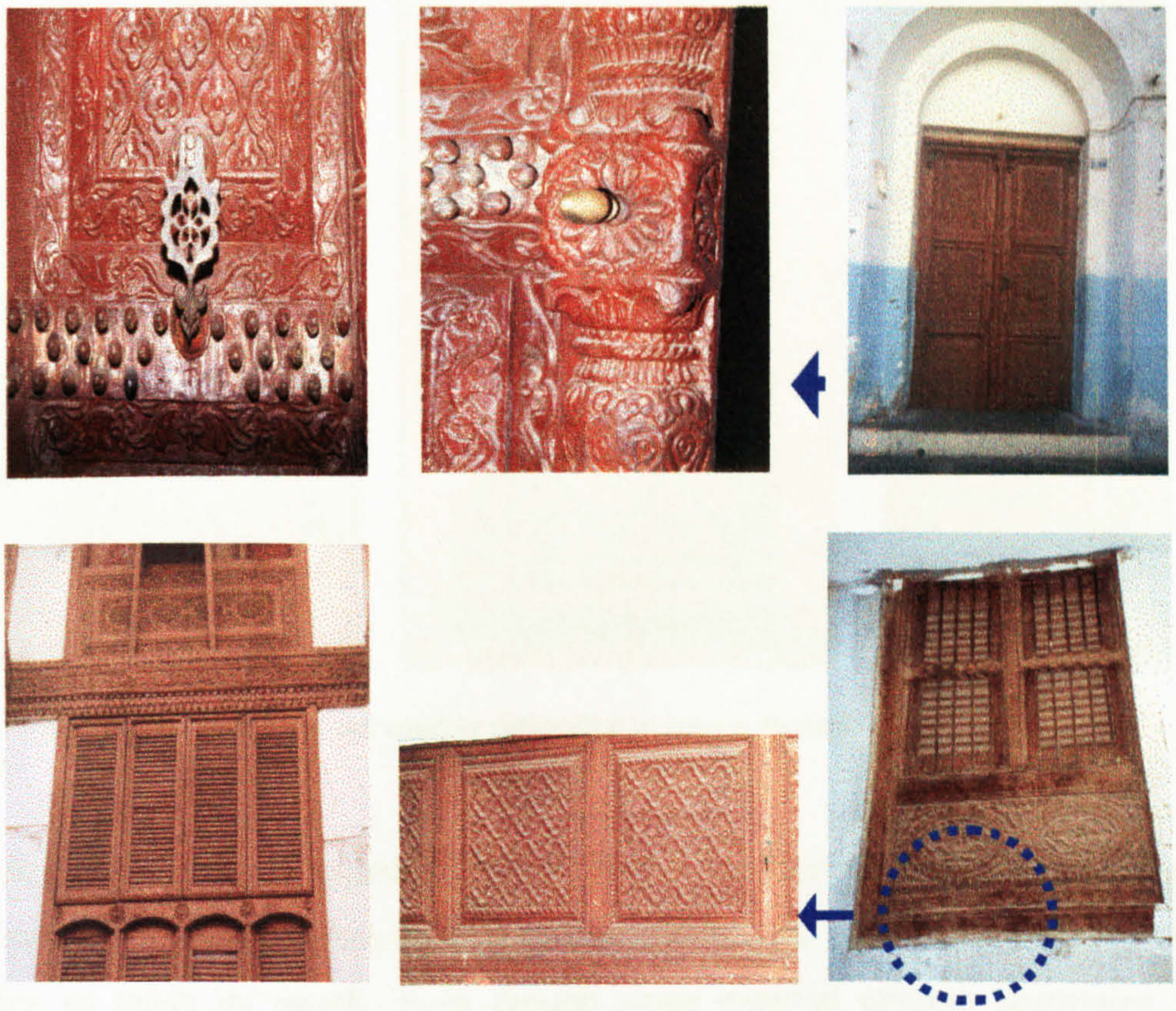


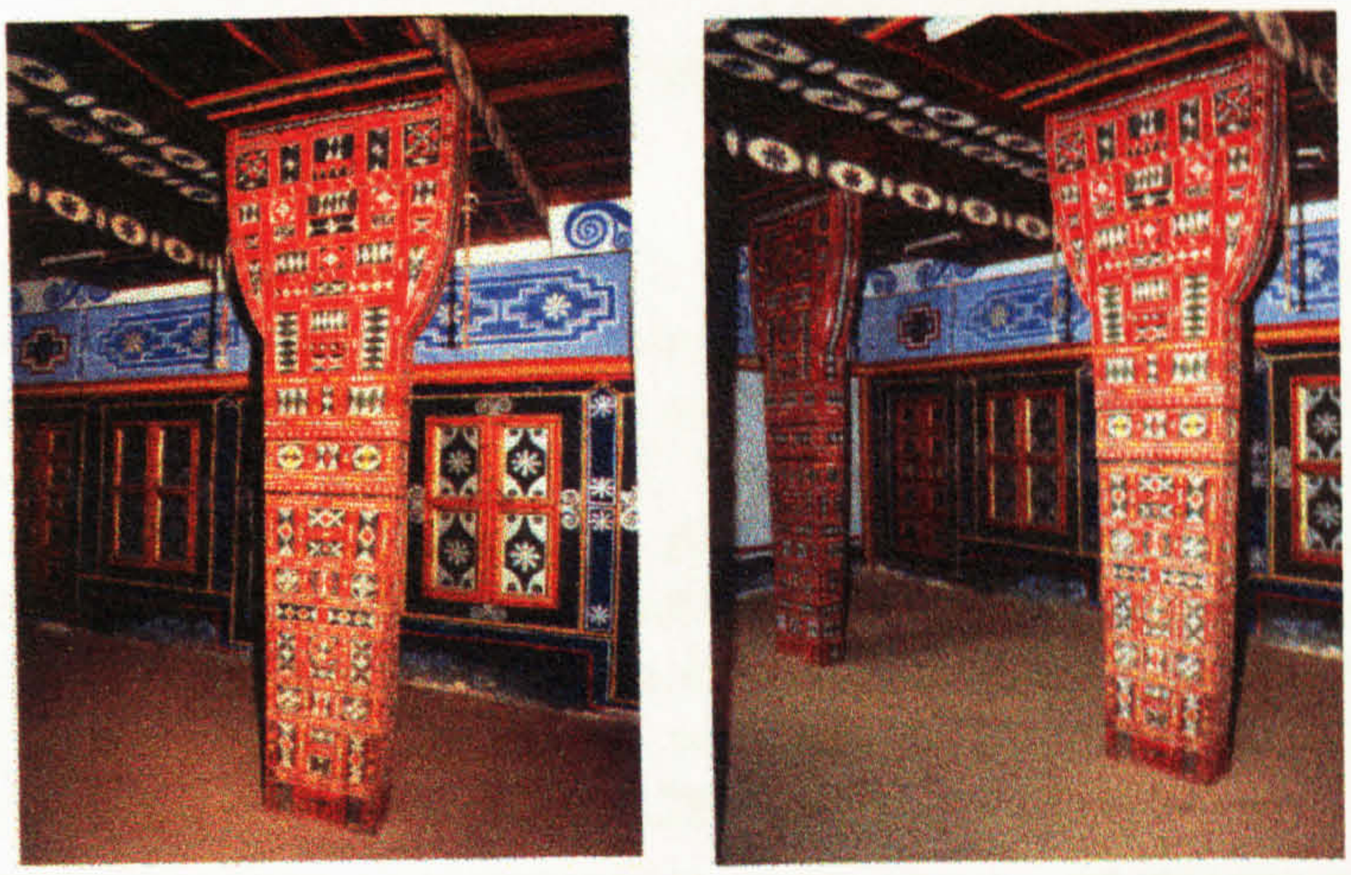
Figure 3.25: Wooden door and window decoration, traditional house

Colour

In the whole realm of house decoration colour is clearly the most powerful feature. Contrasting colour is provided by vivid dark blues, reds, and greens of elements against a light background, perhaps introduced to compensate for the bleached harshness of the desert landscape. (Figure 3.26) In general, simple colour schemes derive from the local availability of coloured earth or plant pigments, which are used for painting doors, windows, ceilings and interior wall surfaces.

Figure 3.26: Wooden door and window decoration in colour, Riyadh
Source: Facey. 1997

In Asir, the Southern region of Saudi Arabia, colour decoration is of high importance for obvious reasons. It is to the interior that one would look for the practice to reach its zenith. Even though some external column decoration is practical, it has not attained the level of profligacy in colour or pattern achieved in the interior decoration due to the problem of maintenance. In the hieratical order, space inside the house is usually regarded as more important and therefore expressed by the use of colour painting on walls and ceiling, including decorative motifs (Figure 3.27).



Colour paintings on walls and columns, Asir, Southern Saudi Arabia
Source: Author, 2004

Colour paintings on walls, Asir, Southern Saudi Arabia
Source: Aal Zulfah, M. 1994

Colour paintings on ceiling, Morocco
Figure 3.27: The Colour decoration of Arab house

John Warren and Ihsan Fethi discussed the internal decoration of timber painting in Baghdad traditional houses as follows:

> Internally timber was generally painted and colour heightened the patterns made by the geometry of the timberwork. Applied lozenges shaped designs were used as centre-pieces on ceilings and cornices. The heads of walls were painted as were protected surfaces in *tarmas* and under cornices. Green was used up to dado height in courtyards and sometimes an *iwan* was gaily coloured. Rarely an enthusiastic householder would enliven his entire courtyard with green, blue, soft ochrous browns and white.[45] (Figure 3.28)

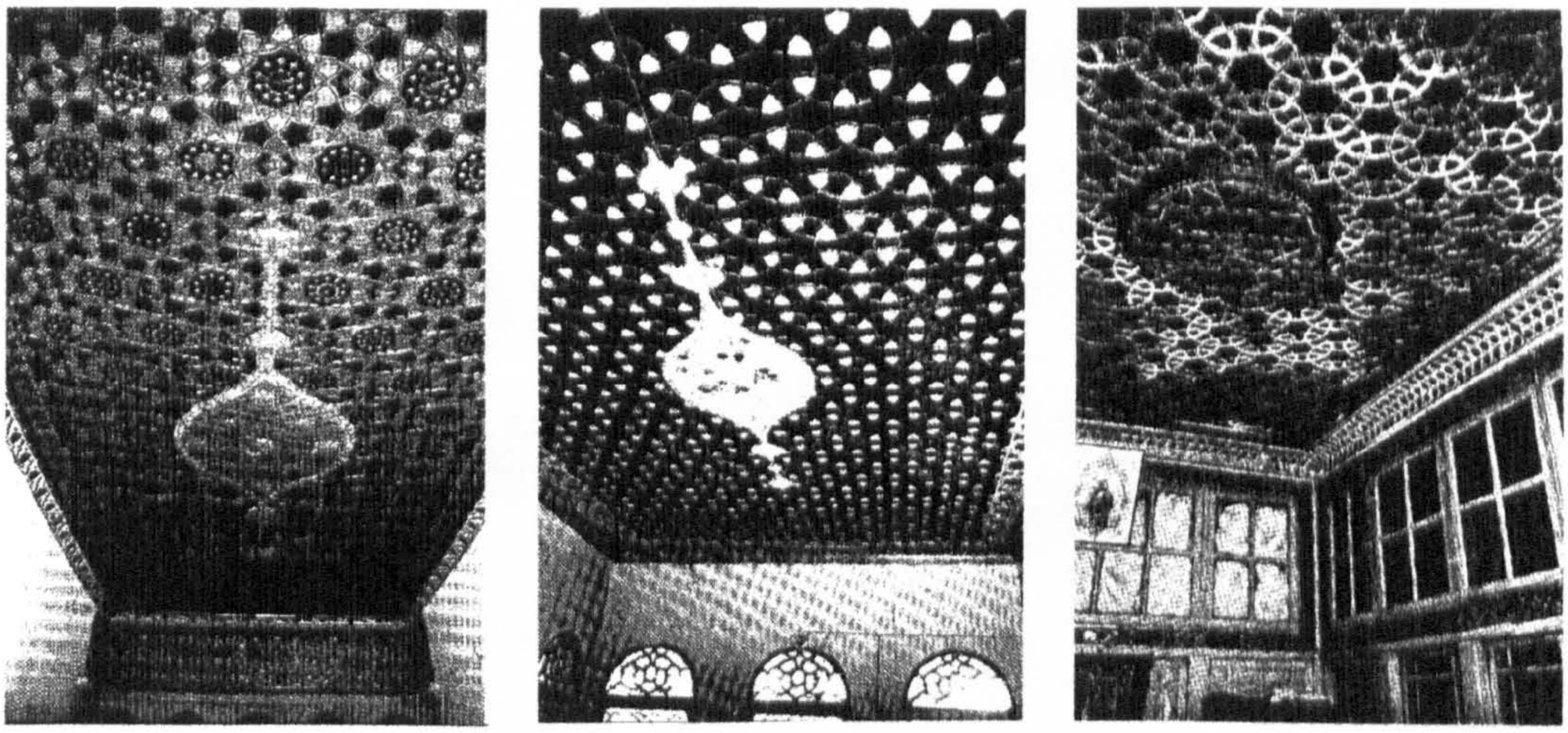


Figure 3.28: Highly finished ceilings, Baghdad traditional house
Source: Warren and Fethi (1982), P.125-126

3.4 Arab Traditional House Forms

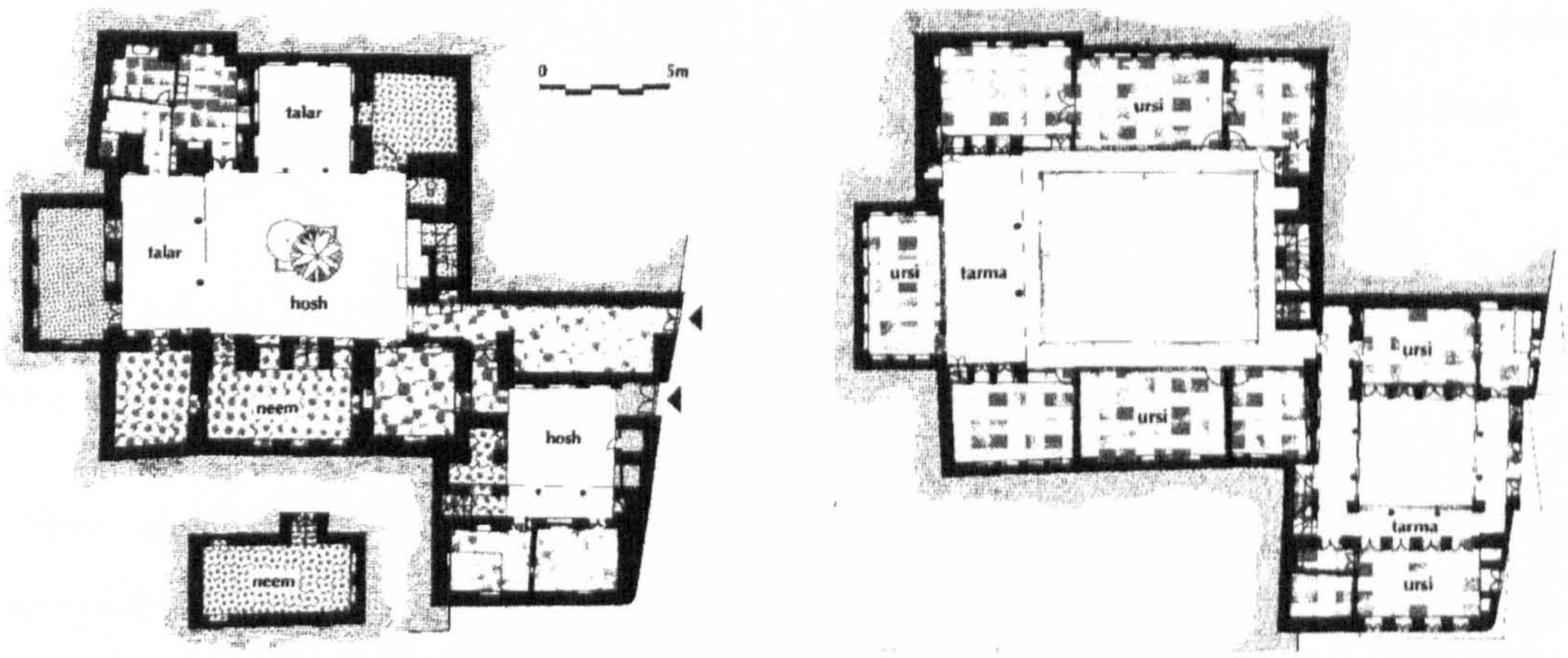
3.4.1 Baghdad in Iraq

Warren and Fethi [46] pointed out that the internal designs of Baghdad traditional houses were commonly based on the existence of a square or rectangular shaped courtyard (*hawsh* or *fina*). This courtyard was the heart for all life's activities, connections and movements in the house. The plants and trees, as well as a fountain, which was placed at the centre of the courtyard, helped to raise the level of humidity and cool the air within the house. In addition to the main courtyard the traditional Baghdad houses included one or more courts. Warren and Fethi also indicated that every house in Baghdad was a private enclosure isolated from its

[45] John Warren and Ihsan Fethi, (1982) Traditional Houses in Baghdad, p.123
[46] John Warren and Ihsan Fethi, (1982) Traditional Houses in Baghdad, p.42-97

surroundings by solid and high walls, which provided total privacy for occupants as well as a contrast to the busy life in the street.

Generally the buildings were the same height with some windows in the lower storey. Elaborate complex windows were found in the higher stories. Usually the houses in Baghdad were divided into two zones, the first zone was for males and their male guests and was called *Diwankhanah*, and the second zone was for women and female guests and called *Haram*. The two zones sometimes had their own entrances. (Figure 3.29)



Ground and basement First floor

Figure 3.29: Ground and first floors, Baghdad traditional house
Source: John Warren and Ihsan Fethi, (1982), p.52

The *Mejaz* (entrance passageway) led into the courtyard in such a way that nothing of the life of the household could be seen from outside. This usually was shielded by a break in alignment (a turn) or by a screen (Figure 3.30). The ground floor was characterized by perhaps one or more *Iwans* that surrounded the main courtyard. The *Iwan* had three walls and an open front towards the courtyard. (Figure 3.31)

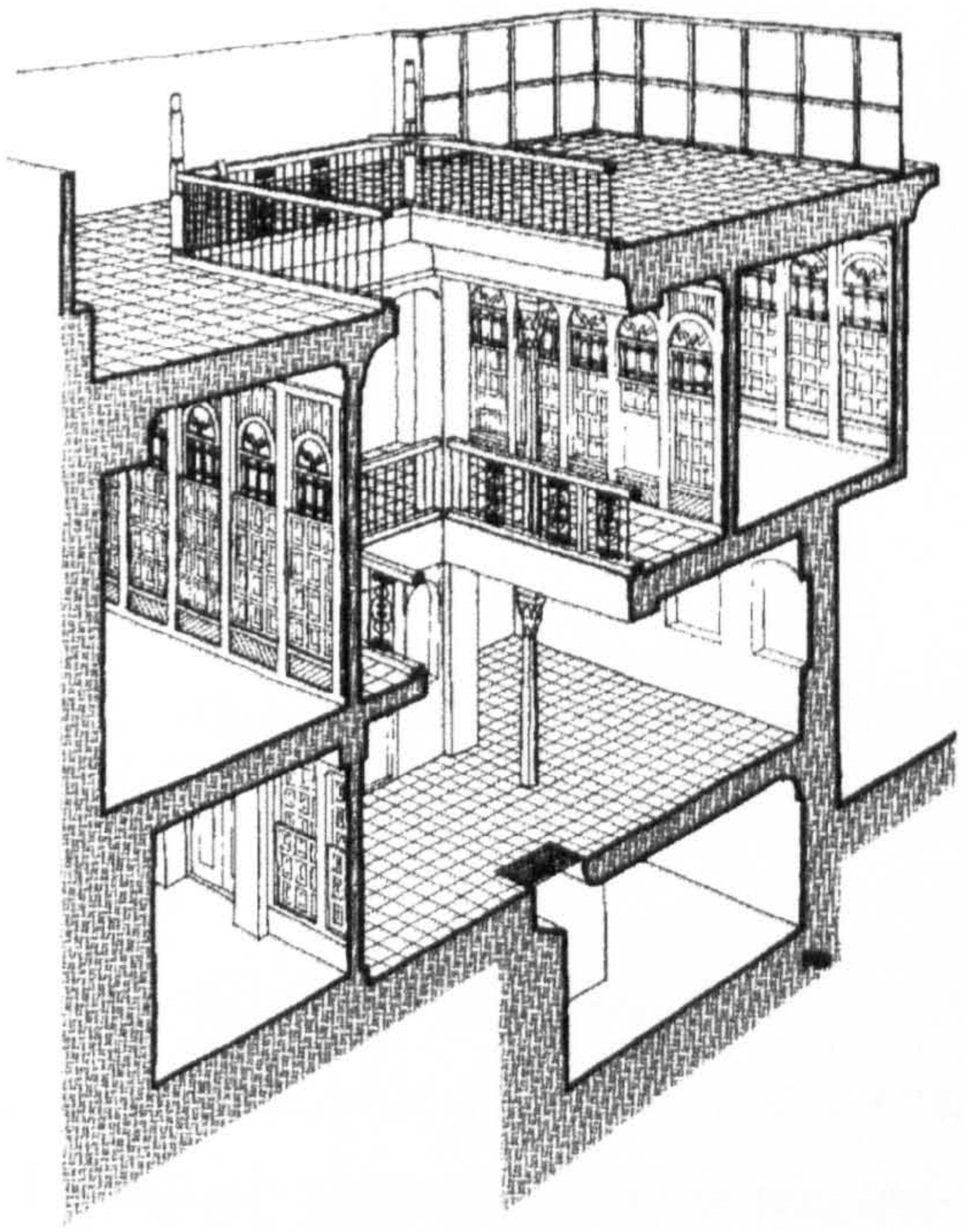


Figure 3.31: The essential form of the Baghdad traditional house
Source: John Warren and Ihsan Fethi, (1982), p.44

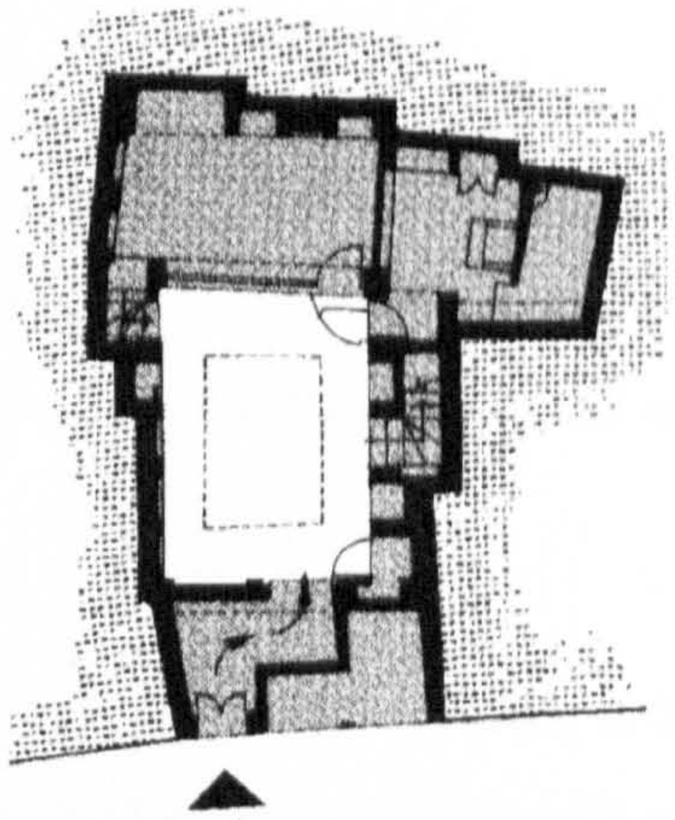


Figure 3.30: Ground floor, a small house of Baghdad.
Source: John Warren and Ihsan Fethi, (1982), p.46

Many rooms on the upper floor were lined around a colonnaded balcony (*tarmah*) overlooking the courtyard. To provide complete privacy from outsiders all the rooms were oriented towards the inside. On the ground floor the movement from one part to another within the house was though the courtyard as well as via the balcony on the upper floors. The roofs were used for sleeping at night. Therefore no house could look down upon its neighbours or look into the courtyard of another because the privacy of the family at night was very essential. The orientation of Baghdad traditional houses was an inward architecture with some degree of outward. So the house forms were quite different from that of traditional houses of Makkah. In addition the internal design of Baghdad traditional houses was emphasised by more than the façades. Privacy was achieved in the houses of Baghdad by separating the public and family quarters. Also the two living quarters either have separate entrances, or one entrance with some shielding element or bend in the entrance passageway or with internal link.

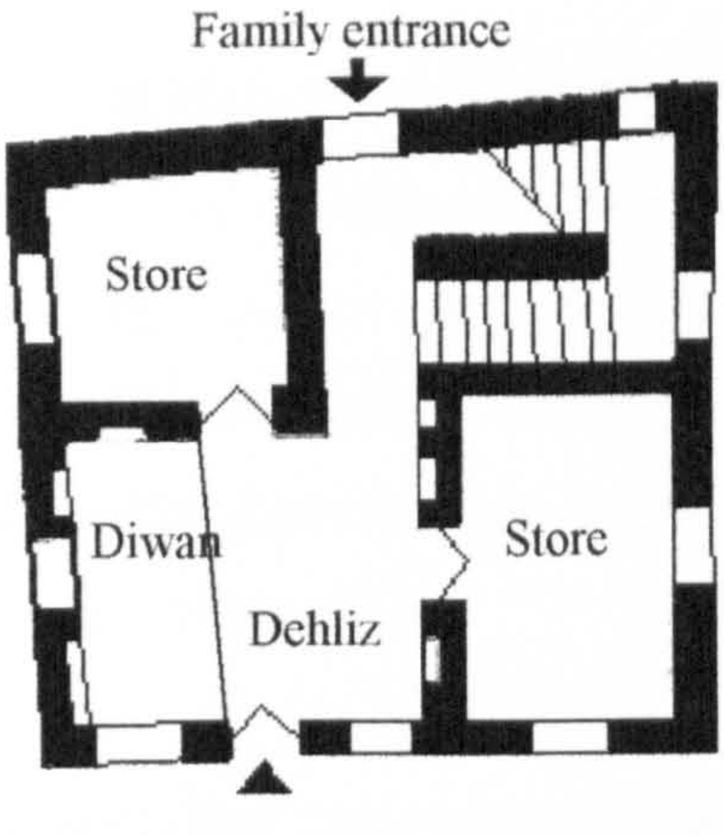
3.4.2 Suakin in Sudan

Greenlaw[47] pointed out that the Suakin traditional houses were very similar to the Turkish traditional houses. Most of these houses were built before 1860. He indicated that he found the same traditional design in Makkah. Greenlaw described several large traditional mansions as well as several small traditional houses of Suakin.

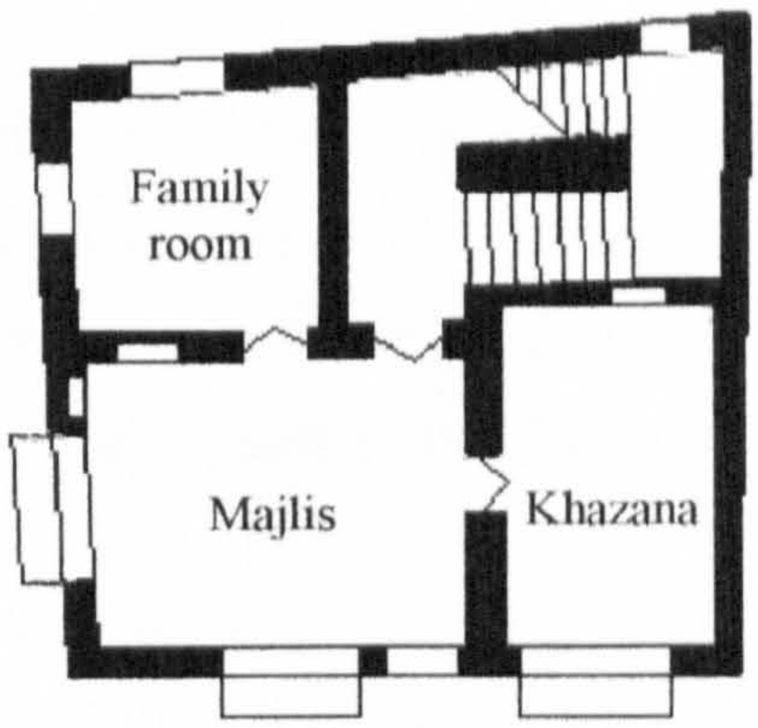
The common form of Suakin traditional house was the small plan house, which is of more interest to us (Figure 3.32). The basic plan of the traditional small house is as follows:

- Ground floor: had a main entrance, *Dihliz* (entrance hall), *Diwan* (male guests), storeroom, and the stairway leading to the upper floors. The house would have a side entrance adjacent to the stairway that was used by family members.
- First floor: was a family section called *Harim*. This floor consisted of a *Majlis*, a storeroom, and *Khazanah* (a withdrawing room).
- Top floor: an enclosed terrace (*Kharijah*) was found over the *Majlis* below. The Kitchen and a covered space called *Darwah* were over the other two rooms. The façades of Suakin traditional houses were characterized by *Rowshan* and shuttered windows. There were many similarities between the Makkah traditional houses and Suakin traditional houses. As Greenlaw also pointed out, the influence of Makkah architecture is quite clear in the house design; for example, the *Rowshan* and *Kharijah* were used. In addition the stairway was located at the far end of the house. The side entrance for guests on the ground floor used to lead directly to the upper floor, which was used by family members as the main entrance. The living quarters were on the upper levels and the public reception area on the ground floor.

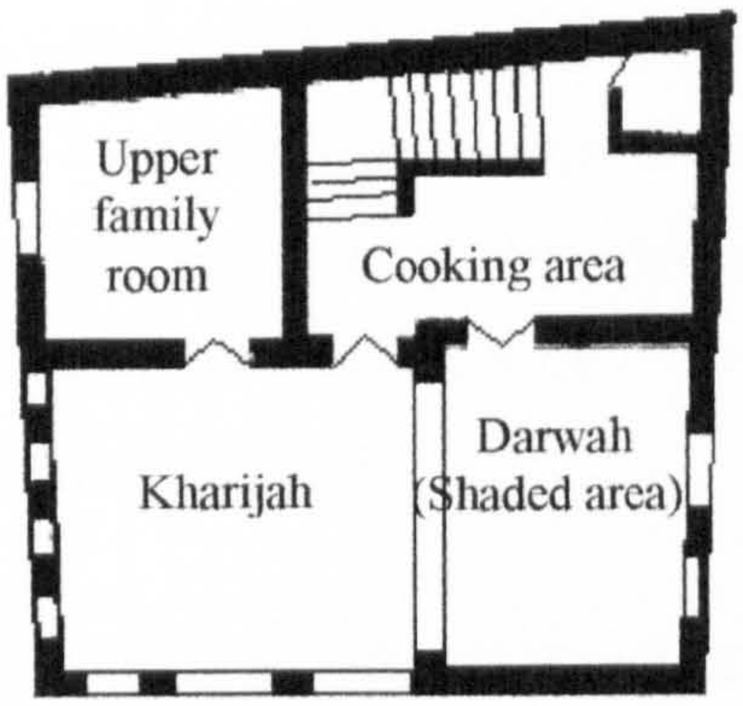
[47] Jean-Pierre Greenlaw, (1976) The Coral Buildings of Suakin, Oriel Press, p.38



Ground floor



First floor



Top floor

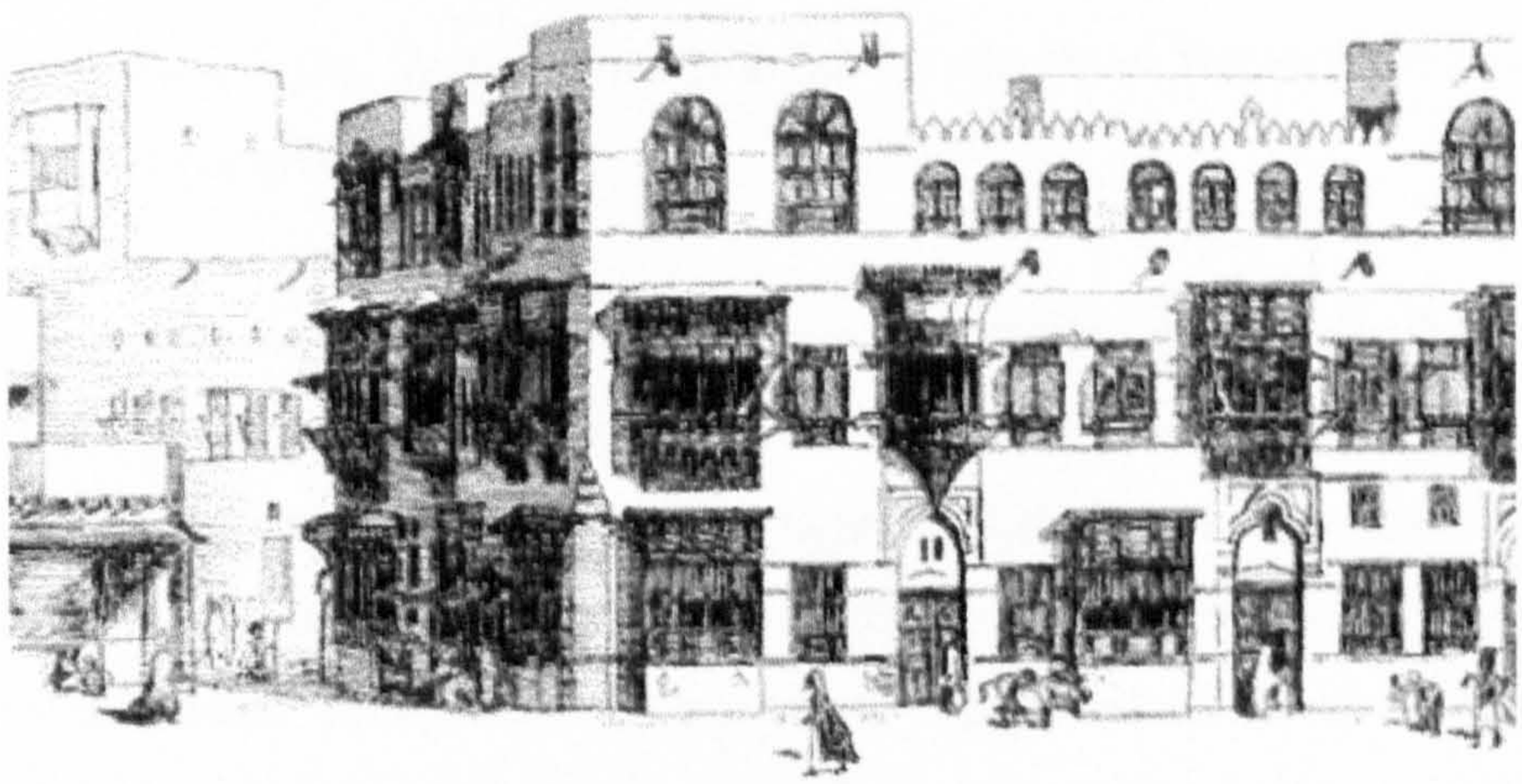


Figure 3.32: Traditional house in Suakin, Sudan
Source: R. B. Serjeant, and Ronald Lewcock, (1983)

3.4.3 Sana'a in Yemen

Most of Sana'a traditional houses are more than five stories high, square tower houses with one or more entertainment rooms at the top.[48] The ground floor is mainly kept for timber storage and animals. *Mathan* (a stone grinding mill) are found on the ground floor. The *Dehliz* "entrance hall" leads to the *Daraj* "a stone staircase". (Figure 3.33)

Usually the first floor contains a large space, which is used as a family living room, into which guests are habitually received. This floor also contains a grain storeroom called "*Mahzan*" and a bathroom. The first human habitation level is the second floor, which has the main family room called "*Diwan*" and other living and sleeping rooms. The floor below contains the kitchen, which can serve either up or down, as well as containing a bathroom and large storage room for house needs. One or more multi-purpose rooms are found on the top floor, which are used for dining, sleeping or entertaining guests.

Female family members are not limited within a particular part of the house, but the second floor from the top floor, which contains the kitchen, is usually their normal domain more than any other. This floor is often provided with an adjacent courtyard with high screen walls. So females of the family can enjoy the sunlight as well as washing and drying their clothes.

As mentioned above, Sana'a traditional houses are tall buildings, with five storeys. In addition the family living area, as the kitchen, is located on the upper floors. However the stairway is located in a far isolated corner of the house. The façades of Sana'a traditional houses are decorated with rich patterns while the façades of Makkah traditional houses are decorated on woodwork such as *Rowshan* or *Mashrabyyah*, windows and doors as well as stonework such as arches and brickwork such as "*Shawabeer*". Therefore from the above description, the Sana'a traditional houses are quite similar to Makkah traditional houses.

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[48] R. B. Serjeant, and Ronald Lewcock, (1983) Sana'a – an Arabian Islamic City,, pp.436-500

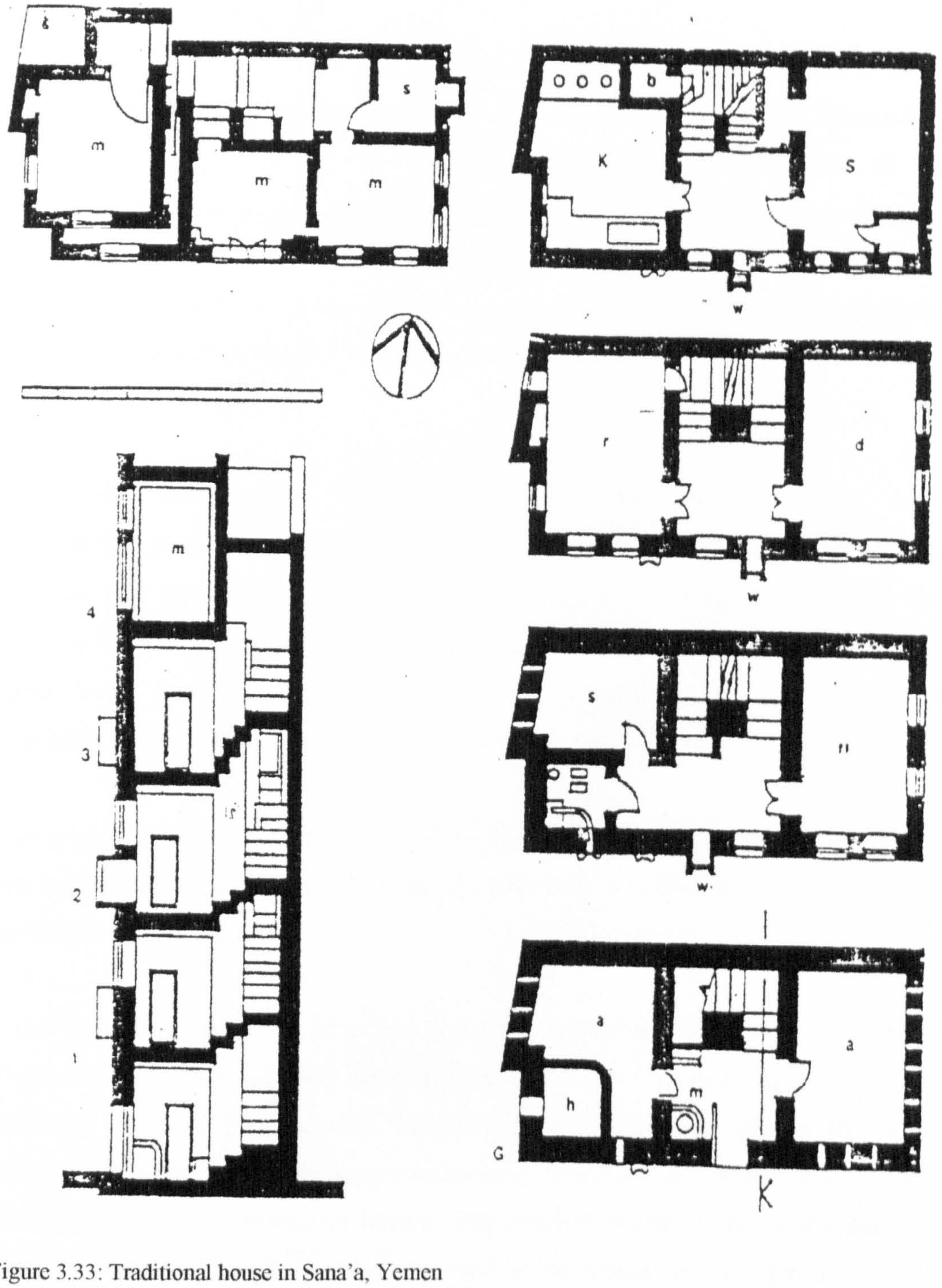

Figure 3.33: Traditional house in Sana'a, Yemen
Source: R. B. Serjeant, and Ronald Lewcock, (1983)

3.4.4 Cairo in Egypt

In the seventeenth and eighteenth centuries A.D the central court was a basic element in the design of Cairo plan houses.[49] The ground floor, called "*Salamlik*", contains the males' reception hall, servant's rooms, kitchen and bathroom. In the design of Cairo plan houses, two *Iwans* are in the main reception hall and open into a portico on one side of the court. This reception hall is used for receiving the male guests in the winter while the portico is used on summer nights. A small room called "*Khizannah*" is located at one end of the reception hall and leads from it to the female guests' reception.

The upper floor called "*Haramlik*" contains the female reception hall, living/sleeping rooms and bathrooms. Usually these living rooms are on the second floor, as well as a roof garden. These rooms are used as living rooms during the daytime and sleeping rooms at night so they function as multi-purpose rooms. The upper floor that contains family rooms is characterized by *Mashrabyyahs* overlooking the central court and the main reception hall on the ground floor.

The greater emphasis is given to the inside rather than to external elevations, where the main reception hall is most decorated by the best available means to reflect the social status of the family.

From the above description it is clear that there is a correspondence of elements in Cairo traditional houses and Makkah traditional houses, that the roof terrace *Kharijah* in Makkah somewhat corresponds with the roof garden in Cairo. *Mashrabyyahs* located on the outer windows in Cairo are very much related to the *Rowshan* in Makkah traditional houses. The concept of the privacy and separation between male and female are also observed in the traditional plan houses of both Cairo and Makkah.

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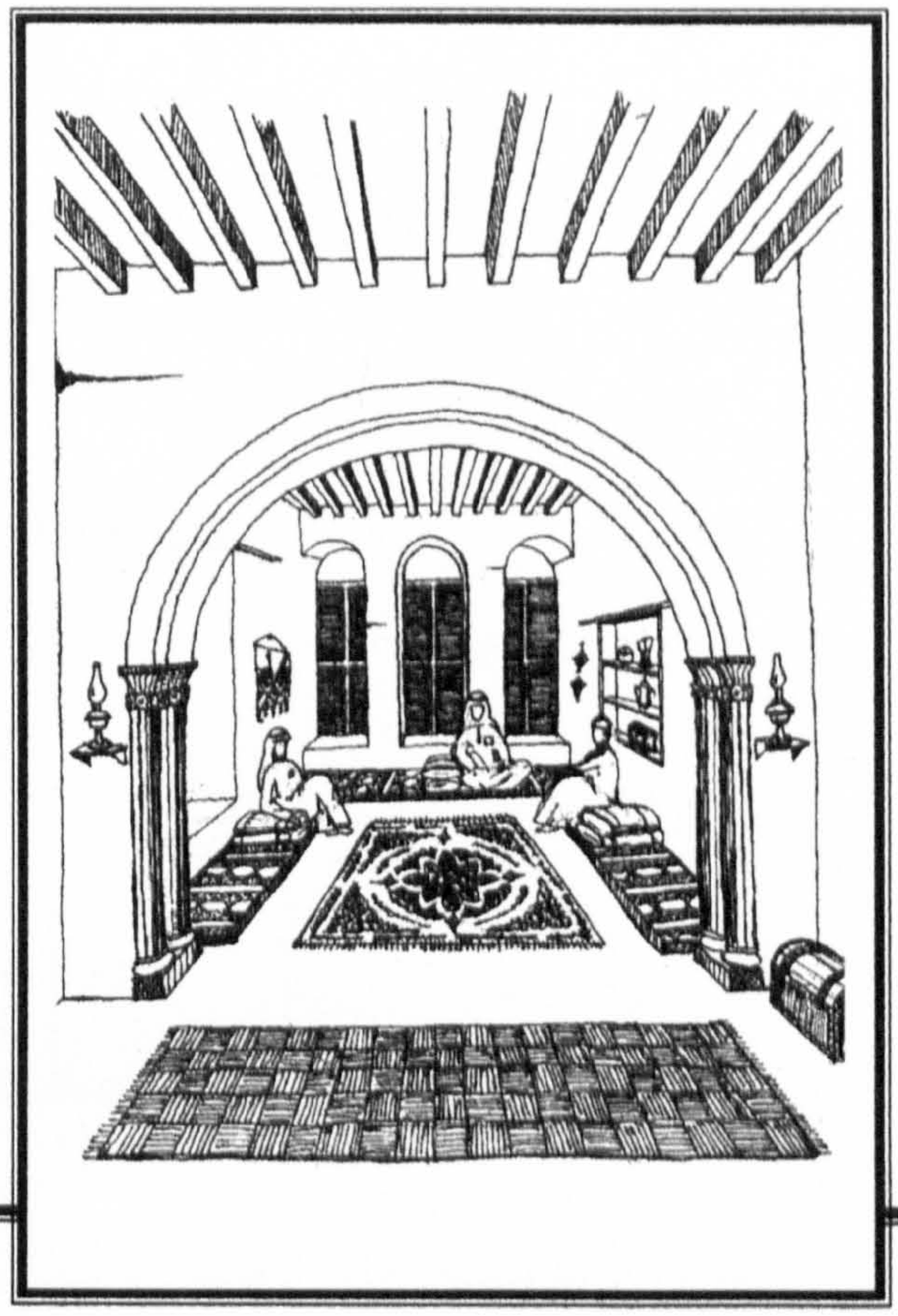
[49] Tawfiq Ahmad Abdul-Jawwad, (1970) Tarikh al-Imarah wa al-Funun al-Islamiyyah (History of Islamic art) (Cairo, Press, vol. III), pp.190-201



CHAPTER 4

THE MAKKAH TRADITIONAL HOUSE

4.1 The Makkah House in its Setting

4.2 The Interior Spaces of Makkah Traditional Houses

- 4.2.1 *Dehliz* (entrance hall)
- 4.2.2 *Maq'ad* (sitting room)
- 4.2.3 *Majlis* (guests reception)
- 4.2.4 *Suffah* (ante-room)
- 4.2.5 *Makhlawan* (resting place)
- 4.2.6 *Muakhkhar* (living room)
- 4.2.7 *Bay't alma* (water closet)
- 4.2.8 *Mabit* (night room)
- 4.2.9 *Kharijah* (terrace)

4.3 Makkah Lifestyle

- 4.3.1 Family Structure and Roles
- 4.3.2 Internal and External Lifestyle

4.4 Materials and Furnishings

- 4.4.1 Interior Treatment
  - 4.4.1.1 Floors
  - 4.4.1.2 Internal Walls
  - 4.4.1.3 Ceilings
- 4.4.2 Woven Covers
- 4.4.3 Interior Colours
- 4.4.4 Furniture
  - 4.4.4.1 Fixed Furniture
  - 4.4.4.2 Moveable Furniture

4.5 Plan Typologies

- 4.5.1 The Simple Plan Houses
- 4.5.2 The Compound Plan Houses
- 4.5.3 The Complex Plan Houses

4.6 Reflection

4.1 The Makkah House in its Setting

In terms of the basic urban configuration Makkah city does not differ much from the other Saudi Arabian cities, such as Jeddah, Al Madinah and Riyadh or other Arab cities such as in Tunisia, Morocco and Algeria (Figures 4.1 and 4.2) where the houses were joined together with narrow paths in between. What distinguishes Makkah from the rest are the mountainous nature of the area and the vertical extension of houses around *Al Haram* (big Mosque), a consequence of the need to accommodate the citizens and pilgrims at the same time within very narrow streets with a shortage of public open places.

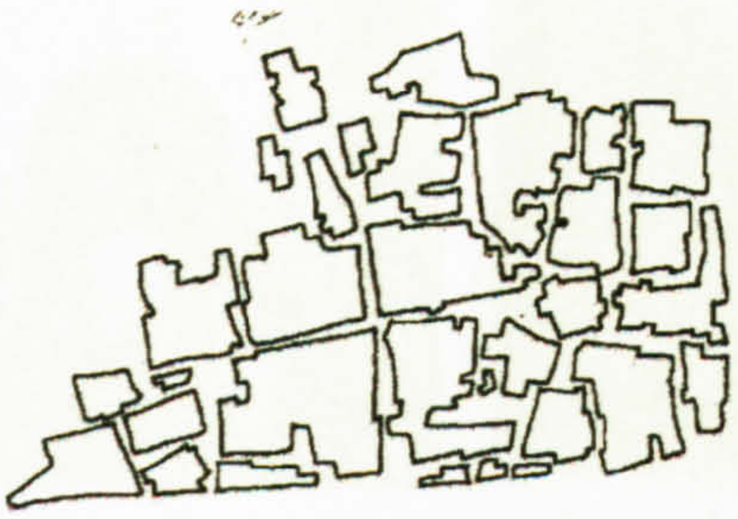


Figure diagram 1

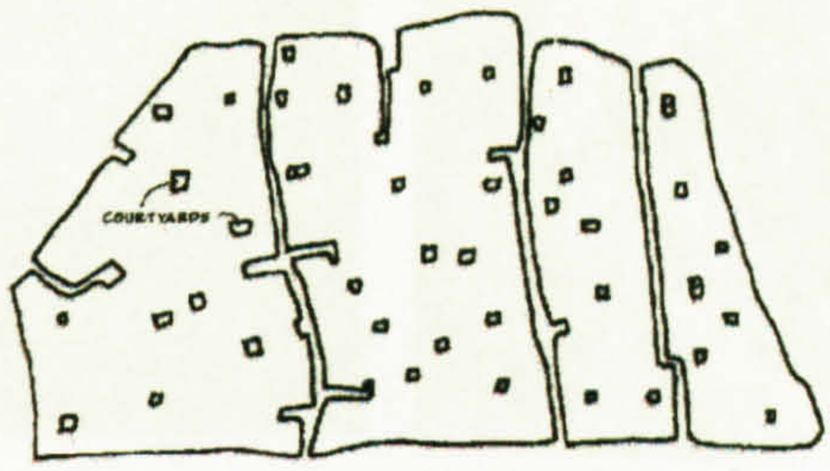
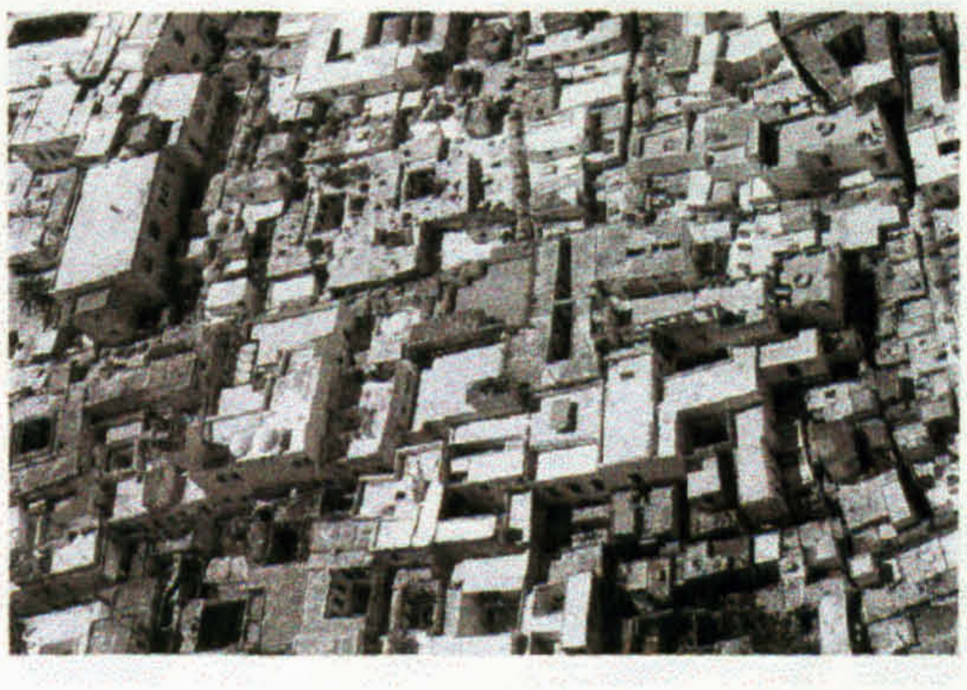
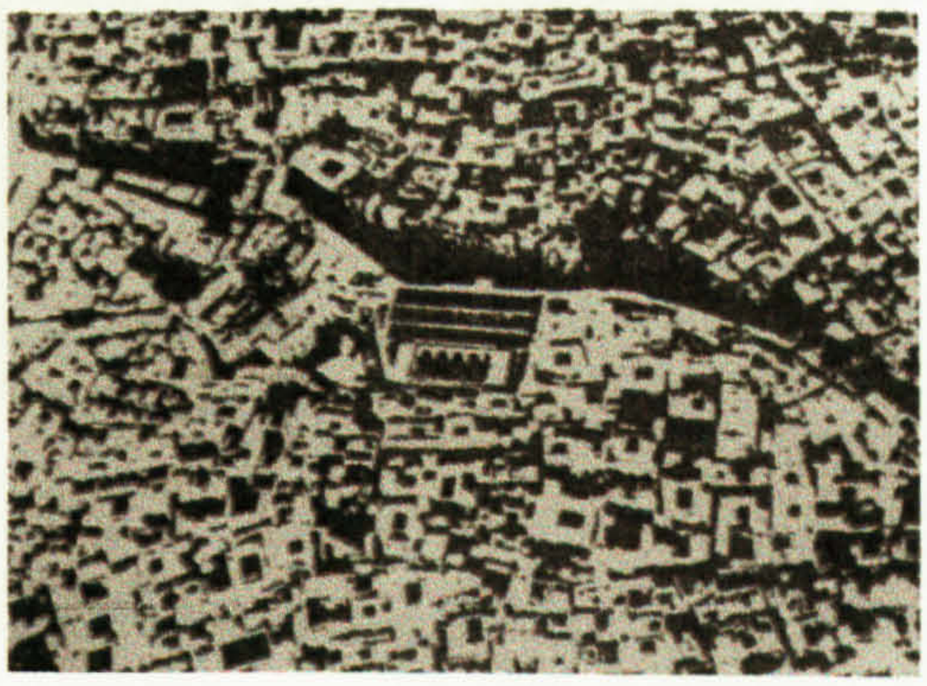


Figure diagram 2

Figure diagram 1: Jeddah
Figure diagram 2: Riyadh
Source: Kaizer Talib (1948), p.8



Tunis
Source: Jameel Akbar (1998), p.14



Fez, in Morocco
Source: Alaa AlDeen Lulah (1985), p.176

Figure 4.1: Traditional pattern, old Arab cities

Riyadh

Algiers

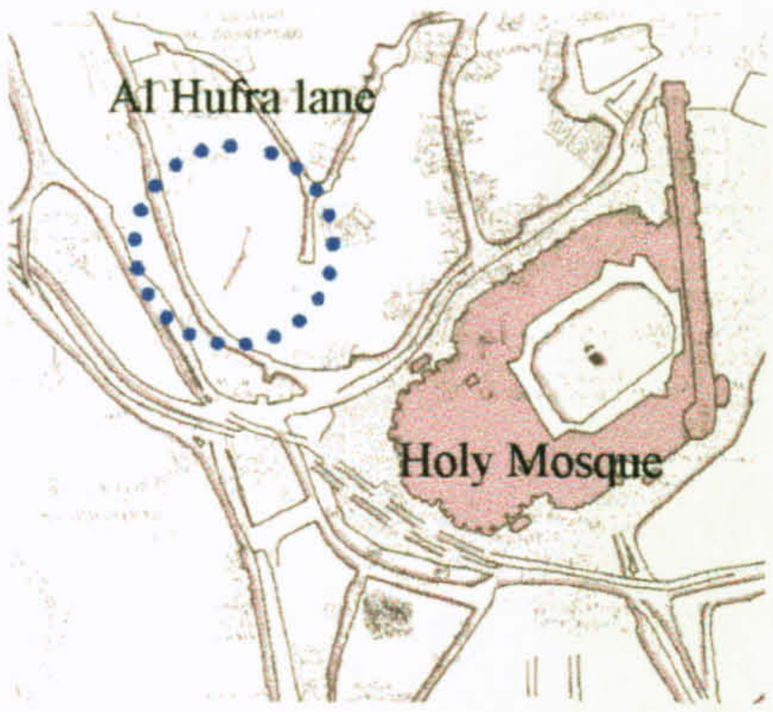
Tunis

Algiers

Morocco

Figure 4.2: Narrow road, old Arab cities
Source: Jameel Akbar, (1998), pp. 10, 171, 215, 239, 234, 244 and 245

Al Hufra lane, in Jabal Hindi (India Mountain), (Figure 4.3) was one of the few examples of these mountainous areas. It was situated to the west of the Holy Mosque and was approximately 500 metres from it. Due to its proximity to the Holy Mosque, Hufra lane was also a characteristically narrow roadway similar to those typical to Islamic cities, which zigzag, narrow, and widen according to need and function and to give maximum protection against the weather for the locals (Figure 4.4).



The site of Al Hufra lane, Jabal Hindi (Indian Mountain)

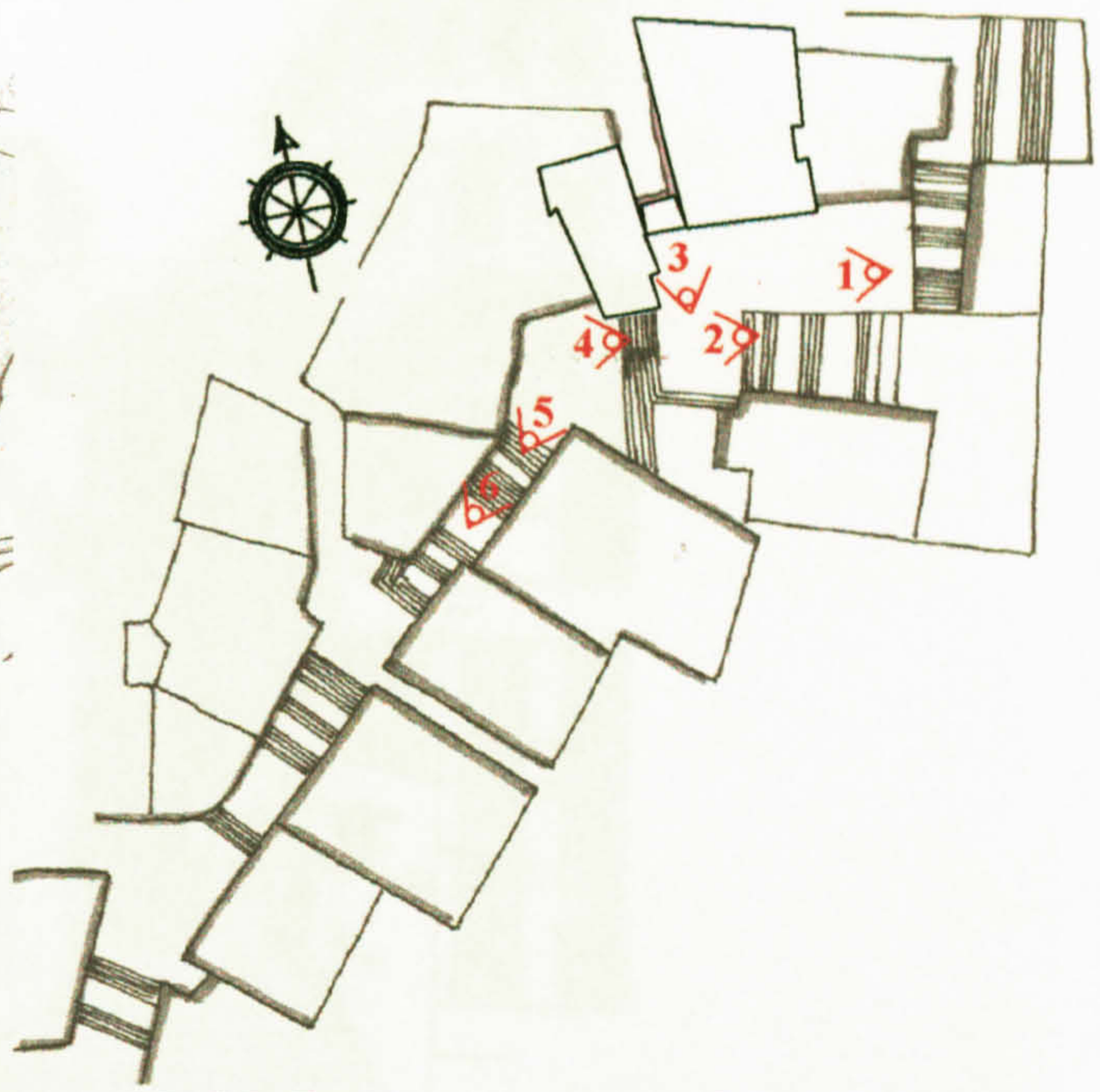


Photo 1

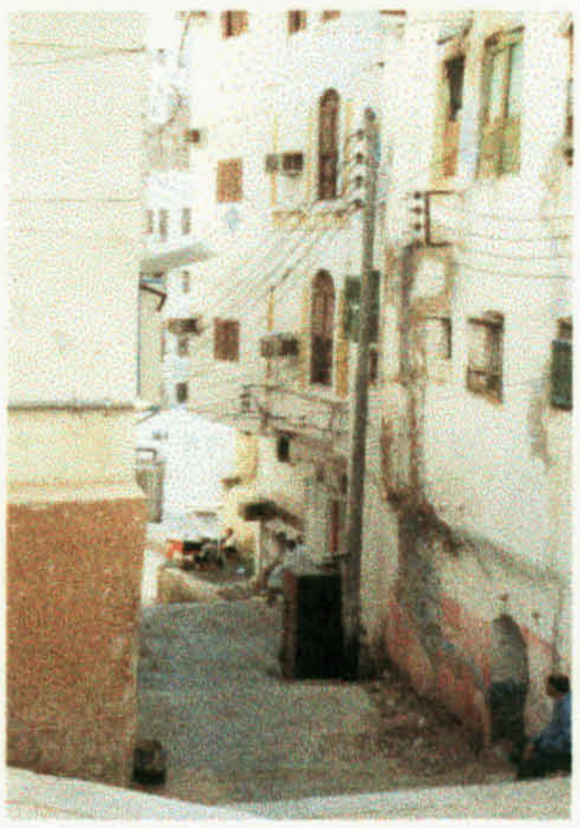
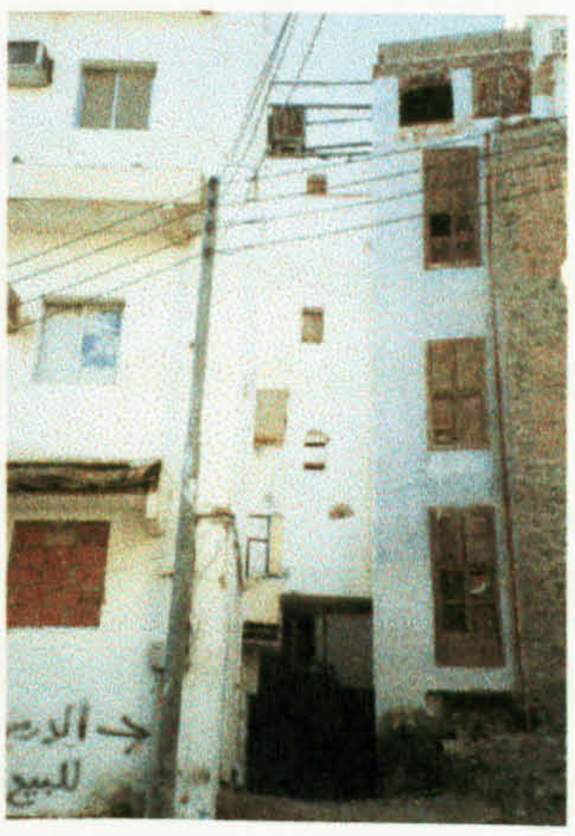


Photo 2



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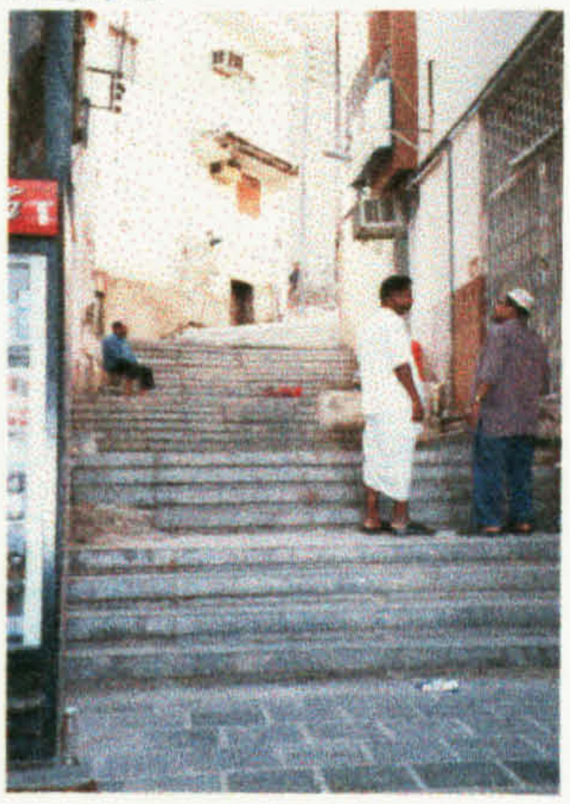


Photo 5

Photo 6

Figure 4.3: Hufra lane, Jabal Hindi (Indian Mountain), Makkah

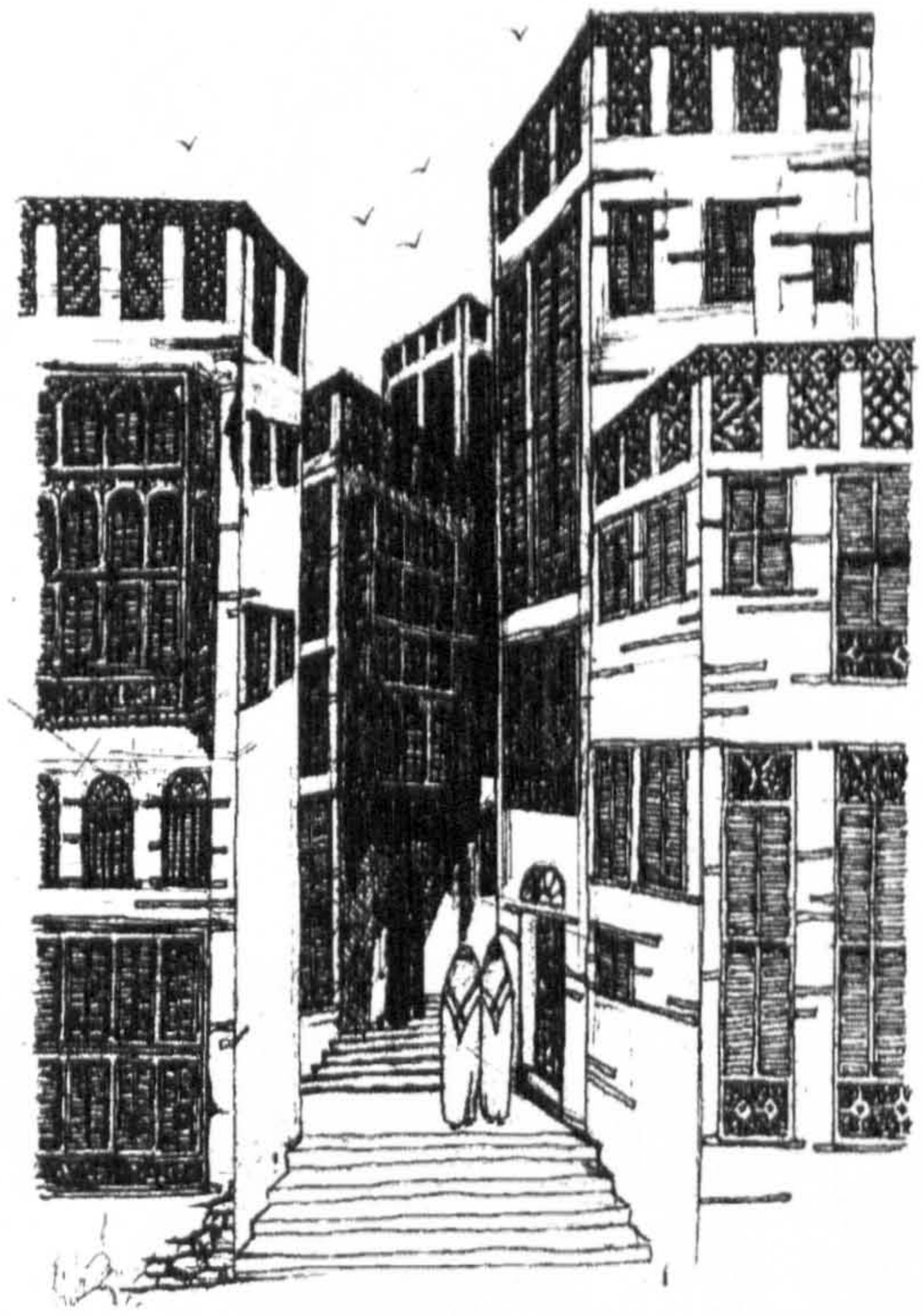
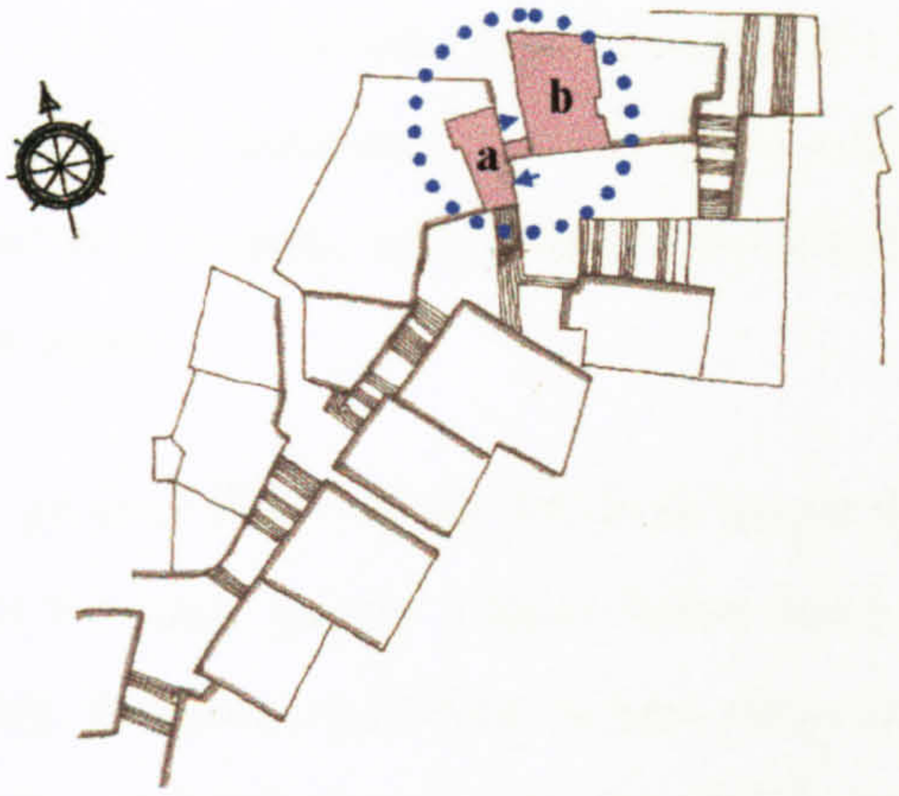
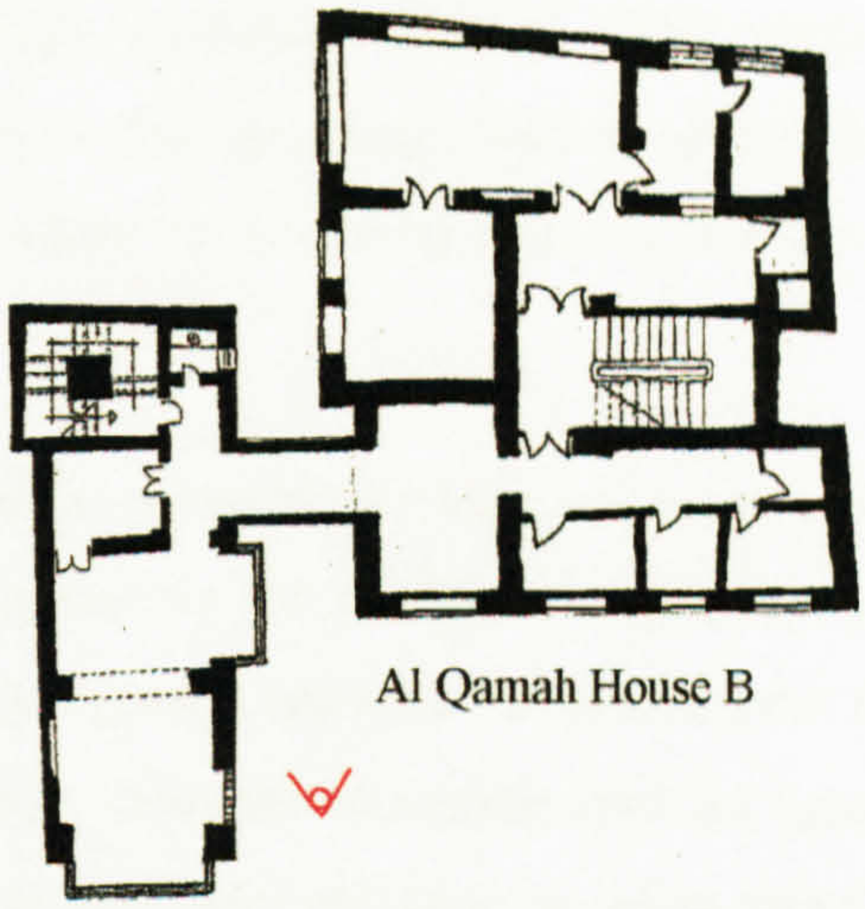


Figure 4.4: An example of Hufra lane, Jabal Hindi (Indian Mountain)

It was observed that basic Islamic codes are followed in the layout of the houses so that despite them being adjoined door openings never face others directly. In the case of windows being opposite each other (unavoidable in such close proximity) the solution adopted was the *Rowshan*, which allowed for a view out without being seen. It was also observed that houses were joined to provide as much shade and in some instances, as for example, the Al Qamah house the interiors were joined up as well. The linking of houses also increases socialization between the individuals in those houses. (Figure 4.5) For more information about Al Qamah houses (a and b) see Appendix A.





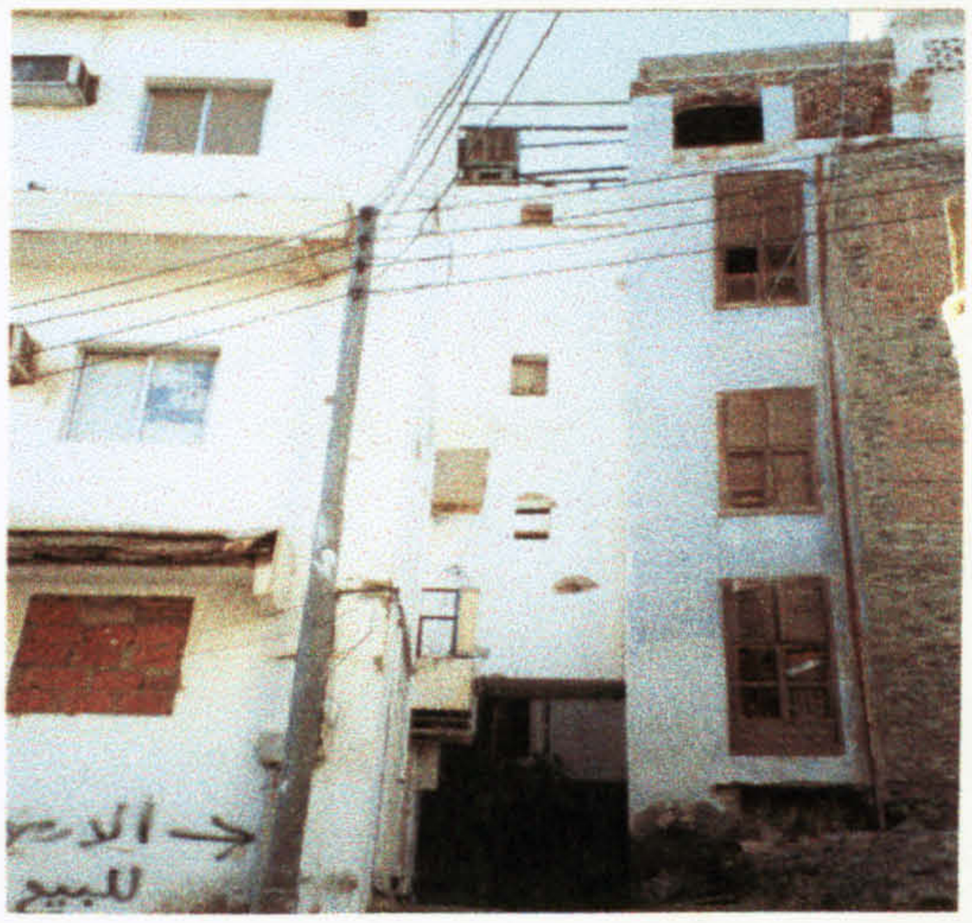


Figure 4.5: Building composed of two houses with five floors connected with the adjacent building by a three Stories high Bridge

Similarly, the street was also characteristic of the old Islamic custom in that it was a dead-end street (cul-de-sac). This arrangement allowed for the ordering of space from inside to outside, from private to semi-private to public. The building façade was richly decorated with local architectural elements and features, such as *Rowshan* or *Mashrabiyyah* and *Shawabeer*. These buildings were not only richly decorated externally but also show the treatment following through to their interiors and their organic adaptation to the topography of the mountainside to form one unified environment.

Makkah traditional houses were tall and could reach up to four or five stories high, so producing deep shadows and shaded streets while utilizing the limited space

available for houses to accommodate large, extended families. The vertical extension in building was the most important distinguishing feature of Makkah traditional houses, which led to the establishment of a vertical order in the use of floor space.

The ground floor of the Makkah house typically contains a reception room and a toilet for male guests. Upper floors were reserved for the family as well as female guests. In some traditional houses there was a separate entrance for guests from the family, probably to provide the family privacy. Also the reception area for guests was located at the front of the house near to the main entrance so as to prevent guests entering the rooms. (Figure 4.6) In most Makkah traditional houses the entrance does not lead directly into private family rooms. Also, there was a partition to prevent direct vision into the house.

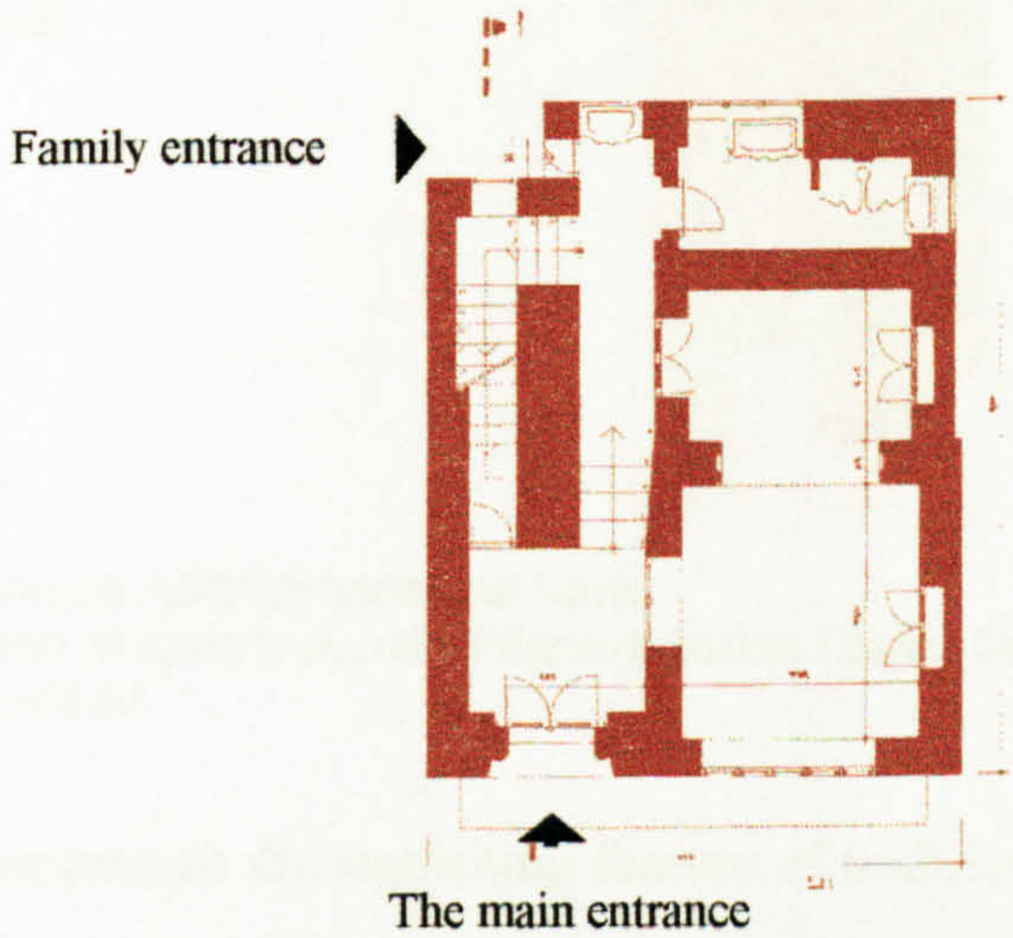


Figure 4.6: An example of traditional houses, Sheab Amer, Makkah
Source: Umm Al-Qura University Pilgrim Searches Centre, Samples for Makkah traditional houses, 1991, p.58

Since the women's domain was in the interior of the home their need for an open and private space produced a unique outdoor private space called *kharijah*. This terrace, equivalent of the courtyard in other Arab houses, was located on the upper floors, usually the third and above.[1] The *Kharijah* usually had high walls, which may be up to two metres in some buildings. This wall called *Shawabeer* was built of

[1] Hariri, M. (1993) *Al-Khrijah: Solution for the Disappearance of the Private Open Space in the Modern Multi-Storey Housing*, Saudi Arabia: Jeddah Press. (Arabic text)

brick and it had large holes, forming a mesh to let air through.[2] Women in the *kharijah* could expose themselves to the sun's rays, which was an important prerequisite for good health. The direct visual contact with the sky, the moon and stars, cool climate and privacy gave the *kharijah* a special function in fulfilling a fundamental human need. It was used to chat, play games, drink tea and sleep as well as serving as a space to dry washing on a rope stretched from one side to the other, and for storage. (Figure 4.7)

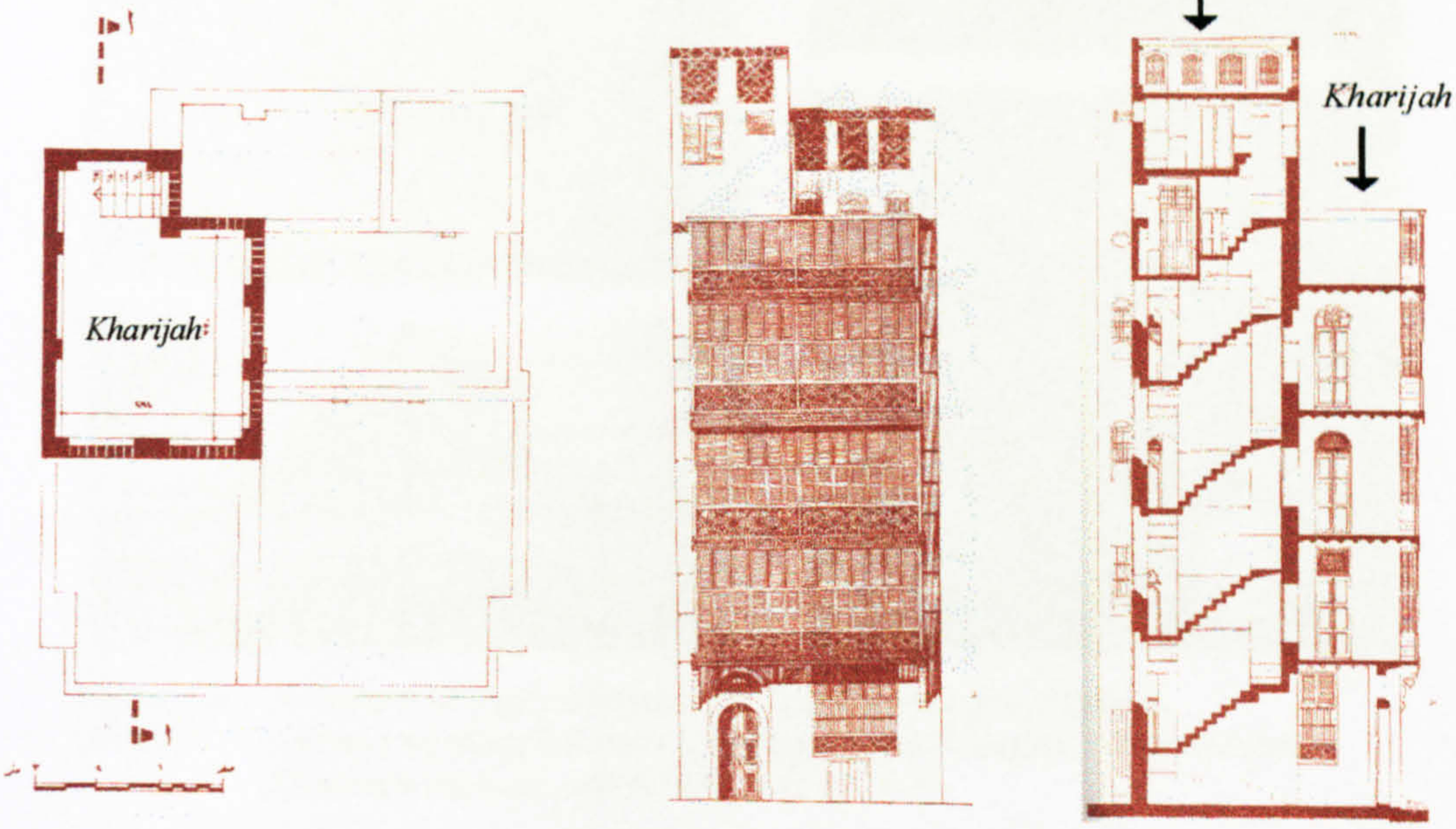


Figure 4.7: *Kharijah,* Makkah traditional house.
Source: Umm Al-Qura University Pilgrim Searches Centre, Samples for Makkah traditional houses, 1991, p 61-63

Another of important distinguishing feature of traditional buildings in Makkah was the *Rowshan* or *Mashrabiyya*. These wooden screens were characteristically filled with plants or decorations and sometimes they cover the whole front face of the house allowing currents of air to pass through the house. The advantages of *Rowshan* or *Mashrabiyyah* could be summarized as follows:

- It provides a view of the main street while offering occupants privacy,
- It allows the women to see outside without being seen.
- It serves as a screen to reduce glare.
- It provides good cross-ventilation for the interior spaces.
- It provides sunlight control. (Figure 4.8)

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[2] AL Bis, A. (1999) The Types of Traditional Houses in Saudi Arabia in Early 20th Century. *Alam al-Benna, The Journal of Architecture and Planning,* 1999: 12. (Arabic text)

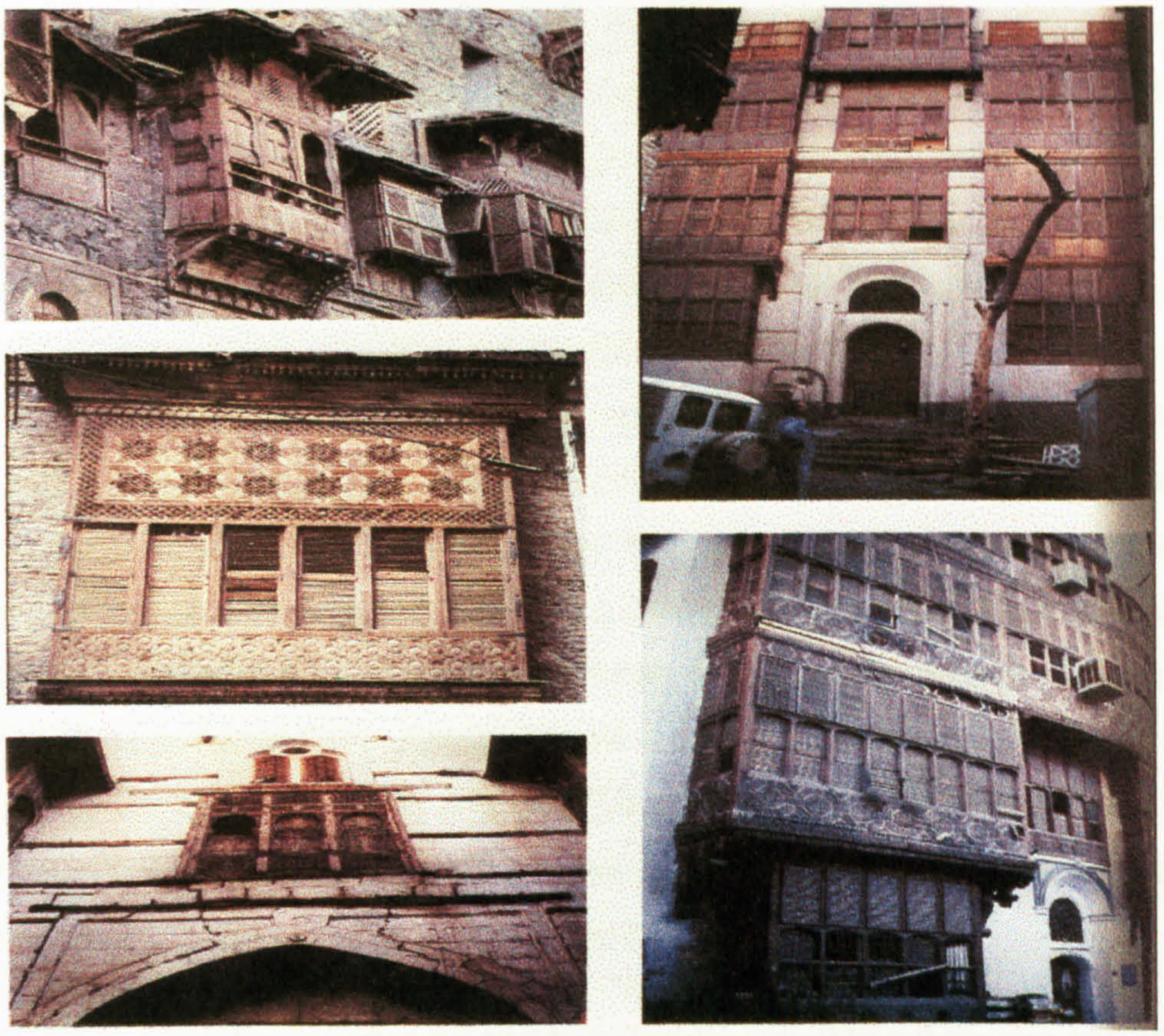

Figure 4.8: *Rowshans* or *Mashrabiyyah* in the traditional houses, Makkah.
Source: Ministry of municipal and rural affairs, Makkah Region, comprehensive Development plans, report No.6, P.p. 13.15.17

The lower floor of the Makkah traditional house was used for the men of the family and their guests, with provision for female guests on the first floor. The upper floors were for private use only with bedrooms, living rooms and other family gathering spaces. The top floor was used for sleeping as well, and so was the roof area, especially on hot summer nights. However, the requirement was for dual-purpose spaces, that can fulfil their economic as well as social needs e.g. spaces that were constructed in such a way that they could be used both as a family residence and for letting the house or part of it during the *Hajj* (pilgrimage) period.

From this outline of the basic layout of Makkah traditional houses it can be seen that there were many similarities between these and other Arab traditional houses described in the previous chapter. In Baghdad the traditional house forms were quite different from those of Makkah, but both Makkah and Baghdad traditional houses were usually divided into two zones for social entertainment in addition to the

private family quarters. The first zone was for males of the family and their guests and the second zone was for females and their guests. The roofs were also used for sleeping at night. Greenlaw[3] noted that there were many similarities between the Makkah traditional houses and Suakin traditional houses. He is also pointed out that the influence of Makkah architecture was quite clear in the Suakin house design, for example the use of the *Rowshan* and *Kharijah*. Sana'a traditional houses were tall buildings, with five stories. The family living area, as the kitchen, was located on the upper floors. Therefore the Sana'a traditional houses were also quite similar to Makkah traditional houses. From the earlier description of Cairo traditional house it also emerges that there was a correspondence of elements with Makkah traditional houses, for example, the roof terrace, *Kharijah*, in Makkah somewhat corresponds with the roof garden in Cairo. *Mashrabiyyahs* located on the outer windows in Cairo were very much related to the *Rowshan* used in Makkah traditional houses. The concept of the privacy and separation of male and female were also observed in the traditional plan houses of both the Cairo and Makkah houses.

It should therefore be clear that the Makkah traditional building form was part of the Islamic tradition, which accommodated the local environmental conditions while expressing the language of international Islamic culture that came to it from different parts of the world through pilgrimage. Traditional buildings in Makkah still show evidence of the influence of their Ottoman and Egyptian models, which reflects the turbulent history of the place.

4.2 The Interior Spaces of Makkah Traditional Houses

As mentioned earlier, the vertical extension of the space was the most important feature of Makkah traditional houses which provided the vertical order in the use of floors, such as separate zones for male guests and family and their female guests. These spaces were given characteristic names, such as *Dehliz* (entrance hall), *Maq'ad* (sitting room), *Majlis* (guest reception), *Suffah* (ante-room), *Makhlawan* (resting place), *Muakhkhar* (living room), *Mabite* (night room),

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[3] Jean-Pierre Greenlaw, (1976) *The Coral Buildings of Suakin*, p.38

Kharijah (terrace) and *Bait alma* (water closet). However, these names were shared only with other cities in the *Hijaz* region. The researcher found these names used individually in some other Arab cities, but never in exactly the same combination. For example, in Suakin terms such as *Dehliz*, *Kharijah* and *Majlis* were used and one encounters *Dehliz* also in Sana'a, in Yemen, as discussed in the previous chapter. It remains for us to explain the exact meaning of the terms in Makkah.

4.2.1 *Dehliz* (Entrance Hall)

This was a space adjacent to the main entrance and it was the first space experienced by anyone who entered the house (see case-studies of Makkah traditional houses, Appendix A). It was considered a transitional space, moving from public to private.[4] In Makkah and other Arab traditional houses sometimes the entrance was offset, in order to screen the interior from the gaze of strangers when the main gate was open. This is in accordance with the religion and traditions of Islamic Arab society.[5] Here the home owner would have received passers-by or occasional visitors.[6] Architecturally the *Dehliz* tended to be simple, empty of decoration, i.e. apart of construction elements of the ceiling and the highly decorative door. Smooth stones were used as flooring material in the big traditional houses while sand was used in smaller houses (see section 4.4.1.1). Additionally, two wooden benches, called *Karaweet,* were provided in the *Dehliz* for sitting or sometimes for sleeping at night. The use of loose furniture contrasts with other Arab countries for example, Iraq where in the Baghdad traditional houses masonry benches, called *Dakkah,* were incorporated within wall niches in the *Dehliz*, providing seats for the doorkeeper and the visitors' servants.[7] (Figure 4.9) There are, however, also such inbuilt features in Makkah houses. (Figure 4.10)

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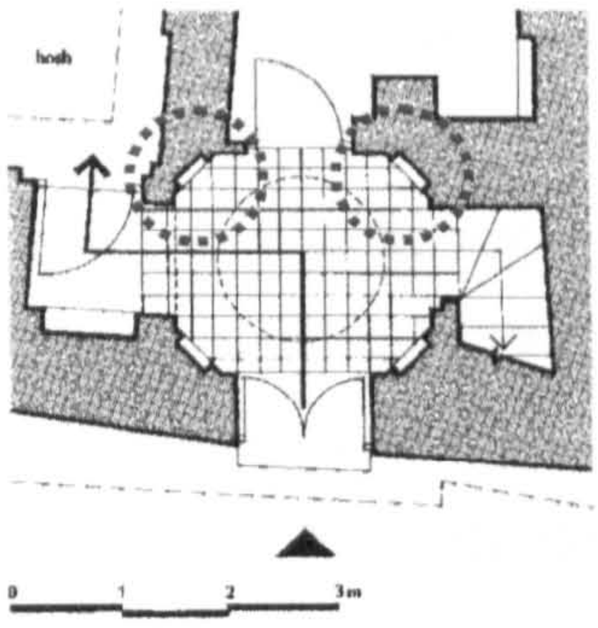
[4] Ghaleb, A. (1988) *Encyclopaedia of Islamic Architecture,* Beirut, Lebanon Press, p.190, (Arabic text)
[5] Jodi, M. (1998) *Al amarah Al arabiah Al islamiah,* pp. 66-67
[6] Fadan, Y. (1983) The Development of Contemporary Housing in Saudi Arabia: A Study in Cross-Cultural Influence under Conditions of Rapid Change, PhD thesis, MIT. P.305. See also Hurkhroni, K. (1990) Makkah history in late 13th century of Al Hejrah. Translation by Al Suryani, M. and Merzah, and Nawaab, Makkah: Cultural and Literary Club Press, p.345
[7] John Warren and Ihsan Fethi, (1982) *Traditional Houses in Baghdad,* p.50



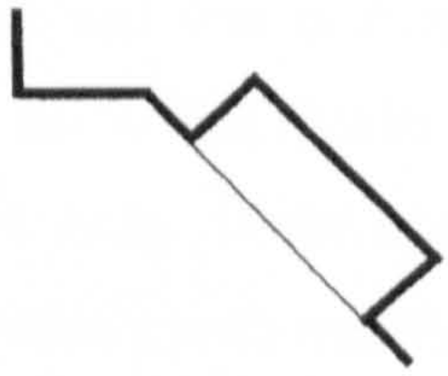
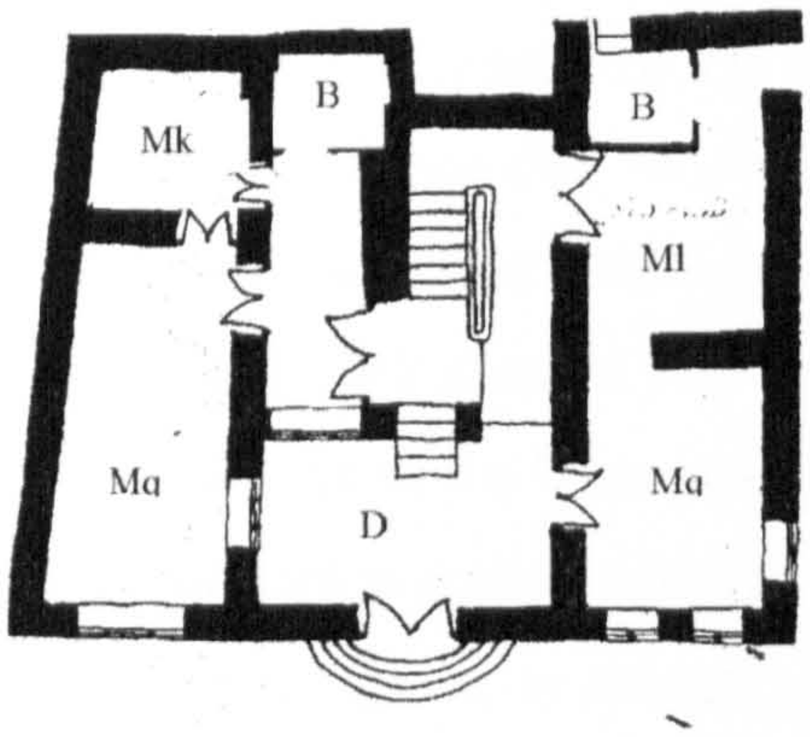
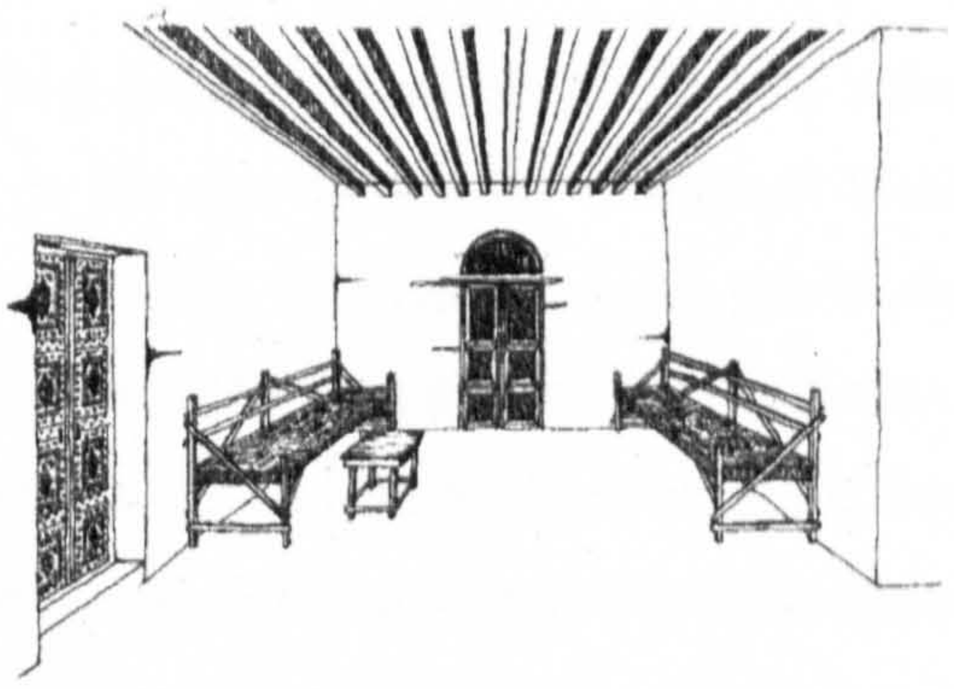
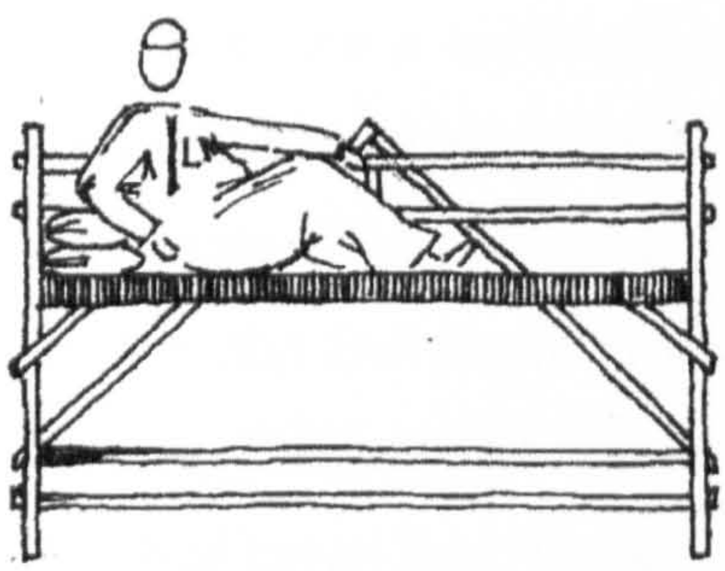


Figure 4.9: Masonry benches, called *Dekkah*, *Dehliz*, Baghdad traditional house
Source: John Warren and Ihsan Fethi (1982), p.50



Ground floor





Wooden benches, called *karaweet*

D *Deliz* (entrance hall)
Mq *Maq'ad* (sitting room)
Ml Multipurpose room
Mk *Makhlawan* (resting place)
B *Bayt alma* (bathroom)

Figure 4.10: A typical entrance area, *Dehliz*, Makkah *Dehliz*, case study seven: Al Qamah house (b), Mkkah

The *Dehliz* area was found on the ground floor and was dedicated to men since women rarely had any activities on the ground floor. The *Dehliz* was considered a waiting place for visitors and also as a place for study. In the past one of the most important of the *Dehliz* functions was trade, especially with merchants. On the other hand, because it was the coolest part of the house being always in the shade and usually sprinkled with water, the *Dehliz* was often used as play area for children when the sun was too hot outside the house.[8]

4.2.2 *Maq'ad* (Sitting Room)

The *Maq'ad* was always on the ground floor and could be situated on both sides of the *Dehliz* or at one side only depending on the plan type of the individual Makkah traditional house (See section 4.5, plan typologies). Its floor level was raised above that of the *Dehliz* to avoid sand coming in. It was the most public room in the house, where the men of the house sat and sometimes used it for sleeping during the day. It was used also as a reception area for male guests. Sometimes was used as offices or as a store for goods, or as a place to keep luggage during the Hajj (pilgrim season). Usually the *Maq'ad* was a wide space characterized by having two or more windows onto a public road.[9] Al Merhem pointed out that the *Maq'ad* had large, screened openings both towards the *Dehliz* and the street to order to facilitate air movement. [10] However, it is clear from the case-studies of Makkah traditional houses that the screened openings towards the *Dehliz* were found only in some houses. Although the *Maq'ad* catered for a variety of activities it was essentially an informal place that was not much decorated. As will be seen later, the *Maq'ad* was furnished with *Karaweet* or *tawaliat* and *masanid.*[11] (Figure 4.11)

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[8] Al Gazawi, A. (1987) *Shatharat Al Thahab,* (Arabic text) See also: Al Layaly, S. (1990) The Traditional House of Jeddah,

[9] Magrabi. M. (1982) *Al-Haiah Al-Ejtemaiah Fi Al-Hijaz (Social living in Hijaz region)*, Jeddah: Tohamah Press. p.13 (Arabic text)

[10] AL Merhem, F. (2001) Al-Rowshan wa Al-Shobak Wa Tatheerahoma ala Al-Tasmeem Al-Dakhili Fi Boiot Makkah Al-Taqlidyah (Rowshan and Window and its influence to the interior design of Makkah traditional houses), Master's Thesis, Umm Al Qura University, Makkah, Saudi Arabia, pp. 94-95 (Arabic text). See also Akbar, S. (1998) Home and Furniture: Use and Meaning of Domestic Space, Jeddah, Saudi Arabia, Ph.D. Thesis, University of Newcastle. p. 103

[11] AL Merhem, F. (2001) Al-Rowshan wa Al-Shobak, pp. 94-95 See also Akbar, S. (1998) Home and Furniture, p. 103

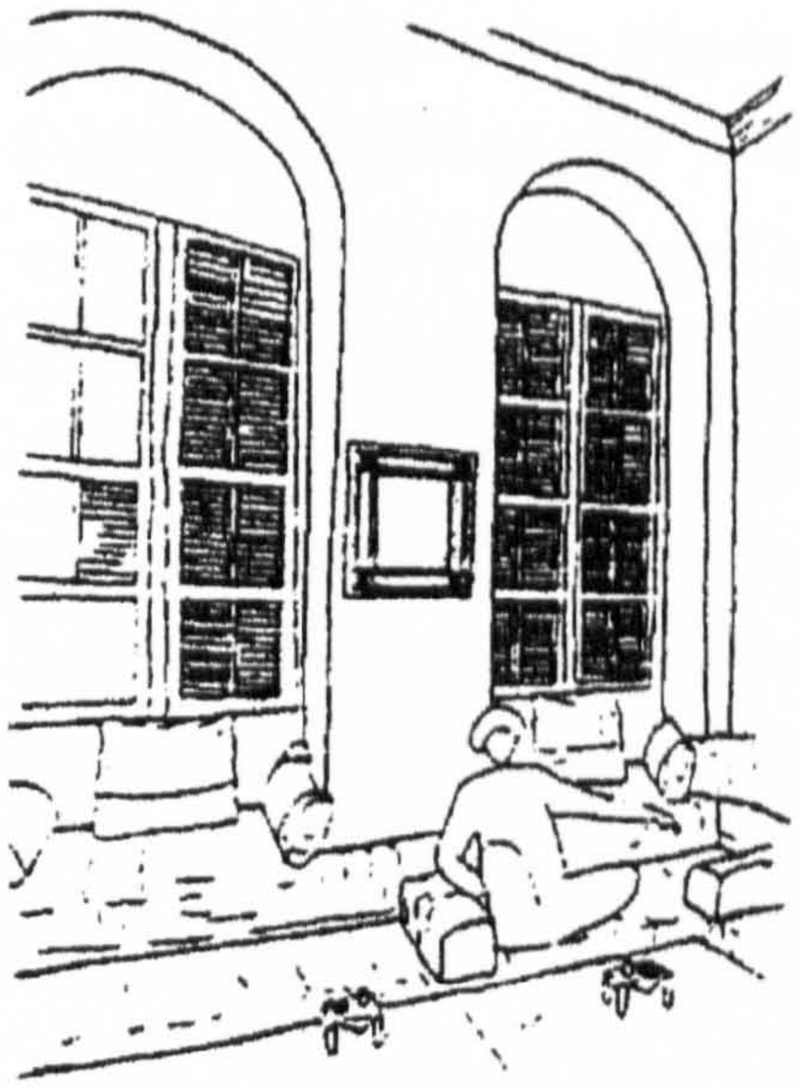

Figure 4.11: *Tawaweel* arrangement in a *Maq'ad*
Source: Akbar, S. Based on a picture in Aba Al-Khail, 1988: 77

4.2.3 *Majlis* (Guest Reception)

The *Majlis* was usually situated on the first floor, but in some traditional houses it was situated on the second or third floors facing the main front façade. (Figure 4.12) It was the principal place prepared for reception.[12] It was also used as a space for public meetings. If men and women were invited simultaneously, the men would use the *Maq'ad* downstairs and the women would use the *Majlis*. Family members did not use the *Majlis* in their daily activities except for sleeping. From the point of view of both decoration and function the family considered the *Majlis* the most important room in the house.[13] Jomah points out that usually the *Majlis* was both the largest room on the floor and the coolest space in the house because it included one, two or more *Rowshan* or *Mashrabiyyah* and wide windows on two sides.[14] However, it became clear from case-studies of Makkah traditional houses that in some cases the *Maq'ad* also had one, two or more *Rowshan* or *Mashrabiyyah* on two sides, as well as sometimes having a large screened opening both towards the *Dehliz* and the street for better cross ventilation. Therefore both the *Majlis* and the *Maq'ad* could be regarded as the coolest spaces in the house. The *Majlis* was the most decorated room in the house. Rugs covered its floor with either *Karaweet* or

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[12] Magrabi. M.(1982) *Al-Haiah Al-Ejtemaiah Fi Al-Hijaz (Social living in Hijaz region)*, p.14
[13] Khan, S. (1986) *Jeddah Traditional House: A study of National Architectural of Jeddah City*, Riyadh: King Abdulaziz City Research Center Press, p.11
[14] Jomah, H. (1992) The Traditional Process,

tawaliat and *masanid* arranged along the walls. (Figure 4.13) In some cases the *Majlis* did not have *masanid* (back cushions) (see section 4.3.4.1). The wooden wardrobes and *Rowshan* were always decorated. Jomah also pointed out that large mirrors were displayed on the *Majlis* walls and it also had recesses in the walls with shelves displaying the ornamental items that the family could afford, such as Chinese plates.[15] However, from case-studies of Makkah traditional houses it would appear as if the decoration of the *Majlis*, e.g. large mirrors, were displayed on the walls together with the constructed elements (tables stool or wall shelves .. etc), only in some Makkah traditional houses, especially those of the wealthy (see Appendix A). On the other hand, the *Majlis* was always kept tidy and clean to be ready for the reception of guests.

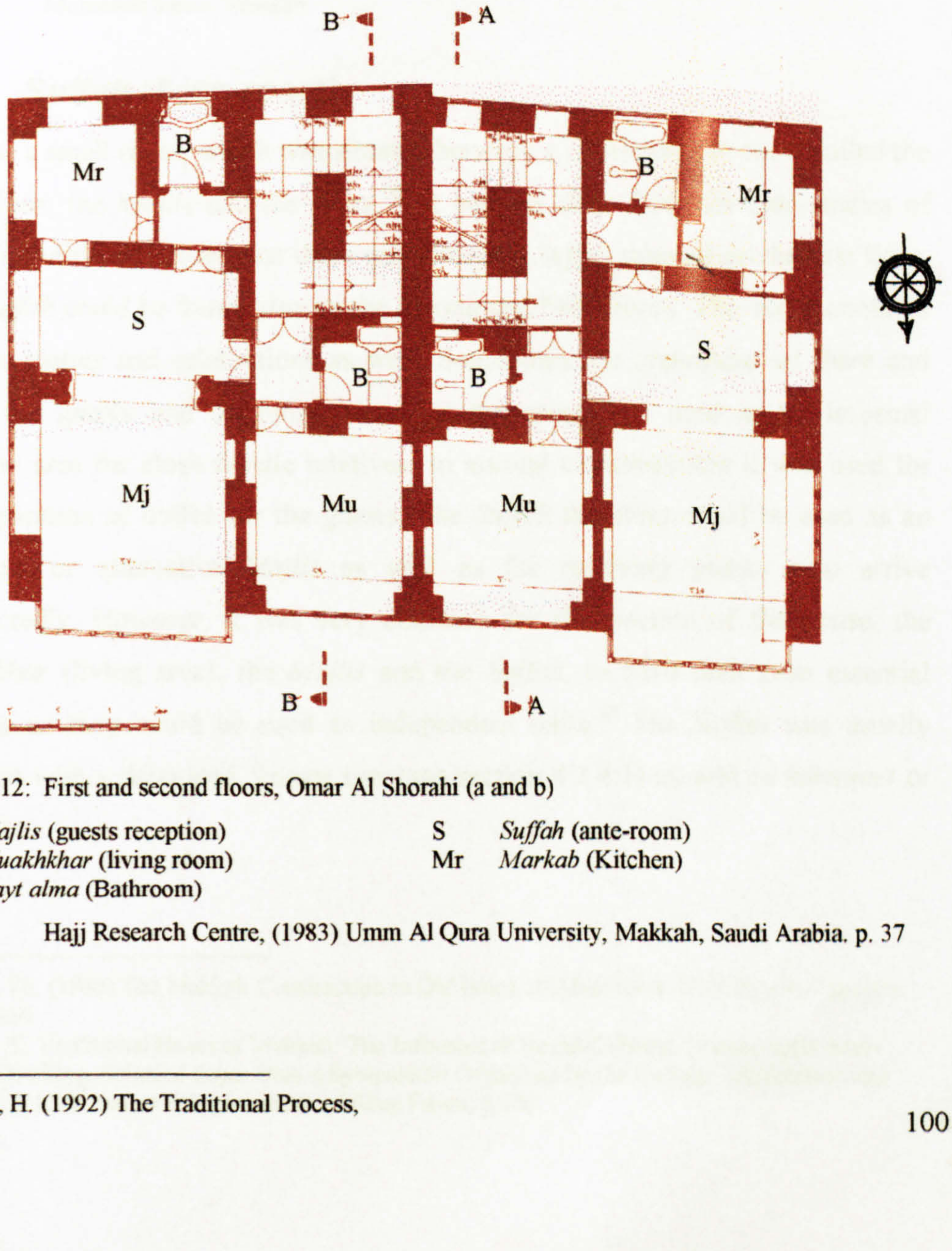

Figure 4.12: First and second floors, Omar Al Shorahi (a and b)

Mj	*Majlis* (guests reception)	S	*Suffah* (ante-room)
Mu	*Muakhkhar* (living room)	Mr	*Markab* (Kitchen)
B	*Bayt alma* (Bathroom)		

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 37

[15] Jomah, H. (1992) The Traditional Process,

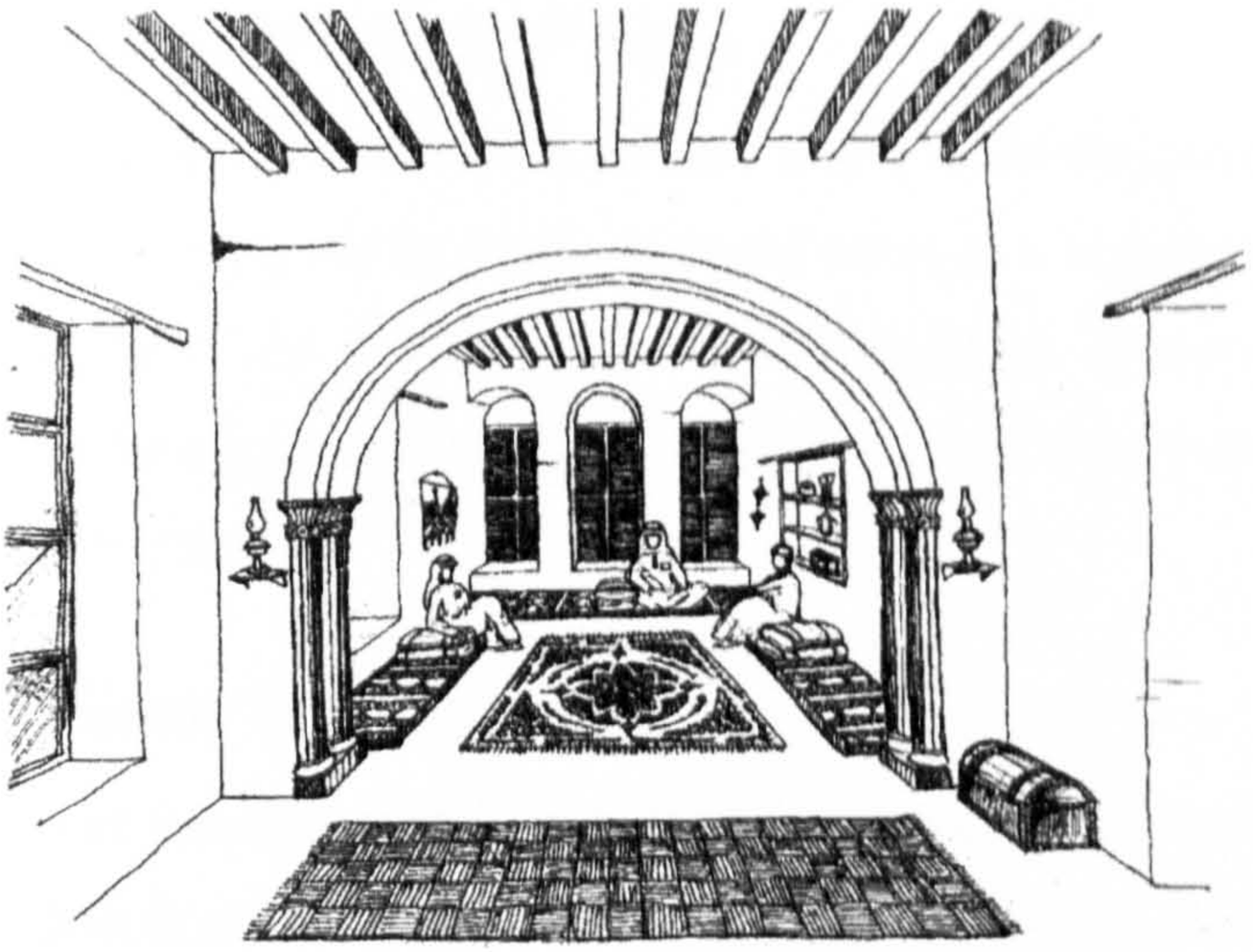

Figure 4.13: An example of *Majlis* with *tawaliat* and *masanid* arranged around the walls, Aal Momenah house, Makkah

4.2.4 *Suffah* (Ante-room)

This was a small room, which was situated between a multi-purpose room called the *Muakhkhar*, the *Majlis* and the stairs.[16]. It became clear from the case-studies of Makkah traditional houses that there was always a *Suffah* situated on the first floor, but a *Suffah* could be found also on the second and third floors. This room could be used for parties and celebrations as well. Sometimes the organizers sat there and served the guests and on other occasions the room was used as an informal reception area for close female relatives. In normal circumstances it was used for the preparation of coffee for the guests. The *Suffah* therefore could be used as an additional or alternative *Majlis* as well as for receiving guests who arrive unexpectedly. However, it was very common for this section of the house, the *Muakhkhar* (living area), the *Majlis* and the *Suffah*, to have their own essential facilities so they could be used as independent units.[17] The *Suffah* was usually furnished with a decorated *Saisam* box (see section 4.3.4.1) as well as *karaweet* or *tawaliat*.

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[16] Hijazi, Th. (1989) The Makkah Construction in Old times. *Al Maathorat Al Shabyyah Magazine*, 1989: 36-46

[17] Fadan, Y. Traditional Hoses of Makkah: The Influence of Social-Cultural Themes upon Arab-Muslim Dwelling. Selected Paper from a Symposium Organized by the College Architecture and Planning, 5-10 January 1980, University of King Faisal, p.305

4.2.5 *Makhlawan* (Resting Place)

This was a place where one could sit in privacy and it could be located on any floor of the house. For example, the *Makhlawan* could serve as a resting place for guests after lunch or by elderly and it was used also a storage room. It was sometimes used as a store, or older people could rest there. The furniture of this room was similar to that found in the *Maq'ad*.[18]

4.2.6 *Muakhkhar* (Living Room)

Akbar[19] pointed out that the second zone on the first floor was usually orientated in the south-east direction. However, from the case-studies of Makkah traditional houses it seems that, the *Muakhkhar* could be found in the north, south, west or south-west facades. In House 3, Omar Al Shorahi, House (c) the *Muakhkhar* was located in the south-east direction while in Houses 4 and 8 the *Muakhkhar* was located in the south-west. In Houses 1 and 2 the *Muakhkhar* was in the north, in House 5 the *Muakhkhar* was located in the south and in House 7 the *Muakhkhar* was located in the west. (Figure 4.14) It usually consisted of one or two rooms, which were multi-purpose. A small kitchen called the *Murakkab* and water closet called *Bayt alma*, were located beside *Muakhkhar*. It was the principal multi-purpose room, used to prepare quick snacks, for eating, children sleeping and general family entertainment. The furnishings were simple Indian rugs and sponge cushions (*liyanat*) and these were put beside the walls so that people could sit or recline on them.

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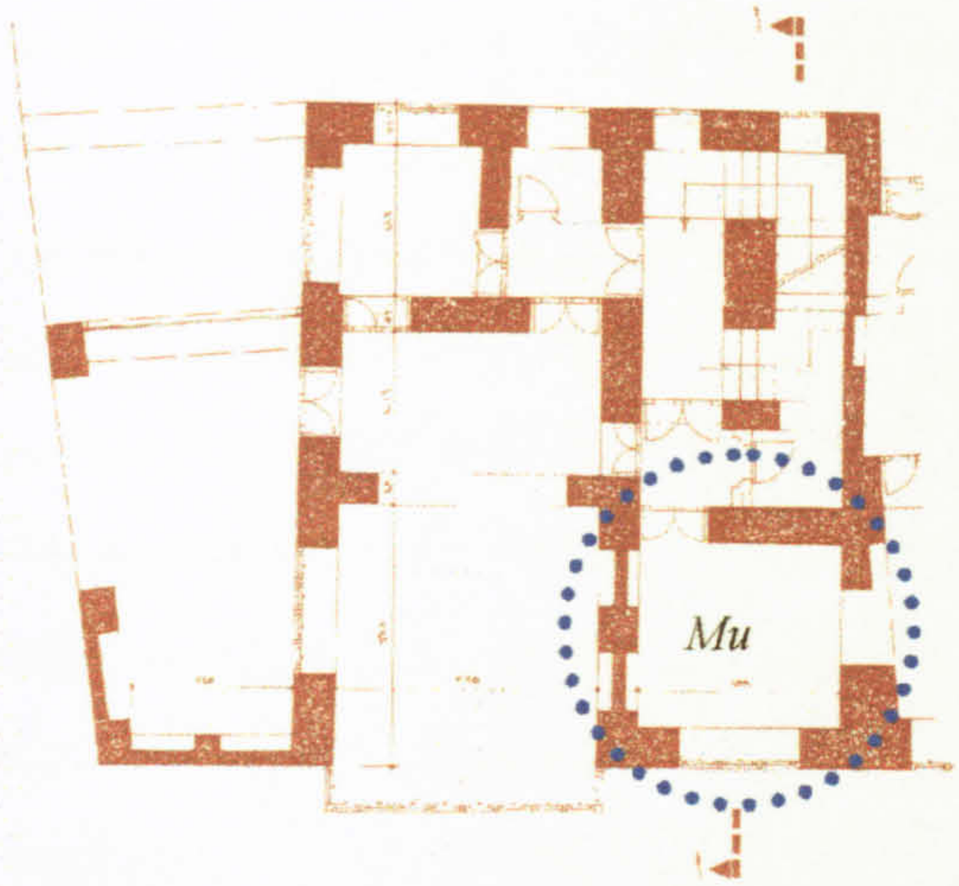
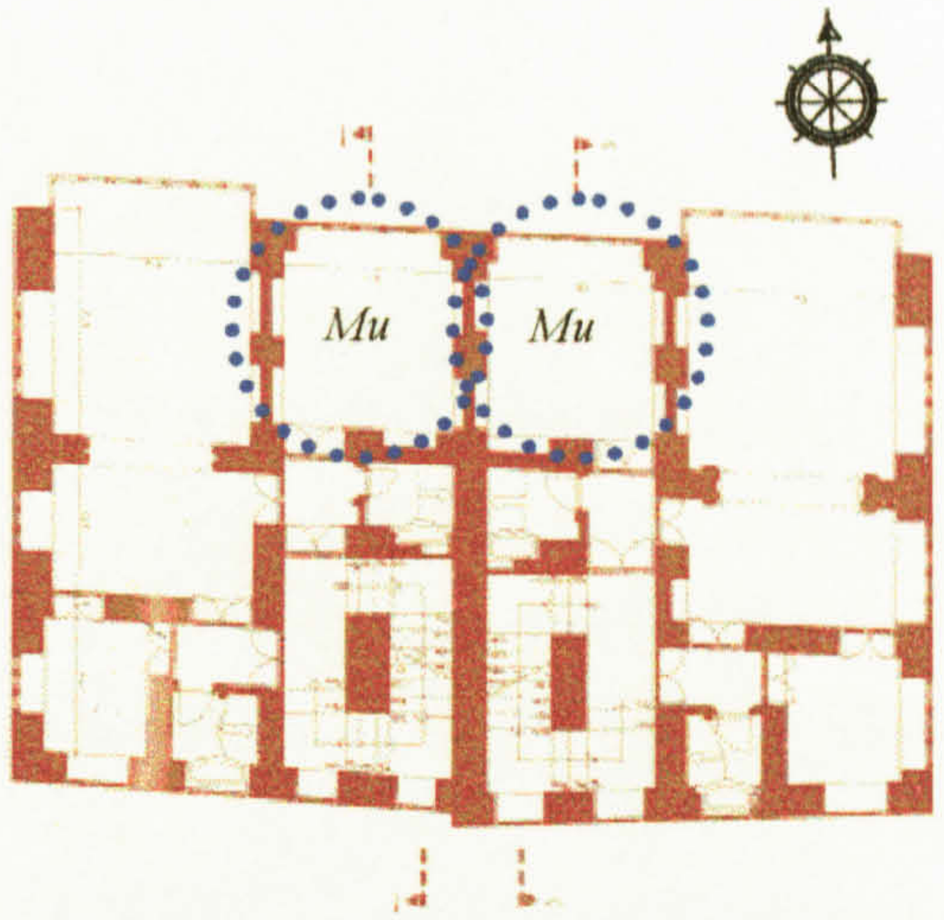
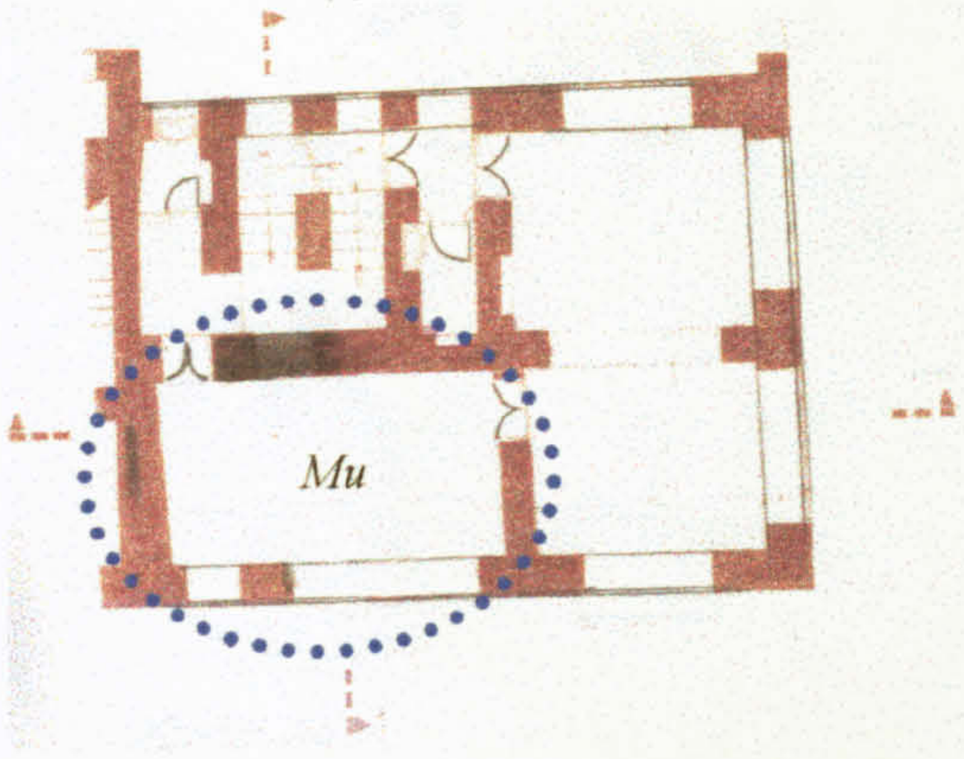
[18] AL Merhem, F. (2001) Al-Rowshan wa Al-Shobak, p. 98
[19] Akbar, S. (1998) Home and Furniture, p103



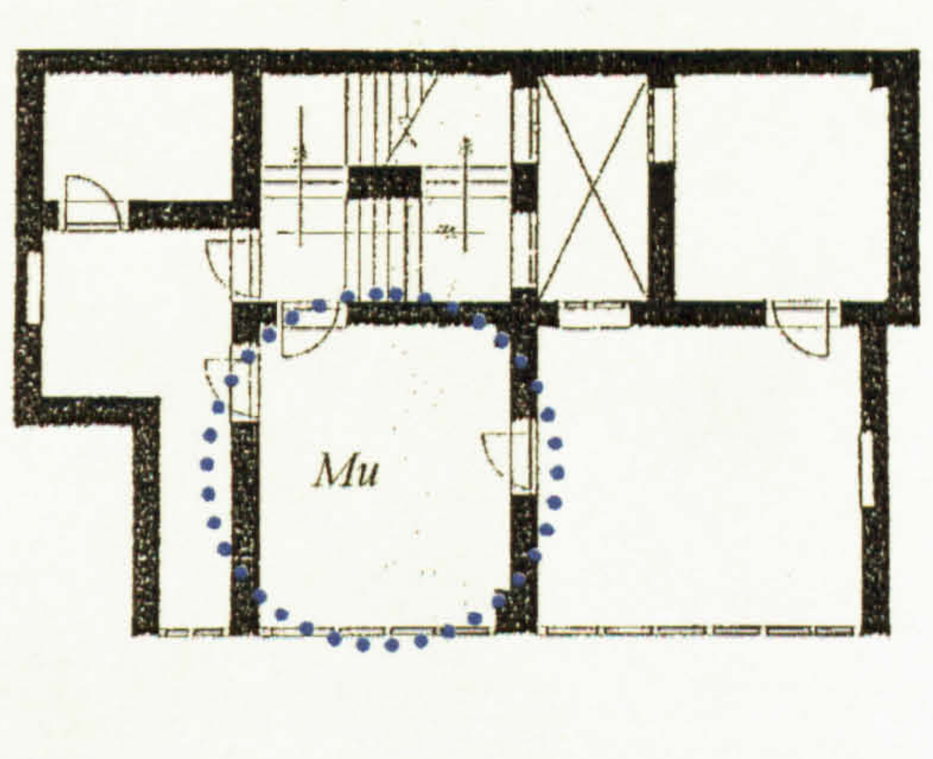
First and second floors, House 3, Omar Al Shorahi, House (c)



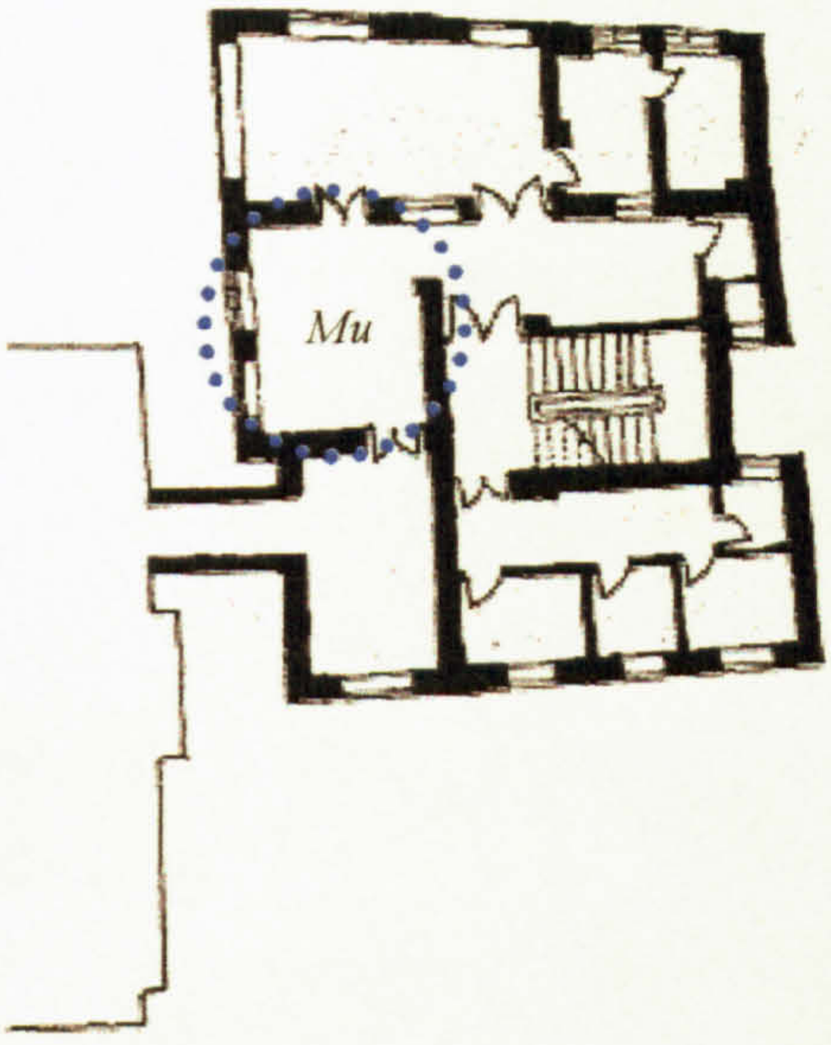
First and second and third floors, House 1 and 2, Omar Al Shorahi (a and b)



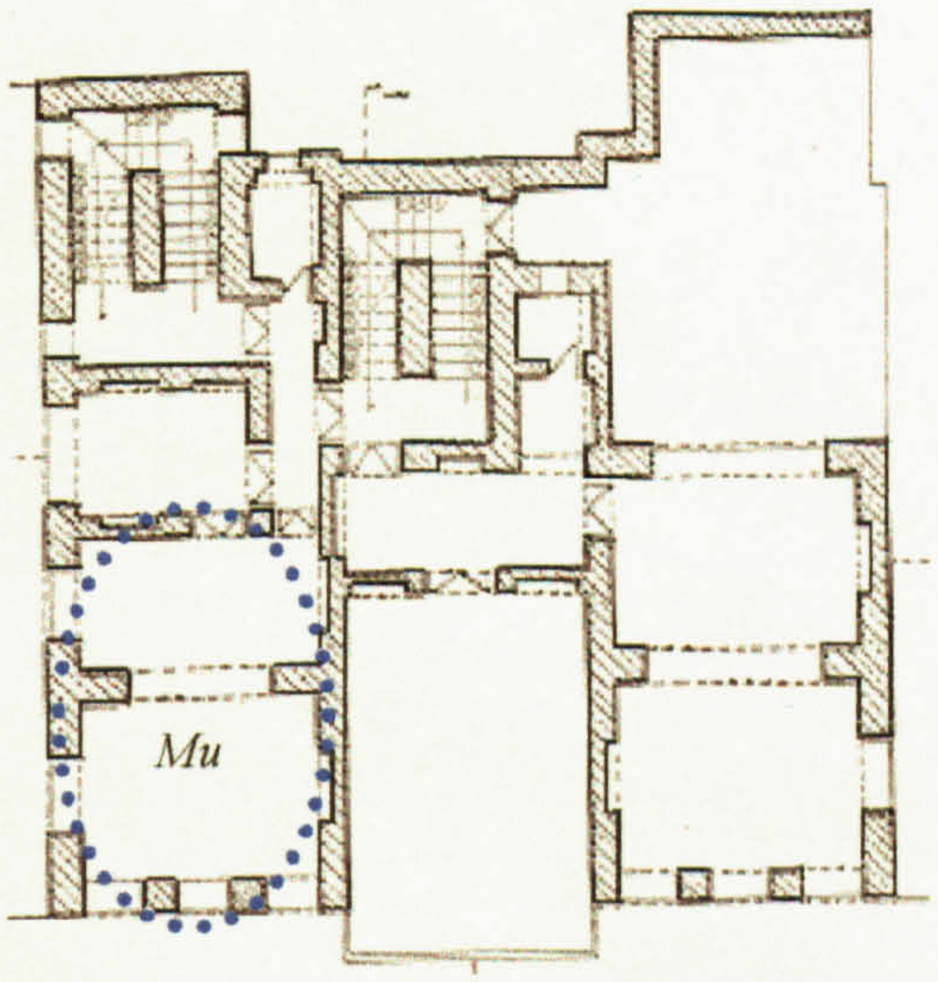
First floor, House 4, Omar Al Shorahi, House (d)



Second floor, House 5, Aal Momenah house



Second floor, House 7, Al Qamah house (b)



First floor, House 8, Aal Momenah house

Figure 4.14: The *Muakhkhar* could be orientated in different directions

4.2.7 *Bayt alma* (Water Closet)

This was the equivalent to the western bathroom and it emerges from the case-studies of Makkah traditional houses that there was usually one on the ground floor as well as on all other floors. It was also usually located near the stairs or any place as far as possible away from the living spaces (Figure 4.15). This gives privacy to the occupiers of the house while the waterman called *Saqqah* was climbing the stairs to fill the water tank in the *Bayt alma*. It usually had a *Zeer* (water container) for water to be used for washing. Akbar[20] pointed out that sometimes a low wall separated this zone from the toilet. The first section was used for keeping the *Zeer*, washing hands or purifying for prayers using a jug and a little washbasin. The second section had a hole in the floor for human waste (Figure 4.16). However, the case-studies, for Houses 1, 2 and 6 show that the *Bayt alma* was equipped with a *Hanafiah* (hydrant) and tap. (Figure 4.17)

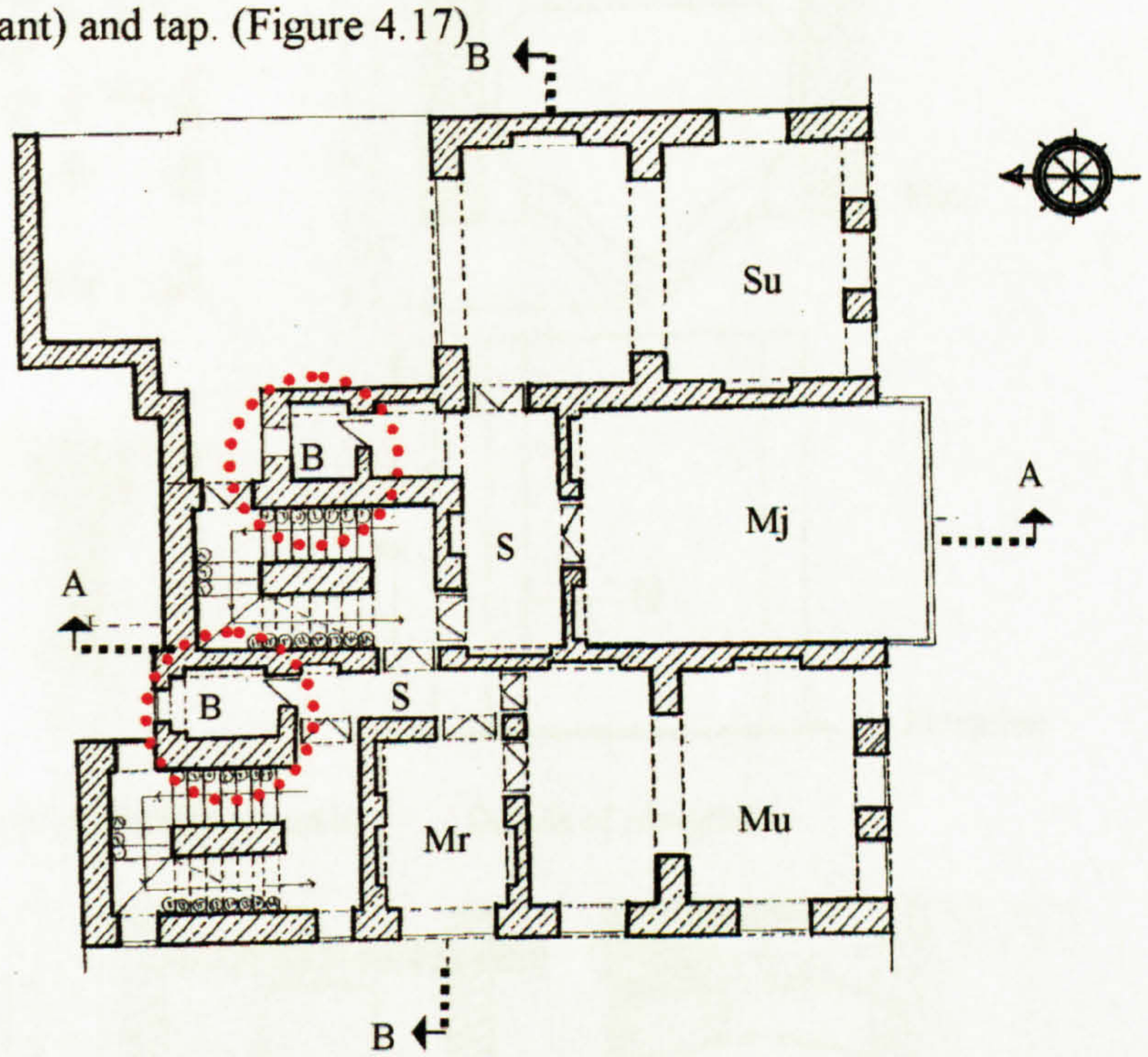


Figure 4.15: *Bayt alma*, first and second floors, House 8, Aal Momenah house
Note: *Bayt alma* was usually located near the stairs or any place as far as possible away from the living spaces

Mj	*Majlis* (reception)	Mu	*Muakhkhar* (living room)	S	*Seeb* (passage)
Su	*Suffah* (ante-room)	Mr	*Markab* (kitchen)	B	*Bayt alma* (Bathroom)

Source: Architecture department report, Umm Al Qura University, 1998

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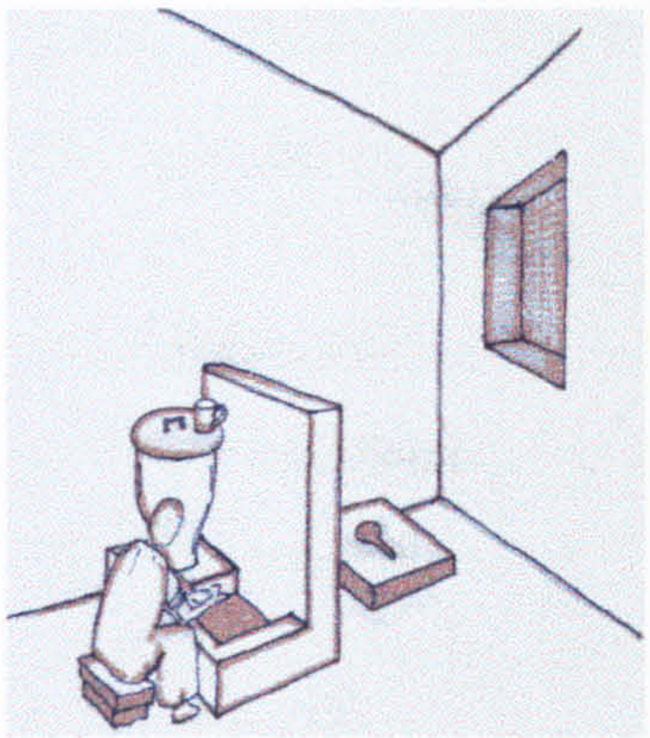
[20] Maghrabi. M. (1982) *Al-Haiah Al-Ejtemaiah Fi Al-Hijaz* [Social living in Hijaz region], p.22

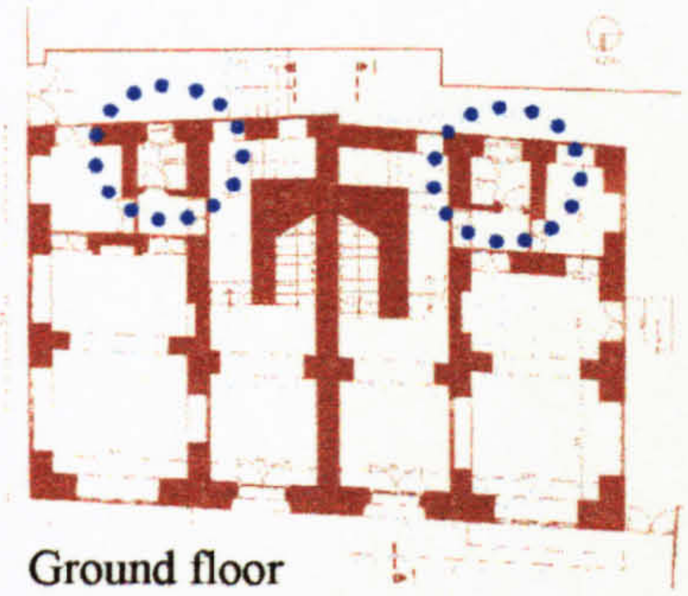


Sketch 1

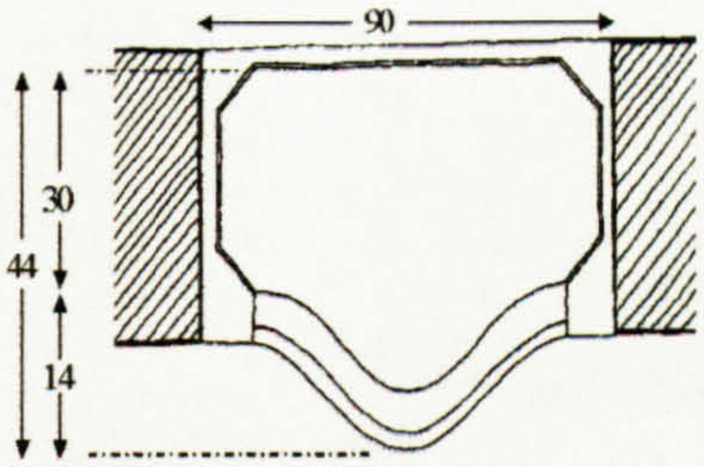
Photo 2

Figure 4.16: *Bayt alma*

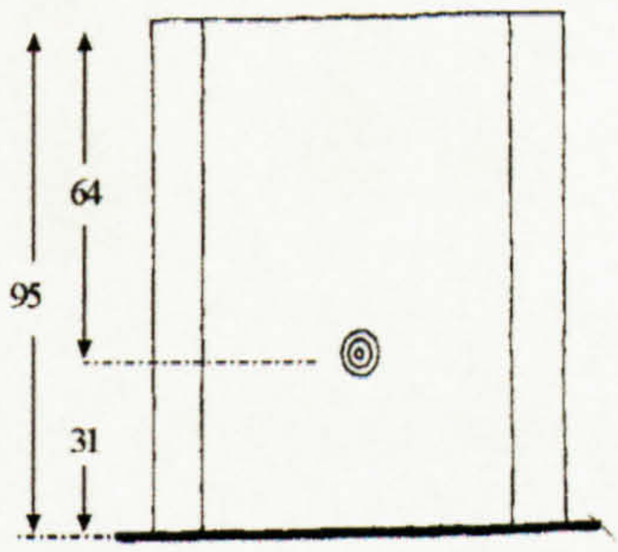
Photo1: An example the low wall that separated the *Bayt alma* to two zones
Source: Dyab, M (2003), p.142
Sketch 2: *Saqqah* (waterman)



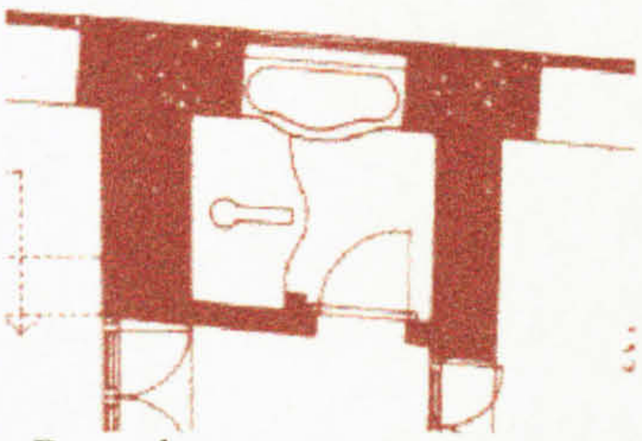
Ground floor



Plan



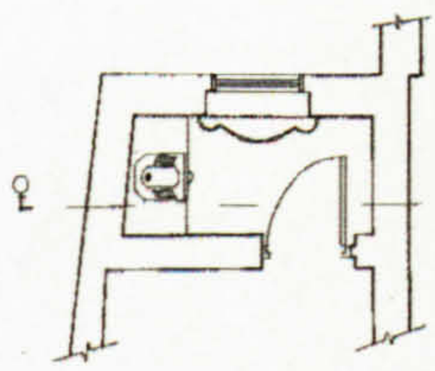
Elevation



Bayt alma

House 1 and 2, Omar Al Shorahi (a and b)

Details of *Hanafiah*



House six,
Al Qamah house (a)

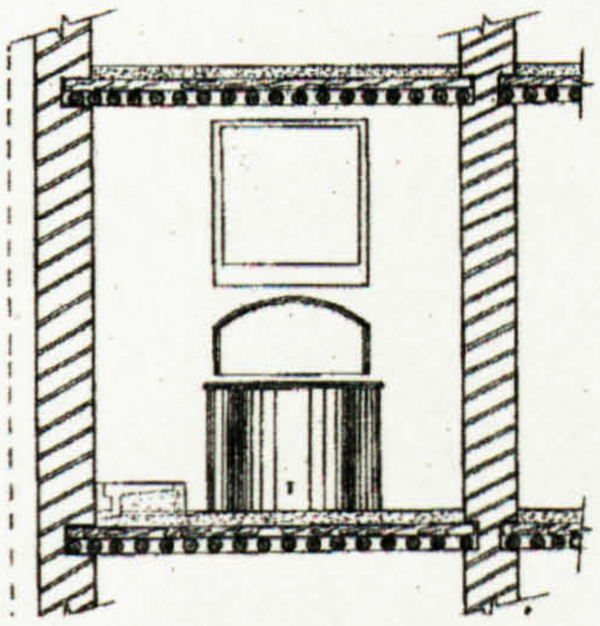
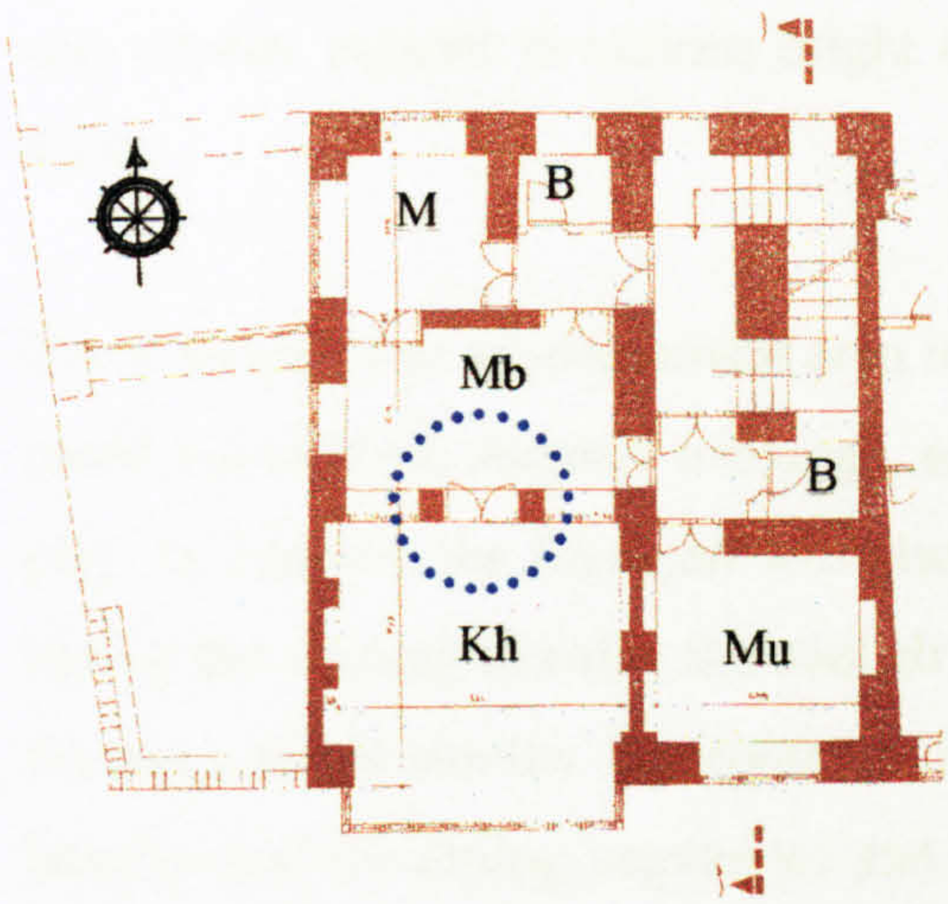


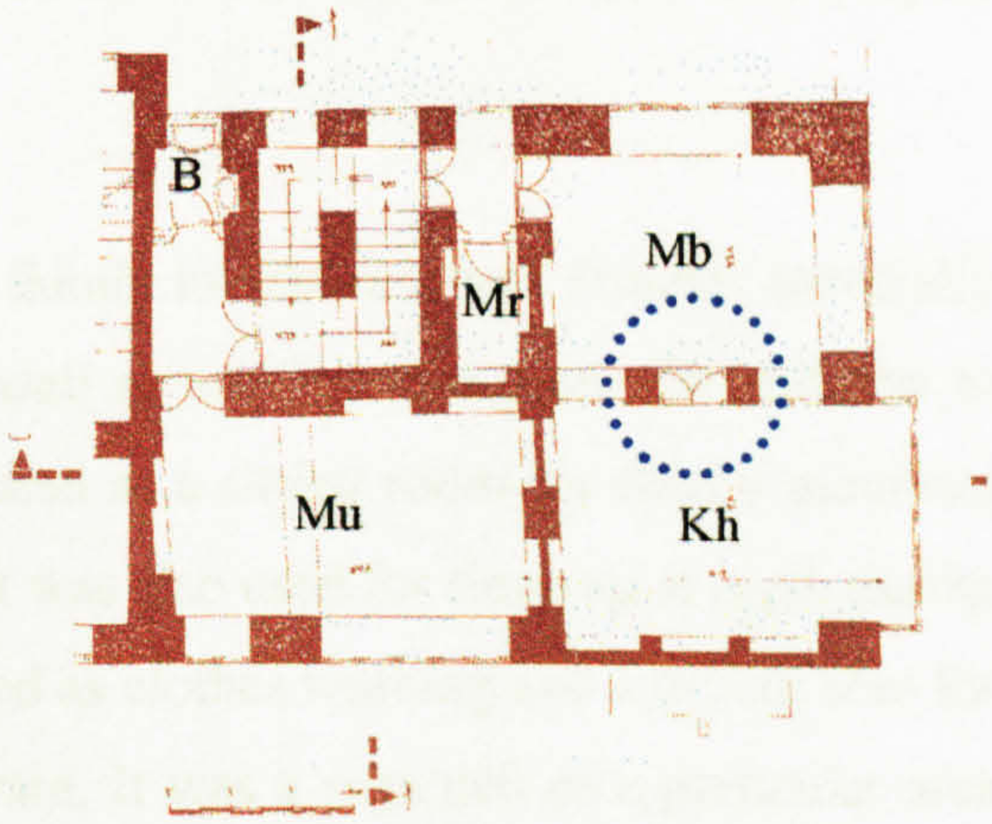
Figure 4.17: *Bayt alma*, Details of *Hanafiah* (hydrant), Houses 1 and 2, Omar Al Shorahi house (a and b) and House six, Al Qamah house (a)
Source: Author drawing based on Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia

4.2.8 *Mabit* (Night Room)

The sleeping area called the *Mabit* was usually situated at the back of the house and opposite to the *Muakhkhar*. The case-studies of Makkah traditional houses show that usually there was connecting door between the *Mabit* and *Kharijah* (terrace) (Figure 4.18). In this way the *Mabit* could be used as storage for *Kharijah* furniture. The parents commonly used this area and it was also used for other family activities, especially during hot days and nights when this floor of the house was used more often. The activities that were carried out in this area include tea drinking, children's playing and also the storing of cushions. In some cases there was also a *Mabit* relatively isolated from the rest of the house, where an occupant's adult relative who did not have a spouse, for example a widowed sister, could sleep.



Third floor, House 1 Omar Al Shorahi (a)



Third floor, House 4, Omar Al Shorahi (d)

House (c)

Mu	*Muakhkhar* (living room)	Mb	*Mabit* (night room)
Kh	Kharijah	Mr	*Markab* (kitchen)
St	*Sabaat* (arcade)	B	*Bayt alma* (Bathroom)

Figure 4.18: The door that connected between the *Mabit* and *Kharijah* (terrace)

Source: (House 1 and 4) Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. pp. 46-54

4.2.9 *Kharijah* (Terrace)

This was an open terrace.[21] A *Kharijah* on top of the houses characterized Makkah traditional residences and they were one of the most important distinguishing features of Makkah traditional architecture.[22] From the case-studies of Makkah traditional houses it can be seen that most of them had more that one *Kharijah* located on different floors. In addition the *Kharijah* on the higher levels could be replaced by some of the lower spaces. Walls which surrounded the *Kharijah* had small openings locally called *Shawabeer* (plural of *Shabowra*), meaning holes that were constructed from brick, and they provided the visual connection between the private and public realms.[23] The *Shawabeer* also allowed cross-ventilation. The *Shawabeer* were prominent ornamental features of the main elevation. The brick was usually painted in various bright colours, white, red, yellow and blue (Figure 4.19).

The *Kharijah* was a refreshment area for family members where females especially could spend their summer evenings, as well as serving as a place for children to play. In addition the *Kharijah* was also used as a sitting room for family members during the evening to enjoy the cool air. It was also used for sleeping at night during the hot summer months. *Kharijah* was used as clothes washing and a drying area for laundry and for drying vegetables and grain. It was a regarded as a particular area for females where they could work and relax freely, in privacy. (Figure 4.20)

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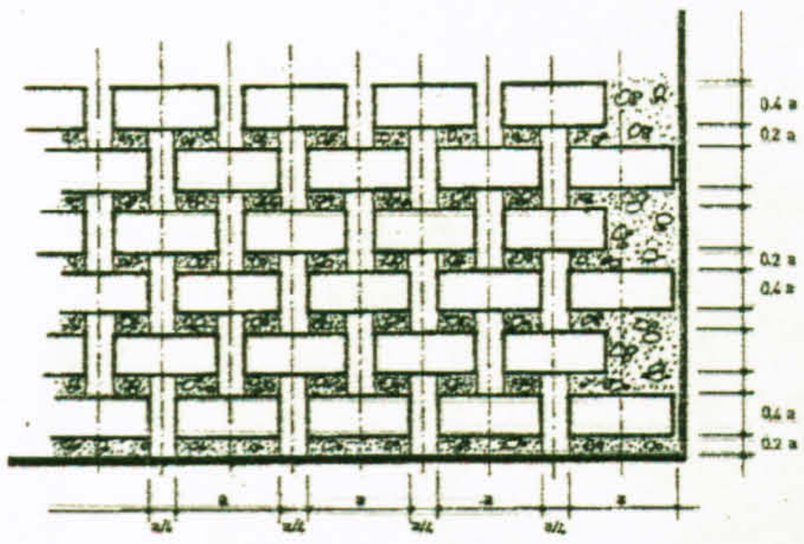
[21] Fadan, Y. Traditional Houses of Makkah: The Influence of Social-Cultural Themes upon Arab-Muslim Dwelling. Selected Paper from a Symposium Organized by the College Architecture and Planning, 5-10 January 1980, University of King Faisal, p.307

[22] Hijazi, Th. (1989) The Makkah Construction in Old times. *Al Maathorat Al Shabyyah Magazine*, 1989: 36 (Arabic text)

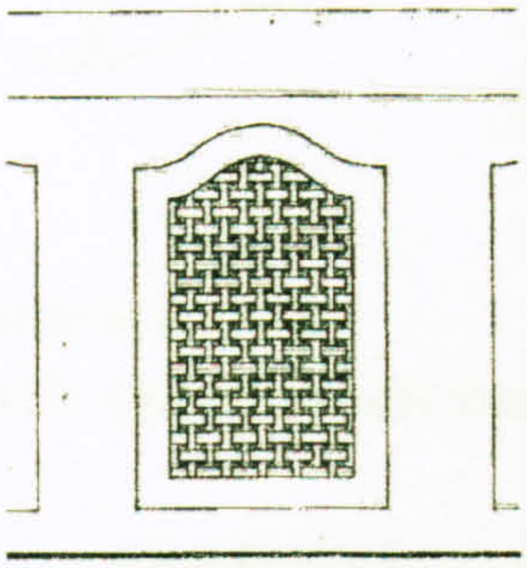
[23] Hariri, M. (1991) *The House in Islamic Architecture*, p.98



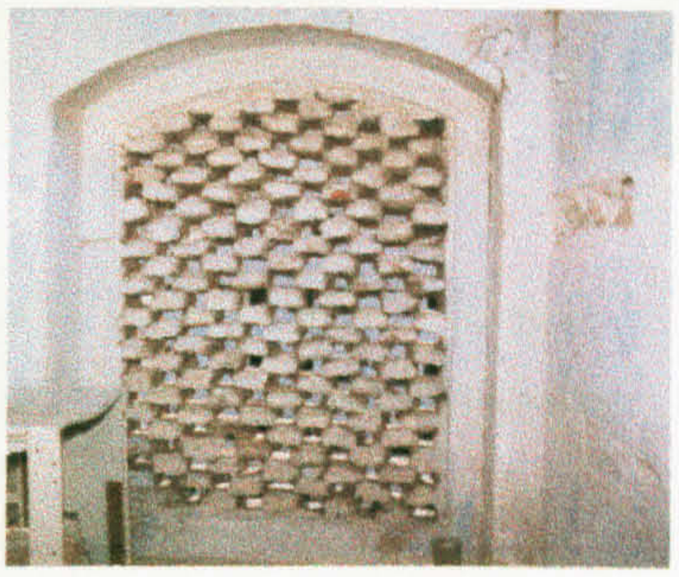
Elevation

Construction system of the bricks, *Shawabeer*

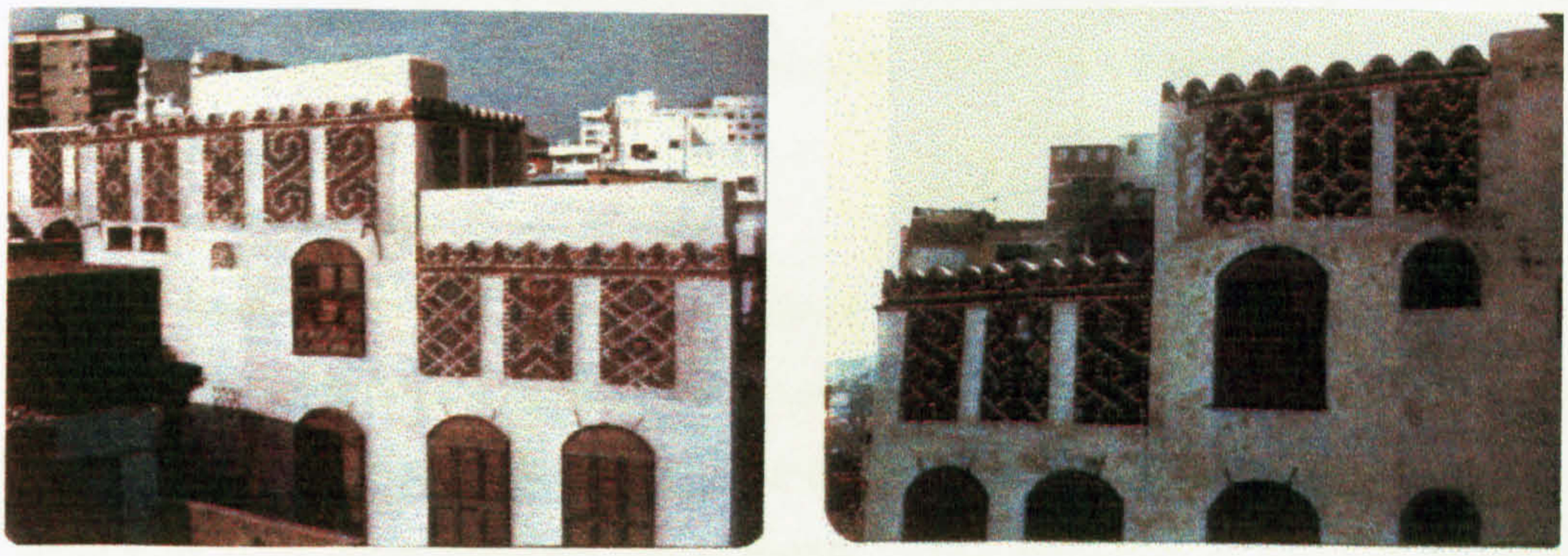
Plan



View of *Shawabeer* from inside

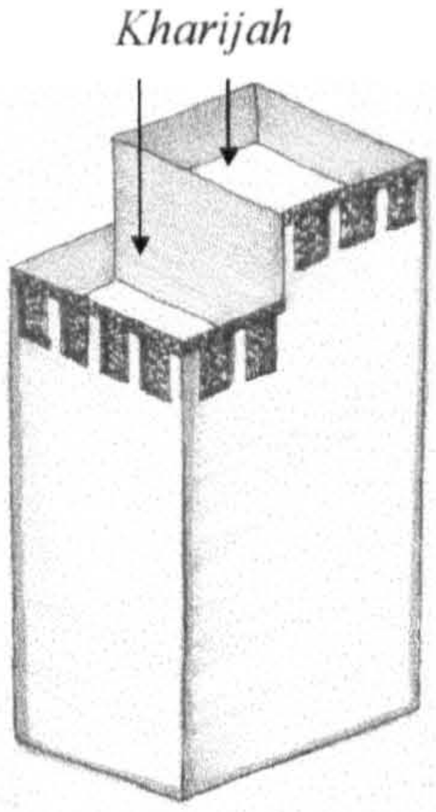


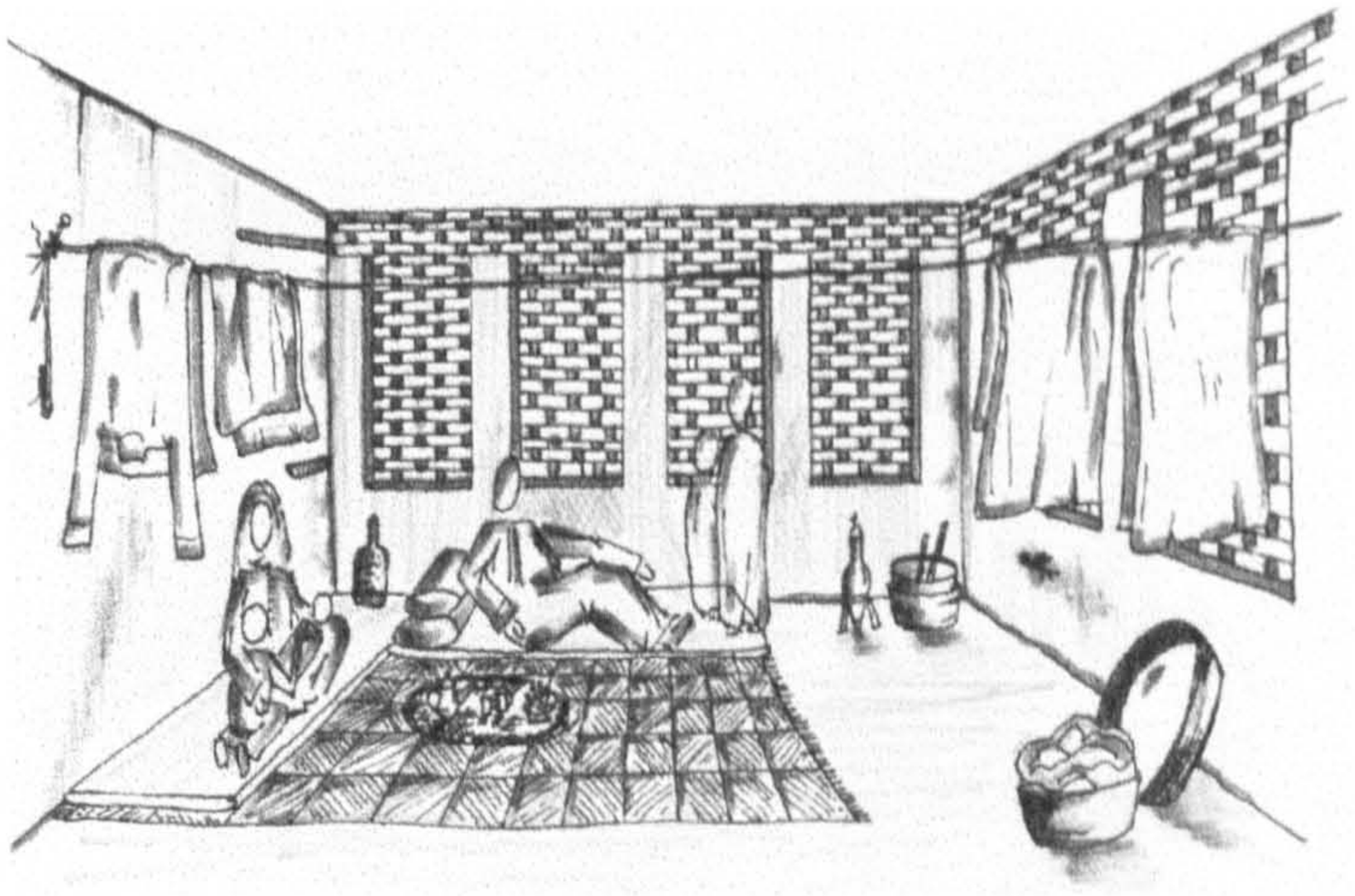
Coloured example of *Shawabeer* from Makkah houses



View of *Shawabeer* from outside

Figure 4.19: Screen walls with small openings constructed from brick, called locally *Shawabeer*
Source: Hajj Reserch Centre, Umm Al Qura University, 1983





The location of *Kharijah*. Typical family activities in the *Kharijah*.

Figure 4.20: Open space calls *Kharijah* were located in the upper floor, Makkah house

4.3 Makkah Lifestyle

4.3.1 Family Structure and Roles

The common family type in traditional Makkah was an extended family of three generations. The relationships between the parent and children as well as all family members were very strong. The central tie that held the extended family together was the grandparents. All the family members respected and obeyed the grand father's decisions. The eldest son would become the actual head of the family when he matured; however respect and consultation were always due to his father.[24] The head of the family also enjoys some special treatment e.g. in a family meal he starts eating before the rest of the family can do and usually the best food would be put in front of him.

Several families usually occupied a house. Some of the family activities were divided according to sex. Men and women, as two separate groups in the house, eat their breakfast and lunch together. The only chance for the nuclear family to eat separately from other families was at dinner.[25] The evolution of Makkah traditional

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[24] Jomah, H. (1992) the Traditional Process,

[25] Maghrabi. M. (1982) *Al-Haiah Al-Ejtemaiah Fi Al-Hijaz (Social living in Hijaz region)*, p.7-13

houses made them representations of the families living in them. The traditions require that once the family had grown and the boys were old enough to get married an extension was built in the family house to accommodate the new family. As a result it is normal for a family of parents, children and grandchildren to live in the same house and therefore it was normal in the Arabian society to find large number of people in the same house.[26]

4.3.2 Internal and External Lifestyle

The traditional Makkah house provided the space needed for all family activities as well as seasonal activities, such as accommodating the pilgrims during the *Hajj* season. The different zones of the house provided for this. Usually the ground floor contained an entrance hall *Dehliz* and one or two *Maq'ad.* The men of the family usually spent most of their daytime in the *Maq'ad* as well as receiving their male guests there. Sometimes they used this floor for sleeping during the daytime. The activities of females of the family took place on the upper floors, as well as receiving their male guests. During the *Hajj* season the owner, who usually worked as a pilgrim guide "*Mutawwif*", would use the *Maq'ad* as his office. The strong relationship of the males with in the alley, the use of the *Dehliz* and the frequently open main door made the *Dehliz* a semi-private space. Usually the household and male family member stayed in the *Dehliz* on the wooden benches "*Karaweef*". *Karaweet* was occasional also used for sleeping by male servants at night, if the occupant had any.[27]

During the day the main door could be left open, but not at night. The main door was composed of two large wooden leaves. In the right hand leaf, approaching from outside, was a little door. This door was for frequent daily use. The two doors would be left open when many pilgrims used the building during the pilgrimage season, when pilgrims rented most of Makkah's houses. The two doors would also be left open for weddings and funerals.

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[26] Akbar, S. (1998) Home and Furniture, pp. 72-73
[27] Akbar, S. (1998) Home and Furniture, pp. 74-75

Boys and girls played games alike, either indoors or outdoors. Some of these games were accompanied by song. These games are popular in many Arab countries with a few variations. These include, for example, *Al-Lub* "marbles", *Al-Midwan* "spinning top" *Al-Madarih* on a swing; these were a must especially during feasts and special seasonal occasions...etc. Therefore, when the weather was hot and children could not play in front of the house, they played in the *Dehliz*, which was usually the coolest space in the house because it was sprinkled with water.[28]

Females and their guests, as well as males of the family, used the upper floors. These floors contained the living units or flats. Usually each flat contained *Majlis*, *Muakhkhar* and *Suffah*. As mentioned earlier, the *Majlis* was used as a family reception room and the *Muakhkhar* was the living room where the family spent most of their time. The family members had their meals in the *Muakhkhar*. Meals were commonly served by spreading a cloth cover called "*Sufrah*" on the floor at meal times and placing large food dishes on this cover; the family members sat around the *Sufrah* and had their meal together. The housewife normally kept the pots and cups for preparing coffee or tea in this room. The family members could sleep on this floor during the winter nights as well. The parents usually slept in the *Majlis* and on summer nights they could sleep in the *Mabit*. Children usually slept in the *Muakhkhar*. The daily work of females was carried out on these floors and they engaged in various activities such as cooking, embroidery, dress-making, ironing, dressing children, and acts of Quran, (reciting the Quran), handicrafts, entertaining friends, *Khmir* (bread making)...etc.[29]

The top floor contained the common kitchen, called *Markab*, for the whole family and a room called *Mabit* opening onto the roof terrace "*Kharijah*". When the whole extended family eat lunch together, the women cooked one large meal, which could only be done in the large *Markab*. The little *Markab* that was in every apartment would be used for quick snacks such as later dinner and early breakfast.[30]

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[28] AL Layaly, S. (1990) The Traditional House of Jeddah.
[29] Habib Shaikh, (2004) Ahlan wasahlan, *Saudi Arabia Airlines Magazine*, December 2004: 10 (Arabic text)
[30] Angawil, Sami. M. (1988) Makkah Architecture, Ph.D. Thesis, School of Oriental and African Studies, University of London, pp.256-260

Women of the family could sun themselves in the *Kharijah*, which always had direct visual contact with the sky. The *Kharijah* was considered a good refreshment area for family members where females especially could conduct many daily activities during the daytime as well as on summer evenings. Before using the *Kharijah* it was sprinkled with water to cool it, and then covered with rugs and *liyyanat* (see section 4.4.2 and 4.4.4.2). It was used to chat, play games, drink coffee or tea, for children to play, and for sleeping on summer nights. It was also used to dry washing and for storage.[31]

4.4 Materials and Furnishings

The internal spaces in traditional Makkah residences derived their simplicity from the sparseness of the furniture. Although this was the case for loose items of furniture, the residents of Makkah were known for the lavishness of the general decoration of their houses and guests' rooms, as well as for their hospitality. In particular, the ladies in Makkah society were known for the extravagance of the presents they gave to relatives and visitors (e.g. dresses and ornamental objects)[32]

Although travellers and visitors have reported on the traditional houses in Makkah, it is rare that the interiors of houses were described in any detail.[33] The reason for this could be the fact that those visitors and travellers usually came in the months of pilgrimage and lesser pilgrimage, during which these houses were rented out and the owner's furniture stored away. The interiors were thus left empty apart from some fixed furniture e.g. *Dakkah* (Sand-cement bench), built-in shelves and wardrobes (see section 4.3.4.1). It should be added here that the rooms in the traditional houses of Makkah were not used just for one purpose but rather served as multi-purpose and multi spaces.

The changing of the daily uses of the rooms and the fact that they were especially spaces for multi-purpose activities meant that the traditional houses of Makkah were

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[31] Hariri, M. (1993) *Al-Khrijah*: *Solution for the Disappearance of the Private Open Space in the Modern Multi-Storey Housing*, Saudi Arabia: Jeddah Press. (Arabic text)
[32] Rafeea, M. (1990) *Makkah in 20th Century*, Makkah: Cultural and Literary Club Press. p.29 (Arabic text)
[33] Hijazi, Th. (1989) The Makkah Construction in Old times. *Al Maathorat Al Shabyyah Magazine*, 1989:.95

characterized by the existence of stores almost everywhere. The rooms did not contain any heavy tables or chairs, but this did not mean that they had no furniture because they contained wardrobes with drawers as well as pillows, rugs and carpets (see section 4.3.4).[34] In addition to the simplicity of the furniture, the traditional houses of Makkah contained many decorations and ornaments. The houses of the rich people contained expensive rugs, as is the case for most of the Eastern people, because Arabs always sat and lay on the floors.[35]

In the rare descriptions found of the inside of the traditional houses in Makkah, it was reported that the residents of Makkah used good quality furniture in their houses, for example Rezfan noted:

> They use low seats and pillows in the rooms and they cover the floor completely with rugs mats made of palm tree. The decoration of the walls consists of different plates of porcelain and metals, which are placed in special holes or on shelves. They also use many hung mirrors and they hide carefully and in special rooms all necessities of sleeping.[36]

Aspects regarding the interiors of the traditional houses in Makkah, need to be clarified. First, internal treatment e.g. floors, internal walls, ceiling. Second the furniture e.g. moveable and fixed pieces.

4.4.1 Interior Treatment

4.4.1.1 Floors

There were basically two methods of treatment for floors:

1- Sand. Some of the floors in the traditional houses in Makkah were left in their natural state. They were simply covered with sand e.g. *Dehliz* and some rooms, which had rugs and similar types of loose coverings. Sometimes sand was substituted by small stones (pebbles), for the floor of the *Dehliz*.[37]

2- *Tubttab* (lime-mortar floors). This is a local term for a type of cement flooring, which was used to cover the floors of the houses, the *Kharijah*, terraces and staircases. *Tubttab* was usually carried out by specialist workers from Istanbul or

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[34] Khan, S. (1986) *Jeddah Traditional House*, p.11
[35] Rezfan, Y. (1993) *Pilgrimage a Hundred Years ago*, Beirut, Lebanon Press. p.340
[36] Rezfan, Y. (1993) *Pilgrimage a Hundred Years Ago*. p.p.145-146
[37] Haikal, M. (1967) *Fi Munzal Al Wahee*, Egypt: Al Nahdhaah library Press. p.154

Syria and was used mainly by wealthy merchants.[38] It was common to use this type rather than sand covering for all the floors in the houses of the wealthy, and the thickness of this covering has been estimated as 15cm.[39]

4.4.1.2 Internal Walls

The walls were treated with a lime wash, or they were first covered with gypsum and then painted with a lime solution. In this first part of the process the gypsum was mixed with sand and lime.[40] The specialist workers in Makkah were very good at making gypsum decorations. These decorations take beautiful natural images such as birds, trees, etc and combine these with quotations of Qurani verses, proverbs, or the date of the construction of the building.[41] The fronts of the houses were also decorated in this way. These gypsum ornaments are normally found around arches, inbuilt shelves, wardrobes and capitals of pilasters (Figures 4.21 and 4.22)

Figure 4.21: Gypsum decorations on the internal walls, Majlis, Aal Momenah house, Makkah

Figure 4.22: Gypsum decorations on the top of bathroom doors, Aal Momenah house, Makkah

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[38] Hurkhroni, K. (1990) *Makkah history*, p.100
[39] Ulnengin, N. & Bulent, (1993) Homes of Old Makkah. *Aramco World*, 44: 28
[40] Al kurdi, M. (1385) *The History of Makkah and Holy Mosque*, Makkah: Al Nahdhah Press. p.266
[41] Magrabi. M.(1982) *Social living in Hijaz region*, p.210

4.4.1.3 Ceilings

The ceilings of traditional houses of Makkah were constructed from local materials such as palm leaf matting supported by timber beams.[42] These ceilings were treated in the following ways:

1- Uncovered beams: The wooden beams or joists of wood were left uncovered with floor planking fixed on top followed by woven matting made from palm tree branches and finally a thick layer of sand and/or lime mortar forming the floor surface. [43] This process resulted in parallel uncovered wooden beams at approximately 40 cm in between.[44] When entering the traditional houses in Makkah, one can see those exposed wooden baulks in the roofs of the *Dehliz*, corridors and stairs. This was especially so in the middle-class houses. These were less costly treatments and sometimes it was called *Qandal* roof, probably because of the fact that *Qandal* wood was used in its construction.[45] (Figure 4.23)

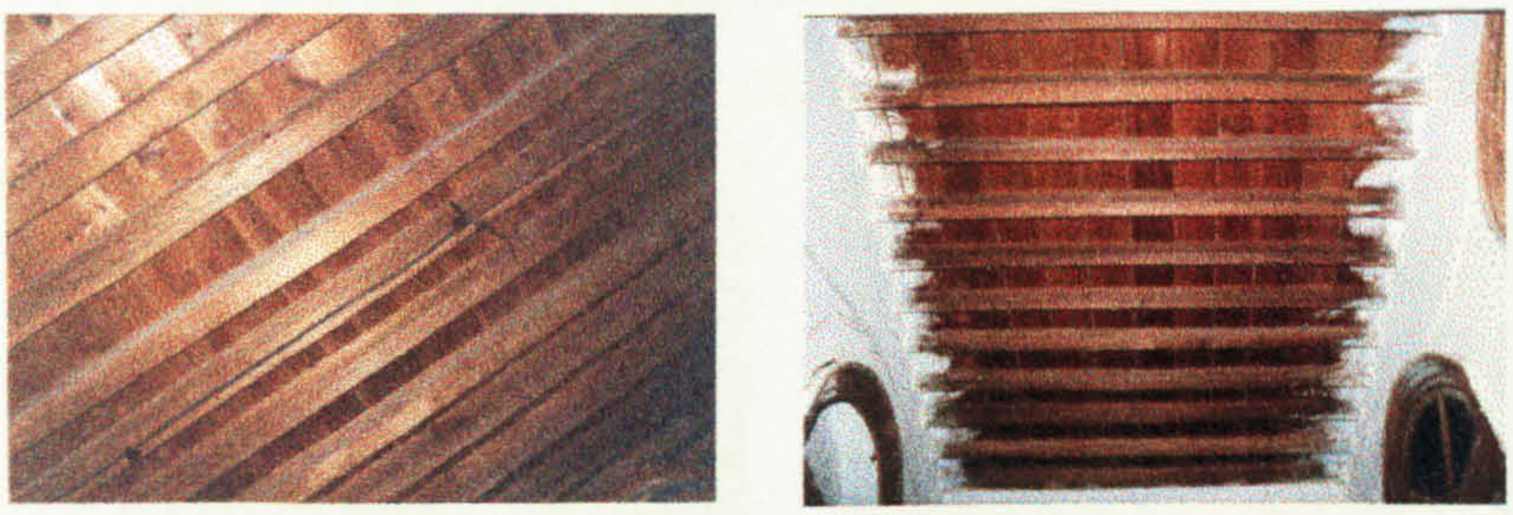

Figure 4.23: Uncovered wooden beam ceiling, Al Solimani and Aal Momenah houses, Makkah

2- Decorated wooden boarding: In some of the Makkah traditional houses, especially those of the wealthy, these wooden beams were covered so that they cannot be seen. This was particularly the case of the main rooms, e.g. the *Majlis*, where the beams were covered systematically with planks and fitted with chandeliers, which could be more easily decorated to great effect.[46] (Figure 4.24)

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[42] Al Gazawi, A. (1987) *Shatharat Al Thahab*, p.891
[43] Ulnengin, N. & Bulent, (1993) Homes of Old Makkah, *Aramco World*, 44: 28
[44] Hurkhroni, K. (1990) *Makkah history,* p.99 **see also** Ulnengin, N. & Bulent, (1993) Homes of Old Makkah. *Aramco World*, 44: 28
[45] Al Harthi, N. (1986) Architectural Wooden Earthwork in Hijaz in Ottoman Period, Master Thesis, Umm Al Qura University, Makkah, P.85
[46] Al Tunisi, M. (1303 AD) *Safwat Al itebar Bi Mostawdaa Al Amtar Wa Al Agtar,* Lebanon: Dar Al Safaa Press. P.26

Figure 4.24: Decorated ceiling, Aal Momenah house, Makkah

4.4.2 Woven Covers

1- The *Sejaad* (rugs): These were the rugs that furnished the *Majlis*. Some of these rugs were of high quality and usually imported from Iran and were, therefore, called Persian rugs.[47] In the Ottoman period they were also brought to Makkah from Turkey and these rugs were very expensive.[48] Besides the expensive rugs, which were bought by the rich and some of the middle classes, there were rugs of Arabian type of lesser quality that were cheaper. These were called *Sherazi*. (Figure 4.25)

Figure 4.25: Geometric ornament of fleece rug, *Sejaad*
Source: Khalil, A. 1985, p. 390 and 391

2- *Hanbal*: These were rugs that were of lower quality than *Sherazi* types and used for less important areas e.g. *Makhlawaan*. The houses of the lower middle classes depended on this type of floor cover, which were usually cotton rugs with black, red and blue lines.[49] There were rugs also with yellow, green and white lines and these were brought from India and were called *Sejaad Hindi* (Indian rugs) and were

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[47] Rafeea, M. (1990) *Makkah in 20th Century*, p.28
[48] Magrabi. M. (1982) *Social living in Hijaz region*, p.25
[49] Rafeea, M. (1990) *Makkah in 20th Century*, p.29

usually made by hand.[50] The better type of *Hanbal*, which were called *Srti*, were light and resembled some of the woven rugs.[51] They were blue, with red and yellow decorations in the middle and on the sides. A further type of rug was made in the *Hijaz* region, in the cities of Bisha and Taaif; it was called *Shimal* and was usually woven and manufactured by Bedouin women.[52] This type was made from rough wool, which resembles, in its shape and smoothness, their tents. The *Shimal* were rectangular in shape and had many different and striking colours, mostly red, black and grey.[53] (Figure 4.26)

Figure 4.26: *Hanbal*
Source: Khalil, A. 1985, p. 392

3- *Haseer* (palm tree rugs): this was more of an underlay, which was put under other rugs to protect them from damage and they were usually made from the branches of palm trees.[54] There were some types of *Haseer* that were brought from India and they were put in the *Majlis*.[55]

4.4.3 Interior Colour

The colours commonly employed inside the traditional houses in Makkah were white and brown. The brown colour was the natural colour of the wood in the ceilings, whether they were meant to be seen or not. The brown colour gives a feeling of warmth as well as affecting the viewer's sense of space, since the interiors

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[50] Magrabi. M. (1982) *Social living in Hijaz region*, p.25
[51] Al Merhem, F. (2001) *Rowshan and Window*, p.352
[52] Rafeea, M. *Makkah in 20th Century*, 1990, p.29
[53] Al Harthi, N. (1986) Architectural Wooden Earthwork, P.64
[54] Hurkhroni, K. (1990) *Makkah history*, p.107
[55] Magrabi. M. (1982) *Social living in Hijaz region*, p.14

in the houses of Makkah were usually voluminous with ceilings commonly three metres high or more. The darkness of the wood colour gives the sense of lowering the height of the ceilings. On the other hand the white colour, coming from whitewashed walls, gives the sense of restfulness, clarity and brightness as well as the feeling of an expanding internal space, contrasting with the colour of the dark woodwork. As a result the interiors had ample place for exhibiting things, as the white walls provided a neutral background to the objects that were hung on them e.g. mirrors, copper work and woven fabrics.

4.4.4 Furniture

In Makkah the pieces of furniture were either fixed or transferable. However transferable does not mean that these were easy to move or transfer, simply they could be kept in storage during the season of Hajj and Umrah, the renting seasons, and thereafter returned again to their places. The following sections will highlight the classification of items of furniture according to whether they were fixed or transferable, with their local names and locations of use.

4.4.4.1 Fixed Furniture

1- *Dakkah* (Sand-cement bench): It was considered the most important piece in the interior of the traditional houses of Makkah and this was because it for used part of the construction of *Rowshan* or *Mashrabyyah*. It was a cement block that was built from the same building materials as those used for the house. It was usually built inside the *Rowshan* or *Mashrabiyyah* and directly under it's opening, either with the same width or a little less. It looks like a large step, built higher than the level of the floor as a window seat, which people could use during the day. At night the *Dehliz* served for sleeping as well. Its carpets and woven covers were stored during the daytime in a storage cupboard with shelves in its base, either with wooden doors or no doors at all.[56] (Figure 4.27). In the *Majlis* this seat had special covers. It was usually half a metre in height and carpeted with cotton pillows and covered with rugs as well as cushions to lie back on. The commonly chosen colour

[56] Al Hajjan, A. (1980) Role of Artwork in Mamluke houses, Master thesis, University of Helwan, Cairo. P.172

was red.[57] The type and quality of carpets differed according to the importance of the space e.g. reception rooms have more luxurious and more comfortable carpets and rugs than other rooms.

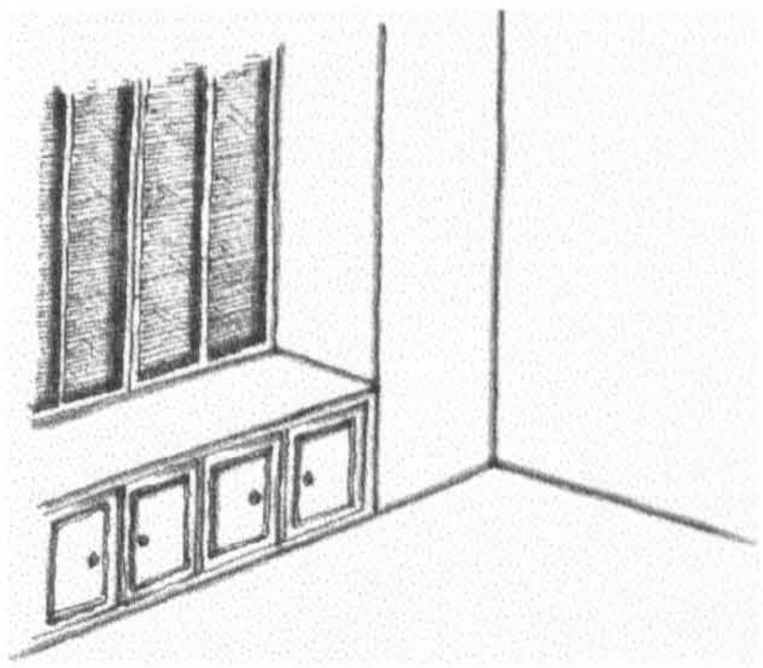

Figure 4.27: An example of *Dakkah*

2- Shelves: In the traditional houses of Makkah, built-in shelves were constructed of stone and recessed into walls. Decorative objects like porcelain plates were displayed on these shelves. In some cases the *Majlis* was decorated with wooden shelves, which had decorative china plates on them.[58]

3- Built-in wardrobes: Fixed wall shelves, which depended on the thickness of the stone walls, were considered beneficial by the residents in the traditional houses of Makkah and when these shelves had wooden doors they became proper wardrobes. A built-in wardrobe was an empty space in the stone wall and with dimensions depending on the thickness of the wall. It had wooden doors and wooden or stone shelves.[59] A wardrobe usually had two parts separated by a vertical panel to which the lock of the wardrobe was fixed.[60] (Figure 4.28)

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[57] Magrabi. M.(1982) *Social living in Hijaz region*, pp.13-14

[58] Al Gazawi, A. (1987) *Shatharat Al Thahab*, p.461. See also, Magrabi. M. (1982) *Social living in Hijaz region*, p.15 and Al Amri, A. (1985) *Handcraft and Trade in Hijaz in Prophet Mohammad Period,* Saudi Arabia: Riyadh Press. p.205. (Arabic text)

[59] Al Hajjan, A. (1980) Role of Artwork in Mamluke houses, Master Thesis, University of Helwan, Cairo p.28

[60] Al Harthi, N. (1986) Architectural Wooden Earthwork, P.p.88-90

Figure 4.28: An example of wall wardrobes, Aal Momenah house, Makkah

4- Miscellaneous: The most important fixed piece of furniture, other than those already mentioned, in the traditional houses of Makkah was the side table (*qaaedah*) and it was a constructional element which was built from lime plaster against the wall with shapes that suited the specific uses (e.g. tables, stools or wall shelves). It had either curved or straight lines or bases that were connected with the wall or the floor or both. These *qaaedah* would be used mainly for display purposes. They could also serve as bases for large wall mirrors that have decorated wooden frames, and these bases would be decorated with prominent lime ornaments. (Figure 4.29)

Figure 4.29: An example of built stools, Aal Momenah house, Makkah

4.4.4.2 Moveable Furniture

1- *Tawaweel* and *Liyanat*: The *towalah* (singular of *tawaweel*) was a 5-10 cm thick cushion, positioned around the room (on the *Dehliz* as well as the floor) and used for sitting and sleeping. It was stuffed with either feathers or cotton and its size, around 180 X 70 cm, determined by human dimensions. It was large enough to be comfortable for sleeping and small enough to be carried and stored whenever necessary. The length of the final *towalah* in the room could be adjusted to avoid leaving a gap with the wall. The *liyanah* (singular of *liyanat*) was the same size as the *towalah* but filled with sponge. It was of lower quality, and thus was used only by family members in their zone. Because they were easy to fold, many *tawaweel* and *liyanat* were stored away, mainly in the corner of a room, to be used whenever necessary (Figure 4.30). Upholsterers made both locally. When the frequent use of *tawaweel* hardened their cotton filling, they were taken to the upholsterer for the cotton to be teased out.

towalah Folded *towalah* *Liyana*

Figure 4.30: *Tawalah* and *Liyanah*
Source: Akber, 1998 p90

The *towalah* probably was the most practical piece of furniture in the traditional house due to its portability and multi-use. A room that was used for sitting could be transformed within a few minutes to be used for sleeping by rearranging the *tawaweel*. Therefore the *tawaweel* were used in almost all rooms.

2- *Madafi* and *Masanid*: Back support cushions, called *masanid*, and side support cushions, called *madafi*, were put on the *karaweet*, *rawashan*, and *tawaweel*. They were covered with thick floral patterned red cloth called *damask*. Because the removal of *masanid* covers for cleaning was a difficult task, long, patterned white cloths, which could be removed easily, covered the upper half of the *masanid*. Upholsterers also made them locally. (Figure 4.31)

Misnad

Midfa

Figure 4.31: *Misnad* and *Midfa*
Source: Khlil, A. 1985, p. 389

3- *Karaweetah* (singular of *karaweet*): There were two types of *Karaweet*, one was a loose piece of furniture, see section 4.2.1, the other a fixed bench along the wall. It was around 50 to 90 cm in height, 80 cm in width, and not more than 2 m in length. The *Karaweet* wooden frames were made by local joiners, and then covered with a thick cloth called *sijani*. Over the *sijani tawaweel*, which were covered with damask, were arranged. Those who could afford it filled the *tawaweel* with cotton; otherwise they were filled with granules called *tiraf* taken from desert shrubs.[61] If finances permitted, the cushions were covered with Persian rugs; if not they were left as they were. When the fixed type of *karaweet* were put together, they would constitute a long continuous sitting platform, most frequently in a U or L shape, thus leaving the centre of the room free for use. People furnished their rooms with *karaweet* whenever they could afford to. They were positioned around the *Majlis* to make continuous peripheral seating with the *Rawasheen*, and were covered with the same covers as the *Rawasheen*, making a large sitting area. (Figure 4.32)

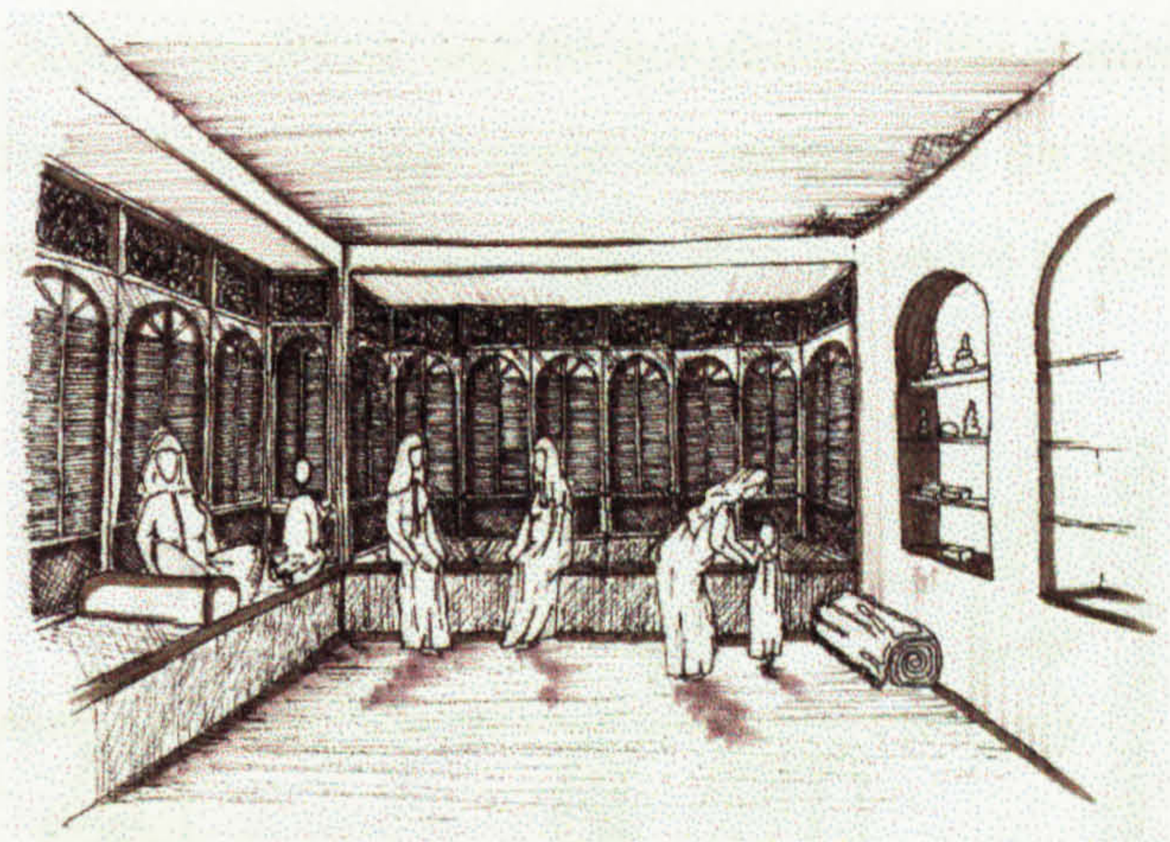

Figure 4.32: *Karaweet* in the *Majlis*

[61] Magrabi. M. (1982) *Social living in Hijaz region*, p.25

Some of the *karaweet* were significantly higher. In Abdul Rout Khalil museum there are *karaweet* as high as 90 cm. It not would have been easy to get on and off these *karaweet*, especially for old people and children. Informants could not give a convincing explanation for this height. One reason given was that this was because people used the space beneath the *karaweet* for storing family belongings. However, this explanation does not seem reasonable, because most houses, especially those of rich families, had plenty of other storage areas. Another reason given for the height of the *karaweet* was because they had to be on the same level as the *Rowshan* so that occupants could see out from the upper stories. (Figure 4.33)

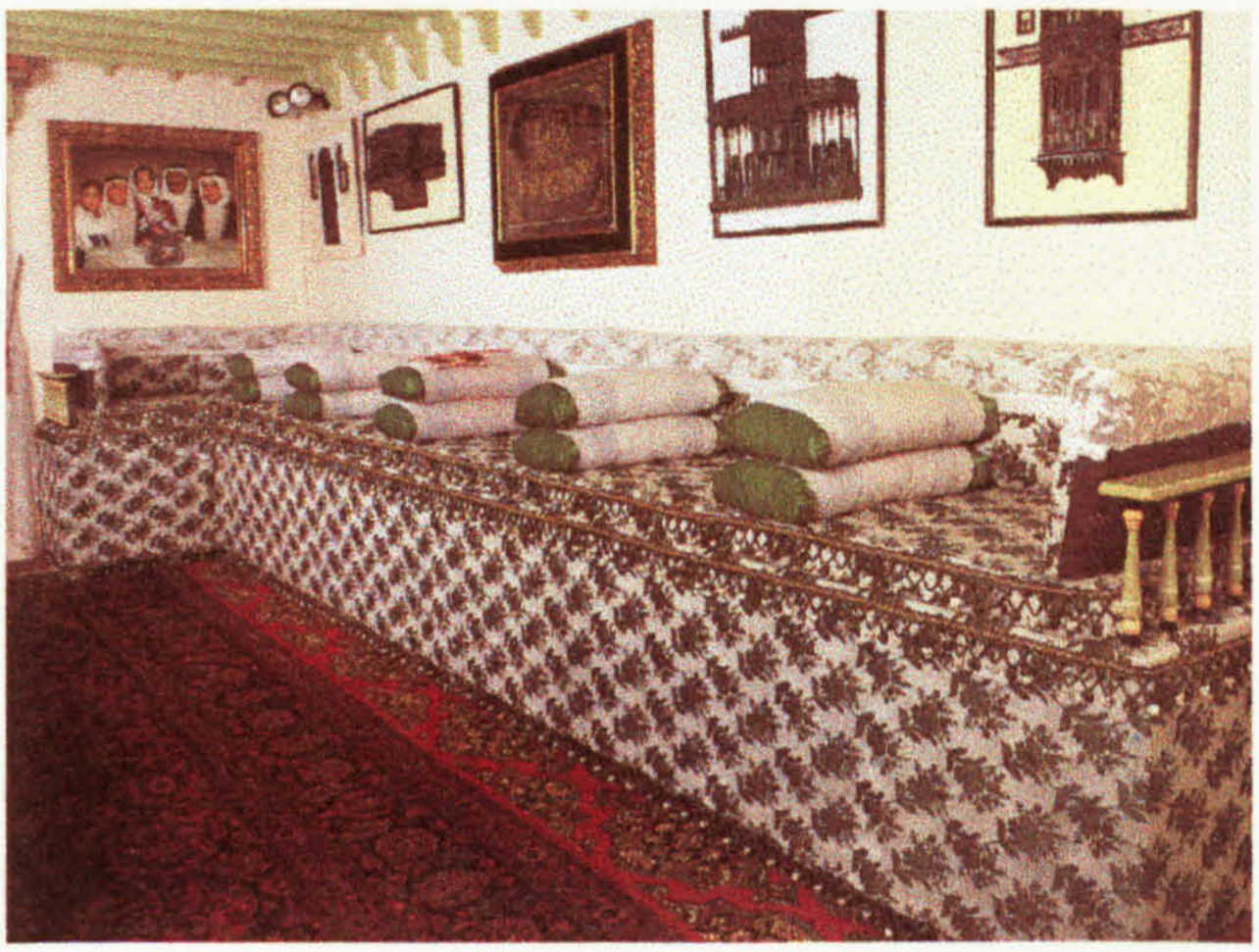

Figure 4.33: An example of high seating
Source: Khalil, A. 1985, p.138 and 197

The arrangement of *karaweet* as a continuous sitting platform, without armrests, which may hinder shifting positions, and the portability of the *madafi* and *tawaweel* increased the freedom of use. People could sit upright, lie on their sides, stretch their legs whichever way they liked, and adjust their positions to look at each other. (Figure 4.34)

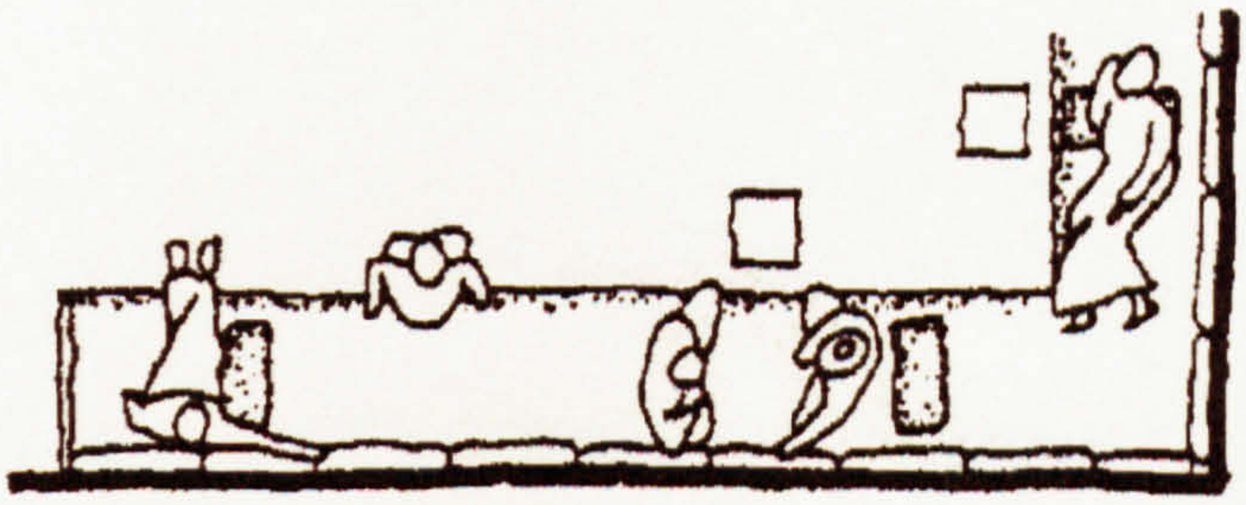

Figure 4.34: The freedom of sitting positions on the *Karaweet*.
Source: Akbar, 1998, p.93

4- *Saisam* and *Sahharah* chests: The most valuable piece of furniture in traditional houses was the *Saisam* chest. It was impressively decorated with wooden carvings. It was around 160 cm in length, 70 cm in width, and 90 cm in height. Family clothes were put in different cloth bags, which were arranged inside the chest. People did not iron their clothes before wearing them. Easy-to-use electric irons were not available. Heavy charcoal-heated irons were used only on very important occasions such as weddings, often in a community way. (Figure 4.35)

The best and most expensive of these chests were imported from India. Cheaper ones were made in Jeddah and Makkah. Another type of the same size but lower quality was called *Sahharah*. The lower income families used it for the same purpose or it was used by rich families for keeping food and spices in the *murakab* (kitchen).[62]

Figure 4.35: An example of a *Saisam* chest
Source: Khalil, A. 1985, p.365

[62] Magrabi. M. (1982) *Social living in Hijaz region*, p.25

4.5 Plan Typologies

According to the organization of the plan, the number of elements and the size of the plot, Fadan[63] has defined three types of traditional plan employed in Makkah houses:

4.5.1 The Simple Plan Houses

According to Fadan these kinds of houses were usually small in size, had only the most necessary elements and it was generally occupied by small families. Next to the *Dehliz* (entrance hall) there was a sitting room (Maq'ad) and these were usually on the ground floor. The *Maq'ad* was used in a lot of cases as a business office and a reception area for close male friends. On the upper floors there was a minimum of living area with private *bayt alma*. The family could use the living area for many purposes. The surface area of the floor decreased as the level increased so that terraces could be provided. An example of this was on the third floor. The terrace takes some of the surface area, which results in the fact that a fourth could be built in this part. The raised part of the third level used for the terrace of the fourth floor as shown in figure 4.36.

The case-studies of the Makkah traditional house show the *Maq'ad* situated on the ground floor. In the simple plan house usually one *Maq'ad* was suited on the right or of the *Dehliz* while in the compound and complex plan house were found two *Maq'ad* and they could be suited on both sides of the *Dehliz*. Fadan pointed out that the *Maq'ad* was used as a business office in the *Hajj* season. Therefore *Maq'ad* could never be found on the upper floors which as far as possible formed the family zone. In addition it is clear from Fadan's Figure 4.37 and from the case-studies of Makkah traditional houses that usually the *Maq'ad* was connected with the *Bayt alma* and sometimes with the *Makhlawan*. (Figure 4.37) The researcher found that usually the *Maq'ad* consisted of two spaces connected by an archway about three metres wide to provide more area, due to the structure limitation of building

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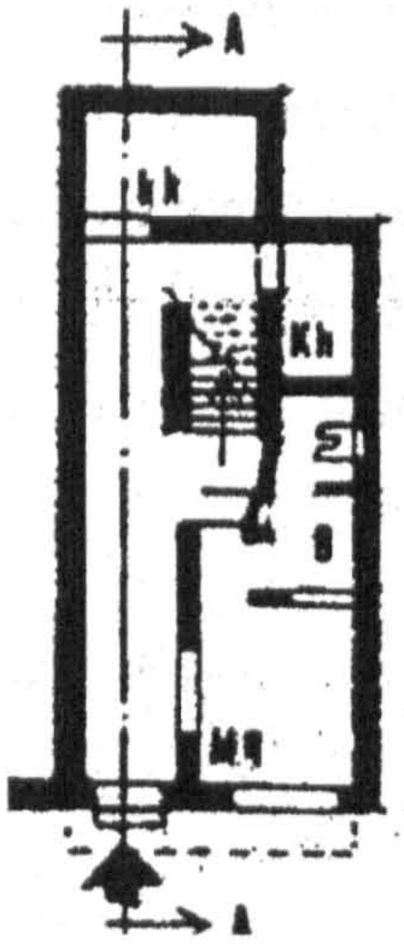
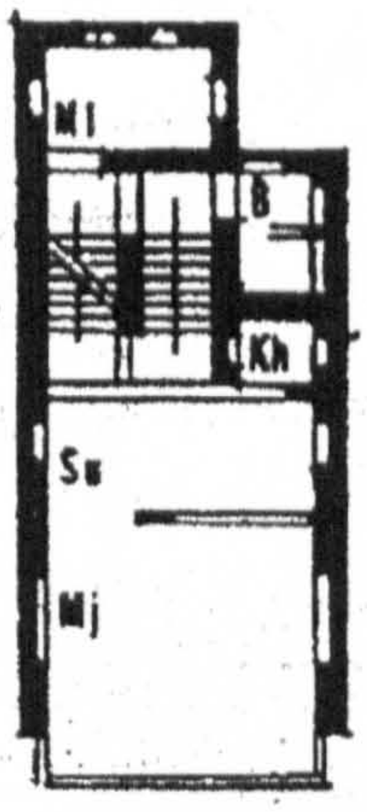
[63] Fadan, Y. Traditional Hoses of Makkah: The Influence of Social-Cultural Themes upon Arab-Muslim Dwelling. Selected Paper from a Symposium Organized by the College Architecture and Planning, 5-10 January 1980, University of King Faisal, p.301-305

materials. (See House 1, 2, 3, 4 and 6, Appendix A) However, the *Maq'ad* was usually located under the *Majlis* and it had the same width.

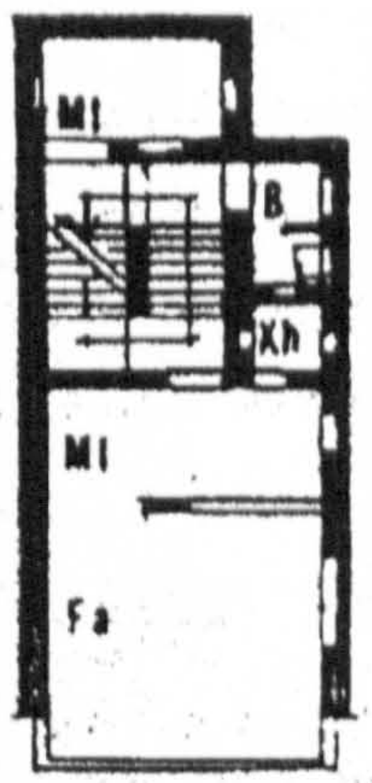
As Fadan pointed out, on each of the upper floors of this types of house there was a minimum of living area with private *Bayt alma* which was located at a lower level. The researcher found that the *Muakhkhar* (living room) was usually located on the first, second and third floors. For example, in Houses 1 and 2 Omer Al Shorahi house (a and b), one *Muakhkhar* was situated on the first floor as well as in House 4, Omer Al Shorahi house (d), the *Muakhkhar* was situated on the first and second floors. In House3, Omer Al Shorahi house (c), and House 6, Al Qamah house (b), the *Muakhkhar* was situated on the second and third floors while in House 5, Aal Momenah house the *Muakhkhar* was situated on the first, second and third floors. On the other hand the *Kharijah* (terrace) is usually found from the third floor upwards. (See case studies of Makkah traditional house, Appendix A)



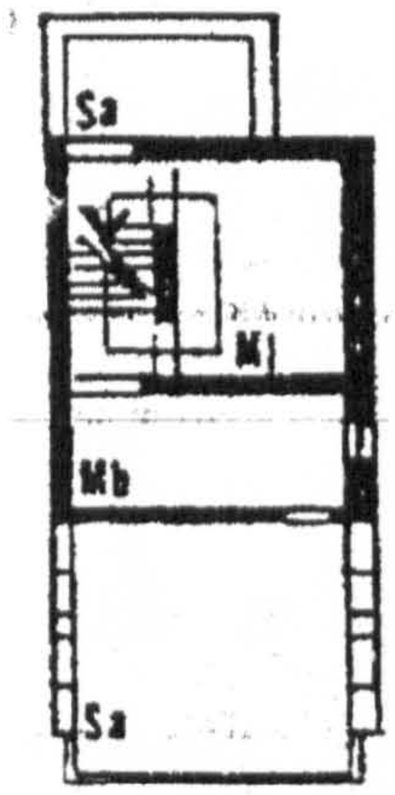
Ground floor



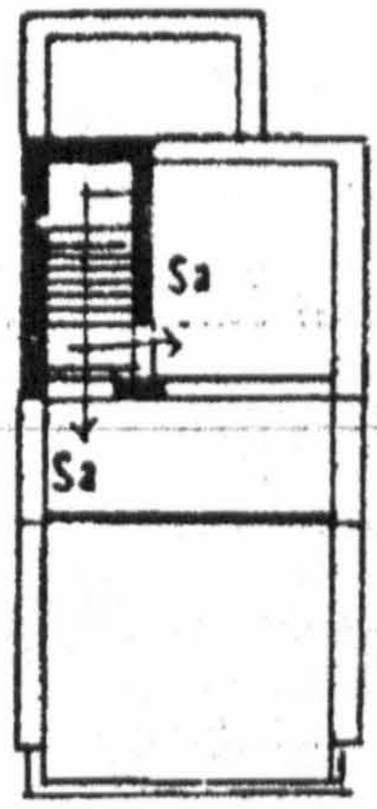
First floor



Second floor

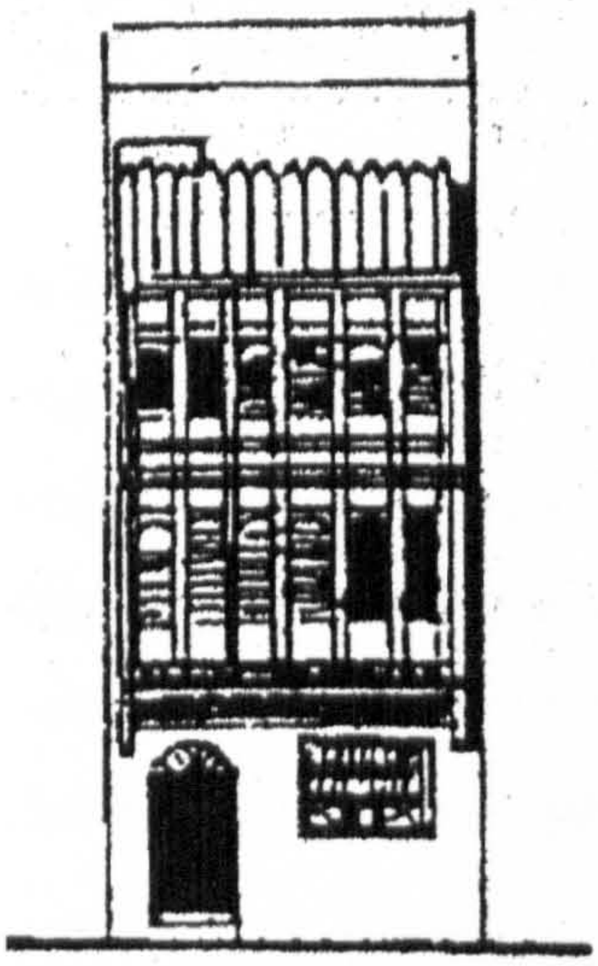


Third floor

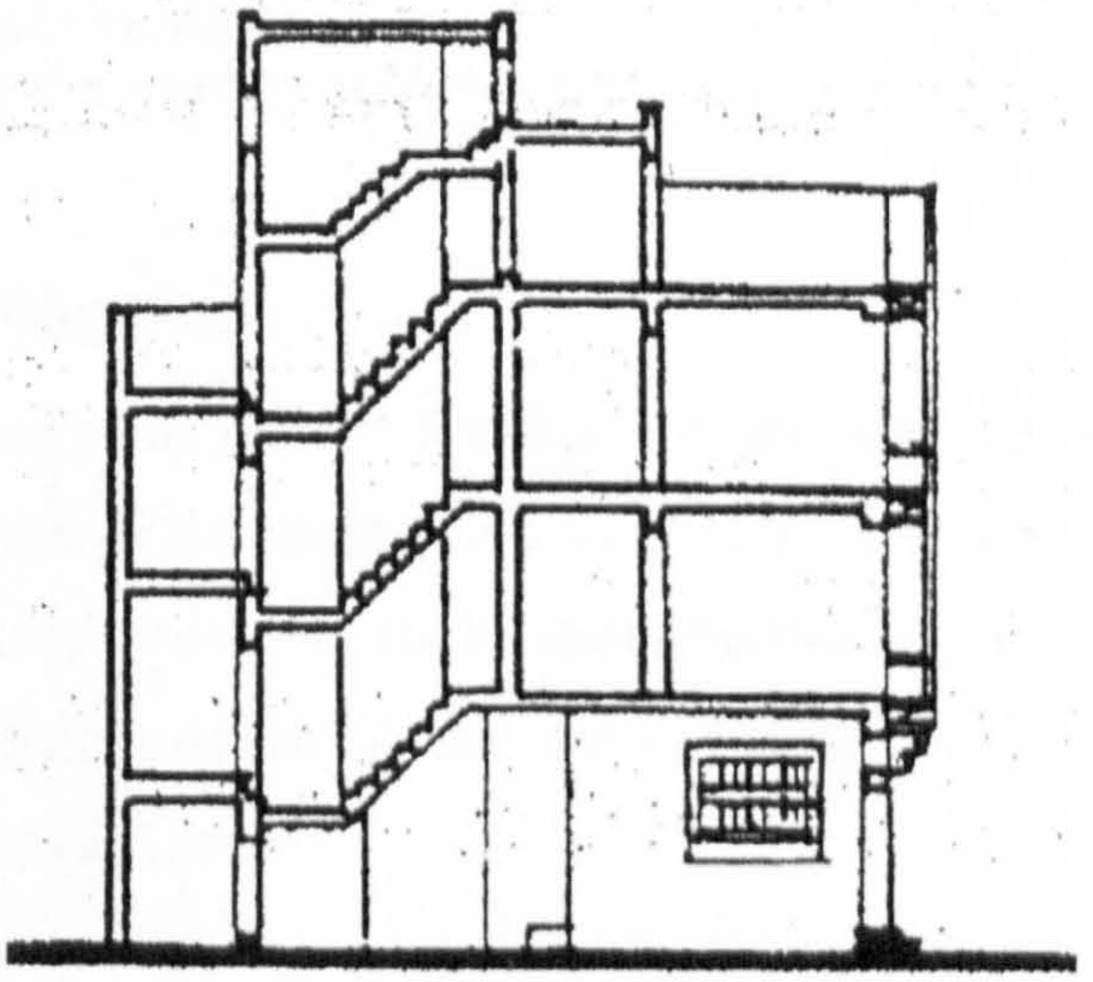


Fourth floor

Da	Entrance hall (dehliz)
Mq	Sitting room (Maq'ad)
Mj	Reception room (Majlis)
Su	Ante room (Suffa)
Fa	Family room
Kh	Storage space (Khuzana)
Mt	Kitchen (Matbakh)
B	Water close (bayt alma)
Dq	Storage space (diqajsi)
Mb	Night room (mabeet)
Sa	Terrace (kharija)
Ml	Multiple use

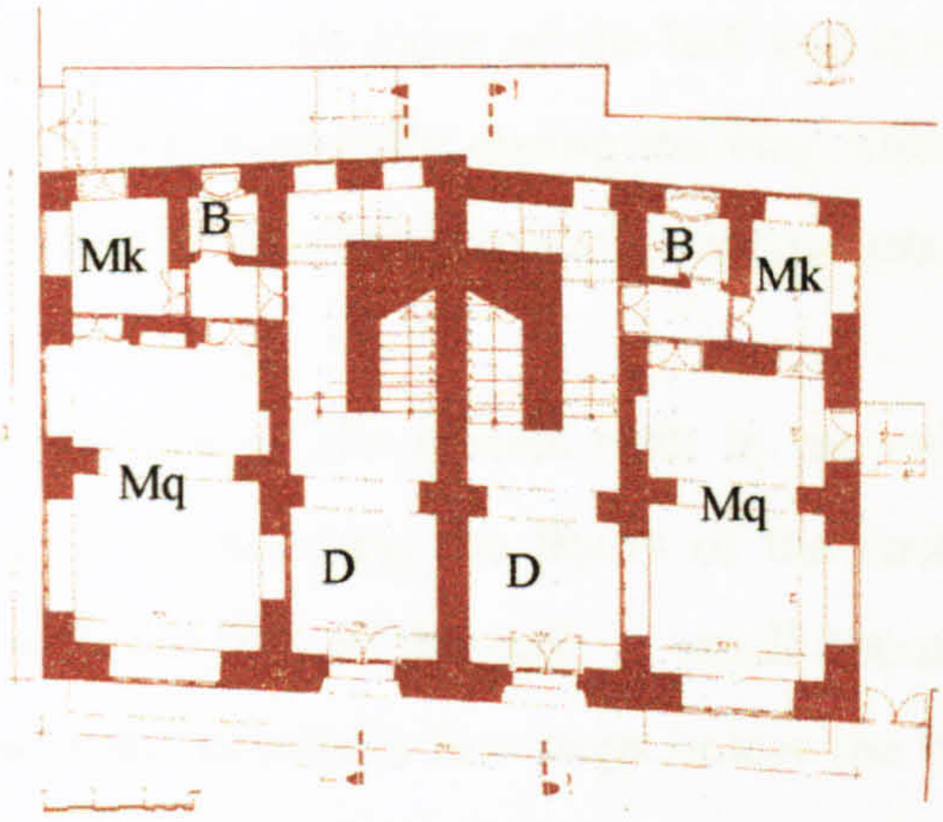


Main facade

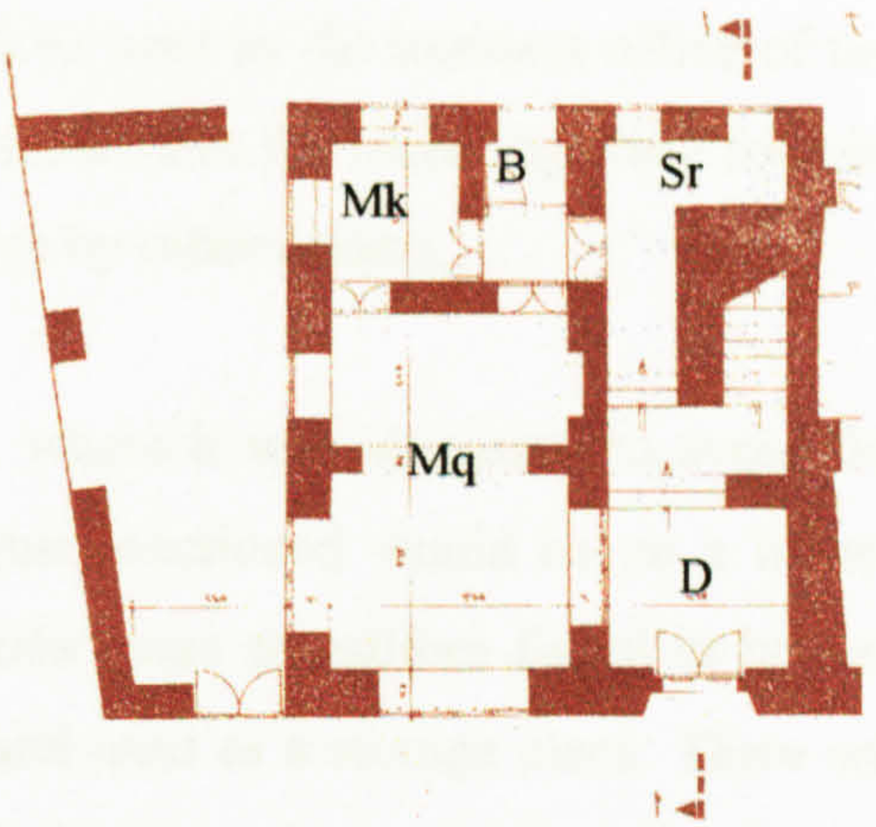


Section A.A

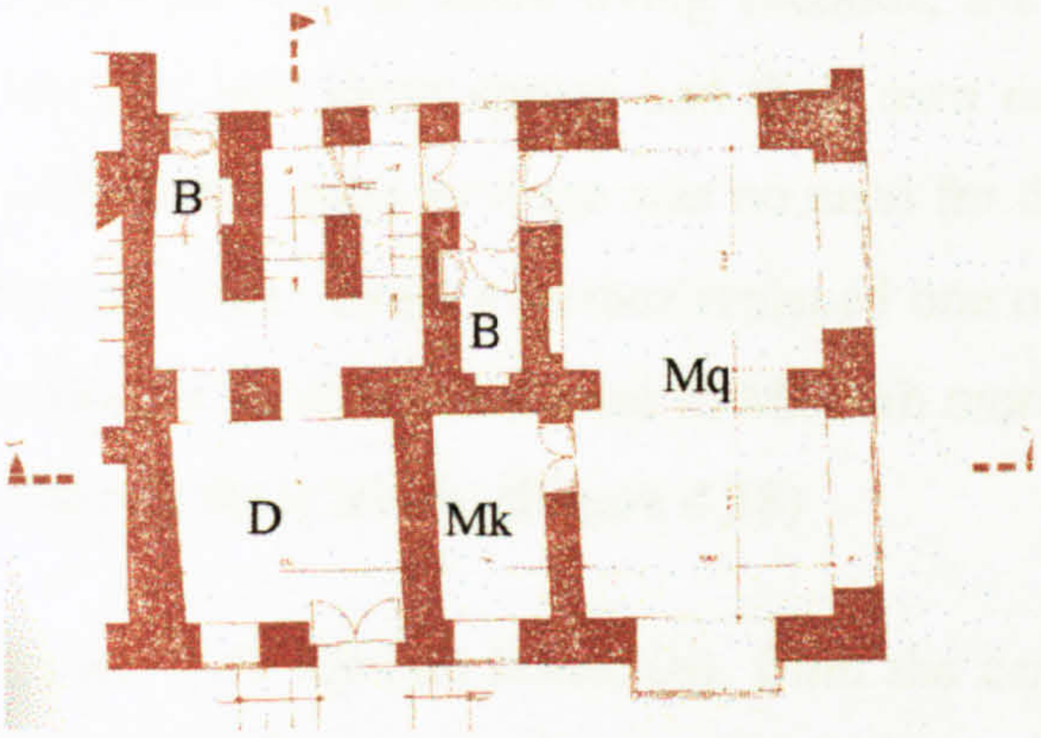
Figure 4.36: Simple plan house, Makkah
Source: Fadan, 1980



Ground floor
House 1 and 2, Omar Al Shorahi, House (a and b)



Ground floor
House 3, Omar Al Shorahi, House (c)



Ground floor
House 4, Omar Al Shorahi, House (d)

D *Deliz* (Entrance hall)
Mq *Maq'ad* (Sitting room)
Mk *Makhlawan* (Resting place)
Sr Storage
B *Bayt alma* (water closet).

Figure 4.37: The *Maq'ad* was connected with *Bayt alma* and sometimes with the *Makhlawan*
Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia

4.5.2 The Compound Plan Houses

According to Fadan the type of house were common in Makkah and the size and number of components depended on the size of the house, the financial ability of the family, the occupation of the head; also according to its location, particularly in relation to the Holy Mosque as this enabled the owners to rent out part of the house during the Hajj and lesser pilgrimage seasons (Umrah).

Usually the *Dehliz* in this kind of house was raised up to one and half times the usual storey height. This variation in floor levels of the house meant that Makkah houses did not have a typical floor level throughout the storey. The *Maq'ad* could

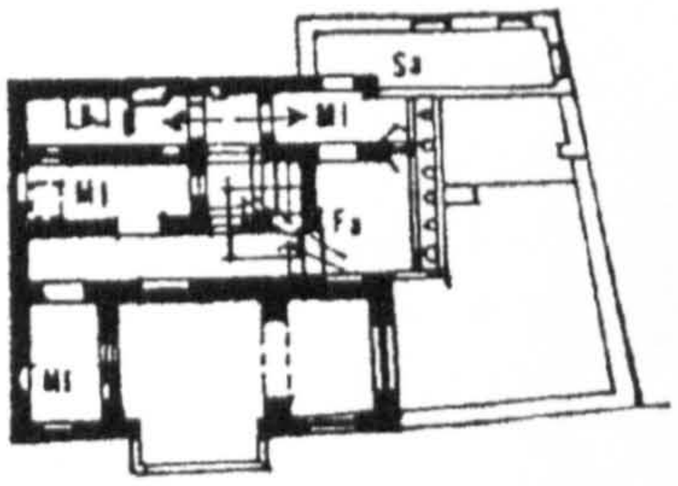
be found on two sides of the hall and it could be used as the business office of the house and especially during the Hajj time or sometimes for receiving close friends. It could be also being rented as a business office by other traders.

In the case of the houses built in the valley, where it was necessary to avoid the danger of flooding the floors of the rooms just mentioned would be on a higher level than that of the hall. A small room (*Qabw*) was sometimes found in houses that were located a few steps below the hall and used as a storage place. There are also multi-purpose adjoining rooms, which could be used to accommodate friends who did not have access to upper floors. The main *Majlis* and a neighbouring *Suffah,* as well as extra living sections, are built on the higher level. It was very common that these spaces had their own essential facilities and could be used as independent units so there was no need for direct communication at the same level. On the upper levels a terrace replaced one or more an the space below. In addition to this, in most of the houses in Makkah more than one terrace could be found at the different floor levels. (Figure 4.38)

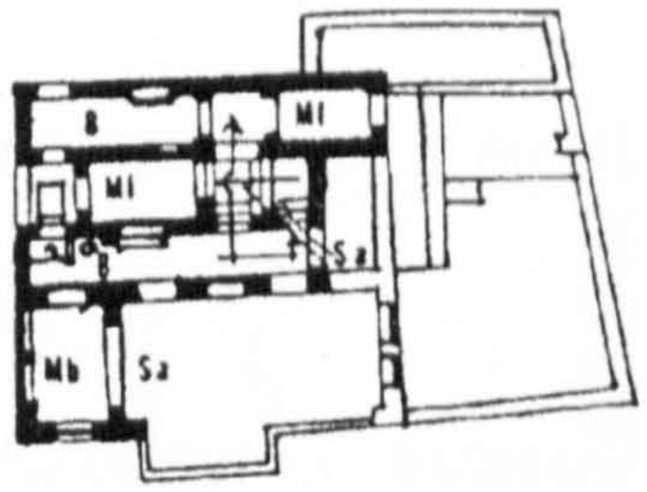
House 7, Al Qamah house (b), from the case-studies of Makkah traditional house the *Dehliz* has the higher ceiling than the other rooms. However, as mentioned earlier, the compound plan house had two *Maq'ad* situated on the ground floor on either side of the *Dehliz*. Fadan notes that the *Maq'ad* in compound plan houses was used for receiving close friends as well as the business office during *Hajj* season. The researcher found that the *Maq'ad* could be used for the same function in all types of Makkah traditional houses. Fadan mentions that in the compound plan house there was sometimes a small room called *Qabow* (basement). However, our case-studies of Makkah traditional houses show that the *Qabow* can also be found in the simple plan house type. For example in House 4 (simple plan house), Omer Al Shorahi house (d) the building is reached by four steps from ground level, designed to be approached from both sides of the main entrance. This raising of the building is probably to ventilate the *Qabow*. (Figure 4.39)

It is clear from the case-studies presented here that all types of houses (simple plan house, compound plan house and complex plan house) contained the *Majlis*, the

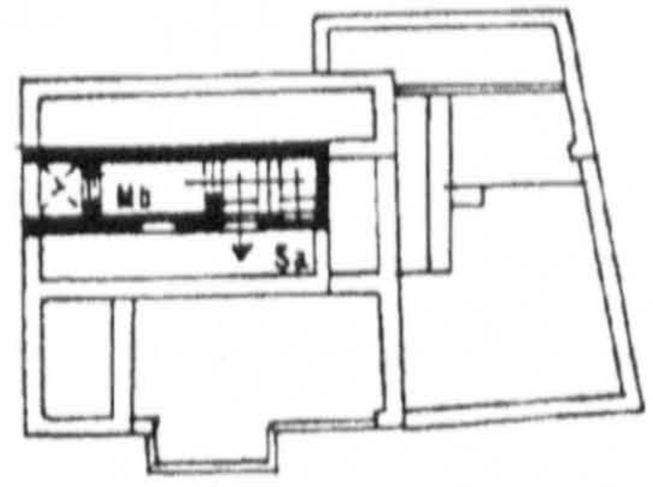
Suffah and the *Muakhkhar*, which were usually built on the upper floors as well (both first and second floors). The researcher also found that in all types of Makkah traditional house the *Kharijah* (terrace) was situated on the higher level and could be a substitute for some of the lower spaces.



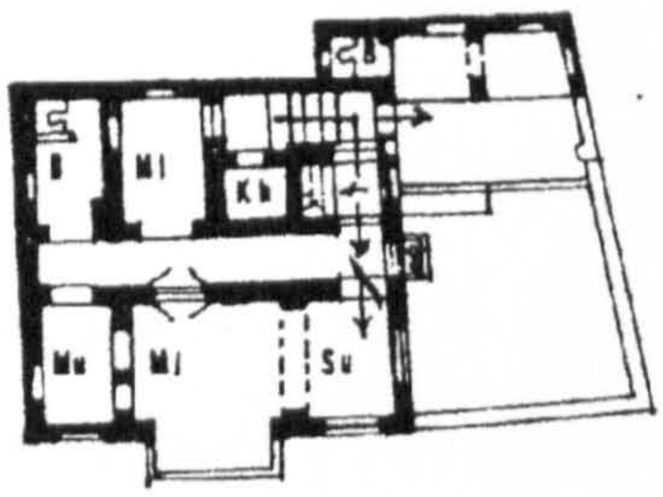
Third floor



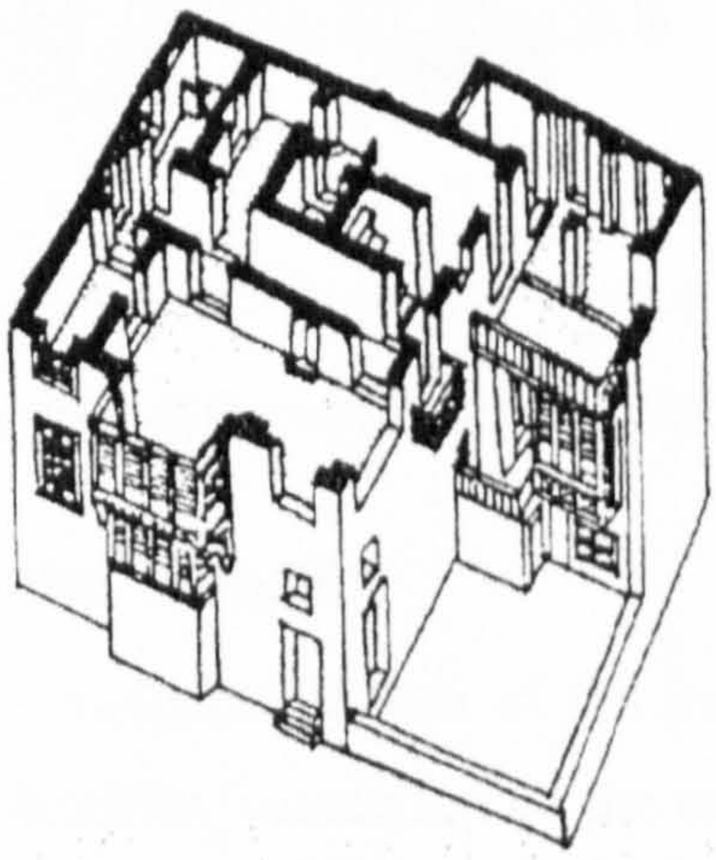
Fourth floor

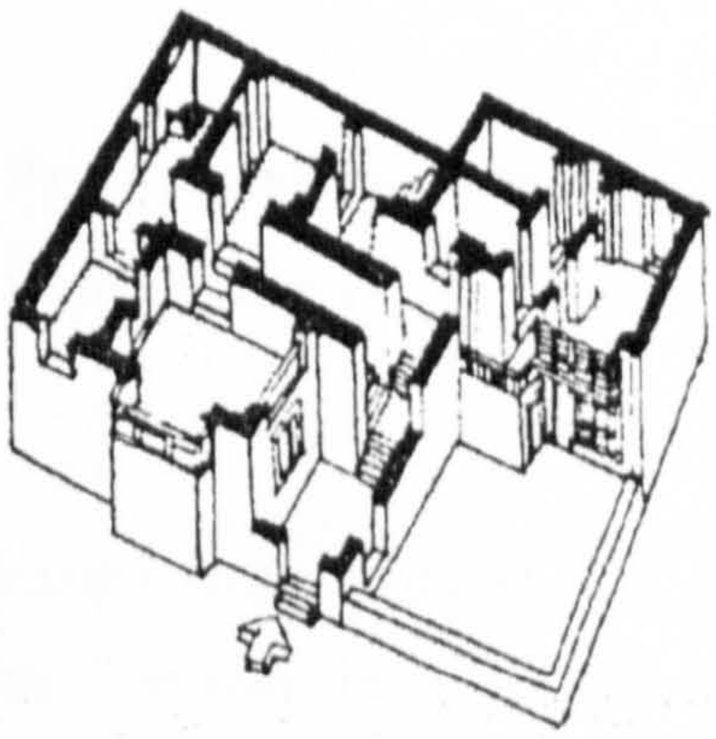


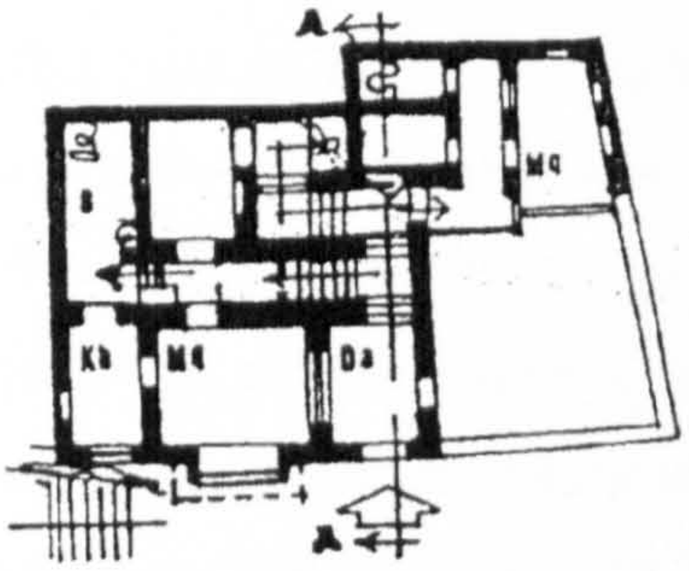
Fifth floor



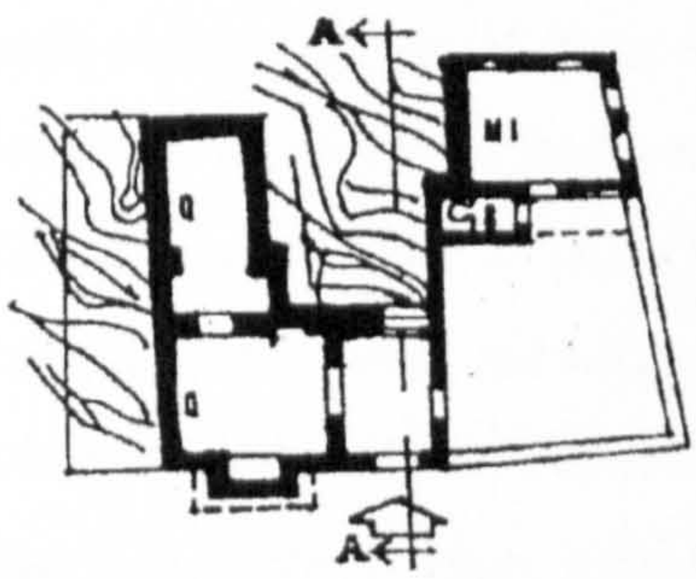
Second floor



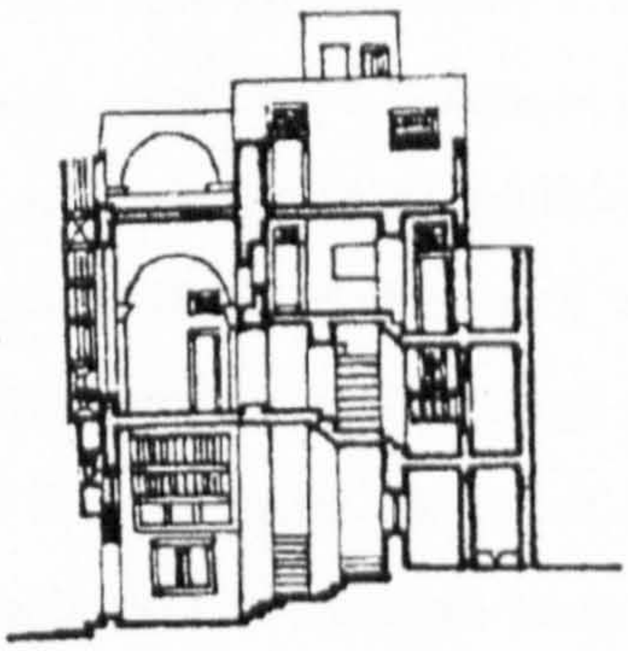




First floor



Ground floor



Section A.A

Da	Entrance hall (dehliz)
Mq	Sitting room (Maq'ad)
Mj	Reception room (Majlis)
Su	Ante-room (Suffa)
Fa	Family room
Kh	Storage space (Khuzana)
Mu	Small room (Muakhkhar)
Mt	Kitchen (Matbakh)
B	Water close (bayt alma)
Q	Basement (Qabw)
Dq	Storage space (diqajsi)
Mb	Night room (mabit)
Sa	Terrace (kharija)
Ml	Multiple use

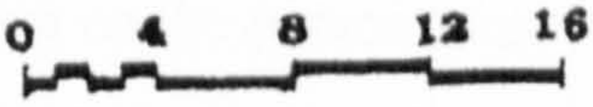


Figure 4.38: Compound plan house, Makkah
Source: Fadan, 1980

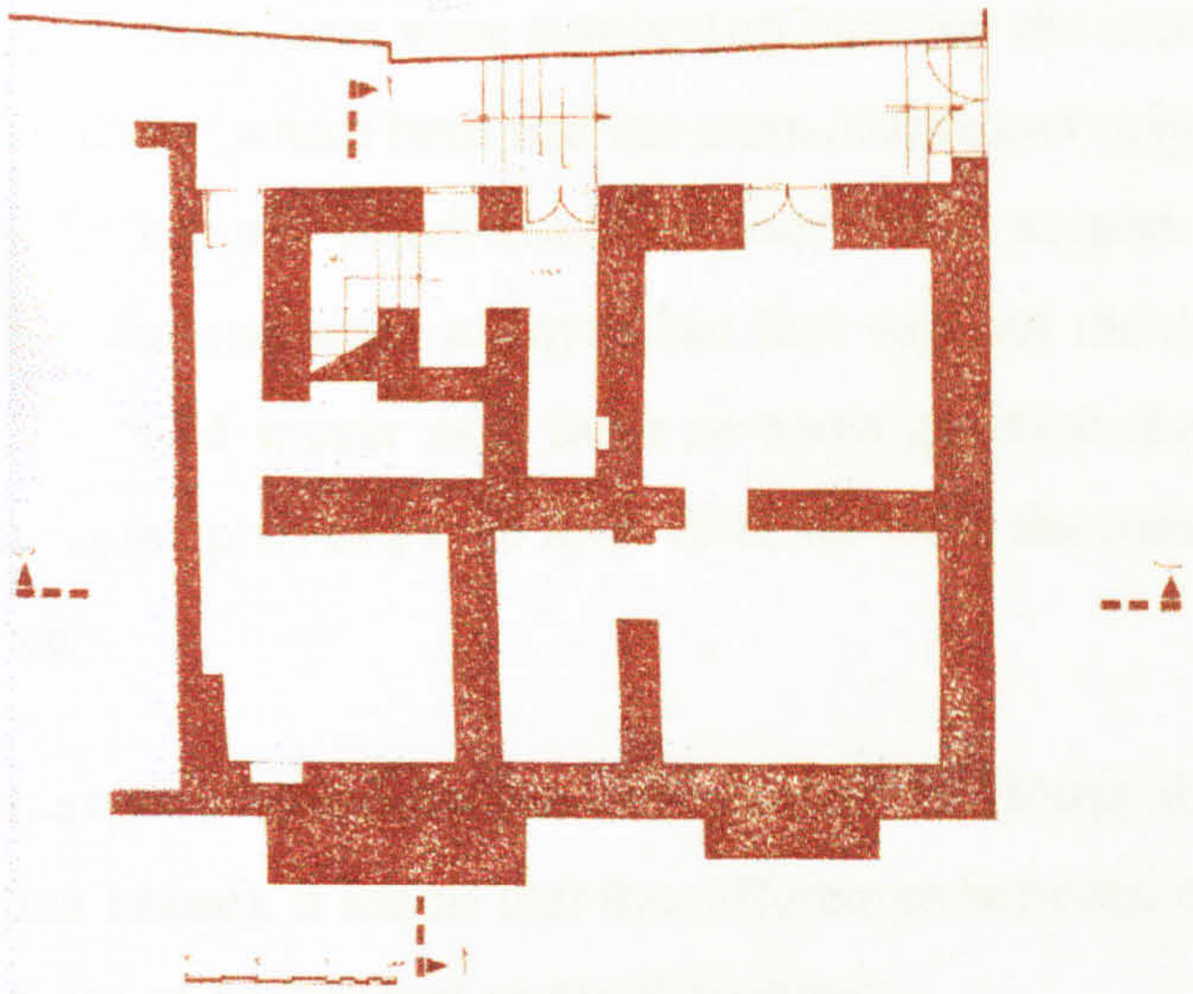


Figure 4.39: The *Qabow* (basement), in a simple plan house, Omar Al Shorahi, House (d), it was used as a storage space
Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 45

4.5.3 The Complex Plan Houses

This type of house was called complex because of the increased range of basic elements and the increasingly complex interaction of the units. The complex plan also differs from the compound plan by having two entrance halls and also two staircases serving different zones of the house. Like all other plan types, the floor to ceiling height of the entrance hall is one and half times more than that of the other rooms on that floor. The *Maq'ad* in the ground floor is used in the same fashion as in the other plan types. However, there are differences in the size of the rooms as well as the number of them in any one house. In addition to this, the higher floors have the main *Majlis* and neighbouring *Suffah* as well as small living units which could be used either as part of the house or as individual units. On the highest levels terraces have been substituted for the other rooms of lower levels. Terraces are essential to all plan types of the houses in Makkah because of the special activities that take place in them. Families get together after sunset on the terrace because the air is fresh and cool and it is also comfortable and relaxing to sleep in them during the hot summer nights. They can also be used to dry the laundry and they are shown in figure 4.40.

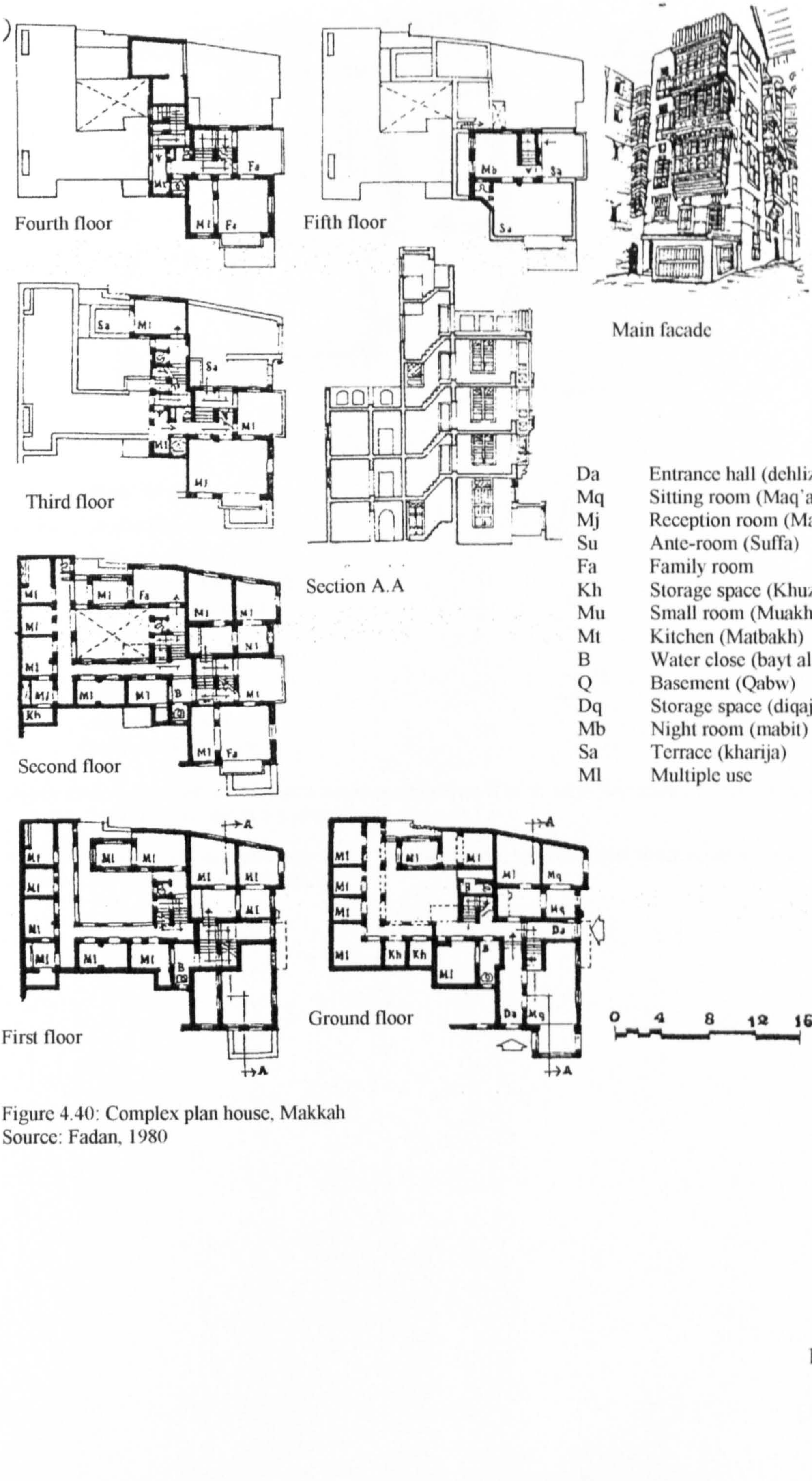
From the earlier description there were similarities between the complex plan house and compound plan house where both had the main *Majlis* and neighbouring *Suffah* as well as a small living unit which could be used either as part of the house or independently. This unit contained a *Bayt alam* that was not mentioned by Fadan. (Figure 4.41) So, it would appear as if there be some question mark over Fadan's definition of the complex plan as a type form different from the compound plan, this needs to be resolved.

From Fadan's description and from the case-studies of House 8, Aal Momenah house (complex plan house), it seems that the differences between the complex plan houses and other types of houses rest on the following:

- Usually the complex plan house comprised a *Dehliz* and two staircases that serve different zones of the house.
- The plan of the complex plan house was usually bigger than other plan types. Moreover, the number of the rooms and its size were also different from the other types of plan form.
- This type had an elaborate interior treatment e.g. gypsum decoration and decorated wooden boarding in the ceiling with beautiful natural images such as birds, trees etc., combined with quotations of *Quran* verses, proverbs, or the date of the construction of the building. In addition the ceilings of the main rooms e.g. *Majlis* were usually covered systematically with planks and chandeliers, which could be more easily decorated to great effect. Therefore the complex plan house could be mainly occupied by rich people. (Figure 4.42)

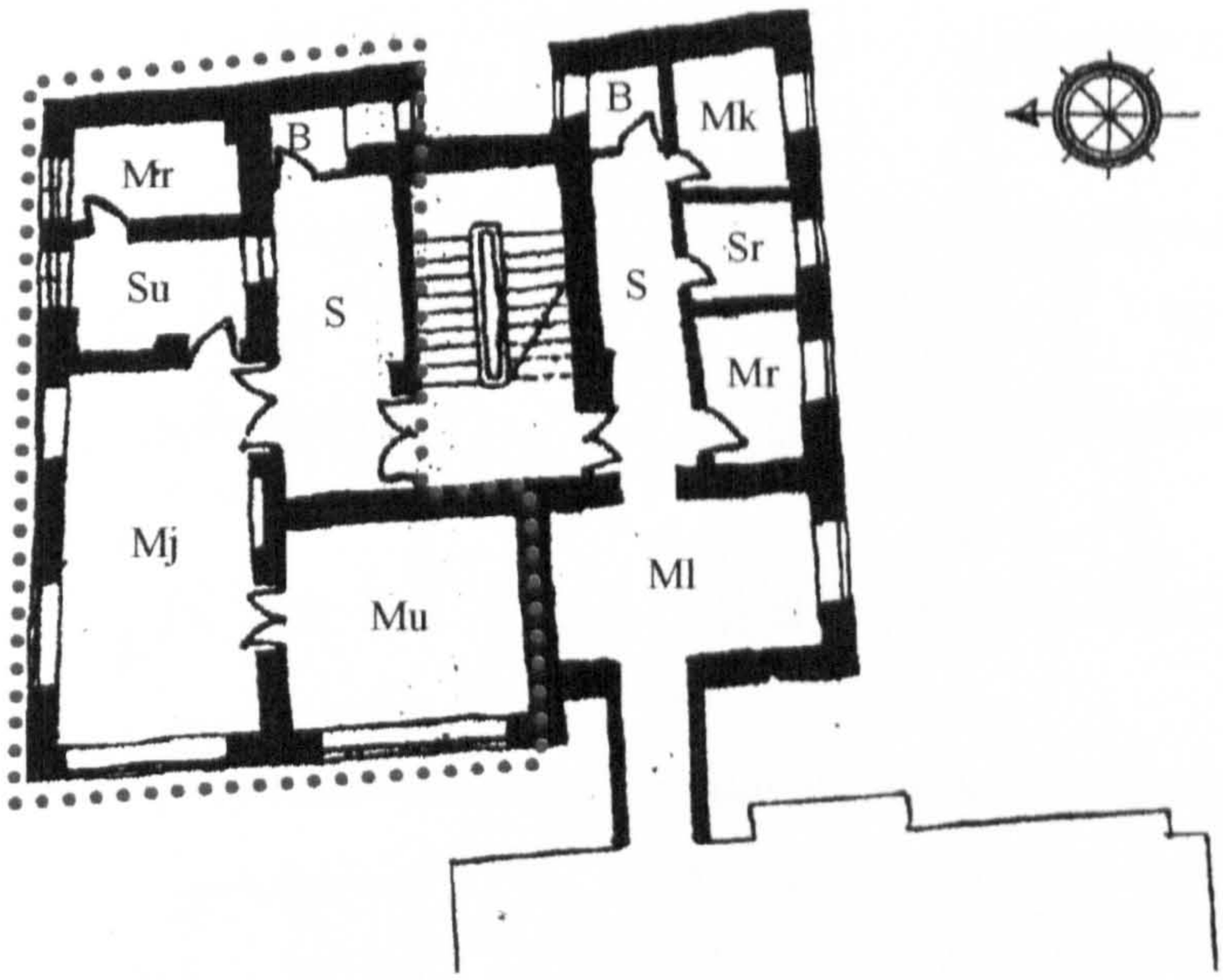
On the other hand, Figure 4.41, an illustration by Fadan, also shows a courtyard and *Riwag* (colonnade), which was not mentioned by Fadan. Therefore the complex plan house could possibly be considered a courtyard house.

From previous Fadan definition it can be seen that the complex plan house is generically not much different from compound house.



Da	Entrance hall (dehliz)
Mq	Sitting room (Maq'ad)
Mj	Reception room (Majlis)
Su	Ante-room (Suffa)
Fa	Family room
Kh	Storage space (Khuzana)
Mu	Small room (Muakhkhar)
Mt	Kitchen (Matbakh)
B	Water close (bayt alma)
Q	Basement (Qabw)
Dq	Storage space (diqajsi)
Mb	Night room (mabit)
Sa	Terrace (kharija)
Ml	Multiple use

Figure 4.40: Complex plan house, Makkah
Source: Fadan, 1980



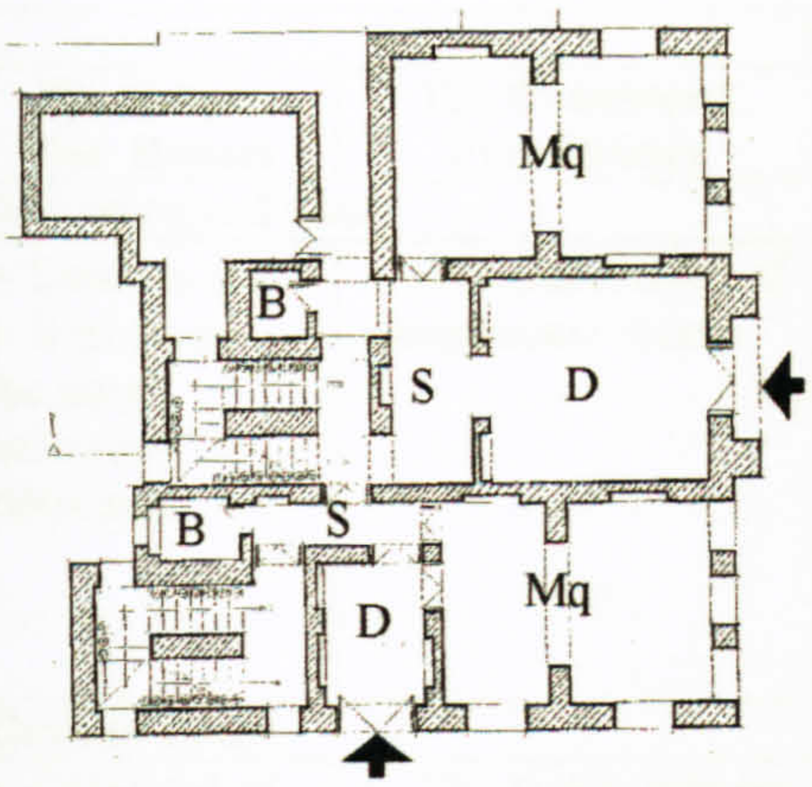
First and second floors

••••• Independent unit

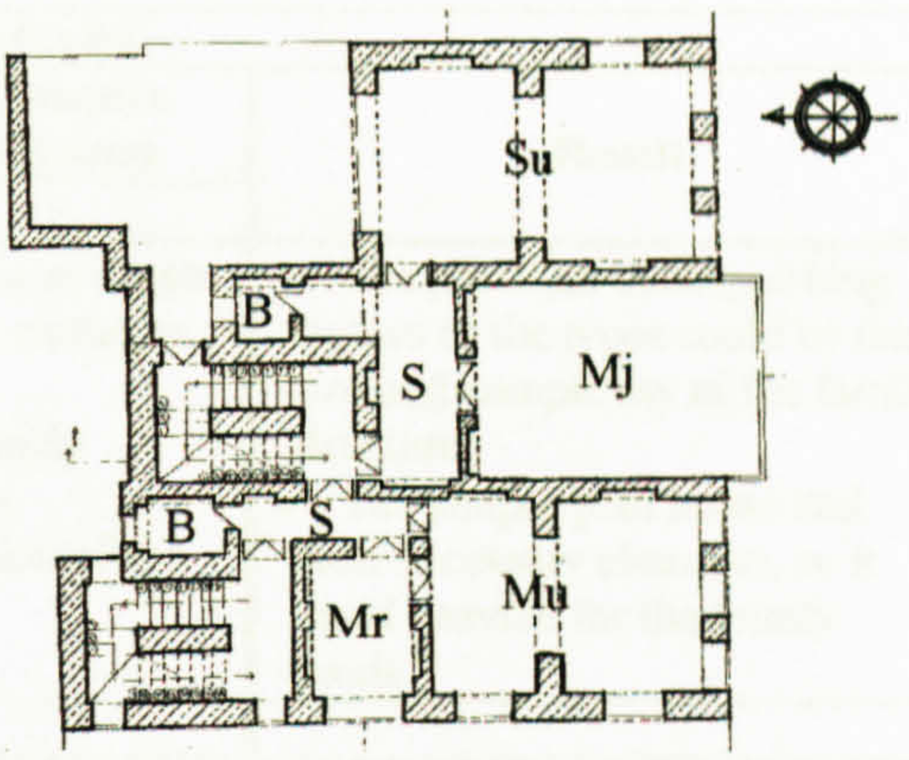
Mj	*M*ajlis (reception room)
M	*Makhlawan* (resting place)
Mu	*Muakhkhar* (living room)
S	*Seeb* (small hall)
Ml	Multi-purpose
Su	*Suffah* (ante-room)
Sr	Storage
Mr	*Markab* (kitchen)
B	*Bayt alma* (bathroom)

Figure 4.41: An example of similarity between complex and compound plan house, Compound plan house, Al Qamah house (b)

Notice the main *Majlis*, neighbouring *Suffah*, small living unit and *Bayt alma* which could be used either as part of the house or as individual.

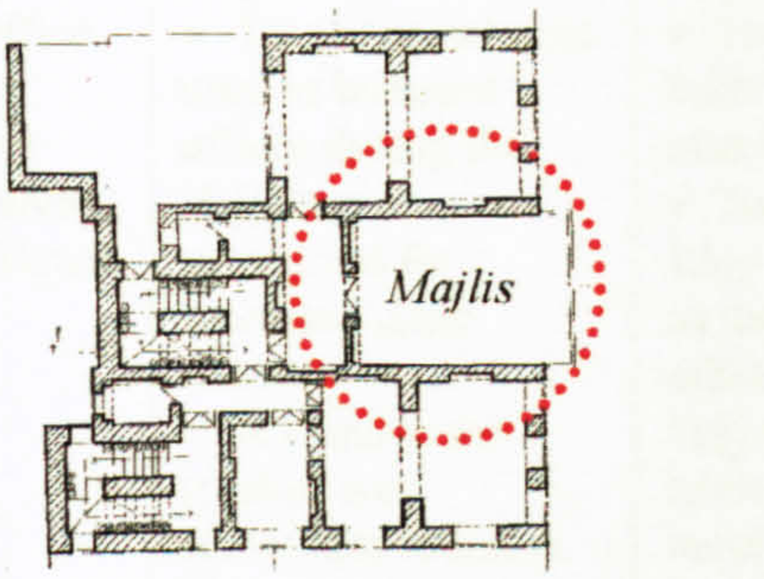


Ground floor



First floors

Usually the complex plan house consisted of two staircases that served different zones of the house.



Ceiling and wall decoration, First and second floors

Gypsum ornaments upon the room and toilet doors

Figure 4.42: An example of the complex plan house, House 8, Aal Momenah house
Source: Architecture department report, Umm Al Qura University, 1998

Plan Typologies			
The Simple Plan Houses	**The Compound Plan Houses**	**The Complex Plan Houses**	**Result**
According to Fadan			
• Small in size • It had only the most necessary elements.	• Size and number of components varied.	• Increased range of basic elements and the increasingly complex interaction of the units.	• The principal distinguishing feature of the types could be the size and complexity of the family structure. • The simple plan house had most necessary elements, so it could provide for the family needs.
Ground floor:			
• Consisted of the *Dehliz.* • A *Maq'ad* was used as a business office during Hajj seasons and reception area for close friends	• The *Dehliz* rose up to one and half times the normal floor height. • Two *Maq'ad* were used as business offices during the Hajj time or sometimes for receiving close friends. • A small room (*Qabw*) was sometimes found in some houses. • Adjoining rooms were used as multi-purpose spaces.	• The *Dehliz* rose up to one and half times the floor height. • Two entrance halls (*Dehliz*) and also two staircases. • Two or more *Maq'ad* were used as the business offices during the Hajj reason, or sometimes for receiving close friends.	• The *Dehlz* in both houses (compound and the complex plan houses) rose up to one and half times the floor height. • The *Maq'ad* in all types was used for the same functions. The question here is, does one identify the type of house through its spactial functions? • *Qabw* could be found also in any of the types. (see case-studies, simple plan house, Omar Al Shorahi house)
Upper floor:			
• There was a minimum of living area with own *Bayt alma.*	• There was a *Majlis* and a neighboring *Suffah.* • One or more living units frequently had their own necessary facilities.	• There was a *Majlis* and a neighboring *Suffah.* • One or more living units frequently had their own necessary facilities.	• The simple plan house could also have a *Majlis* and a neighboring *Suffah*, which was not mentioned by Fadan. • So, all types could have had a *Majlis* and neighboring *Suffah.* • There were similarities between the complex plan house and compound plan house when both had a small living unit which could be used either as part of the house or independently. This unit contained a *Bayt alam* that was not mentioned by Fadan.
Surface area of floor:			
• Decreased as the level increased.	• A terrace replaces one or more of the space below. • More than one terrace could be found at the different floor levels.	• On the highest levels terraces have been substituted for the other rooms of lower levels	• All house types decreased as the level increased. • A terrace also could replace one or more of the space below in all types.

Table 4.1: A summary of the various house types with their distinguishing properties listed. Columns 1-3 as per Fadan, column 4, critique based on researcher finding

4.6 Reflection

There are special features that distinguish Arab architecture from other styles of architecture around the world. These design or use principles are embodied in the characteristic specialised formal features e.g. courtyard, *Dehliz* and *Rowshan* or Mash*rabi*yyah etc. the outcome of these space form combinations have been beneficial in several respects:

- Harmonious relationship: architecture, setting, special layout and lifestyle of inhabitants. It is clear in the Arab house that most of its elements were characterized by the harmonious relationship with natural settings externally, and internally by the organic relationship between the spatial layout and the lifestyle of the inhabitants. (Figure 4.43)

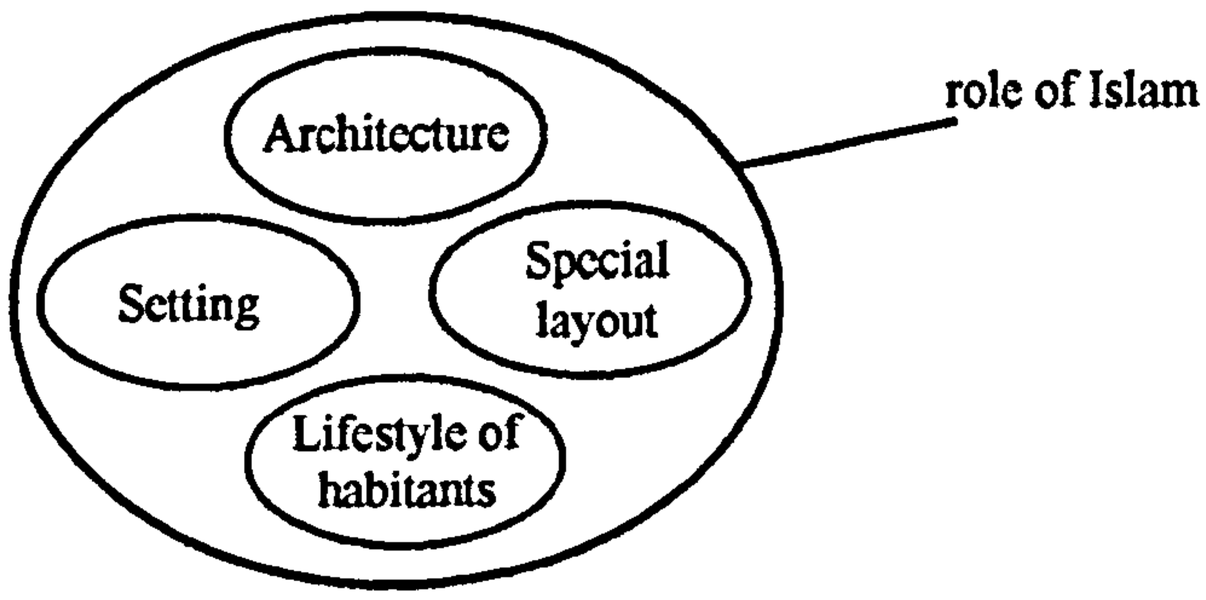


Figure 4.43: Harmonious relationship

- Hierarchical order in internal space: most Arab people hold fast to religious teaching on how to live your life, concerning issues such as privacy, (separation between unrelated men and women) which is a required issue for the Muslims. We found that the two zones (family zone and guest zone) were realized in Arab traditional houses. For example, usually the houses in Baghdad were divided into two zones, the first zone was for males and their male guests and the second zone was for women and female guests. The two zones sometimes had their own entrances. Therefore the privacy concept was achieved in the houses of Baghdad by separating the public and family quarters. Also the two living quarters either have separate entrances, or one entrance with some shielding element or bend in the entrance passageway or with an internal link. In Sana'a the ground floor had a main entrance, *Dehliz* (entrance hall), *Diwan* (male guests), storeroom, and the stairway

leading to the upper floors. The house would have a side entrance adjacent to the stairway that was used by family members. The first floor was a family section. This floor consisted of a *Majlis*, a storeroom, and *Khazanah* (a withdrawing room). On the top floor an enclosed terrace (*Kharijah*) was found over the *Majlis* below. So, the internal spaces could be ordered to three parts (public, semi public and private). (Figure 4.44)

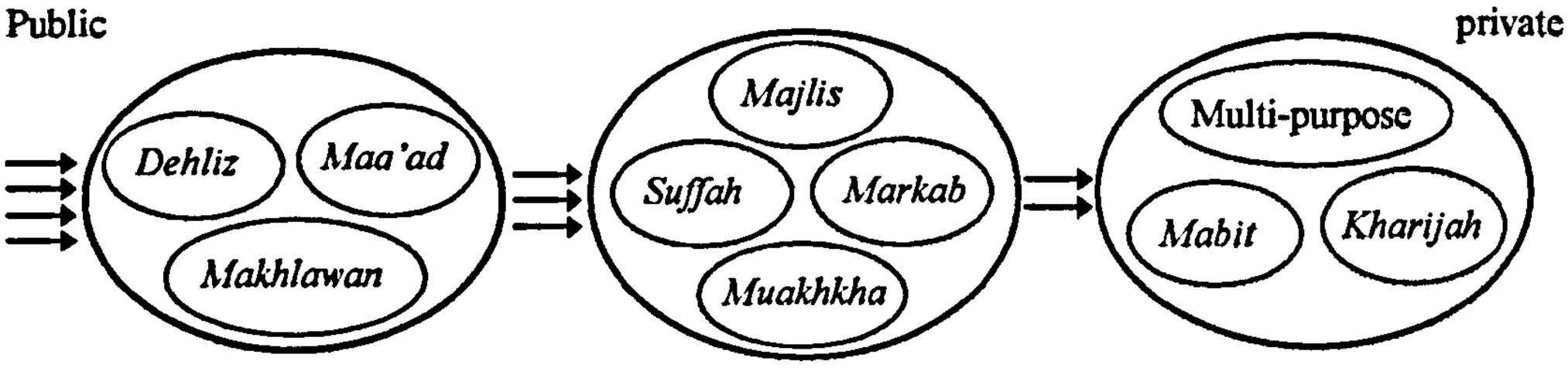
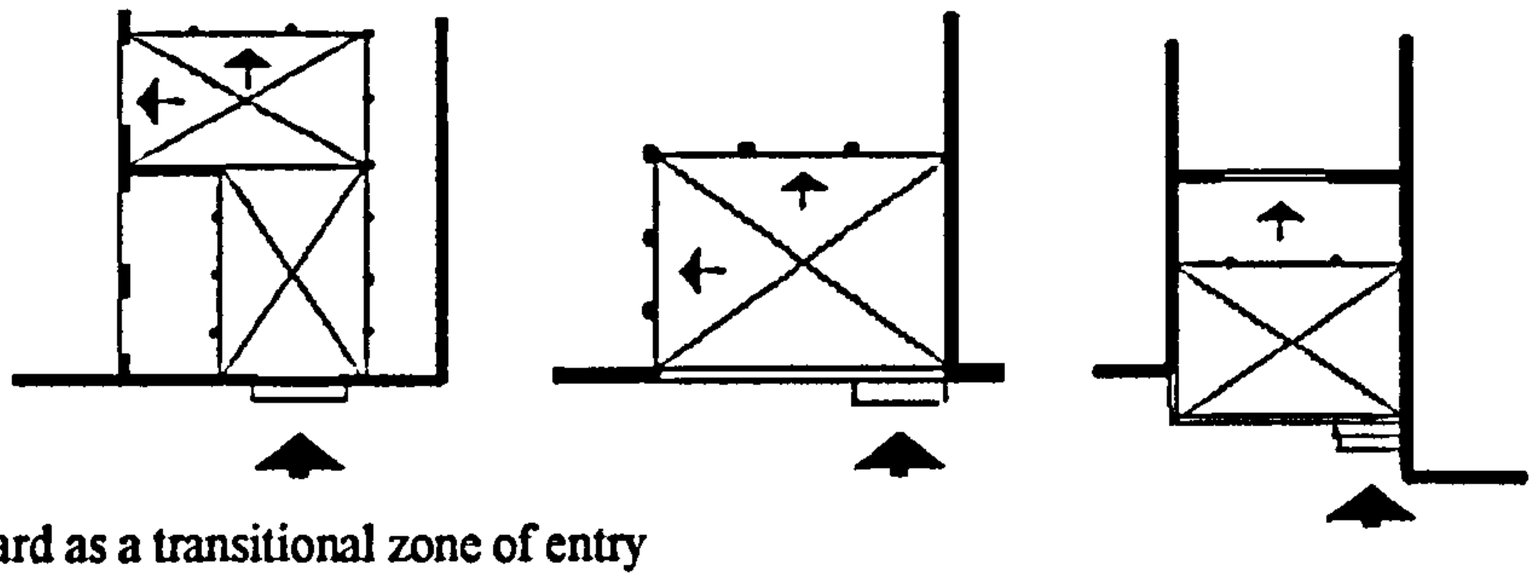


Figure 4.44: Hierarchical order in internal space a progressive scale from public to private

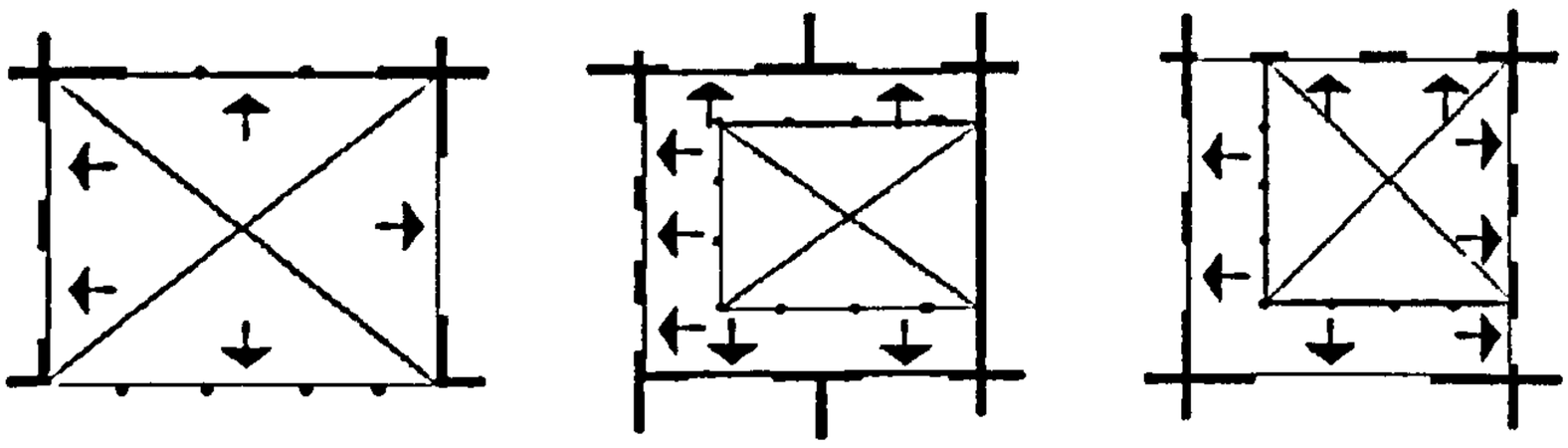
- Zone of engagement and privacy: a maximum emphasis has traditionally been given to privacy in the organisation of space within the house. The respect for privacy can be seen clearly in the internal organisation of such houses. Sometimes the house has two entrances, the separation between the male and female quarters, an essential feature of Islamic society, being achieved in some traditional houses by the vertical arrangement of the house. The ground and the first floors are arranged in a way that allows male visitors and guests easy access without disrupting the privacy of female members of the household. In the family living quarters a certain degree of privacy is achieved through the overall arrangement of the space, so that it is hard to view the whole interior. This process is at any given point of access facilitated by some key devices, the most important were the *Dehliz* or reception room, the courtyard and the *Rowshan*.

As shown that the *Dehliz* was used as a public area. In accordance with the religion and traditions of Islamic Arab society sometimes the entrances are offset, in order to screen the interior from the gaze of strangers when the main gate is open. So the offset shape could be a good solution for modern houses in order to achieve the same effect.

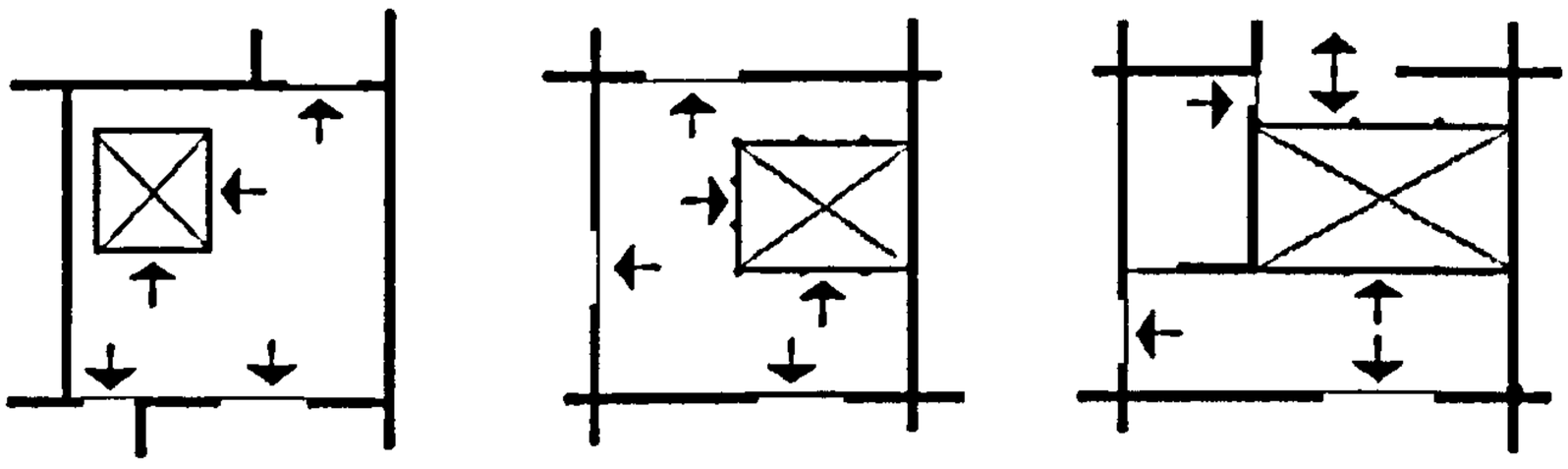
The courtyard in its various interpretations was the focus for all connections and the heart of life in the Arab traditional house. It was planted, probably with trees and often had a fountain placed in the centre, helping to raise the level of humidity and cooling the air. It acts an enlarger and a mediator of space. It can function as transitional element, no one could move about the house from room to room or level to level without in some way participating in the life the courtyard and contributing to it. It can also function as a space articulator or definer of space. (Figure 4.45)



The courtyard as a transitional zone of entry



The courtyard as the main distributor



The courtyard as a subsidiary space

Figure 4.45: Plan diagrams showing the various roles of the courtyard in the layout of an Arab house

As the result, the kind of activity within a courtyard depends on its location in the house, its size, the type and use of the rooms around it, its paving, material use, and landscaping. However, the courtyard has always been used as a multiple-purpose space: as a divider the house into different zones, a connector of space, living space, cooking space, and for variety of other uses.

Some of traditional house e.g. (Makkah, Jeddah and Yemen etc) did not have a courtyard. However, alternative spaces have been provided. From the second or third floor and above an open area called *Kharijah* is provided, in addition to main roof. *Kharijah* was an elevated space, semi closed on all four sides but open to the sky. It provided a horizontal extension of the interior space while serving a similar function to the roof.

In all traditional Arab houses, another distinctive feature was a series of *Rowshan*, which project from the façade, and the extensive use of woodwork inside and outside the building. The spaces, with the wooden lattices, enhanced the quality of the interior spaces, allowed in the required light and air provided an area from which the occupants could observe the outside world while maintaining their privacy. (Figure 4.46)

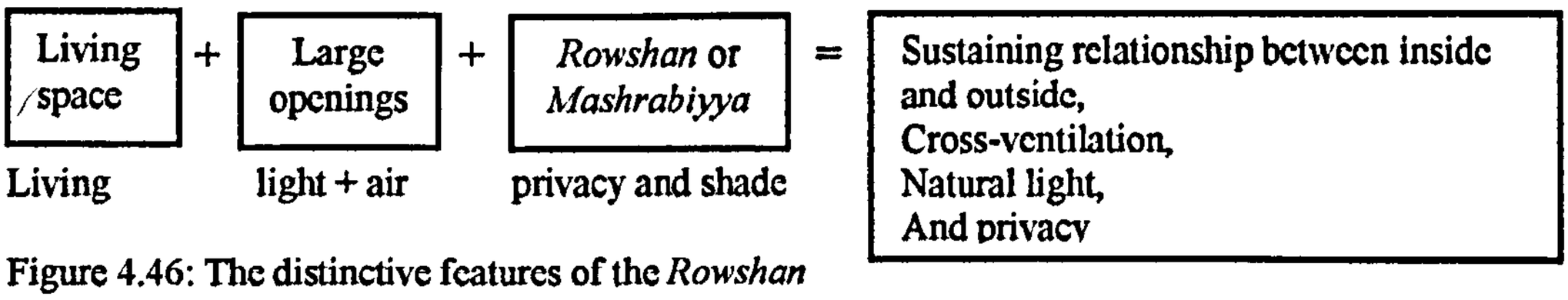


Figure 4.46: The distinctive features of the *Rowshan*

- Linking the internal spaces: as shown that courtyard can function as a space articulator. However, in other of traditional house which did not have a courtyard, access to all floors was obtained by means of a central staircase. It mainly provided a vertical circulation end and enhanced the circulation of air both into and out of the building.

- Flexible multi-purpose rooms: traditionally there was no single use of rooms, the overall arrangement of the house giving maximum flexibility for family to arrange the use of the rooms according to its need. The simple traditional furniture facilitated this.

These are the main features that distinguish Arab architecture from other styles of architecture from around the world. Within this framework there were also special features that distinguished Makkah traditional architecture. What can we learn from these? In chapter 2, section 2.3 we have declared an objective to establish some

basic design for modern Islamic architecture, drawn primarily from study of traditional buildings, as seen through the filter of Christopher Alexander's "Pattern language" concept. Identifying those basic principles underlying Arab house design as realized with the Makkah traditional house type is the aim of this section. In particular we need to articulate those formal arrangements or "patterns" that best capture the essence of Arab design and Alexander has provided a useful mechanism by which to externalize quality:

The Makkah traditional house	**Christopher Alexander's "Pattern Language"**
• Hierarchical order in internal space: The vertical extension of the space provided the vertical order in the use of floors, such as separate zones for male guests and for the family and their female guests.	• Intimacy gradient (Pattern No. 127): "Lay out the spaces of a building so that they create a sequence which begins with the entrance and the most public parts of the building, then leads into slightly more private areas, and finally to the most private domains"[64]
• *Dakkah* (cement bench): It was considered the most important piece of furniture in the interior of the traditional houses of Makkah because it was part of the construction of *Rowshan* or *Mashrabiyyah*. Females could sit on *Dakkah* and enjoy looking outside or to the street without being seen as well as it being a place for all family members to lie and enjoy the natural ventilation and light.	• Window place (Pattern No. 180): Special attention has to be paid to the window as a social event – a link between the inside and outside domestic. "In every room where you spend any length of time during the day, make at least one window into a "window place".[65]
• Two or more *Rowshan* on two sides: In the case-studies of Makkah traditional houses we found that most of the rooms were characterized by having windows on two sides. For example, the *Majlis* was the largest room on the floor as well as usually being the coolest space in the house because it included one, two or more *Rowshan* or *Mashrabiyyah* and wide windows on two sides.	• Light on two sides of every room (Pattern No. 159): Alexander's dictum of "light on two sides of every room" also links up with traditional Arab space making. He suggested: "Locate each room so that it has outdoor space outside it on at least two sides, and then place windows in these outdoor walls so that natural light falls into every room from more than one direction."[66]

[64] Alexander, C., Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 613 (For more description of Alexander theories see chapter 8)
[65] Alexander, C., Ishikawa, and Silverstein, M. (1977) *A Pattern Languag*, p. 837
[66] Alexander, C., Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 750

• A resting place *Makhlawan* was a place where one could get privacy and it was located on any floor of the house. It was also used as a resting place for guests after lunch, as well as older people could rest there, for example.	• A Room of One's Own (Pattern No. 141) The house should provide a room of one's own as well as a place to go and close the door, which is a private room. This room must be located at the extremities of the house as well as at the end of the intimacy gradient,
• Storage Makkah traditional houses were characterized by the existence of stores almost everywhere.	• Bulk Storage (Pattern No. 145) Alexander stated: "Do not leave bulk storage till last or forget it. Include a volume for bulk storage in the building - its floor area at least 15 to 20 per cent of the whole building area - not less."[67]

Table 4.2: Comparing the space-use properties of the Makkah traditional house with the desirable criteria for living space identified by Christopher Alexander in his 'Pattern Language'

In conclusion it would appear as if the result the spatial order of Makkah traditional houses, the characteristic of rooms having windows *Rowshan* or *Mashrabiyyah* on two sides, a *Makhlawan* (resting area), and the existence of stores almost everywhere could be in agreement with Alexander's 'pattern' (intimacy gradient), (window place), (light on two sides of every room), (a room of one's own), and (bulk storage).

[67] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 688

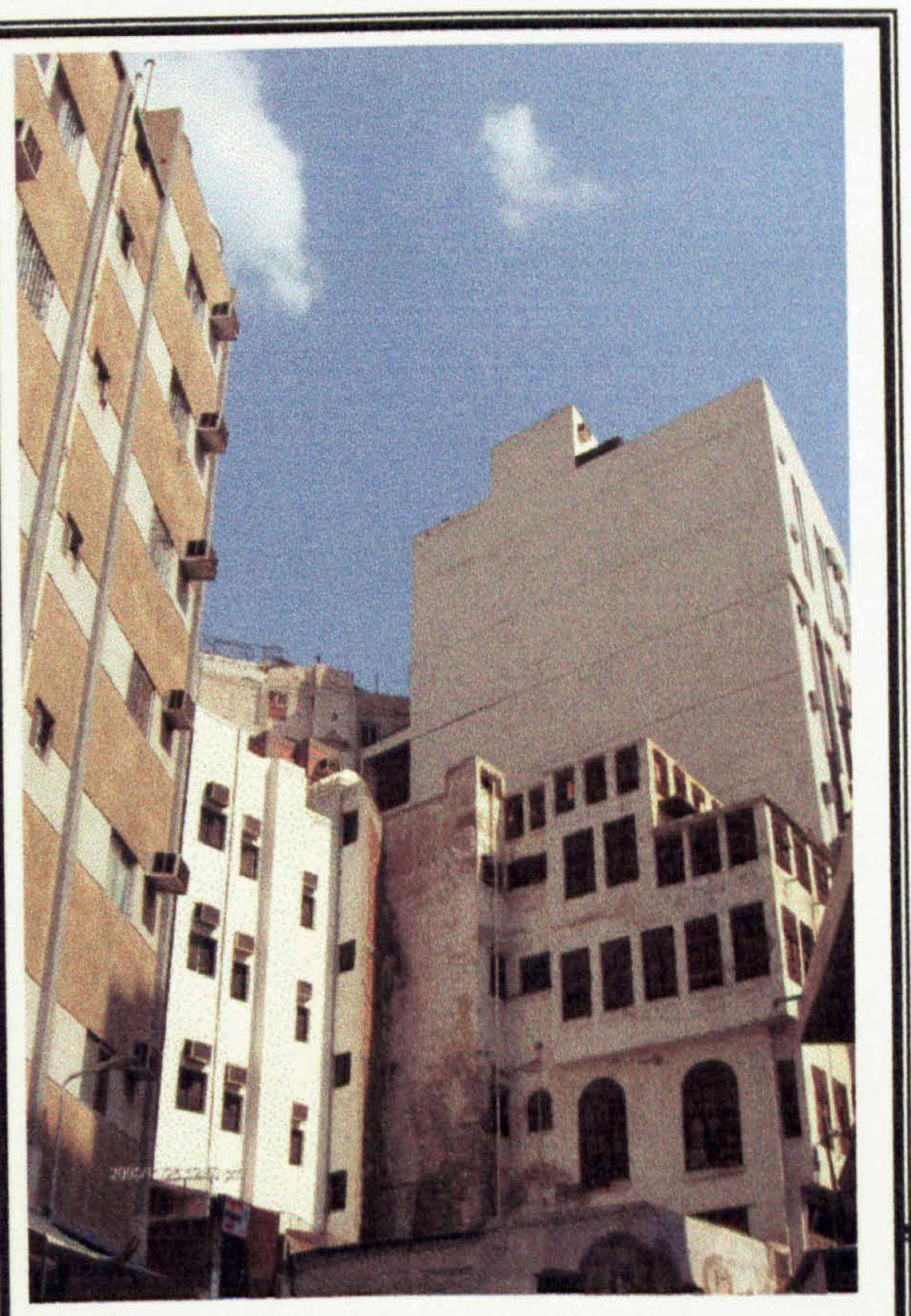
PART III

THE DEVELOPMENT OF THE MAKKAH HOUSE: FROM THE TRADITIONAL TO THE MODERN

Chapter 5: From Traditional to Modern

Developments in Saudi Arabia since the Oil Boom

Chapter 6: The Modern House in Makkah



CHAPTER 5

FROM TRADITIONAL TO MODERN

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5.1 Introduction

During the later half of the 20th century the housing industry in Saudi Arabia experienced major changes. The transformation from traditional to modern in many aspects of life occurred unimaginably fast. However, the reasons were inter-linked and diverse. In Saudi Arabia, in May 1933 King Abdulaziz wisely reconsidered a concession to Standard Oil of California (SOCAL) in return for an advance from the company. Between 1933 and 1938, SOCAL discovered several oil fields. In 1939, oil was discovered in commercial quantities.[1] Undoubtedly the discovery of oil was the most important single factor behind the transformation of the Saudi economy, which sustained the profound social changes of the following decades. Charsley, however, warns against too simplistic an interpretation of the process:

> [Although] There is no single story of cultural change to be told, and the search for a single theory of cultural change must in the end prove fruitless, there are striking links and patterns always to be found.[2]

In the main purpose of this chapter to investigate the impact of the socio-cultural changes on Saudi society as far as it concerns trends in habitation, so all factors that may have contributed to the development of the home environment need to be considered.

As was shown in the previous chapters there was a definite correlation between the lifestyle of the Arab people and the house form that they created. This harmonious relationship has been held up as an ideal for the modern Arab architect. It is, therefore, necessary to look for a similar correlation between the modern Saudi society and its house forms. Since the modern designer is an active agent within this evolutionary process, an understanding of the basic trends in the contemporary lifestyle, and the forces that shape them is essential. Although, within the context of this study, it is only possible to outline these it seems worthwhile to do so before moving on to the resultant built forms in the rest of the chapter.

The transformation of the Saudi residence from its traditional form to the contemporary one changes occurred mainly in the period from the late 1940s to the

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[1] Gadi, Omar.and Ibrahim, H (1981) *City Planning in Saudi Arabia*, Riyadh: Saudi Arabian Printing Company Press. p.34. (Arabic text)
[2] Charsley, S. (1992) *Wedding Cakes and Cultural History*, London: Routledge Press. p.101

1990s. It divides into three phases. The first period, the late 1940s to early 1950s, came just after the first major increase of oil production. The second phase covers the period up to the late 1970s, a time of unparalleled economic growth and building boom. The final section is about developments of the late 1980s onwards, which is a direct outcome of the preceding two phases, but its products are more sophisticated, probably because of the increased involvement of architects in interior design.

5.2 Modern Lifestyle

The modern lifestyle in Saudi Arabia was caused by many factors: new technology, new materials and peoples' increasing knowledge of other cultures and architectures, which were introduced by the modern media. We can only briefly outline some of the main agents driving these changes.

Media (television[3], radio, newspapers and magazines)[4]: These are important elements in the change of Saudi lifestyle. Today electricity, communications and media accelerate the process of national integration. The widespread use of electricity changes the habits of people and changes the basic concept of house design. The widespread use of television and radio and other communication facilities and the accessibility of newspapers and magazines have introduced the nomads and the farmers to the wider society. Their limited picture of their time and place in Saudi Arabia and in the world has changed. Previously isolated from one another and from the outside the world, the tribes thought of themselves as people of the *Hijaz* or *Najd*[5] rather than part of a larger nation. The unification of the country made their unity a political reality and the wide use of the new communication media made it a social and cultural sense as well.[6]

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[3] Television at the beginning was introduced into the country by Aramco, which started a television service for its employees in 1957. In 1965 a national television network began transmission from Riyadh and Jeddah. By 1985 a Satellite Transmission System was in operation to cover the whole country. Today there are three channels two in Arabic and the other in English. Two domestic radio networks were established in mid-1965.

[4] Newspapers and magazines are also important influences. In 1924 Umm Al Qura newspaper was the only one published in Makkah. Nowadays, there are more than 70 newspapers and magazines published inside Saudi Arabia. However, there are also many imported newspapers and magazines from all over the world that are available in the market.

[5] Riyadh one of the biggest cities in *Najd* region

[6] AL Afghani, A. (1990) The Saudi house in the past, present and future: a Study of Changes, PhD thesis, University of Glasgow (UK), p.203

Education: Before the Saudi Kingdom there was no education system in the modern sense. In 1924 the Department of Education was established and in 1953 this Department of Education was transformed into the Ministry of Education. Between 1954 and 1990 the number of students was increasing. In 1954 there were 52,839 students, in 1968 there were 331,760 students, and in 1990 there were 1,973,830 students.[7] Moreover, in 1957 the first school for girls was opened. The Directorate General of Girls' Schools was established in 1960. In 1960 there were 12,000 female students; in 1965 there were 48,000; in 1970 there were 170,000; there were 308,200 female students in 1975 and in 1980 there were 435,000 female students. [8]

It follows that education became a major factor in the change of the Saudi lifestyle, especially in so far as the education of girls is concerned, because previously the girls spent most of their time at home and they had limited activities such helping their mother to clean the house and cooking etc. However, since the General Girls Schools were established, they spent about seven hours at school daily. In 1957 the first university in Saudi Arabia was established, in Riyadh. It started with one college (Art). In 1964 the second university was founded in Jeddah and in 1980, Umm Al Qura University was established in Makkah. In addition to development in higher education within Saudi Arabia, the Saudi Government has been sending large numbers of young Saudis to study in universities and colleges in Western, as well as Arab and other Islamic, countries.[9]

Education opens the people to new ideas and different technologies as well as producing new ways of thinking in both males and females. It also can be seen from the transformation that Saudi society now has more easy access to the outside world and to other societies. Most Saudis travel abroad for education, business, and health reasons and for tourist activities. Such contact with western or other Islamic Arab

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[7] AL Afghani, A. (1990) The Saudi house in the past, present and future: a Study of Changes, PhD thesis, University of Glasgow (UK), pp. 203-204

[8] Directorate General for the Development of Higher Education, Statistical Index on Progress of Higher Education from 1969/70 to 1983/84, Issue No.2, Ministry of Higher Education, Saudi Arabia, 1985, p.3

[9] Directorate General for the Development of Higher Education, Statistical Index on Progress of Higher Education from 1969/70 to 1983/84, Issue No.2, Ministry of Higher Education, Saudi Arabia, 1985, p.3

habits affects the people who readily absorb new ideas and try to bring them back with them. Saudi society, through education, is now expecting a modern lifestyle and requires special standards for their houses in practice and for their physical environment in general, very different to the traditional way of life that prevailed a century ago.

Transportation: In their traditional lifestyle the Saudi people used to depend on animals such as camels, donkeys and horses to travel through the vast land. People used to spend weeks travelling from one town to another, as well as inside town's people used to walk or ride. Animals used to carry everything from water to wood. The characteristically narrow streets accommodated this form of transportation. Architecturally the most intrusive form of modern transport is the motor vehicle. In the 1920's a few cars and trucks were introduced into the kingdom in the west region. By the early 1960's the number of cars imported annually into the kingdom had increased to about 6,000 per year, and the increased ownership and use of motor vehicles began to make itself felt in the town.[10] Figure 5.1 shows Rae Al-Hijoon street in Makkah after the paving and extension work carried out in 1947 with a few cars as well as some of the people still dependant on animals.

Figure 5.1: Rae Al-Hijoon street in Makkah, in 1947
Source: Aramco

[10] Dyab, M. S. (2003) *Jeddah*: *Al-tarekh wa A-Haiat Al-Ejtemaiah* [Jeddah: Historical and Social cultural], Jeddah: Daar Al Elm Press, pp. 106-109

So, it can be seen that the new transportation elements affect the new physical layout of urban places. The introduction of cars into the urban pattern has drastically altered the traditional context. The car cannot be accommodated within the narrow winding street system. It encouraged the development of different residential areas away from the centre of towns as well as different free standing built forms like the villa. Moreover, these elements participate in speeding up changes in the different urban centres by improving the mobility of everything, from one place to another. It also made it easy for people to travel and see the various regions of Saudi Arabia as well as abroad.

Utilities:

- **Electricity (light and ventilation):** This service came to the Saudi Arabia with the discovery of oil. In the early stages until the 1940's the electrical service was limited in most Saudi cities. In 1951 the National Electrical Company was established in different cities and it was started as an organized public service.[11] According to Alia Al-Ahmadi[12], in 1940 when she was 14 years old, she came with her family from a rural area in Al Madinah to Makkah. However, her family lived in Al-Otaibiah[13] area in a *Bait Shaby* consisting of three rooms, and kitchen, bathroom and *Hosh* (courtyard). The researcher asked her "Did you have electric light in that time?" The answer was "No". The researcher also asked her "What kind of light did you have?" The answer was three types of oil lamps called *Fawanees* (plural of *Fanoos*), *Atarik* (plural of *Etrik*) and *Qamariat* (plural of *Qamriah*). (Figure 5.2) Mohammad Al-Mehmadi[14] also states that during the 1950s he was living with his family in Makkah in a *Bait Shaby*. He states that they used *Fawanees*.

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[11] For more information see the following:
- Electricity Corporation, Ten Years of Progress, 1976-1986. Riyadh, Saudi Arabia.
Saudi Consolidated Electric Company Central Region, Annual Report (1406 AD – 1985).
National Offset Printing Press
- Saudi Consolidated Electric Company Central Region, on the way of Achievement, facts and Figures, 5 Years of the Company Life. Al Izdihar Printing, Riyadh (Arabic text)

[12] The researcher's grandmother. She is eighty years old.

[13] Al-Otaibiah area is North West of the Holy Mosque and about 3km from it.

[14] Sixty two years old and living in Makkah.

Qamriah *Fanoos*

Figure 5.2: *Qamriah* and *Fanoos*, traditional lights
Source: Khlil, A. 1985, p. 413

The invention of electricity has allowed many Saudi families to enjoy new household items which made so many house chores a thing of the past e.g. washing machines, vacuum cleaners …etc. People started to be dependent on these devices. If at any time electricity is cut off, life is greatly disturbed particularly if essential things such as air-conditioning are stopped.[15] The full implication of this for the domestic interior will be discussed under 5.3.2.

- **Water:** The introduction of running water into the homes is an important factor in the changing process. In traditional buildings, the *Bayt alma* was usually located near the stairs, or any place as far as possible away from the living spaces. This gave privacy to the occupiers of the house while the waterman called *Saqqah* was climbing the stairs to fill the water tank in *Bayt alma*. It usually had a *Zeer* (water container) for water to be used for washing. Nowadays, the bathroom or toilet with piped water can be found anywhere in the house, e.g. the master bedroom has its own bathroom and sometime there are bathrooms next to the children's bedrooms as well as a special toilet in the guest section. In addition the family members have started to give attention to the bathroom or toilet furniture.

[15] AL Afghani, A. (1990) The Saudi house in the past, present and future: a Study of Changes, PhD thesis, University of Glasgow (UK), p.200

5.3 The First Transformation: Late 1940s onwards

In the beginning the people did not use concrete and they were suspicious of its durability. The main reason for not using it was due to its massive consumption of water, which was still expensive at that time. Another reason was that people did not regard it as a structural material. "How could a roof stand without timbers?" was a common question at that time.[16] A new project, Al Aziziah, was established in 1947 by the government, where water would be brought from different wells through pipes and stored in water towers to provide a continuous supply to the city. Here, concrete buildings were desirable due their special properties; as Akbar pointed out, the greatest advantages of modern concrete houses over the traditional materials and construction techniques were the durability and fast construction methods, especially when the demand for housing increased sharply and time was critical. In addition to these useful advantages, concrete was attractive due to its modern image.[17]

Al Hathloul describes the initial changes in the traditional pattern of the physical environment in Saudi Arabia. According to him the starting point was Riyadh and after that it happened in every part of country.[18] However, there were two reasons for the rapid expansion of Saudi cities. The first was the rising number of immigrants and expatriates. This immigration was due to availability of jobs and different work which were generated during the change process. Saudi Arabia witnessed increasing economic development at the end of the 1940s and the beginning of the 1950s due to the growing world demand for oil. The influx of new comers contributed to the rapid urban expansion. In addition the economic development demanded specialist services, for example doctors, teachers and other professionals from Arab countries like Lebanon, Egypt, Palestine and Jordan.[19] There were also no Saudi architects at that time and, as Fadan pointed out, there were no government offices for housing in 1950 either. The few Arab architects

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[16] Al-Ansari, A. (1982) *The History of Jeddah*, Jeddah: Asfahan Press. (Arabic text)
[17] Akbar, S. (1998) Home and Furniture, p.117
[18] Al-Hathloul, S. (1986) Development of the Contemporary Physical Environment in Riyadh. *Al Benaa*, 5: 48-51
[19] Al-Harbi, T. H. (1989) The Development in Housing in Jeddah: Changes in Built from the Traditional to the Modern. PhD thesis, University of Newcastle upon Tyne (UK)

resident in Saudi Arabia at the time were citizens of other Arab countries such as Egypt, Syria and Lebanon.[20] In addition a few western architects came to Saudi Arabia through their contracting firms. Riyadh and some big cities, such as Dammam and Dhahran, were especially influenced by these developments. The second challenge to the traditional built fabric came from the rapid urban expansion which demanded drastic changes in the street layout to facilitate the use of the rising number of vehicles.[21] This put a stop to the typical unplanned organic street pattern of the traditional system.

The contemporary residential settlement in Saudi Arabia originated with the first housing project built by Aramco (Arabian-American Oil Company) during the late 1930s and early 1940s, in the Eastern region of Saudi Arabia.[22] M. Al Naim, discusses the impact of this development on the Saudi people as follows:

> These projects introduced for the first time a new concept of space and new home image. It is possible to say that this early intervention has had a deep but not immediate effect on the native people. It made them question what they know and how they should behave. In other words, this early change can be seen as the first motive for the social resistance to the new forms and images in the contemporary Saudi home environment.[23]

At the beginning of modernization there was also little conflict between the western physical images introduced and traditional cultural values. The Saudi people followed what they knew and tried to implement new materials into their daily lives, including their homes, as best as they could. However, the Aramco contract can be considered the beginning of the physical and social changes in Saudi Arabia, and marks a shift in opinion regarding the traditional residences with new images in the minds of local people of what a modern house should look like.[24] Solon T. Kimball, who visited Aramco headquarters in 1956, described how the houses of senior

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[20] Fadan, Y. (1983) The Development of Cotemporary Housing.
[21] Akbar, S. (1998) Home and Furniture, p.117
[22] Aramco built its first camp in Dhahran in 1938, then in Ras-Tanura in1939, and by 1944 in Abqaiq. Shiber, S. (1967) Report on City Growth in the Eastern Province, Saudi Arabia, in his Recent Arab City Growth, Kuwait, P. 428.
[23] Al Naaeem, M. (1998) Continuity and Change, p.33
[24] Al-Ansari, A. (1982) *The History of Jeddah*,

American staff in the Dhahran camp were imported complete from the United States. He said:

> No one westerner would have difficulty in identifying the senior staff "camp" as a settlement built by Americans in our southwestern tradition of town planning. It is an area of single-storey dwellings for employees and their families. Each house is surrounded by a [small-grassed] yard usually enclosed by a hedge.[25]

The following sections will describe the three types of home found in the emerging pattern of Saudi Arabian cities during this period: *Bayt Shaby* (literally means folk house), which were occupied by low income Saudi people who came from rural areas to the cities as well as by immigrants from rural areas of Yemen and Africa; villas, which were occupied by middle to high income people and apartments, which were built to provide for the sudden increase in urban population.

5.3.1 Residential Types

5.3.1.1 *Bait Shaby* (folk house)

Most of these houses, a type that is now obsolete, were designed by their owners and built by unqualified builders. These houses normally consisted of three rooms, two halls, a toilet, a kitchen and a courtyard. The rooms were arranged along the two sides of the plot facing the street. One room, which was located near the entrance door, was reserved for the guests; the other main rooms were multi-functional. The courtyard was used as a sleeping area during summer nights and as a family gathering space during the early morning. (Figure 5.3 and Figure 5.4)

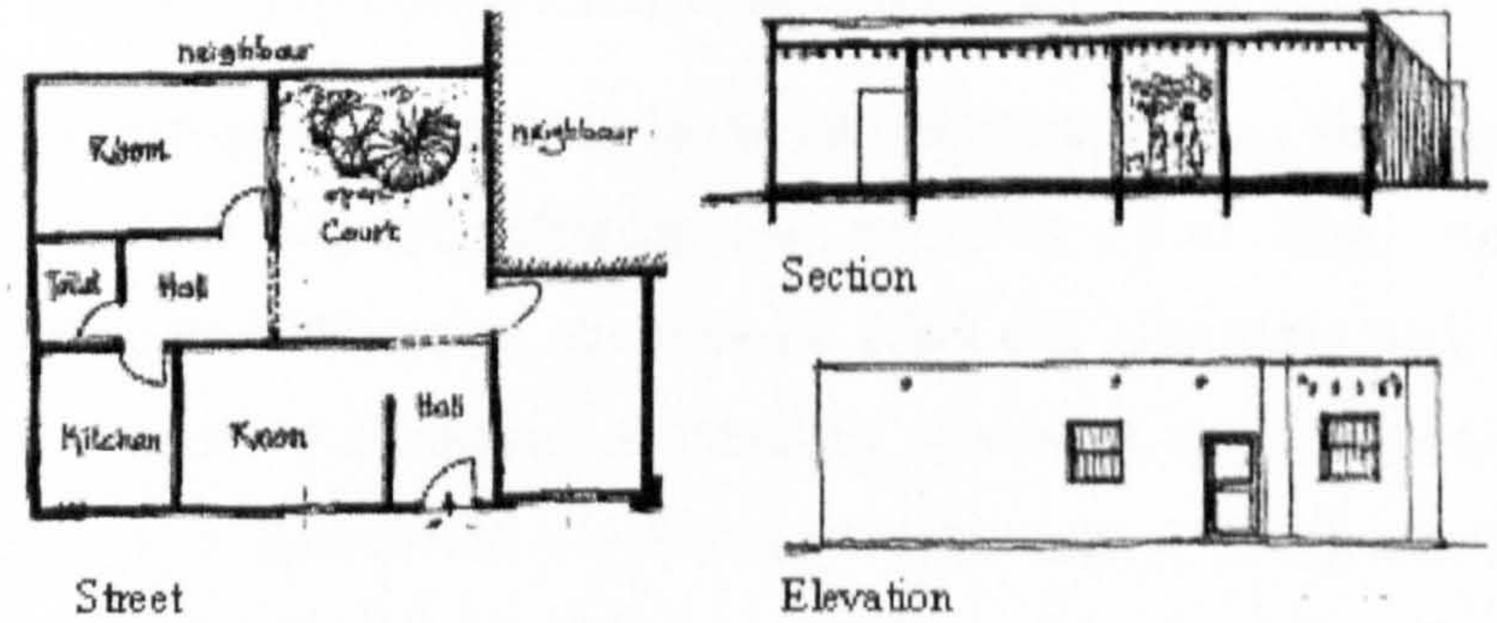
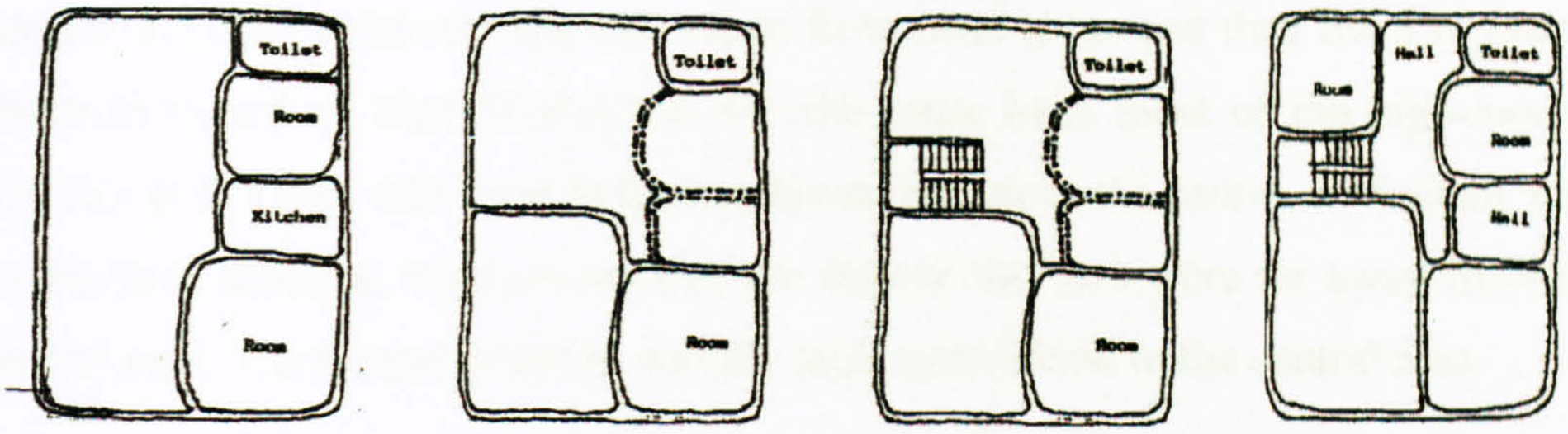


Figure 5.3: *Bait Shaby*
Source: Al-Harbi, T. 1989

[25] Kimball, Solon T. (1956) American Culture in Saudi Arabia: Transactions of the New York Academy of Sciences, Ser. II, Vol.18 No.5, p.472



Stage I Stage II Stage III Stage IV

Figure 5.4: Historical changes of the *Bait Shaby*
Source: Al-Harbi, T. 1989

T. Al-Harbi, described this house type, *Bait Shaby,* as having very simple façades. Louvered wooden shutters closed the unglazed windows (Figure 5.5.) This meant that privacy could not be maintained while the windows were open. It is important to note here that mechanical air coolers, air conditioners, were not yet in use.[26] Such technologies were installed afterwards in the windows, creating a depressing effect on the façade.

Figure 5.5: An example of wooden-shuttered window, *Bait Shaby*

Most of Saudi immigrants who came to the city of Makkah from the rural areas due to the availability of jobs and different work occupied a *Bait Shaby*. According to Alia Al-Ahmadi, in 1940, when she was 14 years old, she came with her family from a rural area in Al Madinah[27] to Makkah. However, her family lived in Al-Otaibiah[28] area in a *Bait Shaby* consisting of three rooms, kitchen/bathroom and *Hosh* (courtyard). The researcher asked her "Where there any other Saudi families who lived in houses similar to your family's?" The answer was that most of the

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[26] Al-Harbi, T. H. (1989) The Development in Housing,
[27] Second holy city in Saudi Arabia, in *Al Hijaz* region.
[28] Al-Otaibiah area is North West of the Holy Mosque and about 3km from it.

neighbours were relatives who also came from rural areas and they lived in *Boioot Shabyah* (plural of *Bait Shaby*) too. On the other hand most of the high-income families at this time still lived in the traditional houses in the centre of Makkah, next to the Holy Mosque, whereas most of the *Boioot Shabyah* were far away from the central area. The reason probably was the high cost of land in the central area.

Akbar[29] claimed that *Boioot Shabyah* were not built and occupied by Saudi families. However, apart from the previous information from Alia Al-Ahmadi, another Makkah resident, Jonaid Dahory, states that he was born in 1965 in Makkah in a *Bait Shaby* and, in 1996 he and his brother Mohammad replaced it with a modern house. In addition Mohammad Al-Mehmadi also states that during the 1950s he was living with his family in Makkah in a *Bait Shaby*. This suggests that Saudi families also occupied these *Boioot Shabyah*.

According to Al-Harbi[30] *Baioot Shabyah* were built of sun-dried bricks and the roof was of traditional construction. The researcher asked Mohammad Al-Mehmadi who lived in a *Bait Shaby* in Makkah, during the 1950s "What was the building material of your family house?" The answer was the walls were built of stone while the roof was made from wooden beam construction similar to the roof of a traditional house. It seems, therefore, that the walls of the *Bait Shaby* were built of sun-dried bricks, but could also be built of stone.

Akbar[31] is of the opinion that the *Bait Shaby* was not a continuation of the traditional house and it is difficult to establish when exactly they first occurred in Saudi Arabia. As mentioned earlier, Al-Harbi pointed out that the mechanical air coolers, air conditioners, were not yet in use in the *Bait Shaby* and it is known that, the National Electrical Companies were only established in 1951 in different Saudi cities. (see above page152). We also have the evidence of Alia Al-Ahmadi, that during the 1940s she was living with her family in a *Bait Shaby* in Makkah. It would, therefore, appear as if the *Boioot Shabyah*, as a house type emerged about 1940, which coincides with the beginning of the oil era in Saudi history.

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[29] Akbar, S. (1998) Home and Furniture, p.118
[30] Harbi, T. H. (1989) The Development in Housing.
[31] Akbar, S. (1998) Home and Furniture, p.118

5.3.1.2 Villas [32]

The source of modern housing settlements in Saudi Arabia stems from the period 1938 to 1944, when the Arabian American Oil Company (Aramco) built their housing project in the eastern region. These projects introduced for the first time to Saudi people a new idea of space use and a new image of home. Al-Naim[33] and Al-Hathloul[34] pointed out that in the eastern region of Saudi Arabia the villas really appeared in the 1950s with the Aramco Home Ownership Program which forced people to submit a design for their homes in order to qualify for a loan. (Figure 5.6) For the design of the peoples' homes, they relied upon Aramco architects and engineers, because at that time there were few architects in Saudi Arabia. Aramco architects and engineers developed several designs for their employees to choose from, in order to speed up the housing process. All these designs adopted a style known as the 'international Mediterranean detached house'. According to Al-Harbi, and confirmed by Akbar, in Jeddah the villas appeared in the mid-fifties.[35] No information could be found on the visual appearance of these houses.

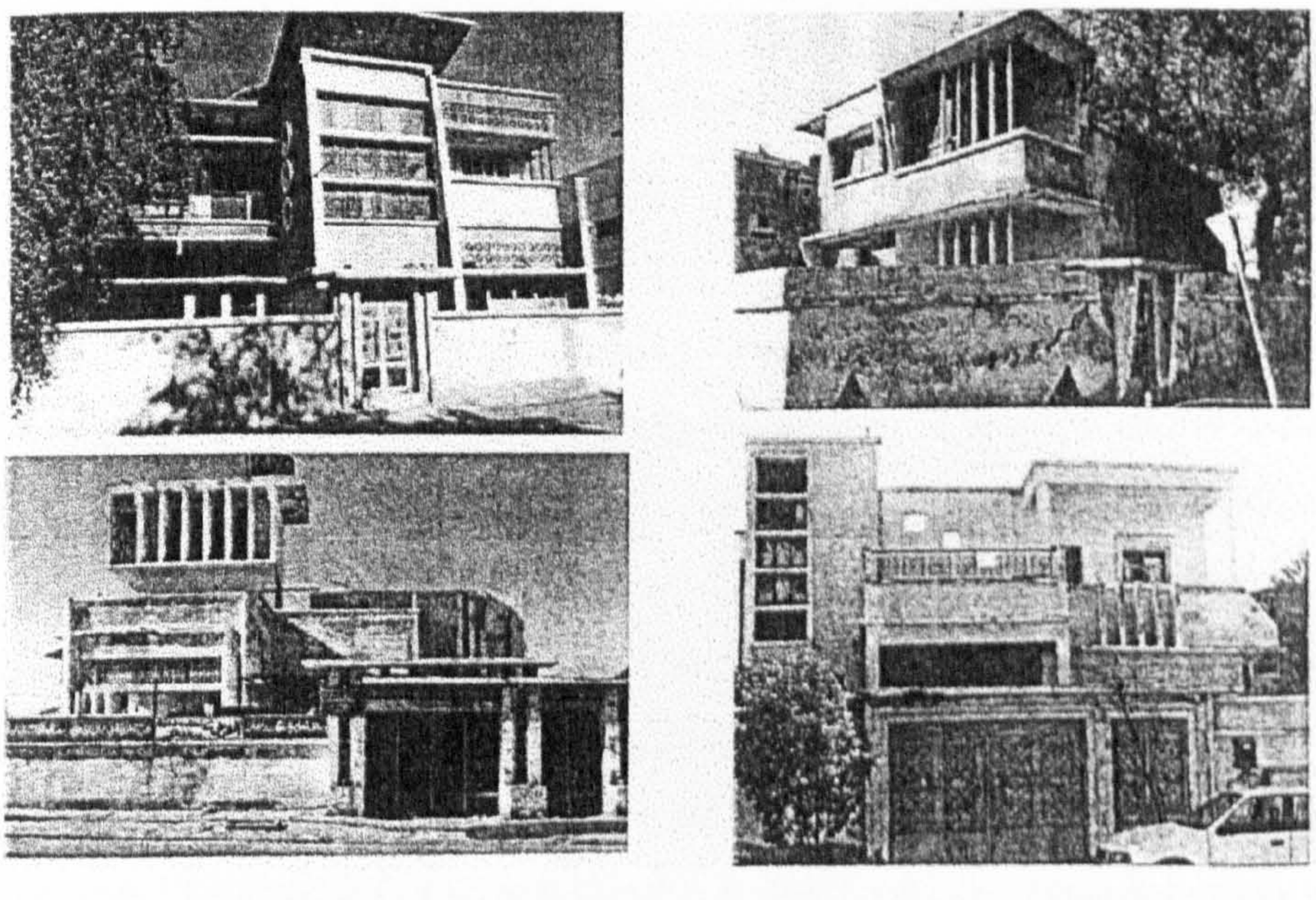

Figure 5.6: A number of villas constructed in the 1950s by the American Home Ownership Programme in Dammam.
Source: Al-Naaeem, M 1998

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[32] Also called 'villa' by Arabs and Saudis
[33] Al-Naim, M. (1998) Continuity and Change, P.33 and P.36
[34] Al-Hathloul, S. (1981) Tradition, Continuity and change in the Physical Environment: The Arab-Muslim City, Ph.D. Thesis, MIT
[35] Akbar, S. (1998) Home and Furniture, p.120

As already mentioned, in 1953 the government decided to move its seat from Makkah to Riyadh. Many employees moved to Riyadh and they needed to provide housing urgently. The Al Malaz area, 4.5km north east of the city centre, was chosen and a housing project was undertaken by the Ministry of Finance. By 1957 parts of the project were completed and the transfer took place. This group of government workers could be recognised as a distinctive social group in Saudi Arabia. The Al Malaz project consisted of 754 villas, mainly occupied by government employees.[36]

Furthermore, the introduction of villas coincided with introduction of modern facilities e.g. electricity and a central water supply. Thus traditional became associated with being sub-standard, and the villas with all modern conveniences became associated with super-standard.[37]

Christopher Alexander points out that in every dwelling a distinction is made between its public area and private area, a relationship which is most important. He calls this the intimacy gradient, suggesting that unless the spaces in the building are arranged in a sequence which corresponds to their degrees of privacy, the visits made by strangers, friends, guests, clients, family, will always be a little awkward. According to him the intimacy gradient of the spaces of a building begins with the entrance and the most public parts of the building, then leads into slightly more private areas, and finally to the most private domains.[38] From the earlier description of the traditional house it was found that the traditional houses responded to local conditions and were shaped around the traditional Saudi family needs. It had a clearly defined intimacy gradient regarding the relationship between the street, the public zone, and the home, the private zone. Since there was no formal correspondence between the imported villa type and traditional Arab houses the villa type had to be modified to suit the Saudi family, to accommodate the extended

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[36] Al-Hathloul, S. (1986) Development of the Contemporary Physical Environment in Riyadh. *Al Benaa*, 5: 48-51

[37] Boon, J. J. (1982) The Modern Saudi Villa: Its Cause & Effect. *American J. For Science & Engineering*, 7: 140

[38] Alexander, C., Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, pp.610-613

family, to maintain their privacy and to ensure good ventilation during hot or humid daytime.[39]

In traditional houses interior spaces had a unique relationship with the outside, which protected the strong sense of family privacy. The family members could see out without being seen themselves. In addition, in Arab houses the strong relationship of men with the outdoors was achieved in parallel with a more fragile, gradual relationship required between the public zone of the street and the private zone where women stayed and enjoyed the outdoors in privacy. However, the villa concept stood in complete contradiction to this. Municipal regulations required a front set back at least one fifth of a street width from the building boundary and a minimum two metres around the other three sides. It also stipulated that the building area must not exceed 60% of the land coverage, which meant that the remaining building area was devoted only to indoor spaces (Figure 5.7). According to Boon[40] and Salagoor[41] there was no provision for open spaces such as *Kharijah* or courtyard. Municipal regulations made it difficult for the design to include such an enclosed open space in the villa type as well as provide a front area completely closed to pedestrians. According to Altman the front garden is a western cultural concept meant to convey the occupant's identity and status.[42]

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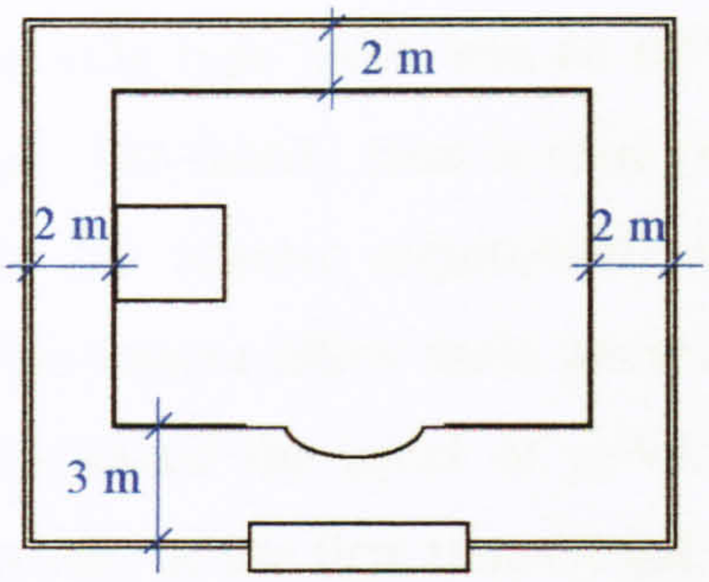
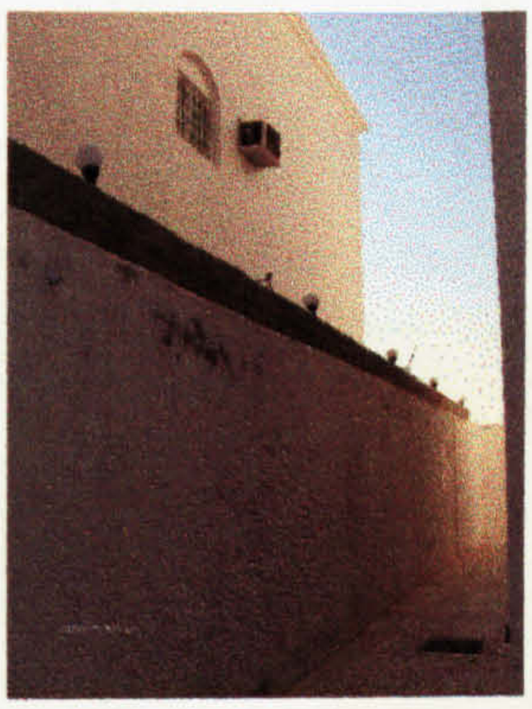
[39] Akbar, S. (1998) Home and Furniture, p.120
[40] Boon, J. J. (1982) The Modern Saudi Villa: Its Cause & Effect. *American J. For Science & Engineering*, 7: 140
[41] Salagoor, J. (1990) Influence of Building Regulation on Urban Dwelling in Jeddah, Saudi Arabia. Ph.D. Thesis, University of Newcastle upon Tyne, UK
[42] Altamn, I. & Gaurain M (1981) *A cross-cultural and dialectic analysis of home*, in Liben. L.et al (Eds.) *Spatial Representation and Behavior across the Life Span*, London: Academic Press. pp.283-319



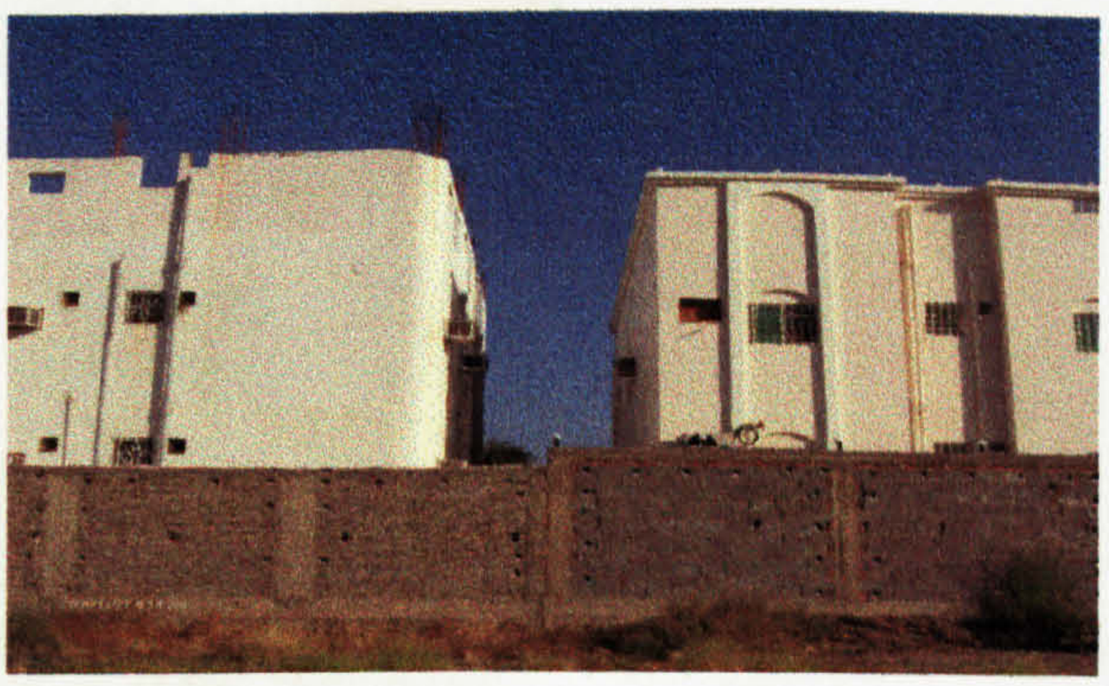
Zoning requirements of the Municipal regulations, Saudi Arabia

The front yard



The back yard

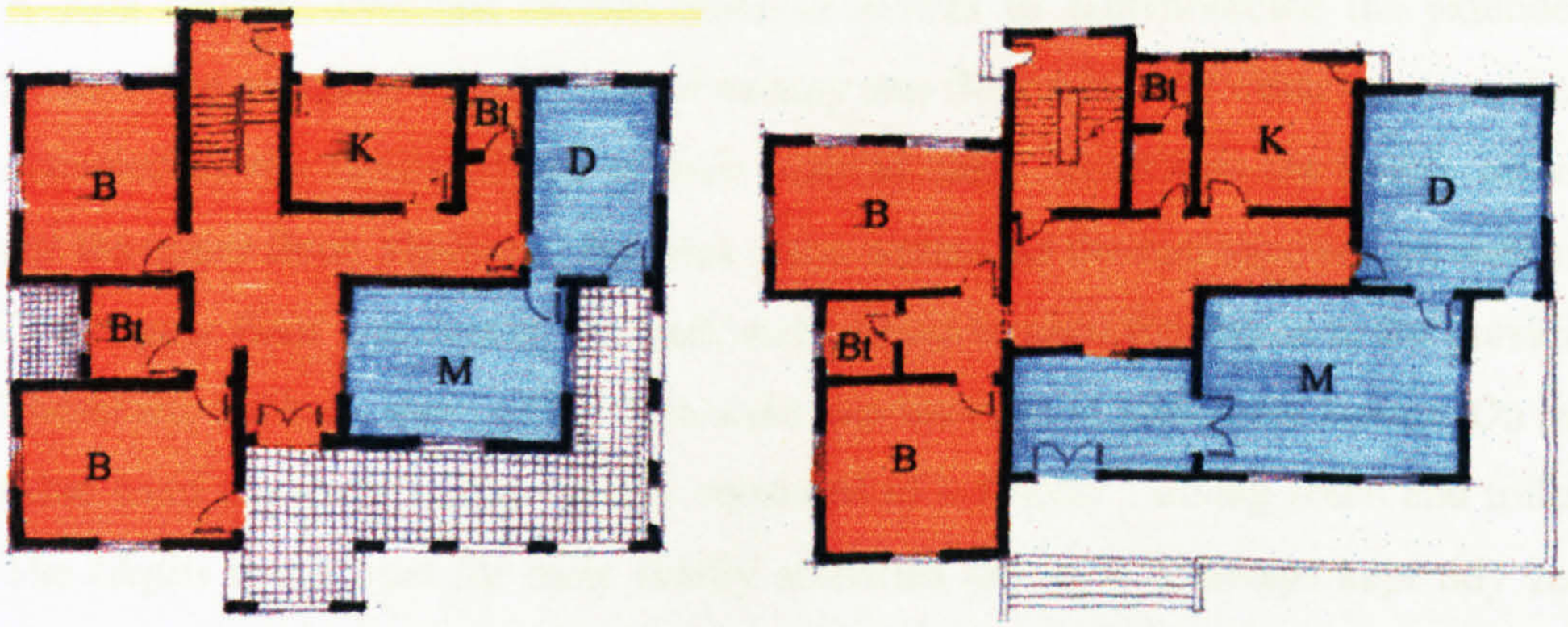
The back yard over looked by neighbours



The neighbours windows face each other which does not provide the occupants privacy

Figure 5.7: The impact of Municipal regulations, Makkah, Saudi Arabia

In the villa type there was an early consideration to have two zones, public and private. The family zone is used mainly by family members and female guests so, due to the Islamic requirement of separating strange males and females, Saudi families cannot allow male guests to see their private zone. According to Akbar, this increased the sense of privacy against male guests more than female ones. Moreover, in the first transformation not all villas had a clear separation between the public part and family part. For example, in villa 1, Figure 5.8, the guest can see movement in the private family zone when entering. In villa 2, this problem is avoided but still the guest would have go through the private zone in order to get to the services area (toilet). Akbar pointed out that in a villa of the 1970's these problems disappeared as the guest zone became completely separate[43] (Figure 5.9). It became clear also from the case-studies of modern houses that in a villa of the 1970's and early 1980's the guest zone became completely separate (See Appendix B, House 20 and House 24).



Villa 1, Ground floor plan

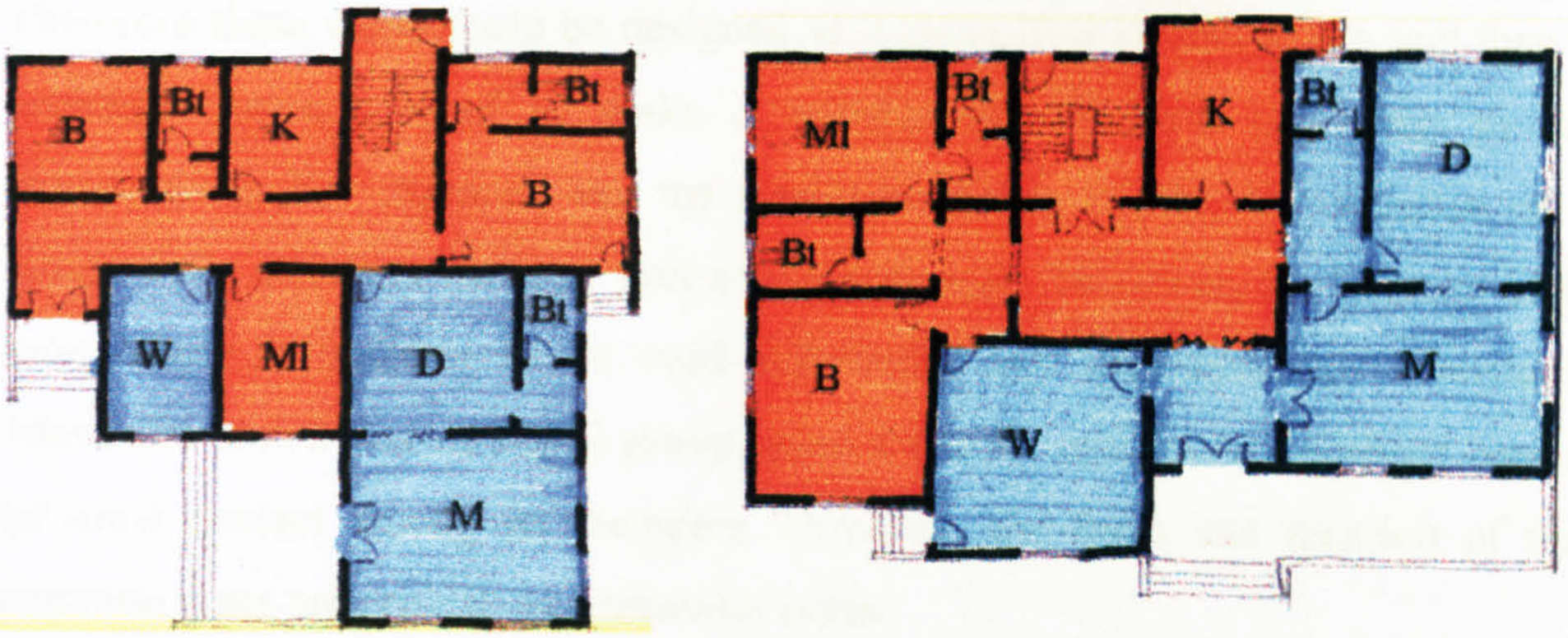
Villa 2, Ground floor plan

M Men's guest room
K Kitchen
D Dining room
Bt Bathroom
B Bedroom

Guests zone
Family zone

Figure 5.8: Villas built in Jeddah in the sixties
Note how guests need to pass through the private zone to get to the toilet.
Source: Author's drawing based on Akbar, 1998, p.122

[43] Akbar, S. (1998) Home and Furniture, pp.120-121



Villa 1, Ground floor plan Villa 2, Ground floor plan

Ml Multi-purpose room W Women's guestroom D Dining room
M Men's guest room B Bedroom K Kitchen
Bt Bathroom

Guests zone Family zone

Figure 5.9: Villas built in Jeddah in the seventies
Note the guest zone became completely separate.
Source: Author's drawing based on Akbar, 1998, p.122

A villa usually consisted of two identical stories to accommodate the extended family. The occupant's family would occupy one floor while the other one would be occupied by the family of one of their married sons. Sometimes the family rented out the upper floor. However, the back stairs connected the two families, as well as, if the upper floor was rented, the back stairs could be used for access to the outside. Therefore, the back stairs of the villa were like the ones in traditional homes. On the other hand the guest's zone usually consisted of a *Majlis*[44], dining room and toilet. The *Majlis* is not used for daily family activities and as it is always kept tidy and clean for unexpected guests. The family zone consisted of bedrooms, multi-purpose room, a kitchen and a bathroom. The kitchen was close to the dining room to serve food while guests were sitting in the *Majlis*.

It was mentioned earlier that the villa had to be modified to suit the extended family and maintain their privacy. There was a difference between the modified and imported villas. One of the differences was that the former had no room designed as a living room. One of the back rooms was used for the family's daily activities.[45]

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[44] In some cases the *Majlis* was called Saloon, so the Saloon replaced the *Majlis* of the traditional Makkah house.
[45] Akbar, S. (1998) Home and Furniture, pp. 120-123

Therefore these villas could be designed as if consisting of two zones, and then the occupants were obliged to make a number of decisions according to their requirements. For example, say the family members decided the location of the family daily activities room as well as the bedrooms. However, the location of this room made it unlikely to be used informally and spontaneously. Christopher Alexander stated that no social group, even a family, can survive without constant informal contact among its members. However, the form and location of these common areas are critical, as Alexander notes:

> If a common area in located at the end of corridor and people have to make a special deliberate effort to go there, they are not likely to use it informally and spontaneously.[46]

5.3.1.3 *Shoqah* (Apartment)

Huge apartment buildings were built from the 1950s onwards to provide for the sudden increase in urban population, because it was impossible to provide for the demand for individual homes in such a short time. However, during this transformation period the apartment buildings themselves were huge, but the apartments small (Figure 5.10). As mentioned before, the economic development attracted professionals, such as teachers, doctors and designers, from the neighbouring Arab countries which, although Islamic, were less strict in their interpretation of the privacy rule. Therefore the private and public zone division, which is so fundamental to Saudi society in order to maintain the family's privacy, was not specified; the designs being copied from foreign practice, often allowed the guests to see the family area of the apartment. [47] The balcony was exposed to the elements, to pedestrians and to neighbours, which hindered any use other than storage or hanging washing. During the 1940's and 1950's the apartment was not modified as much or as quickly as the villa type. The first reason was that it was mainly occupied by expatriates who were already familiar with living in apartments. Also they lived there temporarily and then returned to their home countries. The second problem was space limitation. Finally, the occupiers had no power to modify the design.

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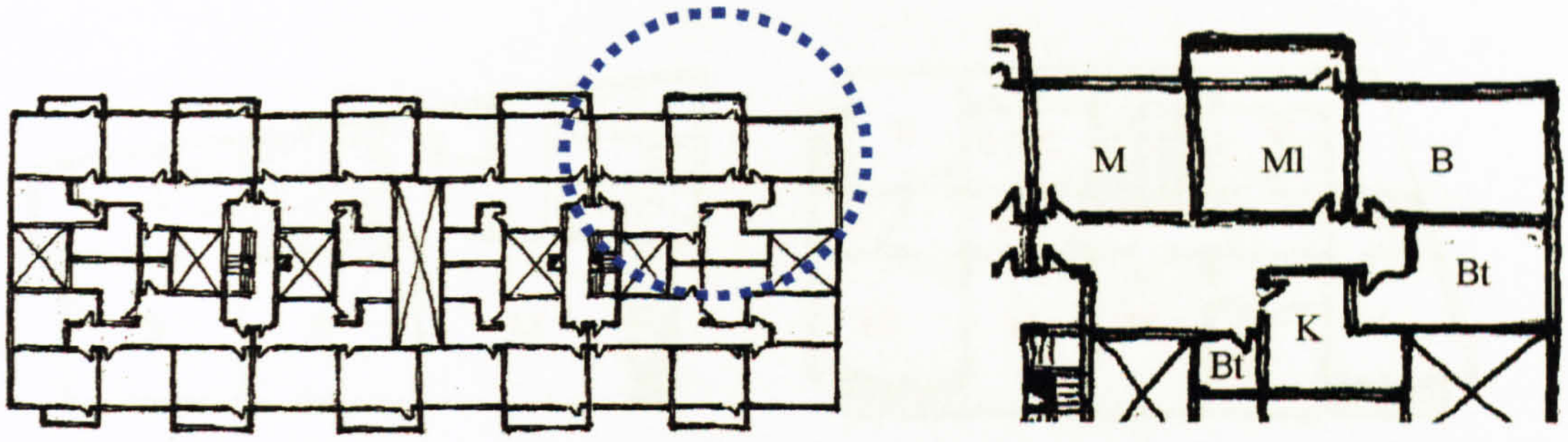
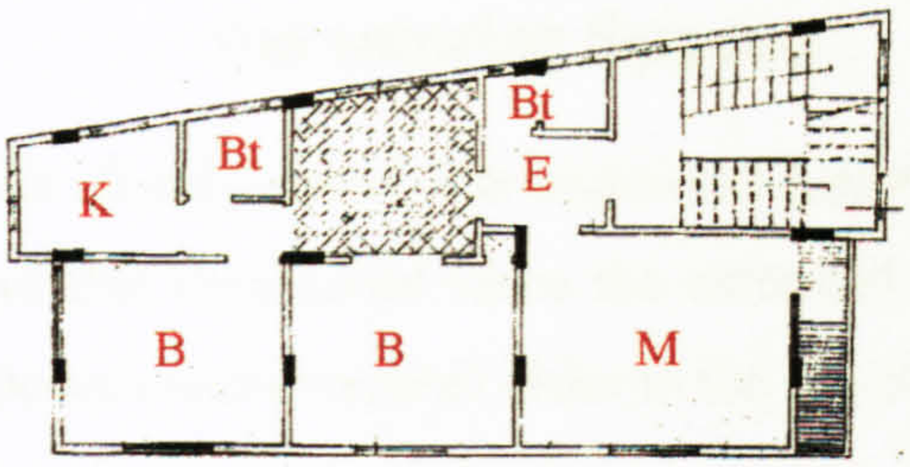
[46] Alexander, C., Ishikawa, and Silverstein, M. (1977) *A Pattern*, p.618
[47] Akbar, S. (1998) Home and Furniture,



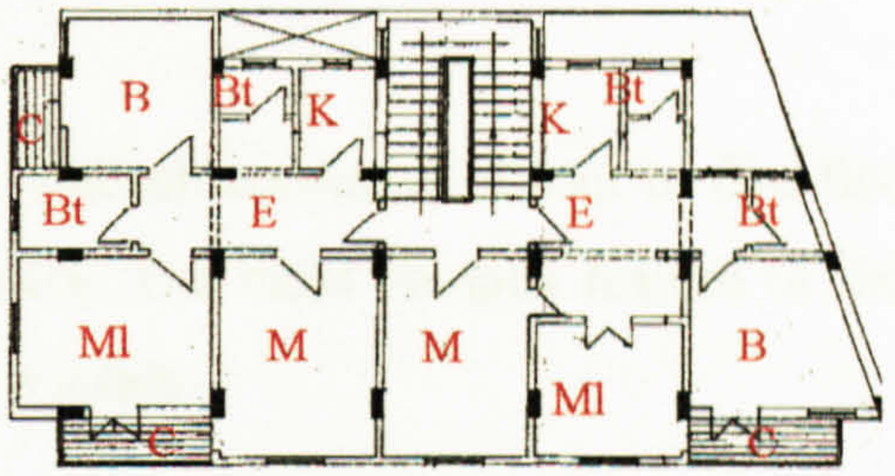
M	Men guests	Ml	Multi-purpose room	K	Kitchen
B	Bedroom	Bt	Bathroom	C	Balcony

Figure 5.10: An example of apartments during the fifties, Riyadh
Source: Author's drawing based on Akbar, 1998, P.124

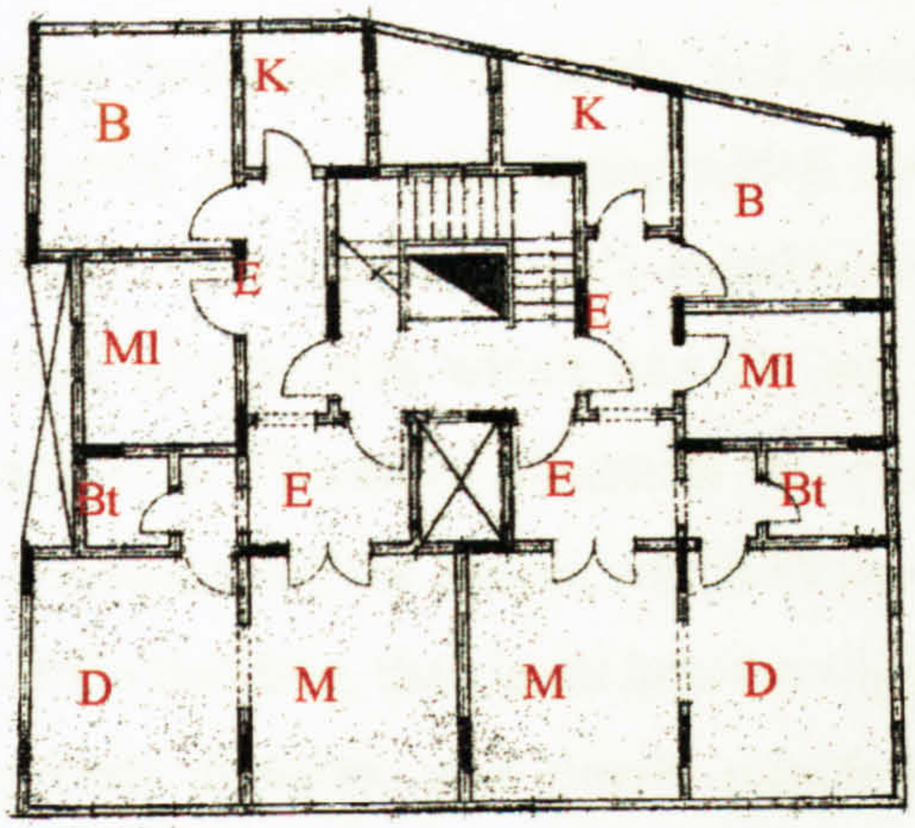
During the 1960's some apartment designs were modified and the size was also increased. Before these modifications no Saudi who could afford to live in villas would accept living in the apartment buildings. It is clear from our case-studies of modern houses that during early 1970s the modification of apartments became more common and the size also increased (Figure 5.11). However, although the two zone (guest's zone and family zone) arrangement appeared in some apartments, in most the zones were not completely separated. For example, when the male guests occupied the *Majlis* or dining room, the female family members had to be cautious while passing through the apartment. Usually the apartment consisted of a main entrance that led to a little entrance hall located between the two zones. The guest's zone consisted of a *Majlis* and dining room which in some cases were divided by a folding or sliding door as well as a bathroom (Appendix B Houses No. 10, 11,13,14,16 and 17). The family zone consisted of a multi-purpose room, bedrooms, a kitchen and bathroom. However, the kitchen was usually located between the two zones because it served the dining room. Like the villa there was no room specially designed as a living room. One room of the private zone had to be used as a multi-purpose room for the daily family activities.



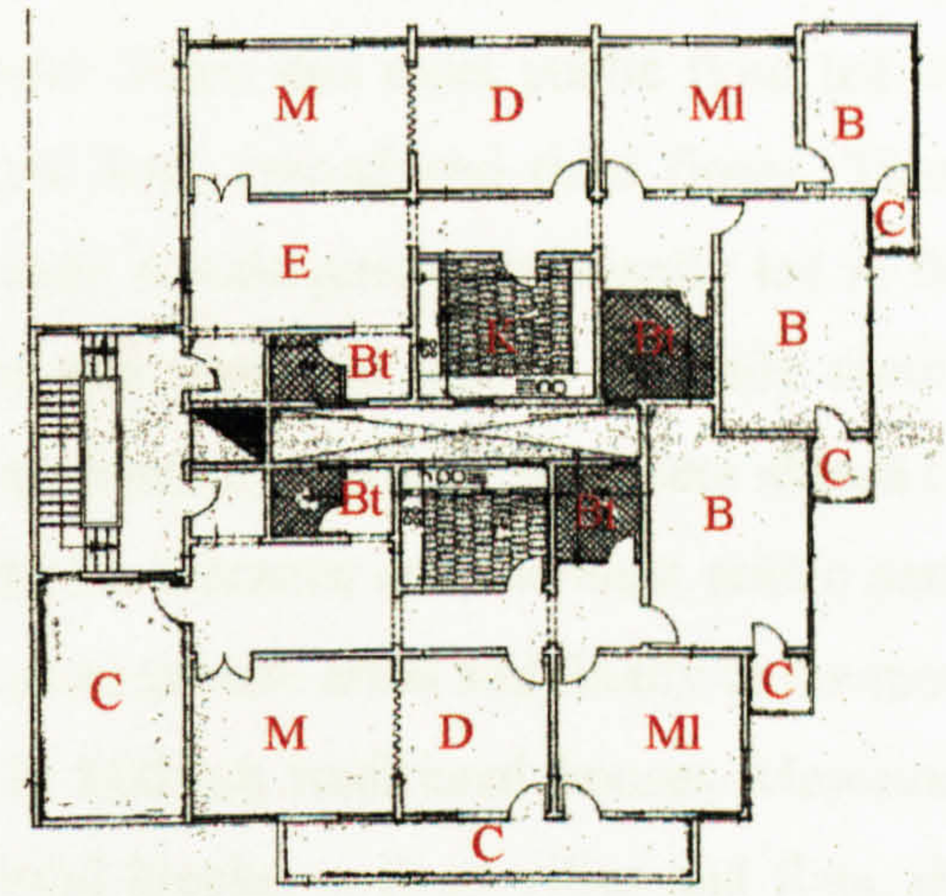
One flat, three rooms (1974)



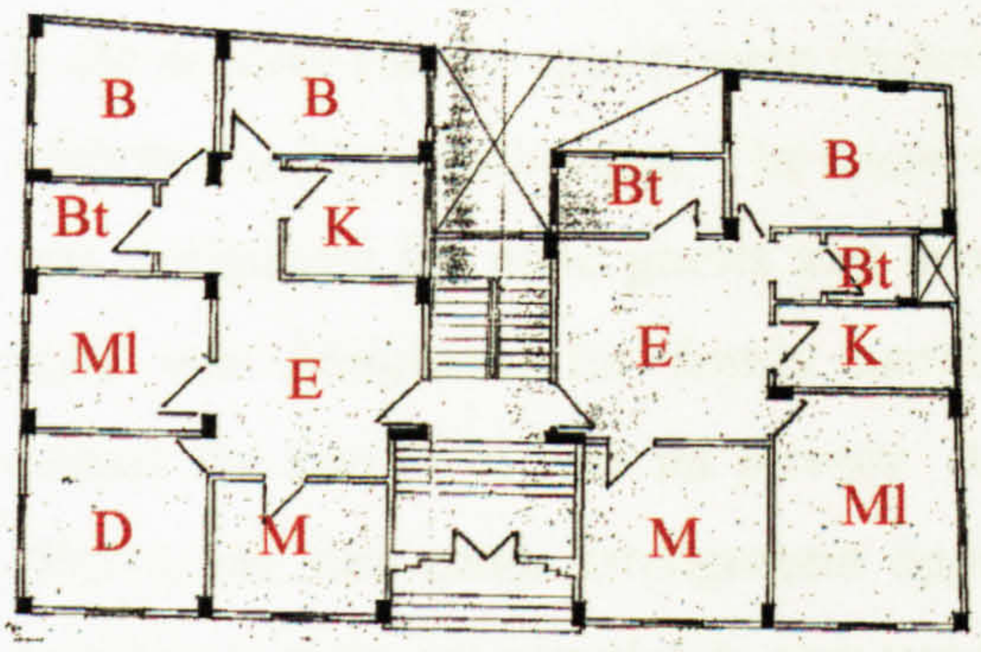
Two flats, three rooms (1974)



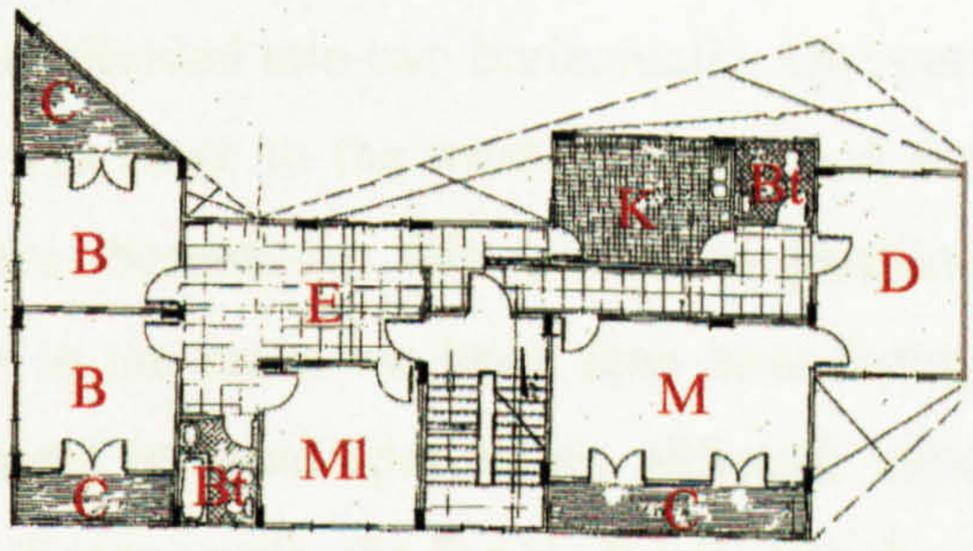
Two flats, four rooms (1975)



Two flats, four rooms (1976)



Two flats, five and three rooms (1977)



One flat, five rooms (1978)

E	entrance hall	M	Majlis (guests reception)	D	guest's dining room
K	kitchen	B	bedroom	Ml	multi-purpose room
Bt	bathroom	C	balcony		

Figure 5.11: Some example of apartments during the seventies
Source: Al Rusafa Municipality Archive, Makkah, 2004

5.3.2 The Impact of Modern Furniture and Technology on the Interior Spaces

As already stated, the traditional houses in Makkah consisted of four to five floors so that they could serve the extended families. The most obvious feature of these houses was a vertical order in the use of floor space.

This vertical order of Makkah traditional house begins with the *Dehliz* and the most public part of the house which was the ground floor. This floor was mainly used by male members of the family and their guests. From this most public floor led off slightly more private areas, which were the first, second and third floors. These floors were used by family members and their female guests and finally led to the most private area which was the top floor that was used mainly for daily family activities. Therefore Alexander theory of 'an intimacy gradient' that there should be a sequence of the spaces which begins with the entrance and the most public parts of the building, then leads into the slightly more private areas and finally to the most private domains, was clearly manifested in Makkah traditional houses. However, with the emergence of the modern residential blocks, such as villas and flats, the distribution of the spaces also changed.

In the modern flat the spaces were limited and did not in general exceed four rooms, a kitchen and two bathrooms. The space was divided into two horizontally. One part was designated for male guests and this was close to the main entrance, and the other was designated for family members. Sometimes this horizontal partition caused the family to lose its privacy. As in the cases we have seen how during 1960's, the two zones arrangement appeared in some apartments, although most apartments were not completely separated. For example, the female family members had to be cautious while passing through the apartment when male guests were in the *Majlis* or the dining room which was not satisfactory and contrary to Saudi custom.

With the emergence of electricity, air-conditioning became popular. In that period the *Rowshan* or *Mashrabyyah* were amongst the traditional features that ceased to be used. This was so because the function of *Rowshan* was meant to cover a large

opening while allowing as much air as possible to enter the internal spaces. With the emergence of air-conditioners the requirements became the opposite of what they were before, as the cool air had to be kept in by closing all the windows and the door.[48] This has resulted in the emergence of smaller, modern windows which were made locally with panes of frosted glass and wooden shutters and called *Tagah*. These *Tagah* opened inwards to maintain the privacy while letting the daylight in and would be kept closed during the hot weather if the air-conditioning was on. During windy weather they would be left open while the external shutters were closed to maintain privacy (Figure 5.12). Akbar thought this an acceptable compromise as this type of window was compatible with the occasional use of air-conditioning and it was practical and virtuous.[49]

So it could be seen that air-conditioning is one of the more important factors that have effected changes in the Saudi lifestyle. The increase in demand for air-conditioning units affected the internal spaces in the residential buildings. Before the second transformation most houses contained just one or two units, but after the second transformation, each room in the house had to have an air-conditioning unit, which amounts to four or more air-conditioning units per flat and seven or more in the villas. This meant that each room in the house became isolated as its windows and doors had to be closed to keep the cool air inside. This is contrary to the practice in the traditional houses, where the windows and the doors of the rooms were kept open to let the cool air travel through the internal spaces. It also has social implications, isolating people from the outside environment.

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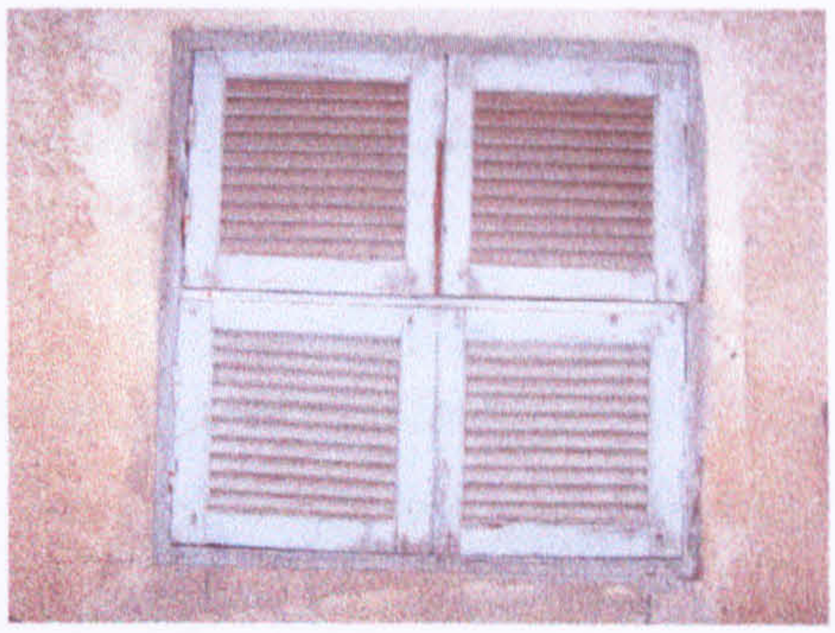
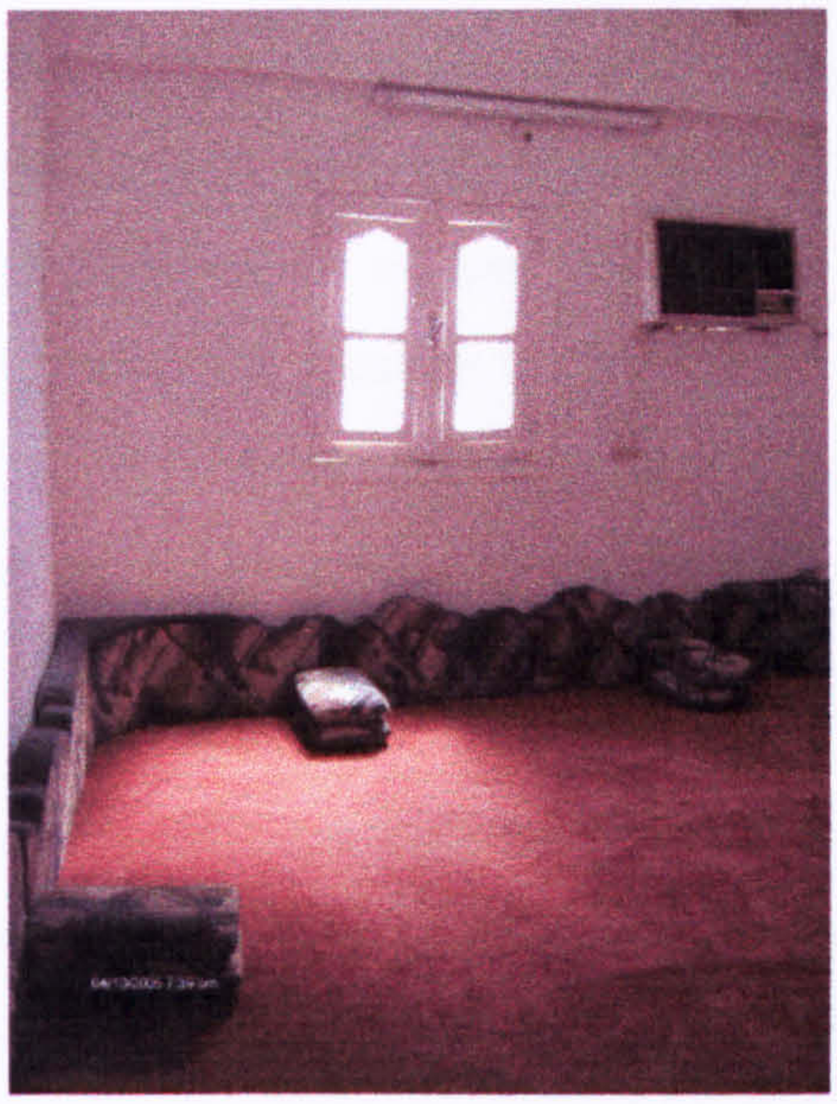
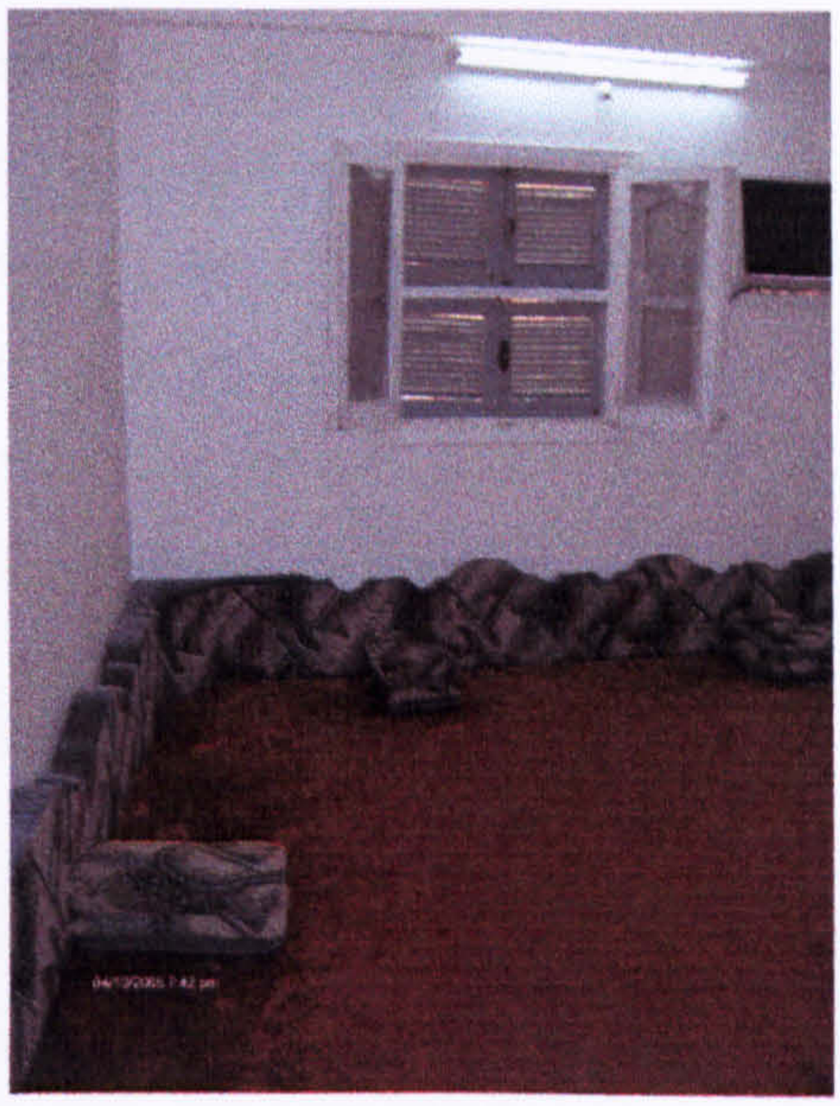
[48] Jomah, H. (1992) The Traditional Process,
[49] Akbar, S. (1998) Home and Furniture, p.127







Inside outside

Inside: The frosted panes of glass from the inside were to maintain the privacy while letting the daylight in

Outside: During windy weather; the frosted panes of glass were left open while the external shutters were closed to maintain privacy

Figure 5.12: *Tagah*, modern window and its function.

Akbar also demonstrated that with the new types of housing units all the names of the different rooms of the traditional houses were substituted with new names. The *Majlis* was replaced by *Saloon*, the *Murkkab* was called *Matbakh* (i.e. the kitchen); some of the other name changes included *Bayt alma*, which came to be called *Hammaam* (i.e. the bathroom) and the *Dehliz* which was changed to *Madkhal* (i.e. the entrance hall). The dining room was newly introduced and there were other traditional names which have totally disappeared e.g. *Suffa*, *Muakhkhar*, *Makhlawaan* and *Kharijah*.[50] However, in the researcher's experience most Saudi people still refer to the *Majlis* and Akbar too acknowledged the continuing usage of

[50] Akbar, S. (1998) Home and Furniture, p.128

the term in some of the evidence that he presented. It would appear as if the new name was 'Saloon' especially used for villas and replaced *Majlis* only in some families.

As can be seen from the case-studies (Appendix A), the kitchen in the traditional houses of Makkah tended to be on a higher floor i.e. as far away as possible from the reception rooms such as the *Maqad* and the *Majlis*. The reason for this was to avoid the smell of food or wood used to prepare the food. However, in the modern houses the use of electricity and the electrical equipment such as electrical fans, and also the introduction of gas, gave more flexibility for the location of the kitchen. Consequently, the location of the kitchen shifted to between the guest zone and the family zone so as to ease serving the guests and the family. Akbar noted that the furniture of the kitchen was very simple during this early phase.

After the water and sewage system were installed, the kitchen was provided with a sink and the different tools and utensils were stored in a cupboard, which was called *Namliyyah* or in some cases they were stored in shelves that were built in the walls. The *Namliyyah* was common until the modern kitchen suite was introduced. In general the size of the kitchen was about 3x4 metres and in some cases even smaller than this. The different equipment of the kitchen such as the gas cooker, the refrigerator and one or two *Namliyyah* did not take much space in the kitchen. In the cases when the kitchen was small the fridge was put outside the kitchen, usually in the corridor near the kitchen.[51]

As was mentioned in chapter 4 the *Bayt alma* in the Makkah traditional houses was near the stairs to enable the water provider (*Saqaa*) to climb and put the water in the in the storage tank. The reason for this was to preserve the privacy of the family as in this way the *Saqaa* did not need to enter the private family sections of the house. When piped water came to modern houses this affected the location of the bathroom or *Hammam*. The planning of the modern flat or the villa contributed to the horizontal spread of buildings as there was a private *Hammam* in the guest zone and one or two in the family zone.

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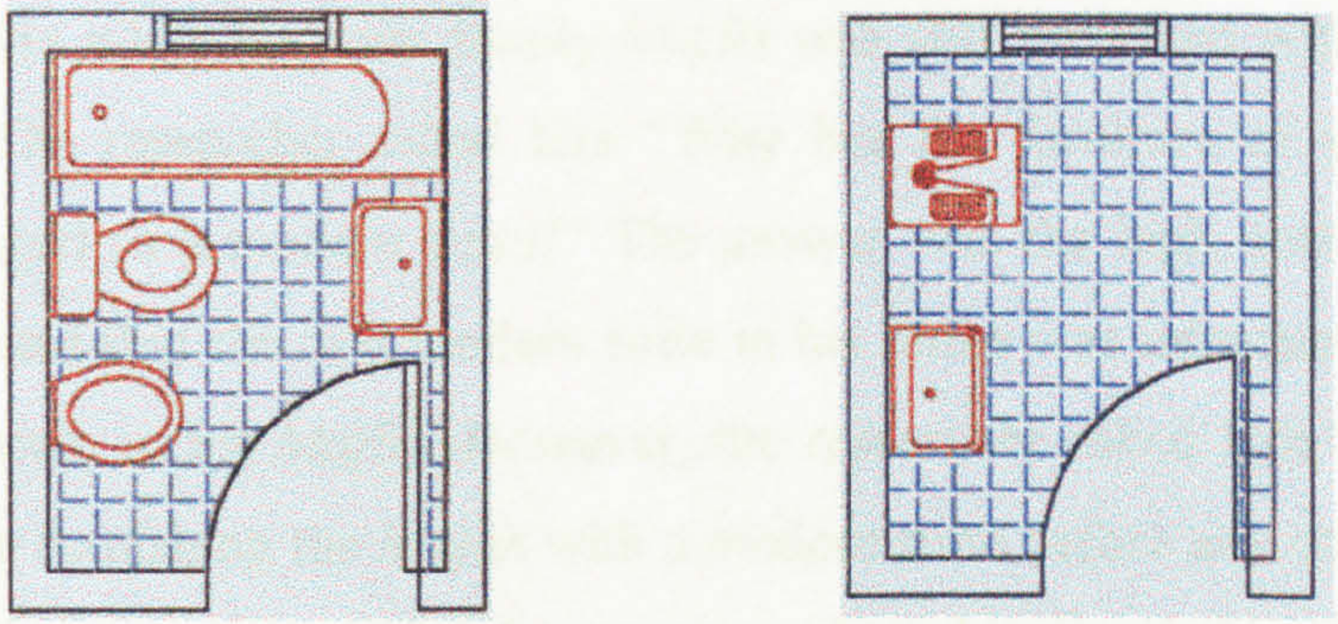
[51] Akbar, S. (1998) Home and Furniture, p.130

With the emergence of the modern bathroom suite, two types of bathroom became known, one called the Arabic *hammam* and the other one called *Hammam franji* (western bathroom). However, in that period the common type was the Arabic *hammam* and the reason for this was the high price of the modern bathroom suite as well as the fact that people did not like the idea of using the western type of lavatory (Figure 5.13). Nowadays, both types are used by all family members, while elder people like to use *Hammam franji* because it is easier for them. These spaces now are usually furnished with mirrors, shelves, toilet rugs and some decorative items such as flowers and wall paintings. (see chapter 6) A small area in front of the bathroom has appeared. This area is furnished with sinks, wastepaper basket, mirrors, shelves, and some decorative items such as flowers and wall paintings. The floor is usually covered with marble or ceramic and small rugs. These areas are usually found in the guest zone and mainly used by guests when they are invited to lunch or dinner to wash their hands before and after eating. More details of this area will also discussed in chapter 6.



The standard size of *Hammam franji* The standard Arabic *hammam*

Figure 5.13: An example of two types of bathroom

Although the names of the spaces had changed the uses were still the same, e.g. the *Majlis* or *Saloon* was still used to receive male or female guests and, in addition to this, it was still the biggest space in the house. It was also the most decorated part of the house. As for the furniture, some people still used in the *Majlis* traditional furniture such as *masaned*, rugs and *tawaweel*, In addition to these traditional pieces there were some modern items such as wooden or aluminium tables, which had glass shelves and also had on them flower vases and some pieces of hand-made

textiles (Figure 5.14). According to Akbar[52], some of the wealthy families in Jeddah had completely changed the furniture and used modern suites instead of *tawaliat* and *masaned* this would have been the same for Makkah. The question that arises here is why has the furniture of the *Majlis* not changed in that period for the majority? The probable reason for this was the high prices of the modern suite at that time.

Figure 5.14: An example of *Majlis* furniture in the late sixties, in Makkah
Note the *Majlis* was furnished with traditional and modern furniture e.g. (*masaned,* rug and aluminium tables).

Al Mehmadi[53], informed the researcher that his friend's family *Majlis* was furnished with modern suite while his own family *Majlis* was still furnished with *tawaweel* and *masaned*. The researcher asked him "Why has the furniture of your family *Majlis* not changed to a modern suite?" The answer was the high cost of modern suites. He also said that the first modern suite in his home was introduced when he was newly-married, in his *Majlis*. However, the researcher asked him "Why were you interested in furnishing the *Majlis* with a modern suite before any other room in your house?" The answer was that he wants to show his guests his wealth. This confirms, to Akbar's view that the introduction of modern furniture sprang from the desire to express social stature and not from utilitarian need.[54] This could also be seen as an indication that the *Majlis* constituted one of the most important spaces in the Saudi home with regard to the furniture and decoration.

The main bedroom in modern houses of the period was used for the parents and this room had simple furniture and was carpeted with rugs, which completely covered the floors. In addition it also had *masaned*, but the most important piece of furniture

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[52] Akbar, S. (1998) Home and Furniture, p.128
[53] Sixty two years old and living in Makkah
[54] Akbar, S. (1998) Home and Furniture, pp.128-129

was the wardrobe. The wardrobe was very important for the people of Makkah, as well as Jeddah, and especially in marriages so that it could be used to store the belongings of the bride. The question here is why was the wardrobe considered the most important item in the bedroom? The answer is because of the fact that the wall wardrobe ceased to be used when the modern structures emerged since the thickness of the walls was only 20cm which made it impossible to construct a wall wardrobe. As a result it was necessary to a find substitute hence the popularity of the modern wardrobe. As for the use of *Saisam* boxes, this was considered a traditional item, which became a thing of the past after the general availability of modern wardrobes. Another reason may be the increase in the amount of clothes of the women, which required a bigger space as well an easily accessible wardrobe to use, where the clothes are better preserved and can easily be seen instead of stacking them in a *Saisam* box.

Sleeping continued to be mostly on the ground as beds were only found in the houses of the rich. Sleeping mattresses were the so-called *tawaliat* or *joadari*, which were locally made from cotton and were covered with pieces of textile. These were of many colours and measured approximately 2x2 metres. This is where the parents slept and then in the morning it was folded and put away. (Figure 5.15)

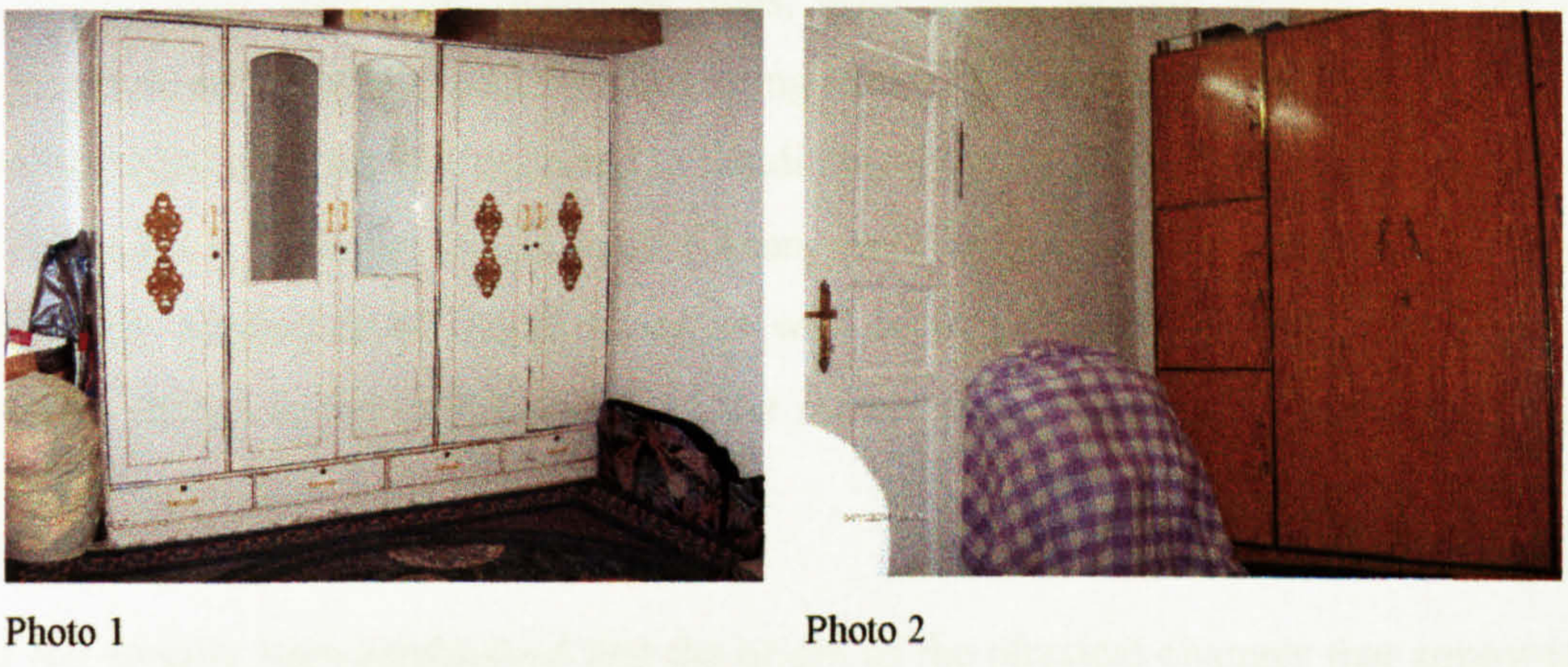

Photo 1 Photo 2

Photo 1: wardrobe, *masaned* and rug
Photo 2: *tawaliat* was folded and put away in the morning

Figure 5.15: An example of a wardrobe in the main bedroom in the late sixties

The multi-purpose room was the room used by the family members for daily activities such as eating, drinking and watching television. It is also used at night as

a sleeping area for the children and the reason for this was the lack of a sufficient number of rooms in order to allocate a private room for the children because, as was mentioned earlier, the flats contain only four rooms. The multi-purpose room used to be carpeted with *tawaliat* and *masaned* together with a modern table, which was made from wood. This table was used for the television when television came to Saudi Arabia and the family took good care of decorating the room with vases of artificial flowers that are put beside the television (Figure 6.16). The room was also used to receive female guests when male guests occupied the *Majlis* or *Saloon*.

Figure 5.16: An example of television table

5.4 The Second Transformation: Late 1970s onwards

The home environment changed slowly during the sixties and seventies until the late seventies when, due to the sharp increase in oil prices in the mid-seventies, there was a sharp increase in national income. A whole new range of services became available to the population in the Saudi cities, for example, medical care, transportation, electricity, telephone lines, water pipes, sewage systems and better education, so for most Saudi families living standards improved considerably. Many of the social changes that occurred in Saudi society were due to government projects (See below). Even so, it still took fifteen years before building regulations were regularly applied in all Saudi cities as well as in all Saudi regions. These were clearly linked to the confirmation of the master plan, initiated between 1968 and 1978.[55]

It has already been established that the origin of the physical changes that appeared later in the Saudi home environment goes back to the beginning of the period of change, to Aramco's developments in the Eastern region in general, and Aramco's home ownership programme in particular. The home style that was imposed by

[55] Al-Hathloul, S. & Anis-ur-Rahmaan (1992) The Evaluation of Urban and Regional Planning in Saudi Arabia. *Ekistics*, May-Jun, 1992: 206-212

Aramco's programme in the 1950s continued to have a powerful impact until the 1970s, especially since the building regulations adopted then supported and encouraged it.[56]

The trend was for the family structure to move from extended to nuclear as more of the population migrated to the cities. According to Al Afghani,[57] looking back to earlier times in Saudi Arabia, before the oil boom the urban population was only 20% of the total population of the country. The cities were growing rapidly as the following data show:

Approximate Year	Approximate Urban Population
1932	20%
1960	30%
1970	49%
1980	67%

This increasing urban population contributed to the increase in residential construction over this period.

In 1974 the Real Estate Development Fund, was established (interest–free long-term loans), which support families to have their own separate house. The main goals of the REDF were to provide long term, interest free loans to middle and low income Saudi landowners for the purpose of private housing construction, as well as to Saudi nationals wishing to construct projects for investment purposes. In addition the general objectives of the REDF were to make available more housing units and to build more buildings suitable for commercial centres, banks and offices etc.[58] During the 1970s the housing shortage was solved by the government initiative, the policy of subsidizing the private sector to build houses appears to have had both positive and negative results.

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[56] Al-Saati, A. J. (1989) Housing Finance and residents' Satisfaction: the Case of Real Estate Development Fund (REDF). *Open House International*, 1989:.33-41

[57] AL Afghani, A. (1990)The Saudi house in the past, p.280

[58] For more information about the REDF see the following: -

a) Ministry of Finance; and National Economy S.A. Real Estate Development Funds Private Loans Manual. REDF, Riyadh 1982, (Arabic text).

b) Ministry of Finance and National Economy S.A. Real Estate Development Fund, Seven-Year Review. 1975/76 - 1980/81. REDF, Riyadh.

d) Ministry of Finance and National Economy S.A. Real Estate Development Fund. Annual Report; 1981/82, 1082/83, 1984/85, 1985/86 and 1986/87-1407/08 REDF, Riyadh.

It has already been stated that television had a great impact on the lifestyle of the Saudi people. The home environment was influenced by foreign programmes, according to Fadan who pointed out that the native workers were especially affected by television in giving them a vivid sense of their class-identity. From the television they learned about the modern living environment as well how to live up to their new social role. In addition television viewers would see the children of workers playing in the expensively equipped company playground, or given a look at the facilities available to workers, such as medical and culture services. On the other hand all of these images conveyed to the possible employees a clear message of the advantages of being one of the company's employees. In addition, these same images gave another message to both the possible employees and other individuals, telling them that these were "your future dream houses and this was the way you should live." Like many Aramco technicians, engineers, planners, architects, the information specialists in TV broadcasting were both inquisitive and concerned about the region's domestic affairs and were determined to carry out the full responsibilities of their cultural work.[59]

In addition to the television many other elements had a great impact on the lifestyle of the Saudi people and their living environment e.g. radio programmes, newspapers and magazines. For example many family issues articles in magazines or newspapers advised providing a special room for children. The Saudi government was sending large numbers of young Saudis to study in western, Arab and other Islamic countries. More people began to travel to European countries and the United States for vacation and saw different home environments that impressed them, and consequently they tried to emulate this when they returned. Abdulwahed El-Wakil reports one story about a client from Jeddah who, in 1972, decided to build for himself, his wife and two children a house on a plot of land he had acquired in new Jeddah. "He had obtained a design whilst in California several years earlier. He approached me with his California design and asked me to give it a 'touch of Arabesque'".[60] It can therefore be seen that in this period the television, radio programmes, newspapers and magazines as well as education probably had a major impact on the lifestyle of the Saudi people and their living environment.

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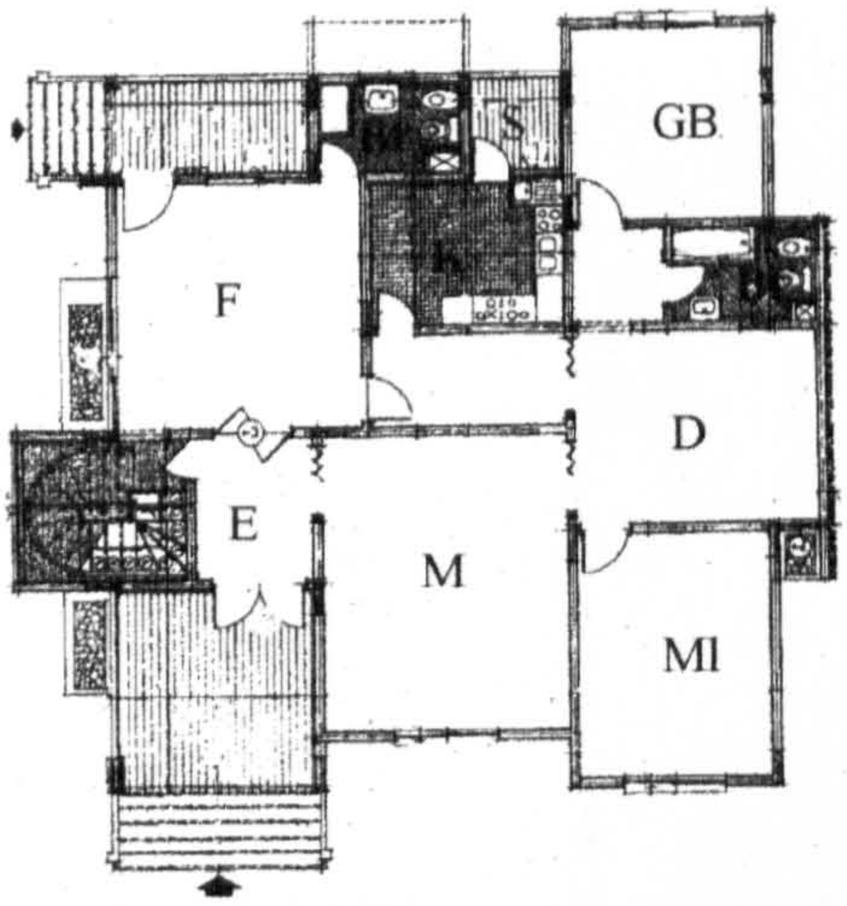
[59] Fadan, Y. M. (1983), The Development of Contemporary, p.168-169
[60] Tagore Rabindranath, (1981) Al Sulaiman Palace. *Mimar Magazine*, 1981:54

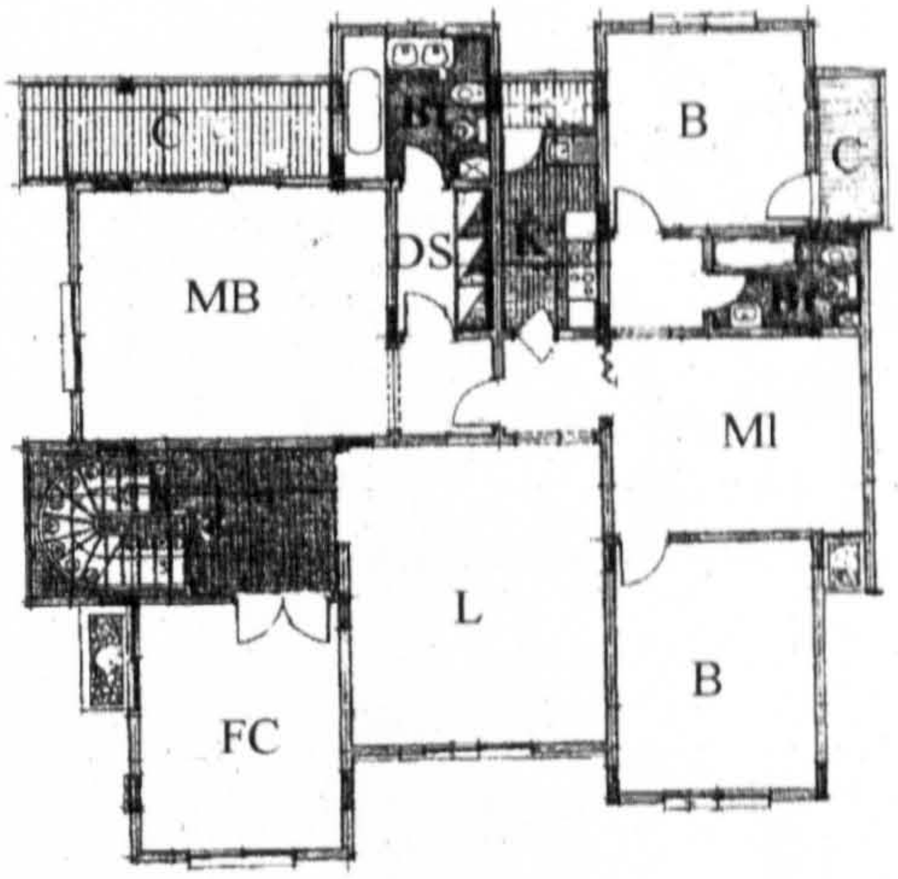
5.4.1 Residential Types

5.4.1.1 Villas

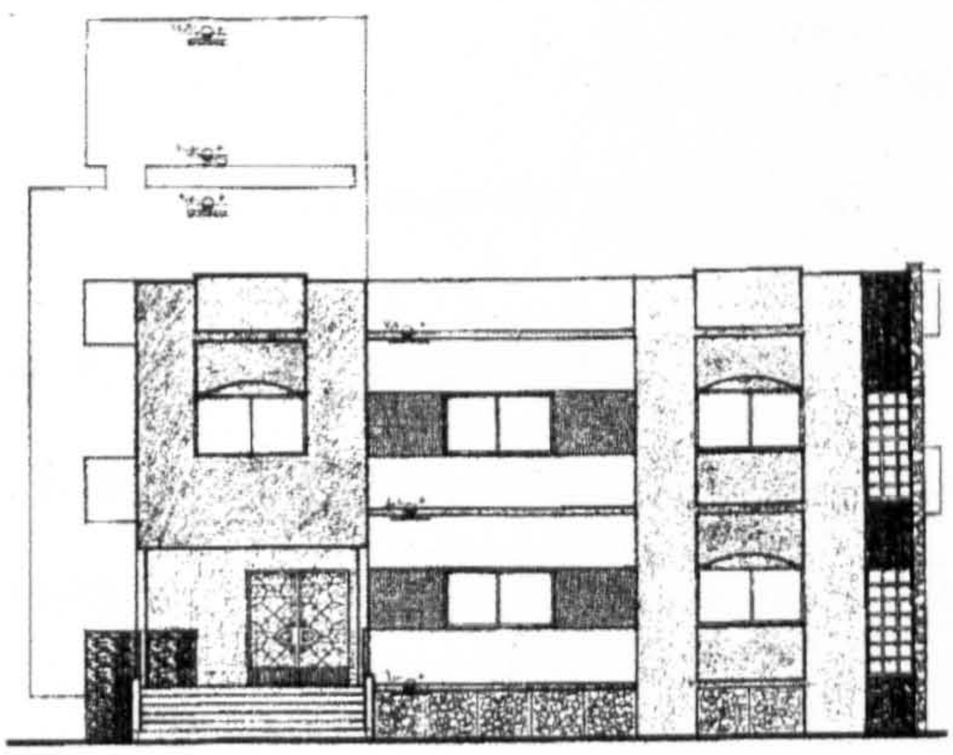
During 1960's and early 1970's the villa usually consisted of two identical stories to accommodate the extended family. However in the late 1970's this type of villa was gradually replaced by a villa for one nuclear family. One such, the Al Zaiany villa was built in 1979 (Figure 5.17). The ground floor consisted of an entrance hall from which stairs led to the first floor, male *Majlis* or *Saloon* with its own entrance, guests' dining room, multi-purpose room, main kitchen connected with storage and two bathrooms. The guests' sleeping room was added on the ground floor. The first floor consisted of bedrooms, bathrooms, a multi-purpose room, and a kitchen was also added on the first floor. The living room was on the first floor instead of the ground floor. However, as seen before, in the villas of the 1960's and early 1970's the stairs were at the back of the home. During the late 1970's most of villas had the stairs at the front of the house or easily accessible from the living room. On the other hand, as seen in the first transformation, not all villas had a clear partition between the public and family parts. Akbar claimed these problems disappeared in villas of the 1970's as the guest zone became completely separate (See the first transformation, section 5.3.1.2). However, from Al Zaiany villa it seems that still in late 1970's not all villas had a clear division between the public part and family part. Because the stairs were located in the guests' part strict control over the male *Majlis* or *Saloon* door was needed when the females of the family went through the entrance hall to the first floor. Strict control over the female *Majlis* or *Saloon* was also needed when the males of the family go through the entrance hall to the first floor.



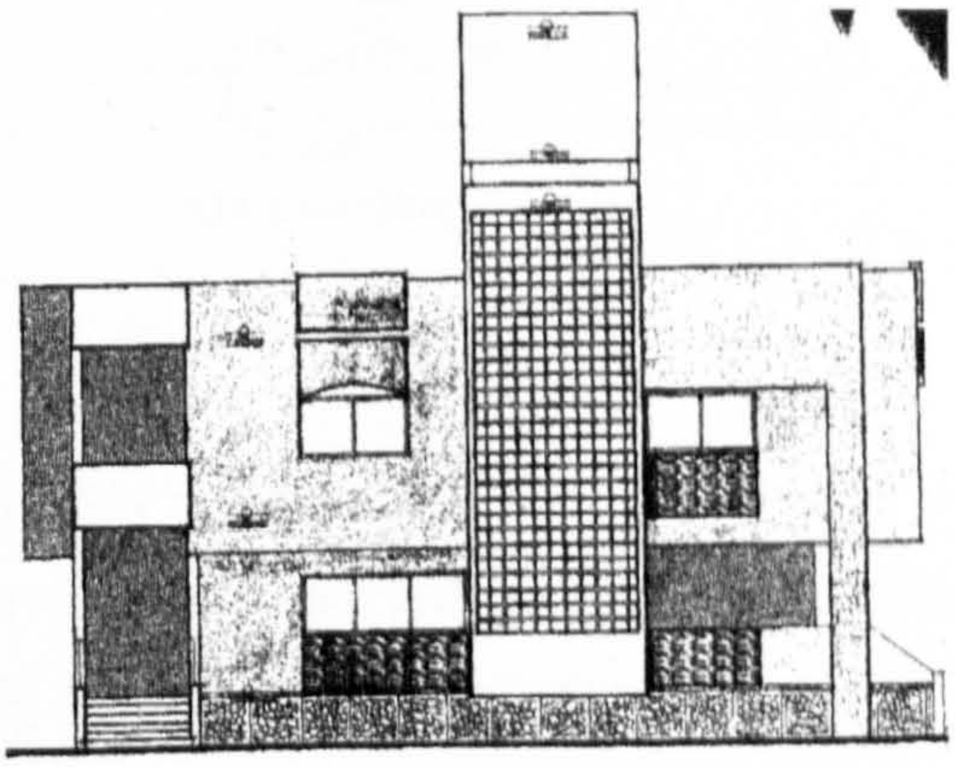
Ground floor



First floor



Main elevation



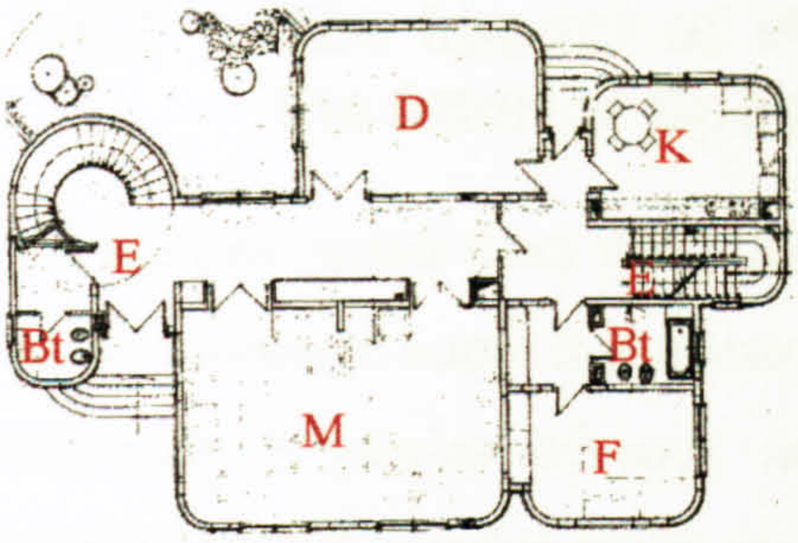
Side elevation

Ml	multipurpose room	E	entrance hall	B	bedroom	C	balcony
MB	master Bedroom	D	dining room	L	living room	FC	office
F	female reception	M	male reception	K	kitchen	Bt	bathroom
DS	dressing room	GB	guests bedroom	S	storage		

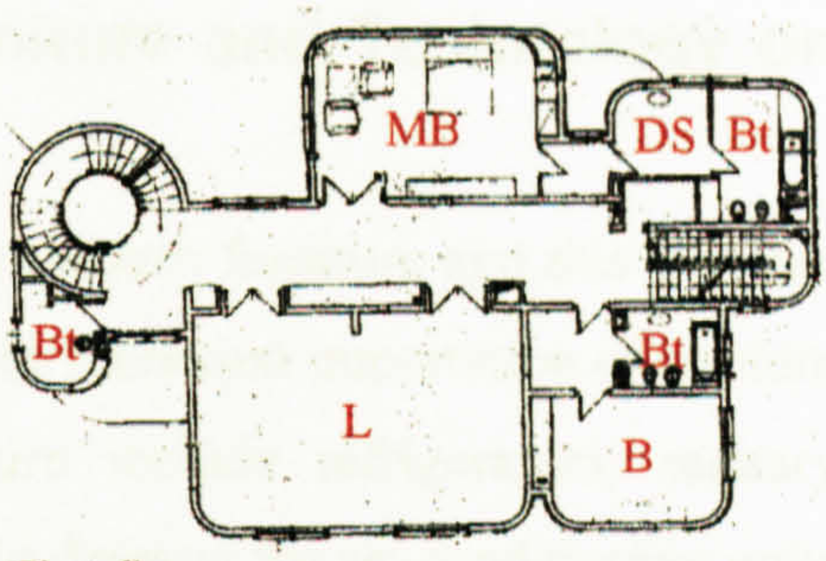
Figure 5.17: Al Zaiany villa, Makkah, built in 1979
Source: Al Rusafa Municipality Archive, Makkah, 2004

Living in a villa was a primary social criterion in boosting the occupant's status during the 1950s and 1960s. During the prosperous seventies and eighties this criterion became insufficient. People now had more freedom to build what they wanted and to distinguish themselves from others, or to claim higher social status by building villas with unusual forms and elevations.[61] (Figure 5.18)

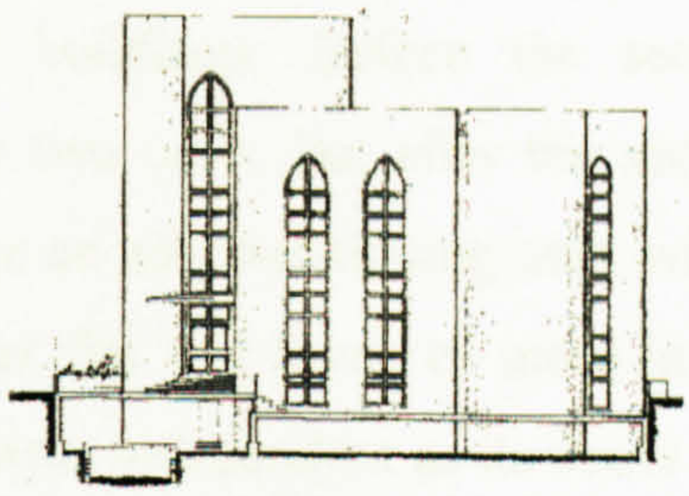
[61] Jomah, H. (1992), The Traditional Process,



Ground floor



First floor



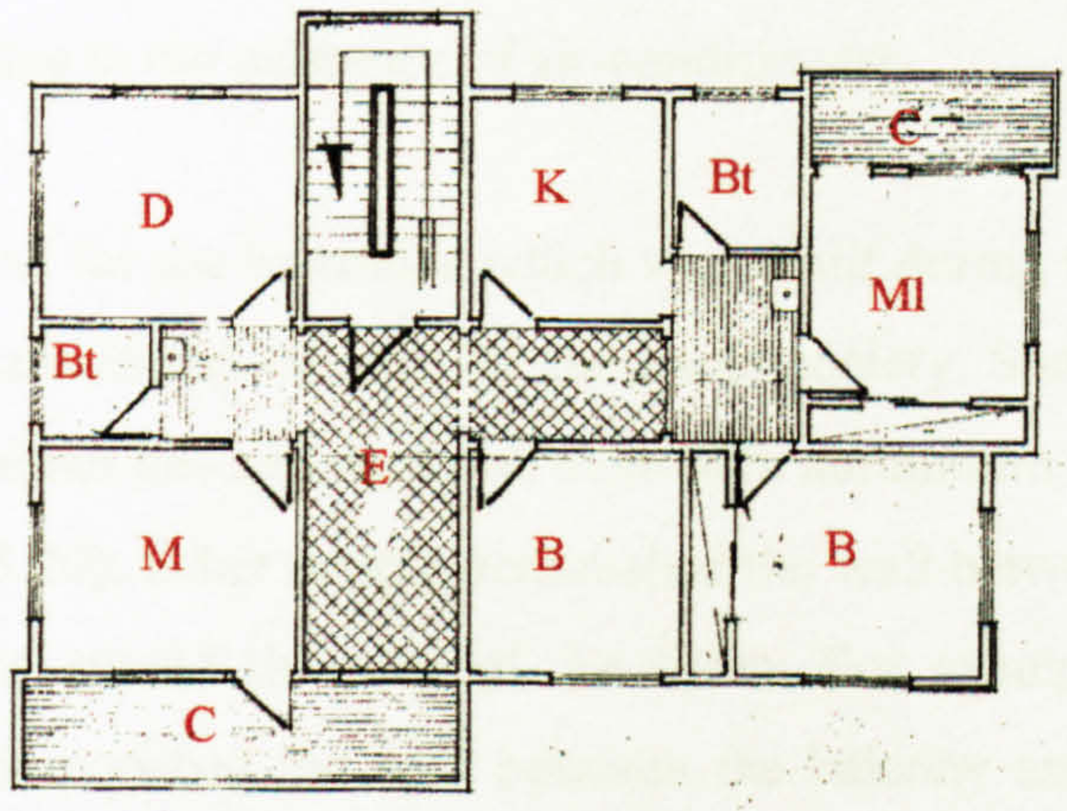
Main elevation

E	entrance hall	M	male reception
F	female reception	D	dining room
L	living room	Mb	master bedroom
B	bedroom	Bt	bathroom
K	kitchen	DS	dressing room

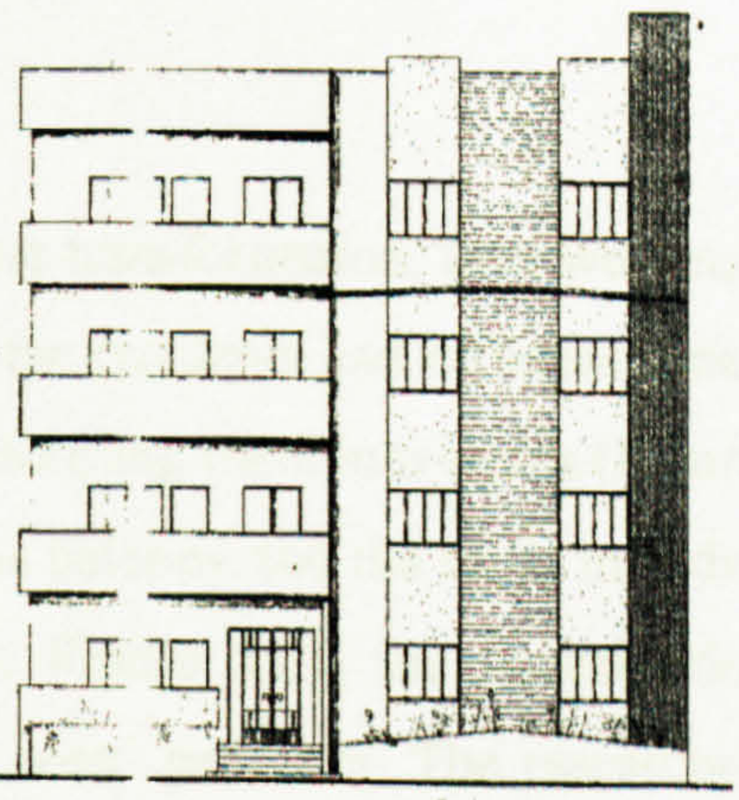
Figure 5.18: Al Khaiat villa, Makkah, 1981

5.4.1.2 *Shoqah* (Apartment)

Multi-storey apartment buildings were huge and had at least four apartments on each floor although the size of these apartments was small. According to Akbar the Saudi families needed a large apartment in a building of few apartments. Consequently smaller apartment buildings with larger apartments were built. These apartment buildings usually had no more than three stories and not more than six apartments.[62] However, from the case-studies of modern houses it appears that the apartment buildings of the late seventies could be four-storied too (Figure 5.19).



Typical floor



main elevation

E	entrance hall	M	male reception	E	entrance hall	M	male reception
B	bedroom	K	kitchen	B	bedroom	K	kitchen

Figure 5.19: Four stories apartment buildings of the late seventies

[62] Akbar, S. (1998) Home and Furniture, p.136

5.4.2 The Impact of Modern Furniture and Technology on the Interior Spaces

During this period there was a huge demand for modern furniture and this was due to the economic boom that consequently led to the increased importation of western furniture. Examples of such imported furniture include refrigerators, sanitary equipment and wooden chairs etc. The increase in demand for air-conditioning units affected the internal spaces in the residential buildings. Before the second transformation most houses contained just one or two units, but after the second transformation, each room in the house had to have an air-conditioning unit, which amounts to four or more air-conditioning units per flat and seven or more in the villas. This meant that each room in the house became independent as its doors had to be closed to keep the cool air inside.

The introduction of air-conditioning units also caused the disappearance of some of the openings, which were characteristic of the Makkah traditional houses, e.g. the window between the *Maqad* and the *Dehliz*. This opening was there to allow the movement of air between the *Maqad* and *Dehliz* (the air enters by the main entrance and then passes through the *Dehliz* and through the opening to the *Maqad*). The air will finally exit through the *Rowshans*, which exist in the *Maqad*. The openings, which used to be in the internal doors to allow air movement between the spaces, have also disappeared and the reason for this is the fact that they became unsuitable due to the existence of air-conditioners.

As for the balconies which were built during the first transformation, they were not considered suitable for the Saudi society. Some of the residents had different ideas about this and enclosed them with aluminium, transforming them into stores (Figure 5.20). Other people demolished the wall between the balcony and the room in order to extend the area of the room. For example, in Figure 5.21, the householder demolished the wall between the balcony and the sons' bedroom. The researcher asked him "Why was that?" The answer was that the householder wanted to extend the area of this bedroom and then separate it into two small bedrooms for his sons and daughters.

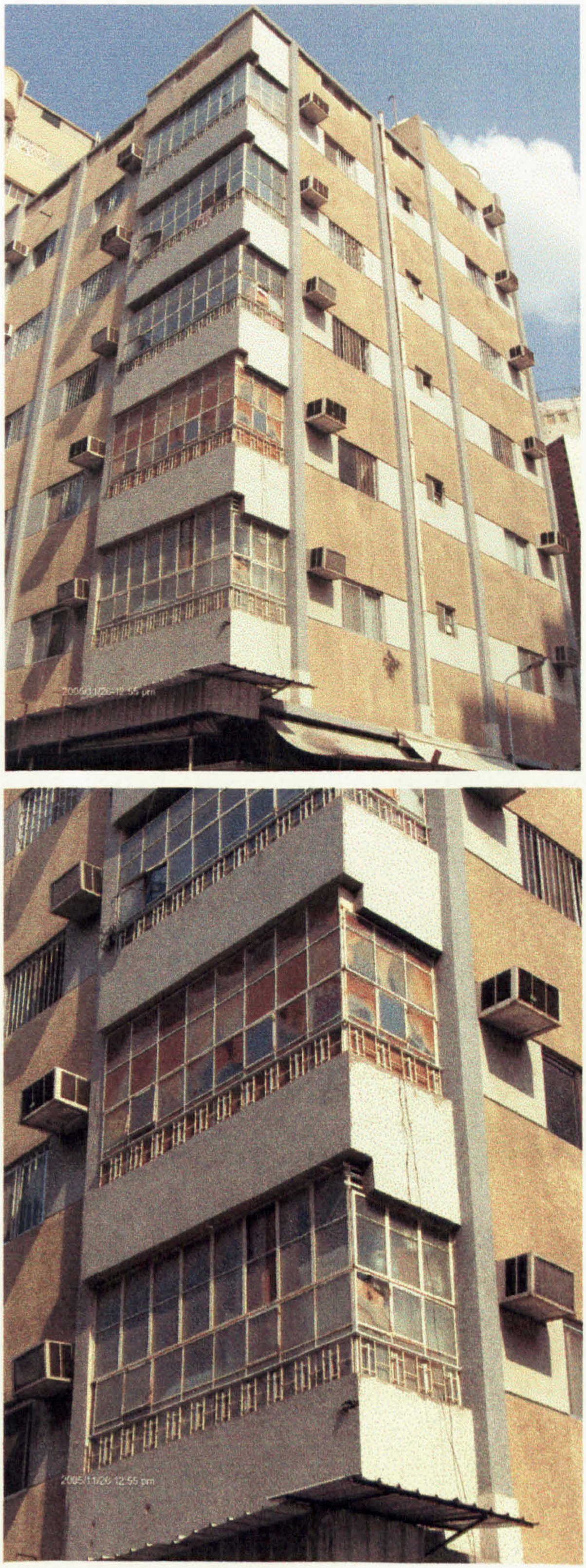
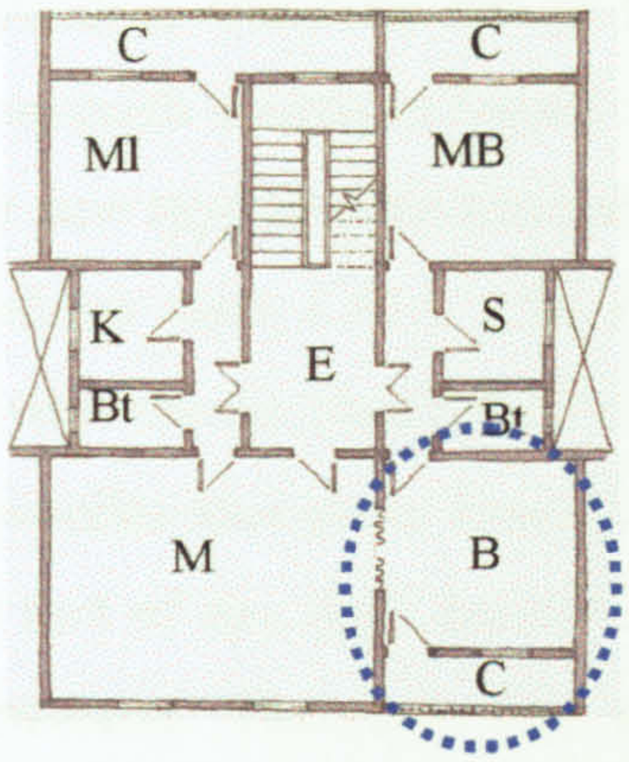


Figure 5.20: Balconies enclosed by aluminium and glass and transformed into stores



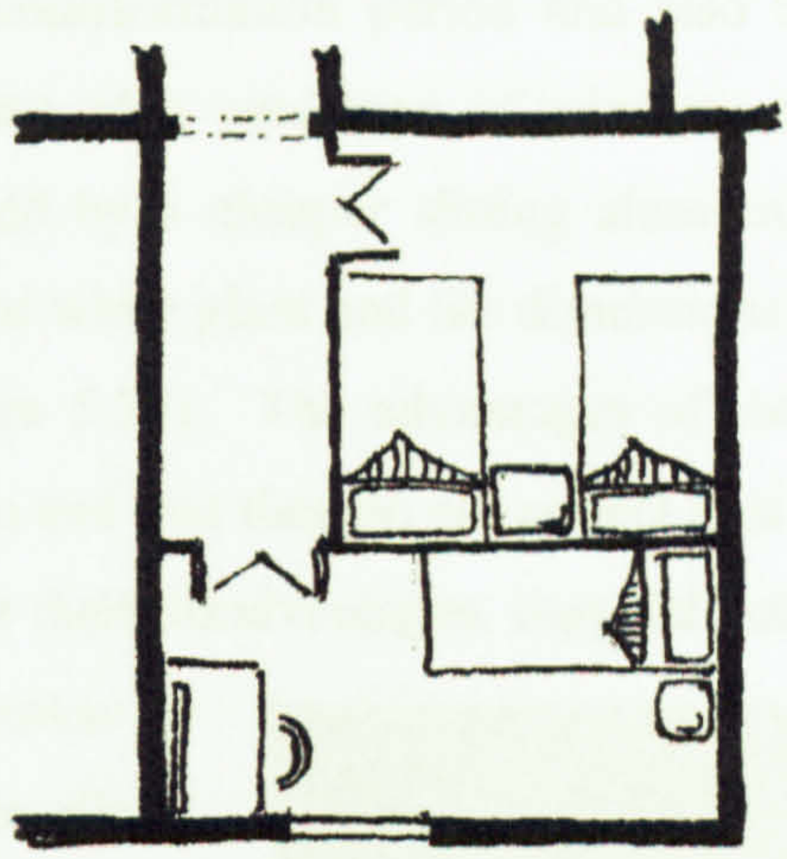


Photo 1

Photo 2

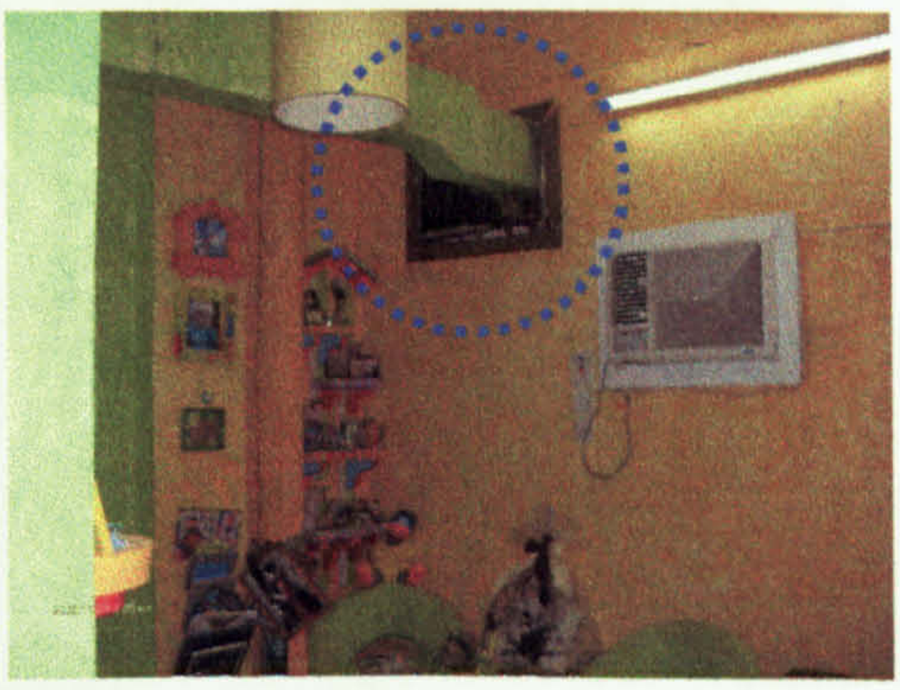


Photo 3

Photo 4

Photo 5

Photo 6

Photo 1: The balcony door (before the householder demolished the wall between the balcony and the sons' bedroom)
Photo 2: The facing door is the for the daughters' bedroom, the side door for the sons' bedroom.
Photo 3: The daughters' bedroom, showing the duct of the air-conditioning.
Photo 4: The sons' bedroom.
Photo 5: The balcony from outside, showing the two air-conditioners to the bedrooms.
Photo 6: The balcony was enclosed in red brick.

M	*Majlis* (reception)	MB	Master Bedroom	ML	Multi-purpose	K	Kitchen
Bt	Bathroom	S	Storage	C	Balcony	B	Bedroom

Figure 5.21: An example of the apartments of the late seventies, Makkah indicating that the balcony was not considered suitable for the Saudi society

The improvement of buildings in the second transformation period and also the modern building materials led to the emergence of a new type of window; the practical wooden shutters (Tagah) were replaced by a cheaper sliding aluminium type. This new type is made from aluminium and white glass and the dimensions of these windows were 1.20 x 1.20 metres (Figure 5.22). The advantages of these windows were the fact that they are easy to clean and that they do not collect dust as much as wooden shutters or *Rowshan* did. As for their disadvantages, they did not have any sort of day light control like the *Rowshan* or wooden shutters. Therefore they allowed more direct sunlight to enter the house, especially at noontime, which resulted in heat gain and glare inside the room. They were also considered a nuisance in bedrooms especially during afternoon siesta. This resulted in some do-it-yourself solutions to solve the problems like sticking plastic sheeting on the glass in order to make the room darker.

Figure 5.22: An example of the new type of aluminum windows

This new type of window also led to the introduction of curtains. These curtains, with many different forms and colours, are made locally (Figure 5.23). These curtains have, besides the purpose of decoration, an additional task, which is darkening the room, something which was previously unnecessarily due to *Rowshan*.

Figure 5.23: An example of new curtains with many different shapes and colours

Alexander suggests that the building is placed in such a way as to allow the sun to shine directly into it. This pattern identifies those rooms and areas along the intimacy gradient which need the sunlight most, and place them so that indoor sunlight can be made to coincide with the rooms along the intimacy gradient which are most used.[63] As seen earlier, most of spaces of the Makkah traditional house, such as *Dehliz*, *Majlis*, and *Muakhkhar*, were rich in varying size openings to provide cross ventilation and light (See Appendix A). However, because Saudi Arabia is very hot in the summer, residences controlled the sunlight and heat gave with *Rowshan* shutters. As a result the new type of window and the decorated curtains could be difficult to open and did not allow the sun to shine directly into the space. Moreover occupants cannot have both privacy and ventilation at the same time. Therefore these spaces of modern house probably cannot function without electricity.

The introduction of carpets in that period has also led to a decline in the use of rugs and the over-use of carpets, as all the rooms were now carpeted also places which were not carpeted in the past, e.g. the entrance hall, kitchen, bathroom and stairs. The question is why did people carpet all the spaces, even the entrance hall, stairs, kitchen and bathrooms? The admiration of people for carpets probably came from their softness and colours, but also their competitive prices, which are cheaper than for rugs. As for the kitchen and bathrooms, it seems carpets were deemed more attractive than the mosaic tiles used before. However, soon after people again began to leave the bathrooms uncarpeted. That is because Muslims use much water every time they use the bathroom, and this resulted in wet and smelly carpets.

5.4.2.1 The Guest Zone

In most cases the guest zone contains two main spaces and these are the *Saloon* or *Majlis* and the multi-purpose room, as well as a bathroom. These two main spaces are connected in most cases, with a sliding door that separates them. The width of this door is 2 metres and it is opened on special occasions to enlarge the area of the space (See Appendix B, House No.10, 14, 16 and 17). During this period a new style of furniture had come on the market, which is known locally as *Klaseeky*

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[63] Alexander, C., Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 617

(classic) (Figure 5.24). This is a different style, imported from Europe and the United States. The curtains usually had the same colour as the *Klaseeky* or a similar colour while the internal walls and ceiling were in white. The carpet covered the entire *Saloon* or *Majlis* and some people put small rugs on the carpet or under the central tables as decoration. As for the multi-purpose room, its floor was covered with a similar colour of carpet so that when the two spaces are opened up to each other they seem homogeneous in colour. In some cases the *Saloon* or *Majlis* and the multi-purpose room were furnished with rugs. The multi-purpose room was furnished with *tawaweel* or a new locally-developed seating called *baturmah* (Figure 5.25). The room is used to receive female guests in cases when there are male guests in the *Majlis* or it is opened up to make one space with the *Majlis* and this happens on special occasions. However, it was used as the guests' dining room and it was also used as a sleeping area at night-time for the children.

Figure 5.24: An example of a new style of furniture which was known locally as *Klaseeky* (classic)

Figure 5.25: An example of a new locally developed seating, *baturmah*

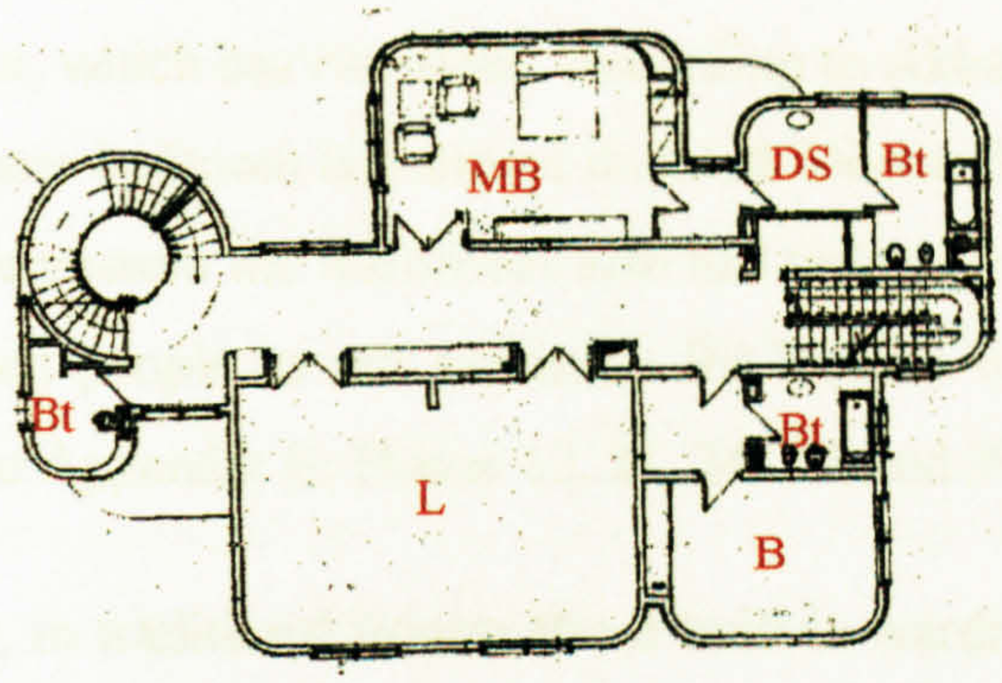
Most people furnished the *Saloon* or *Majlis* with *Klaseeky*, but families of limited income furnished it with *Baturmah*. However the multi-purpose room is furnished with *Tawalyat* and *Massaned* and the reason for this is that they are cheaper than the *Klaseeky* seat or sofas.

5.4.2.2 The Family Zone

Living room

Before the 1970s villas did not have living rooms. One of the rooms at the back of the house was used as a sleeping room for children during the night and for the daily activities of the family at other times. In the period after the second transformation

architects started to introduce a central space on the ground floor as a living room and sometimes on the first (Figure 5.26). The living room was furnished with modern pieces of furniture or with *tawaweel*.[64]



First floor

Figure 5.26: An example of the living room on the first floor, Al Khaiat villa, Makkah, 1981

However, in the flats the multi-purpose room was still used for family activities such as eating and watching television. They were also used as a sleeping room for the children because of the limited number of rooms and the wish of the residents to have an independent living room. The room was furnished with *tawaweel and massaned*. As mentioned earlier, the television used to be put on a table and this table has been developed into a cupboard with dimensions of 2x2 metres which was designed for the television and contained shelves for ornaments and books. It also contained three storage sections, which had doors in the lower part and were usually used by the children to keep schoolbooks. (Figure 5.27)

Figure 5.27: An example of television cupboard in the multi-purpose or living room

[64] Akbar, S. (1998) Home and Furniture, p.146

Bedroom

The main bedroom suite and its facilities had by now become an essential part of all houses. This room comprised a large bed, a dressing table and a wardrobe as well as a mirror and a cabinet, which has two sides. According to Akbar, the average size of wardrobes in the master bedroom has almost doubled. Due to the increasing amount of clothes that people possess the wardrobes also had to increase. This increasing of amount of clothes led people to ask architects for built-in wardrobes when they design the house (See Appendix B, House 12, 21, 24, 29, and 39).

As explained earlier, in traditional houses those built-in wardrobes were important pieces of fixed furniture. They were also considered beneficial by the residents in the traditional houses and when the shelves had wooden doors they became proper wardrobes. The introduction of the modern concept of wardrobes could thus be seen as a continuation of the traditional house, fulfilling the same utilitarian need. It is a good example of how the architect can learn useful concepts from the traditional houses. These pieces of furniture were made locally, which was cheaper than those which were imported from Italy or the United States. The modern bedroom suite added more comfort to the main bedroom which, traditionally, was furnished only with *tawaweel* during the night that were put away in the daytime. The room clearly now had more furniture than before. As for the children, they still slept on the floor because of the limited number of rooms in the flat. This limitation resulted from the lack of independent bedrooms for the children and consequently they had to sleep in the living room and in the multi-purpose room.

The Kitchen

There were many kinds of imported kitchen units on the market, which were imported from countries such as the United States, Italy and Germany. Carpenters also started to make some designs, which were similar, but of lower quality than those imported types and consequently cheaper.

As a result, after the second transformation, the size of the kitchen became much larger than before. There were other changes and developments in the kitchen. In addition to its main function of cooking, families started to use it as a place for socializing. It usually had an area of about $25m^2$ or more and consequently it was

possible to put in it a small dining suite.[65] However in the flats the area of the kitchen remained relatively small, approximately 12 - 18m^2.

Bathroom

Houses from this period have more of the standard bathroom suite than in the past and the size of the standard bathroom is 2 x 3m. In the past and before the second transformation, the private zone used to have just one bathroom, but thereafter every two bedrooms shared a bathroom. This is in addition to the private bathroom, which is located in the main bedroom. In the houses of rich families, bathrooms were so large that many extras items could be found e.g., shelves and plants etc.

5.5 The Third Transformation: Late 1980s onwards

In the late 1980s the third transformation began with rich households. During the second transformation, which was marked by the increasing size of houses and the influx of modern furniture, rich households became more interested in professional interior design. In this period new trends in interior design emerged. The increasing interest in interior design was reflected in several ways:

1- Arab fashion magazines: before the eighties there were no Arab fashion magazines, but now there are many architectural and interior design magazines in Arabic. Most of the design ideas in these magazines are borrowed, mainly from western interior design magazines.

2- The architectural Interior: The growing interest in interior design amongst owners was also reflected in architectural practice. Architectural firms were introducing many revolutionary design ideas, new materials and colours to their schemes.

3- The furniture maker: The increasing amount of furniture led to competition in the market. Therefore advertisements of modern furniture also increased in local newspapers and magazines and wholesale furniture department stores emerged.

4- Exhibitions: Many design ideas are shown in the annual furniture exhibitions, which are organized to accelerate the market. Nowadays these exhibitions show

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[65] Akbar, S. (1998) Home and Furniture, p.148

many designs furnished with different Arab styles, e.g. Egypt and Morocco...etc. For example, annual furniture show in the Al Harthi Exhibition Centre in Jeddah.

5- Specialist Interior Designs: As mentioned above, many trends appeared in the home environment during this period. Rich people were looking for special interior design specifications, which made it feasible for large architectural offices to employ specialist interior designers.

5.5.1 New Spaces

During the second transformation, due to the limitation of rooms in flats, the multi-purpose room was used for family daily activities. It was also used as a children's sleeping room at night. However, there were changes of lifestyle, e.g. introduction of satellite television when many channels became 24 hours and some family members were watching different programmes until late at night, especially at the weekend. So, the residents needed an independent living room. Therefore during this period architects began to experiment with the idea of having living rooms in the flats. Living rooms are usually located in the middle of the flat or in some cases they reconstructed the entrance hall of the family zone to convert it into a living room. Alexander suggested the location of the living area as follows:

> "Create a single common area for every social group. Locate it at the centre of gravity of all the spaces the group occupies, and in such a way that the paths which go in and out of the building lie tangent it."[66]

This seems to have happened in the new-style residences. As a result, the living area became more comfortable than before when the back multi-purpose room was still used for the family's daily activities. However, in most flats there are no female guest rooms. The housewife receives her guests in the living room when the guest zone was occupied by male guests. Therefore most of the living rooms are furnished with modern suites and became richly decorated. It also became common in flats to separate the entrance of the male guests from the entrance of the family. More description of the living area will be in the following chapter.

New spaces also appeared in villas in addition to the main ones, for example, a breakfast room, which can be found in some villas on the ground floor beside the

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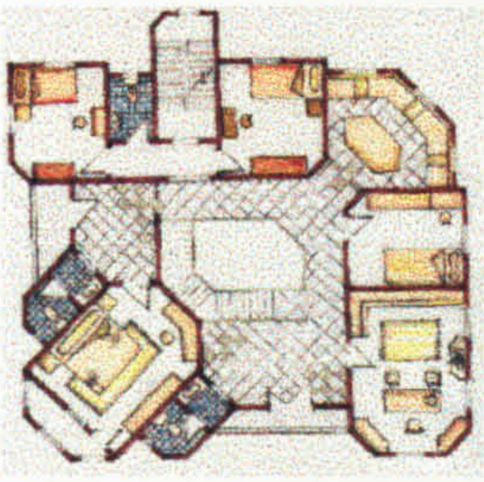
[66] Alexander, C., Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 621

kitchen. Another room is a servant's room as female servants became, in this period, one of the necessities for the rich families in order to help the housewife. This change has had an impact on the internal arrangement of the villas because more privacy is needed, particularly for the family. The servant's room is usually situated on the ground floor and as close as possible to the kitchen, and in some villas the kitchen opened onto the breakfast room. The living room was built with a higher ceiling than the rest of the rooms and it also has special features, including stairs that are built in a curved or canted form (Figure 5.29). In some of the houses of the rich families a small sitting room was added to the main bedroom e.g. the main bedroom in a villa. Only the parents used this to sit and chat and watch television before going to bed.

Ground floor



First floor

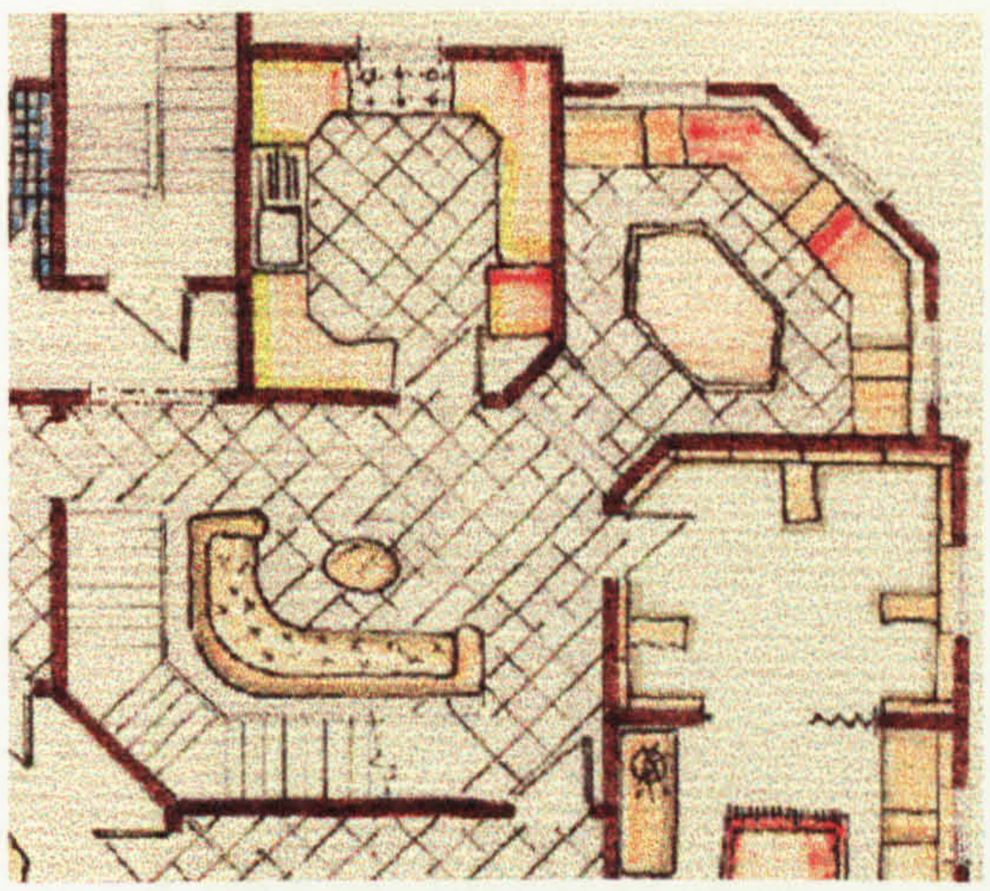


Figure 5.29: The living room is built with higher ceiling including canted stairs
Source: Author drawing, based on report by Riyadh Municipality

It became common in houses of the rich families to tile the floors of their houses with marble without using carpets, and instead small rugs were put under the tables. It is not sure what prompted this change, but Akbar's suggestion that the media and interior design magazines were probably the main reasons for these changes is probably correct.[67] And the process of change seems not to have run its course yet. The question remains: how does one equate these international market driven developments with the desire to maintain an authentic Arab lifestyle.

[67] Akbar, S. (1998) Home and Furniture, p.155

CHAPTER 6

THE MODERN HOUSE in MAKKAH

6.1 Introduction

6.2 Entrance Hall

6.3 The Guest Zone

- 6.3.1 Male *Majlis* (men guests)
- 6.3.2 Dining room or Arabic *Majlis*
- 6.3.3 Female *Majlis* (female guests)
- 6.3.4 Bathroom or toilet

6.4 Family Zone

- 6.4.1 Living room
- 6.4.2 Multi-purpose room
- 6.4.3 Master bedroom
- 6.4.4 Children's bedrooms
- 6.4.5 Kitchen
- 6.4.6 Clothes washing area

6.5 Reflection

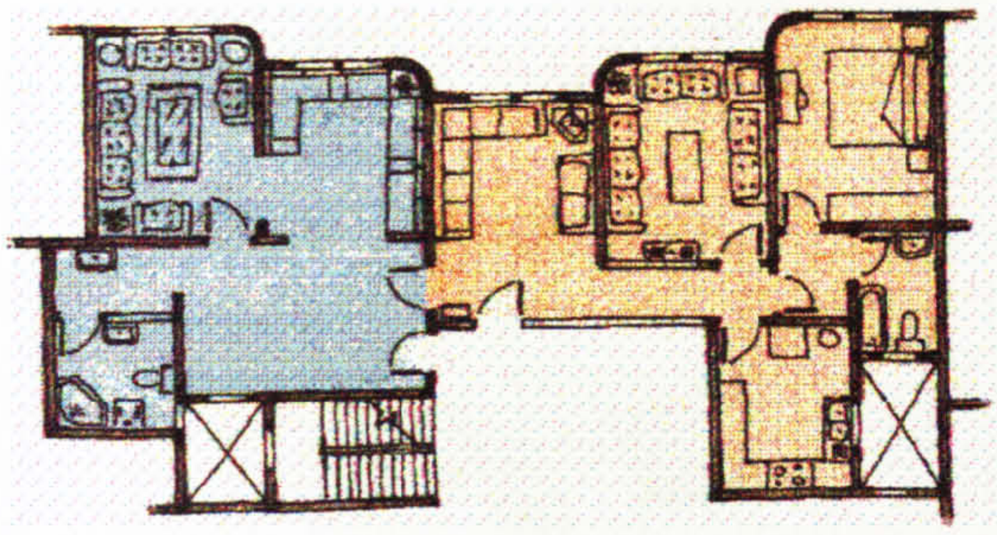
6.1 Introduction

Saudi Arabia has experienced one of the most rapid and massive modernizations in human history, in approximately the last thirty years. One of the elements of modernization is modern settlement patterns and its spread and replacement of the traditional culture. The traditional home environment was compatible with the climate, social and religious structures and its spaces had to be multi-purpose. It was explained in the previous chapter how the traditional environment had been dramatically affected by the move towards modernization. This caused the development of new Saudi Arabian houses to a point where all cities had adopted the same standard house types. The interior spaces were influenced the by same elements, such as air-conditioning, new materials and modern furniture. In addition all these houses are divided into two parts. One part is designed for the guests and the other is designed for family members. As the result, the Makkah modern house is not a local phenomenon, but it is representative of Saudi Arabia, albeit at the conservative end of the scale. This chapter will investigate the final product of the Saudi modern house as an interior, the use and furniture of each type of space (living, sleeping and eating area etc) will be analysed in detail. Six case studies are discussed in this chapter. There are four apartments, (House 1, 2, 3 and 4,) and two villas (House 5 and 6). (For more examples of modern houses from Makkah (villa, semi-detached and apartment see Appendix B)

6.2 The Entrance Hall

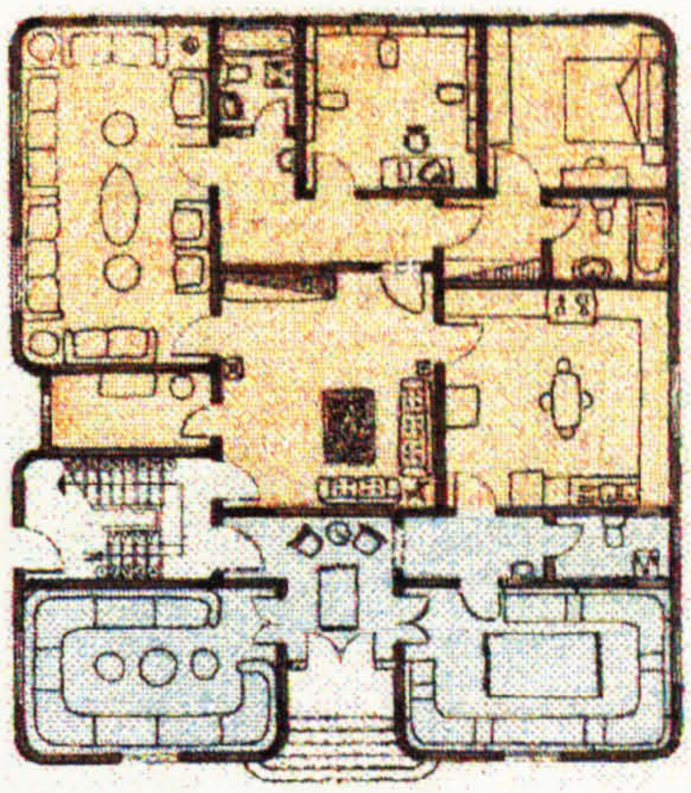
We have noted that the *Dehliz* was considered a transitional space between public and private. It was also considered a waiting place for visitors, a place for study and as a play area for children when the sun was too hot outside the house. In addition the most important function of the *Dehliz* was trade, especially with merchants. Nowadays, the entrance hall works as a transition zone between outside and inside. It also works as a buffer area between the guest zone and family zone. The entrance halls of Makkah modern houses are usually located in the guest zone, which is as near as possible to the *Majlis* and the dining room or Arabic *Majlis*. In the villas or semi-detached houses usually there are two entrances. The first entrance is used by

the guests and is usually located on the main façade which is, as mentioned earlier, as near as possible to the male guests' zone. The second entrance is for the family members and that is located on the side façade on the staircase. In addition the family entrance usually leads to the living area. In some cases the flats also have two entrances for guests and family, which tend to be close together. (Figure 6.1)



Guest zone
Family zone

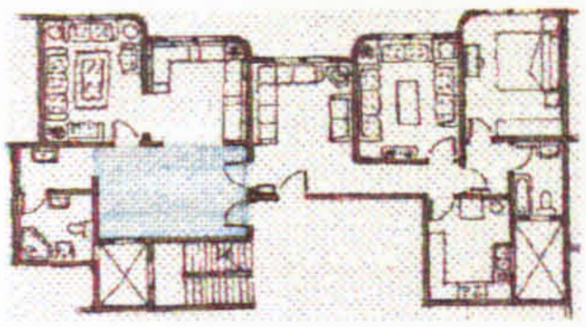
House 1



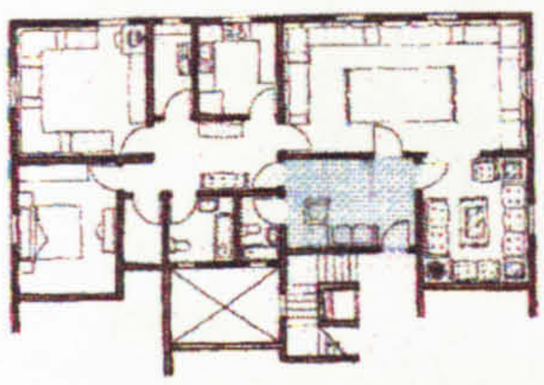
House 4

Figure: 6.1: Guest and family entrances

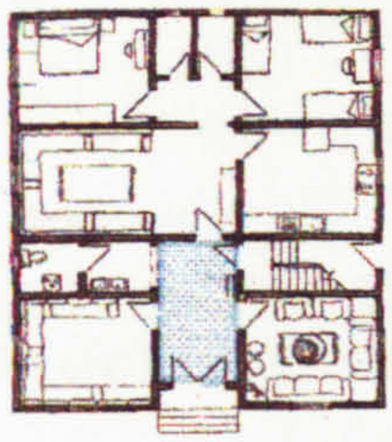
In Houses 1, 2, 3 and 5 there is a door that separates the guest zone and the family zone to maintain the privacy of the occupants. Therefore when male guests go through the entrance hall to the *Majlis* there is a strict control over the door, as well as when the male guests go through the entrance hall from the *Majlis* to the services area. (Figure 6.2)



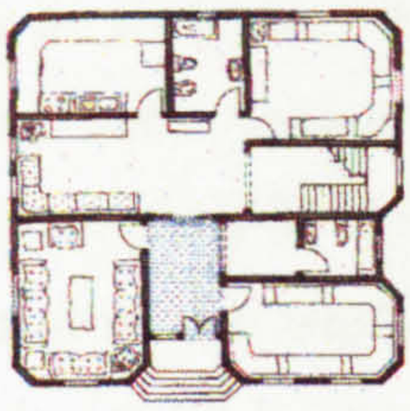
House 1



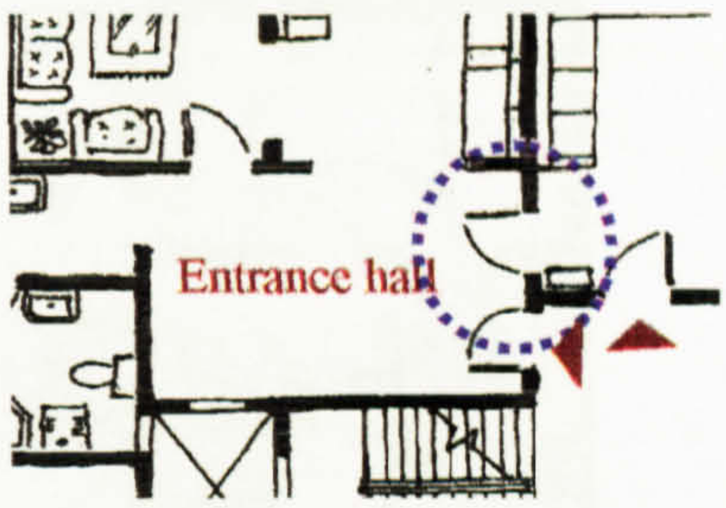
House 2

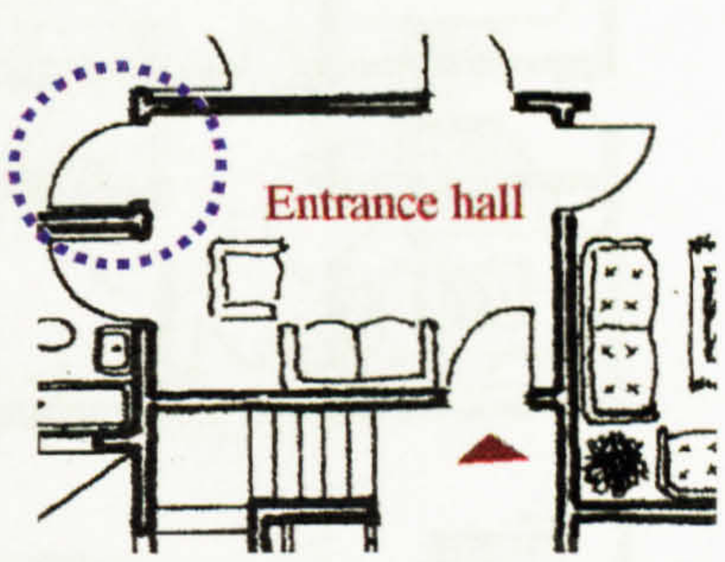


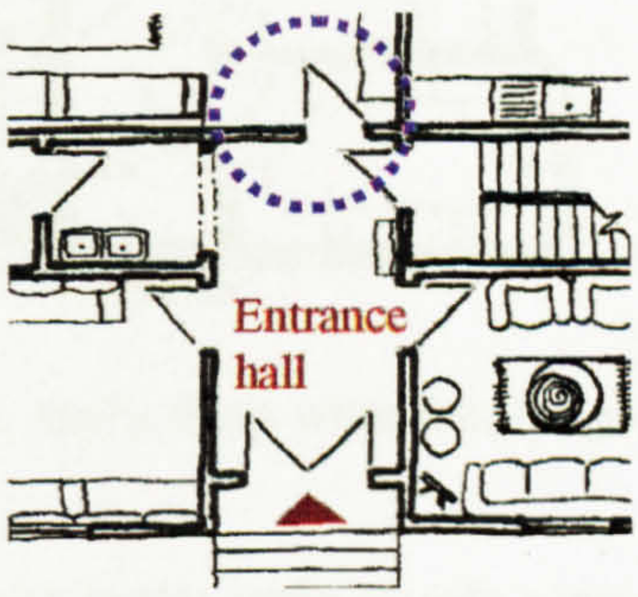
House 3



House 5







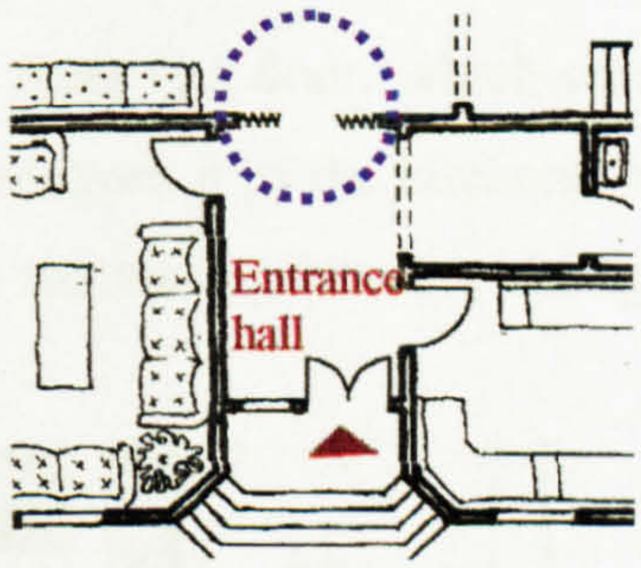
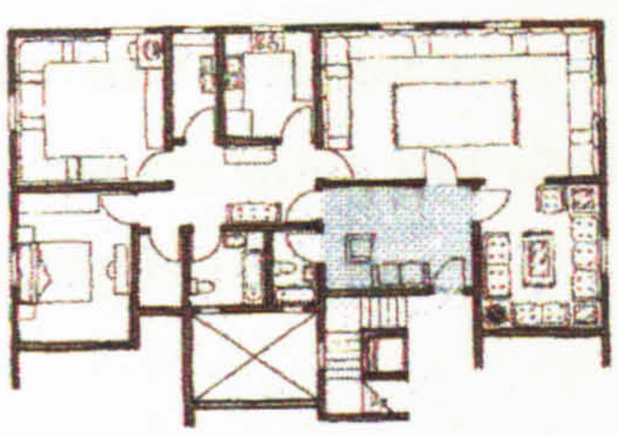
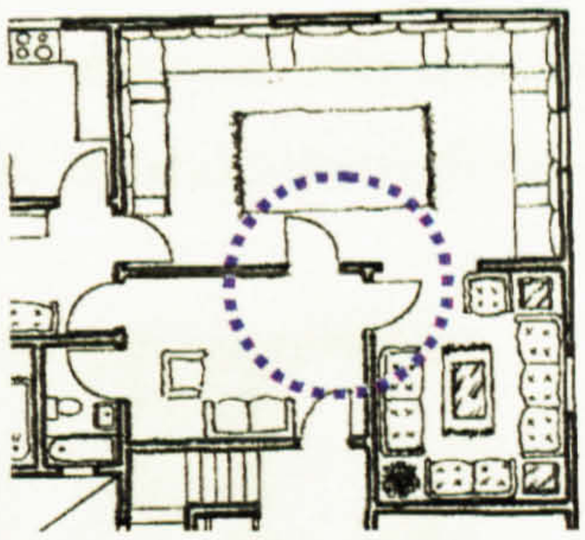


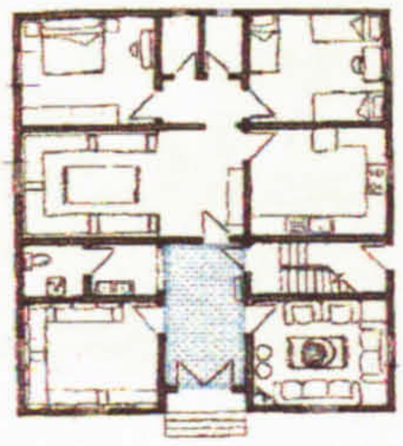
Figure 6.2: A strict control over the door between guest zone and family zone

In Houses 2, 3 and 5 the male *Majlis* and Arabic *Majlis* doors must be closed when the female guests or family females go through the entrance hall to the family zone opposite while the men guests occupy the men's *Majlis,* Arabic *Majlis.* (Figure 6.3)

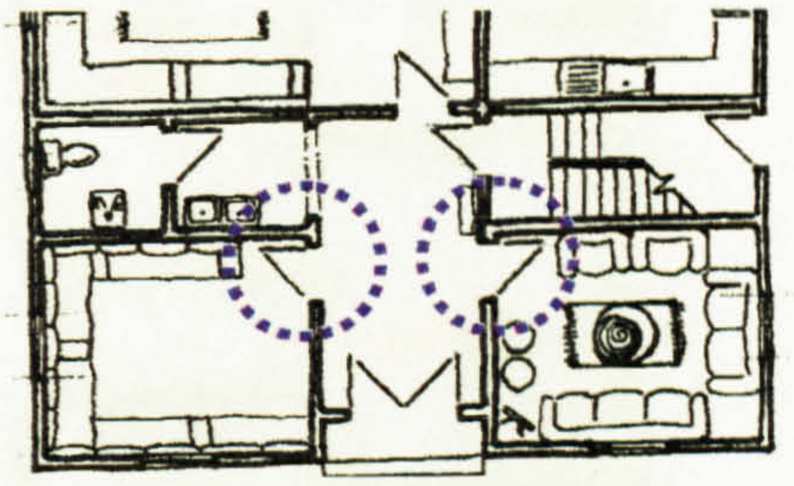


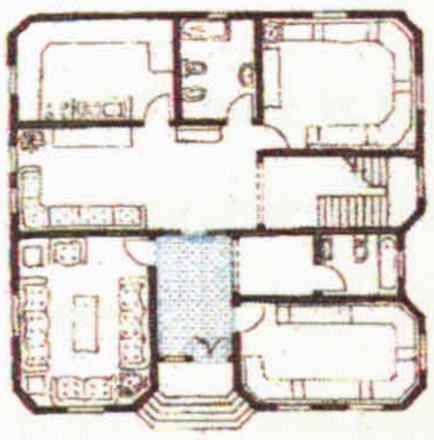
House 2





House 3





House 5

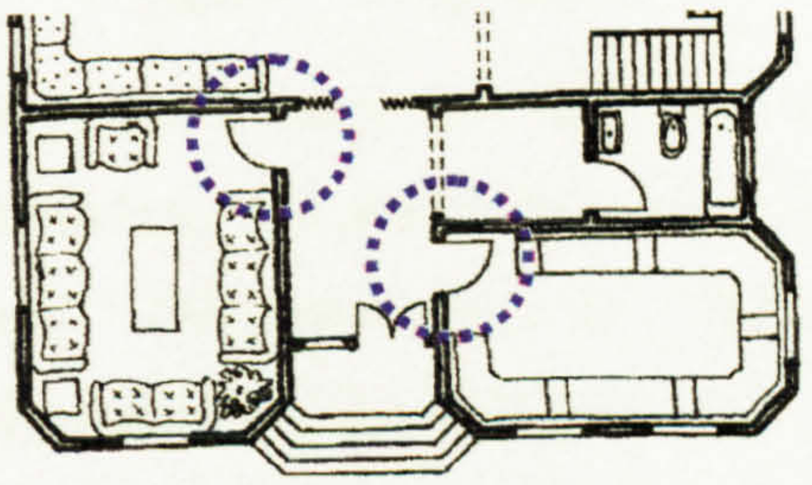
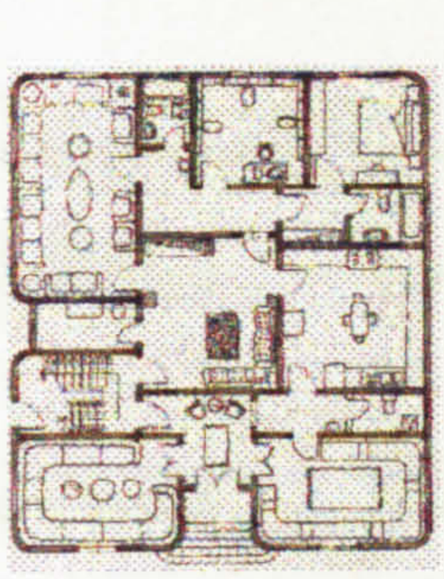


Figure 6.3: Strict control over the male *Majlis* and Arabic *Majlis* doors when females go through the entrance hall to the family zone

In House 4 the door that led to the kitchen was next to the male guests service area (toilet and sink), which also means that strict control of the door is needed when the male guests go through to the service area. Also there is a door, which served the men's dining room, leading to the service area and from it to the kitchen; that also means that door must be strictly controlled when the male guests are sitting in the dining room or Arabic *Majlis*. (Figure 6.4)



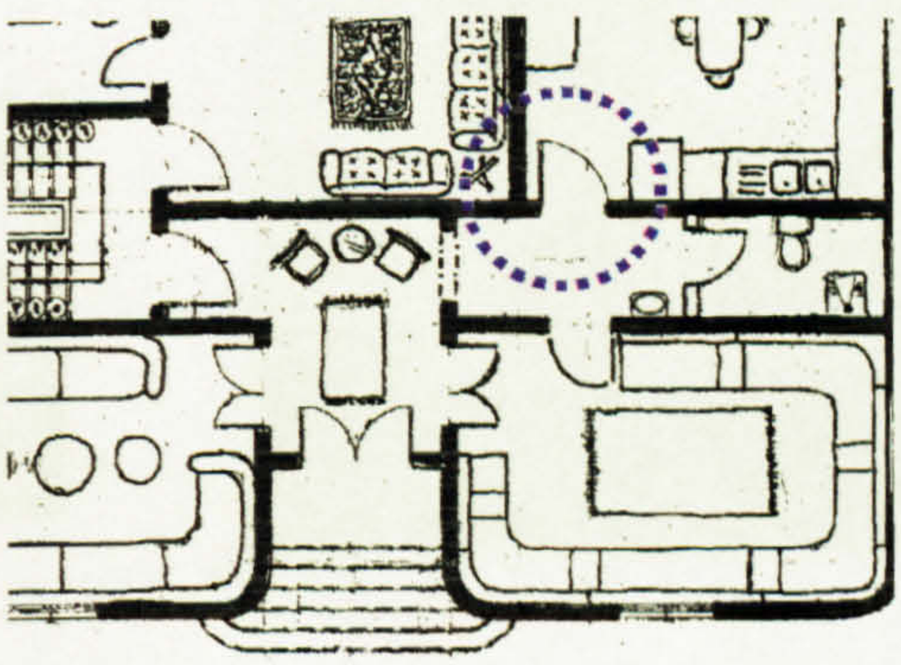


Figure 6.4: Strict control over the door that between the guests' service area (toilet and sink) and the kitchen, House 4

The family entrance in House 4 and 6 led to the living area; that means the men of family must leave the living area when the female guests go through the living area to the female *Majlis*. (Figure 6.5)

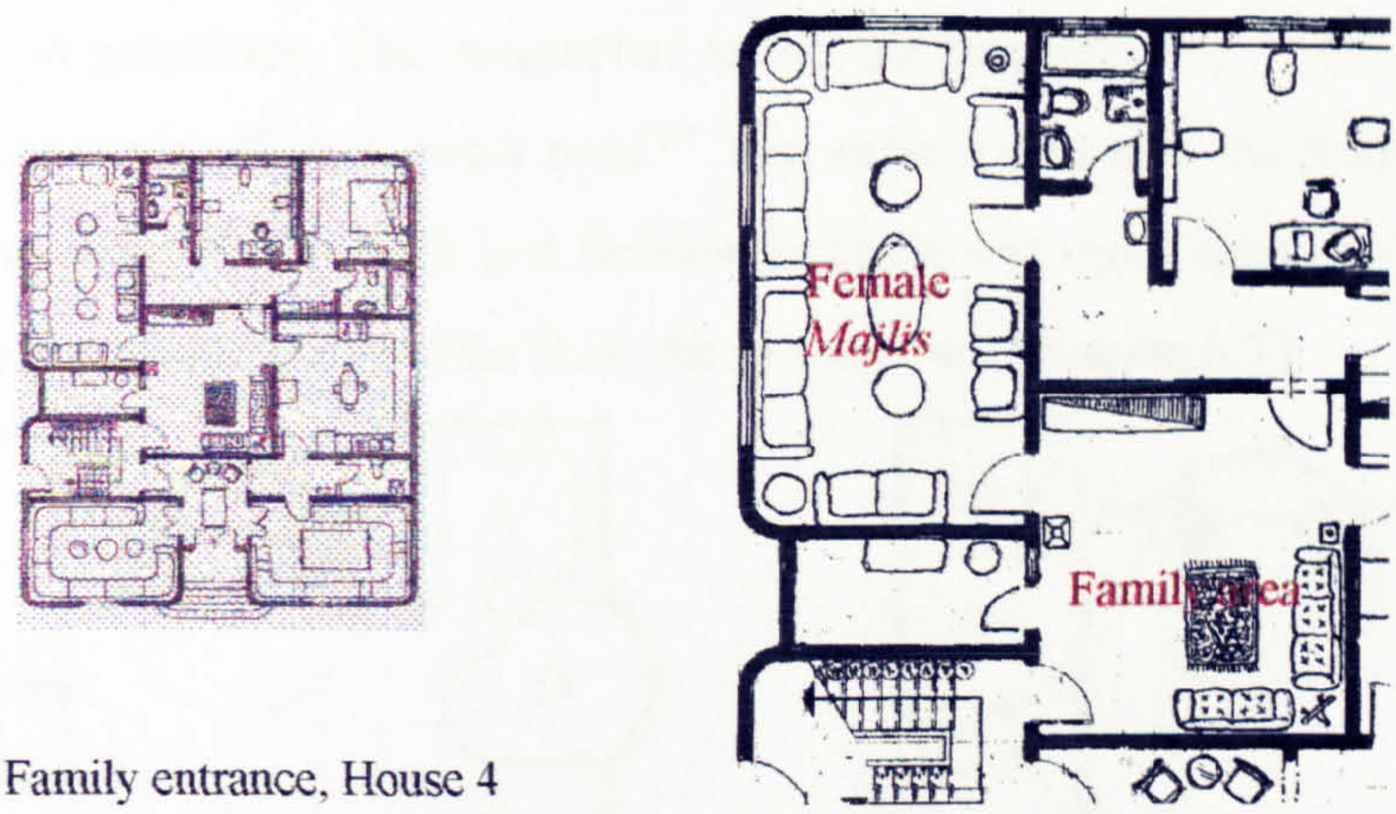


Figure 6.5: Family entrance, House 4

In Houses 3 and 4 there is another door in the entrance hall. This door led to the staircase. The researcher asked the householders, "Do your family make use of this door when receiving their female guests?" The answer was no. "What are the reasons?" The answer was because it is far away from the main gate of the building. The other question was "What is the function of this door?" The answer was that it can only be used when receiving the neighbours from the upper floors as guests. (Figure 6.6)

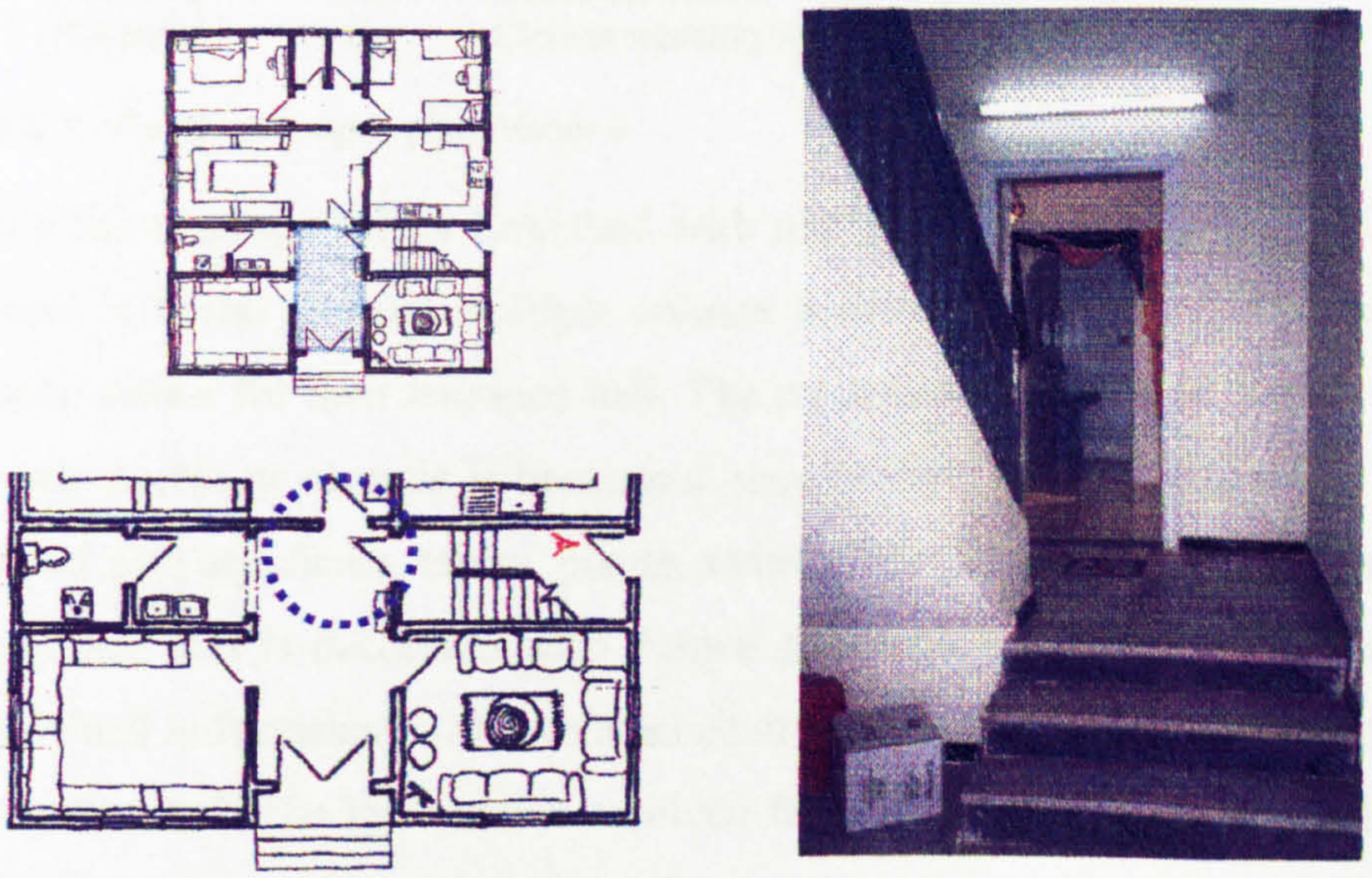
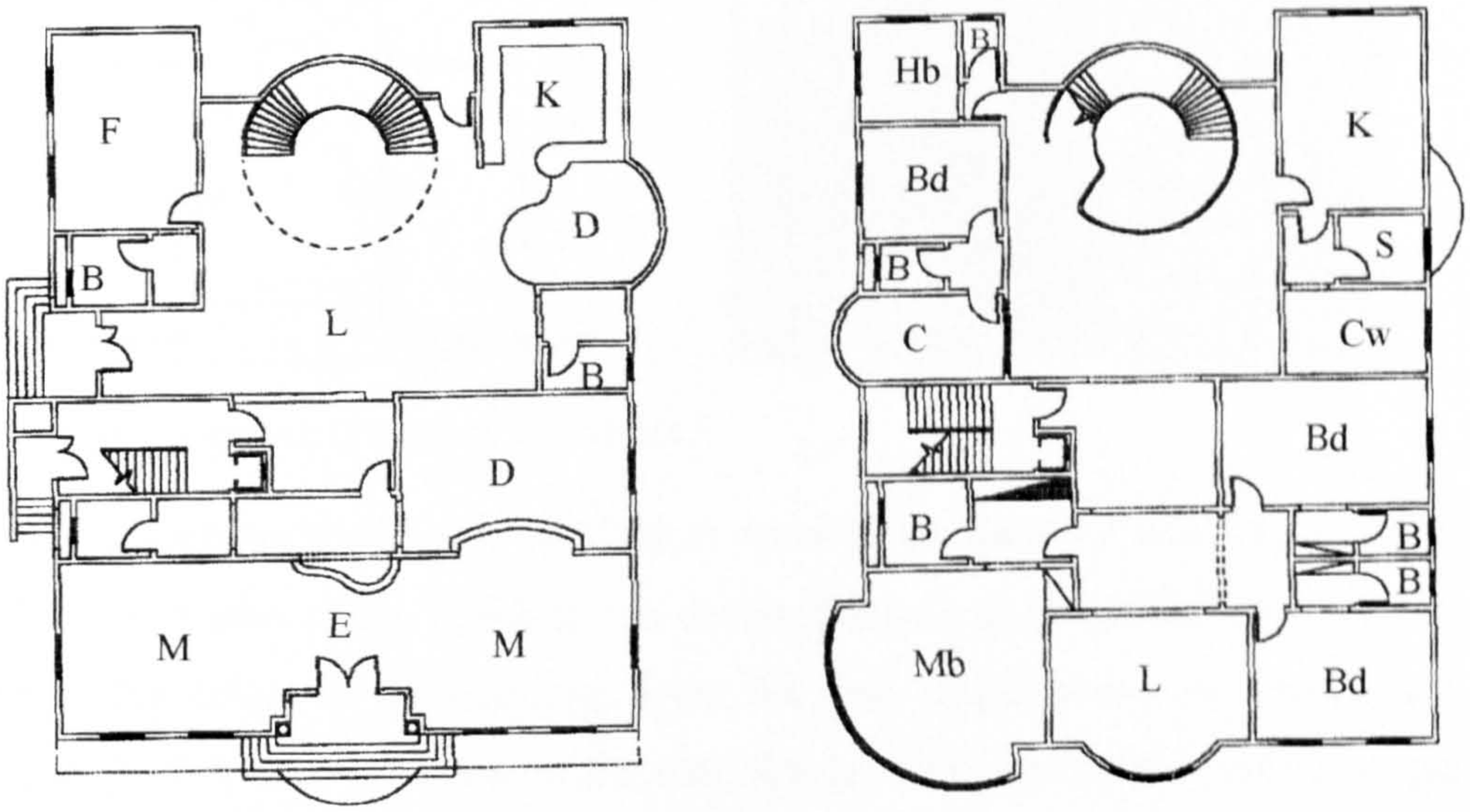


Figure 6.6: Entrance hall, House 3

In House 6 the male guest zone is open to the entrance hall. Therefore when the guests go through the main door of the entrance hall they can see the entire guest zone. The householder has seen this open space in other Arab countries' villas on television programmes. The researcher asked the householder, "What is the reason for the open space of your guest zone?" The answer was that the householder wants to show the guests his wealth and fashion because the open space helps to show all the furniture and decoration that is in the guest zone. (Figure 6.7)



E	Entrance hall	M	Male guest reception	F	Female guest reception		
D	Dining room	L	Living area	Mb	Master Bedroom		
Bd	Bedroom	Hb	Housemaid room	K	Kitchen		
B	Bathroom	Cw	Clothes washing area	S	Storage	C	Balcony

Figure 6.7: Guest zone, open plan, House 6

Usually the entrance hall is furnished with marble, ceramic or carpet. This marble or carpet is found to have multiple colours because family members choose their favourite colour for their entrance hall. The main reason for furnishing the entrance hall with marble or ceramic is because it easy to clean and is fashionable. It is also furnished with armchairs, tables, plants, vases, curtains, and small rugs. The wall of the entrance hall is decorated with framed paintings and mirrors. In House 4 the entrance hall is furnished with two steel chairs and a table, although these chairs are not usually used. The information received from the householder of house 4 is that chairs are rarely used by guests, only after lunch or dinner when they go through the entrance hall to the service area to wash their hands do some of the guests sit for a casual chat while waiting for the sink to be free. (Figure 6.8)

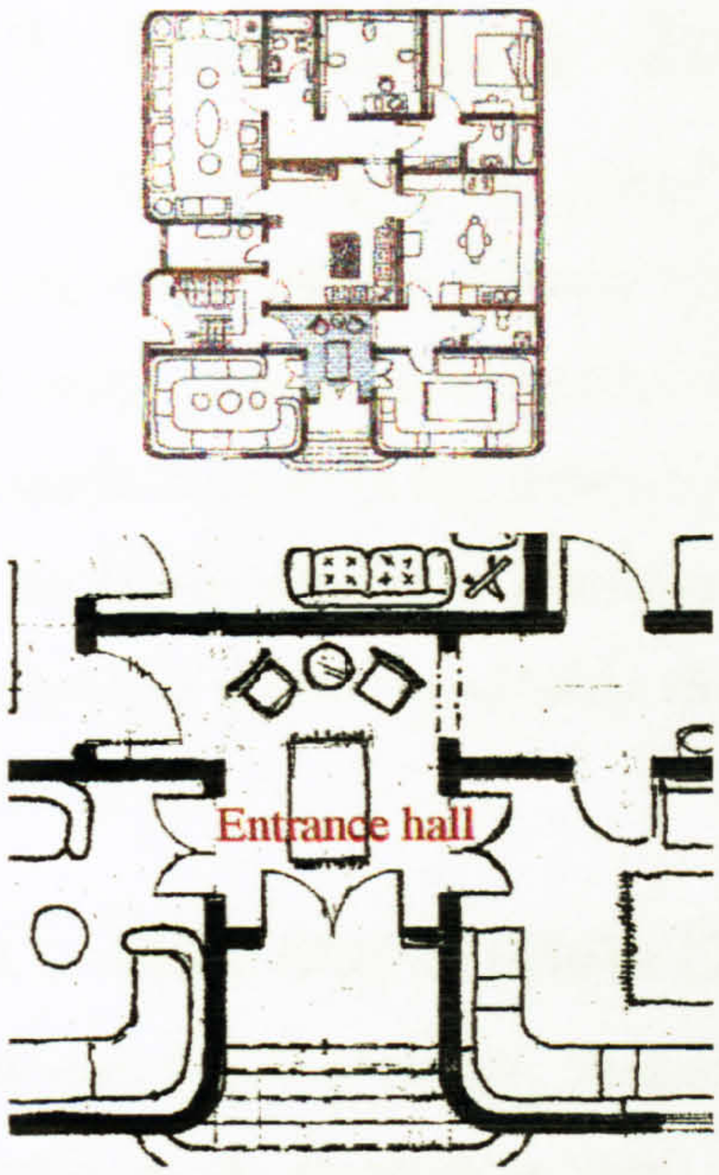


Figure 6.8: Furniture of entrance hall, House 4

In the contemporary houses of Makkah there is no standard size for the entrance hall. The owners of the building can decide the size or be guided by the architect during the design of the building. From the case studies there are five houses. In houses 2, 3, 4, and 5 the area of the entrance hall is between $9m^2$ and $12m^2$, which is the normal area of a contemporary entrance hall. However, in House 1 the area of the entrance hall is about $28m^2$, which means a huge area is lost from the flat without any utilitarian function. (Figure 6.9)

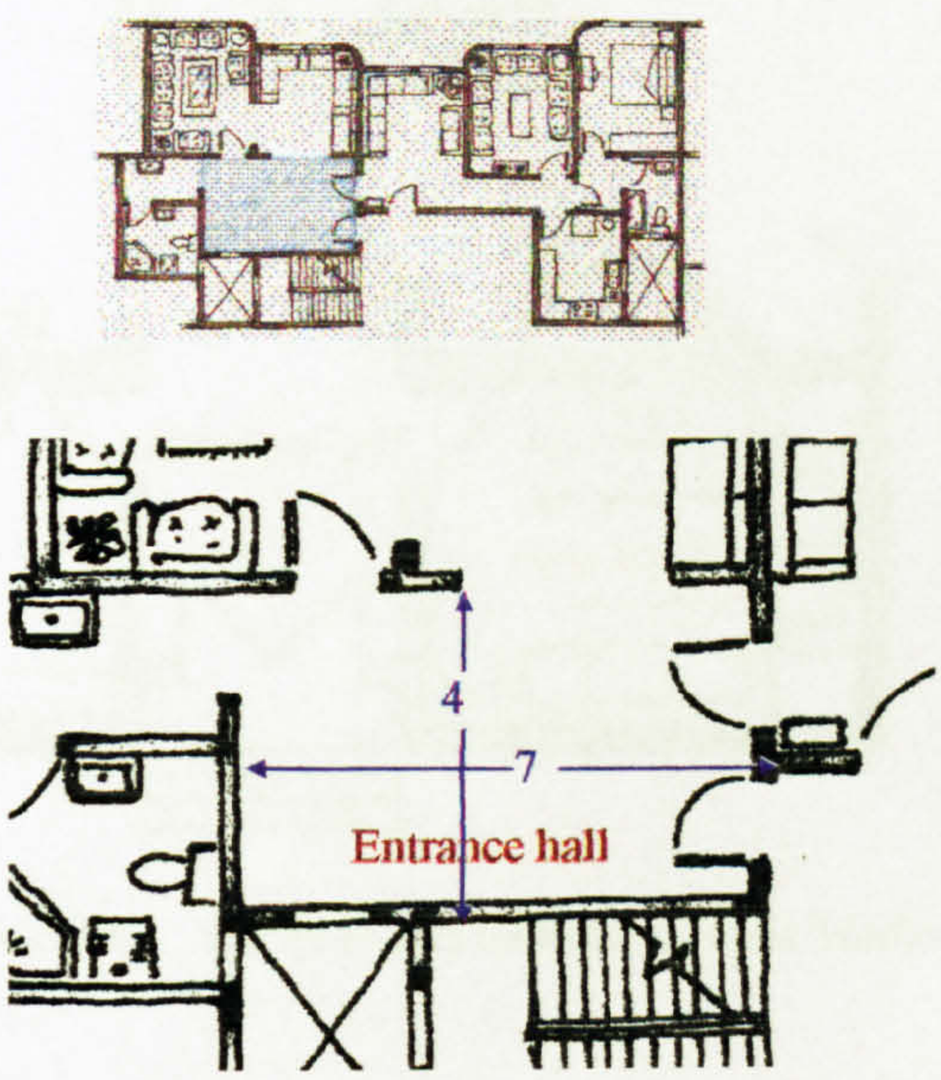


Figure: 6.9: Area of entrance hall, House 1

6.3 The Guests' Zone

As mentioned above, the guests' zone consists of the male *Majlis* (male guests), female *Majlis* (female guests), dining room or Arabic *Majlis* and service area (toilet and sink). This zone is usually located on the main façade and the women's *Majlis* is usually located in the family zone (see section 6.3.3). This zone is the lowest used by the family members. However this zone is always kept clear and tidy to receive unexpected guests. In addition this zone is furnished with the best modern furniture in the house.

6.3.1 Male *Majlis* (Male Guests)

The male *Majlis* is usually located as near as possible to the main entrance, which is located as far as possible from the family zone. In addition the men's *Majlis* is furnished with the best modern suite, sofa, armchairs, coffee tables, curtains, small rugs and wall paintings (Figure 6.10). The walls are painted with different colours and the ceilings are covered with decorated gypsum (Figure 6.11).

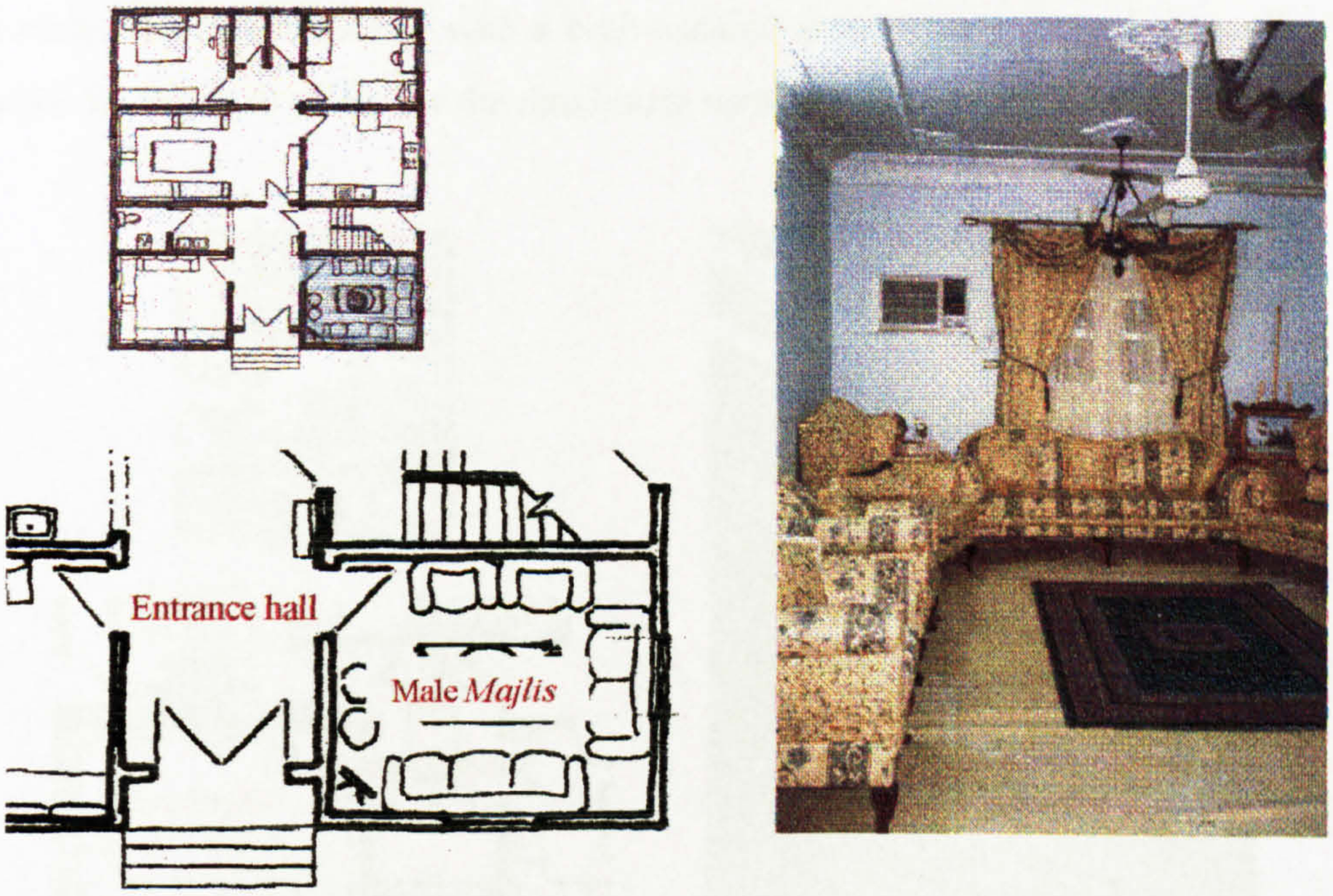


Figure 6.10: Location and furniture of male *Majlis*, House 4

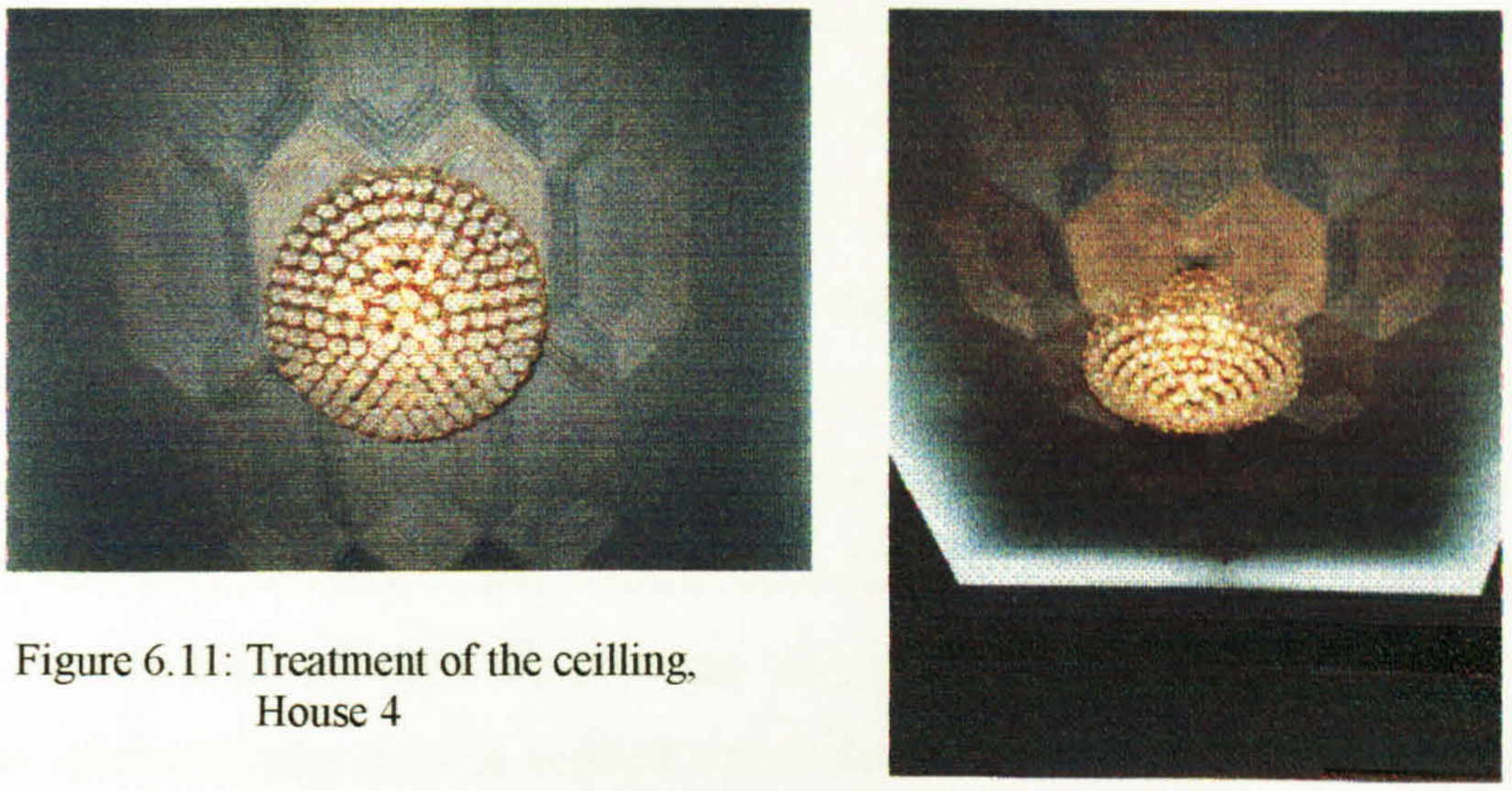


Figure 6.11: Treatment of the ceilling, House 4

From the six case studies it was found that the villas and semi-detached houses are more suitable for the guests (male and female) than the apartments. The reason is that the villas and semi-detached houses contain two guest rooms, one for males and another for females (men's *Majlis* and women's *Majlis*), as well as two separate entrances, of which the main entrance is special for male guests and the family entrance is used by the family members and female guests.

In Houses 4 and 6 male guests mainly use the male *Majlis*. In addition in House 1 the male *Majlis* is furnished with a high cushion arrangement around the walls. The reason for this is to allow for the maximum number of guests (Figure 6.12).

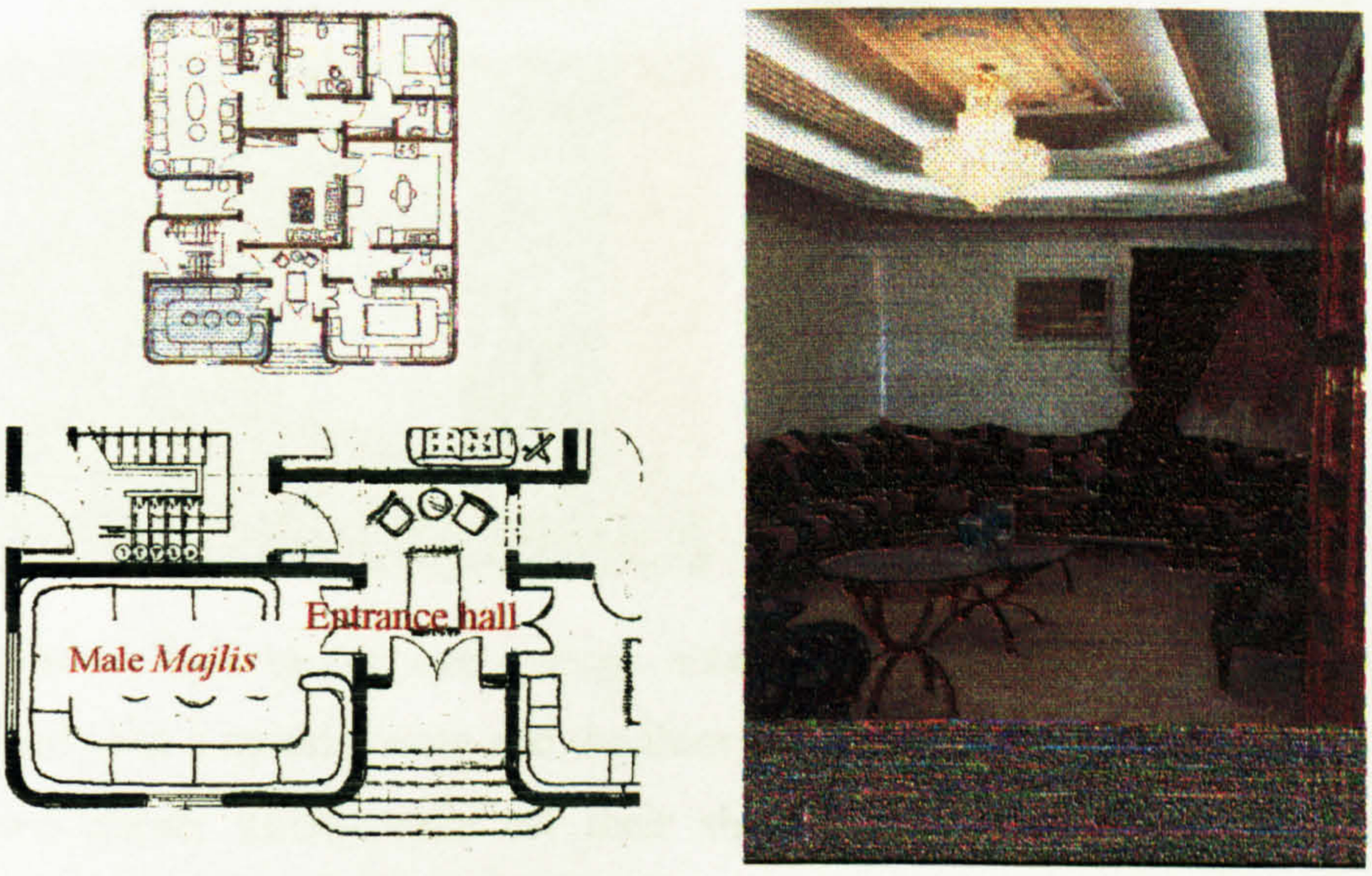


Figure 6.12: Men *Majlis*, House 4

It is difficult to establish a female *Majlis* in the apartments, where the number of rooms are limited, so the occupants are obliged to make a number of decisions according to their priorities. In Houses 2 and 3 the housewife receives the female guests in the men's *Majlis* while the men guests are occupied in the dining room or Arabic *Majlis*. The housewife uses the men's *Majlis* to receive her guests because it is furnished with a modern suite and it is the most decorative room in the house. The modern suite is suitable and comfortable for females because the women guests usually do not take off their shoes when they enter the guest room. Strict control over the Arabic *Majlis* door is needed when the females occupy the men's *Majlis* to maintain the female guests' privacy.

In House 1 the entrance hall, men's *Majlis* and Arabic *Majlis* or dining room is designed as open plan. The housewife cannot receive the female guests in the male *Majlis* while the male guests occupy the Arabic *Majlis*. So the housewife must receive the female guests in the living area. However the men of the family cannot go to the family zone at all (Figure 6.13).

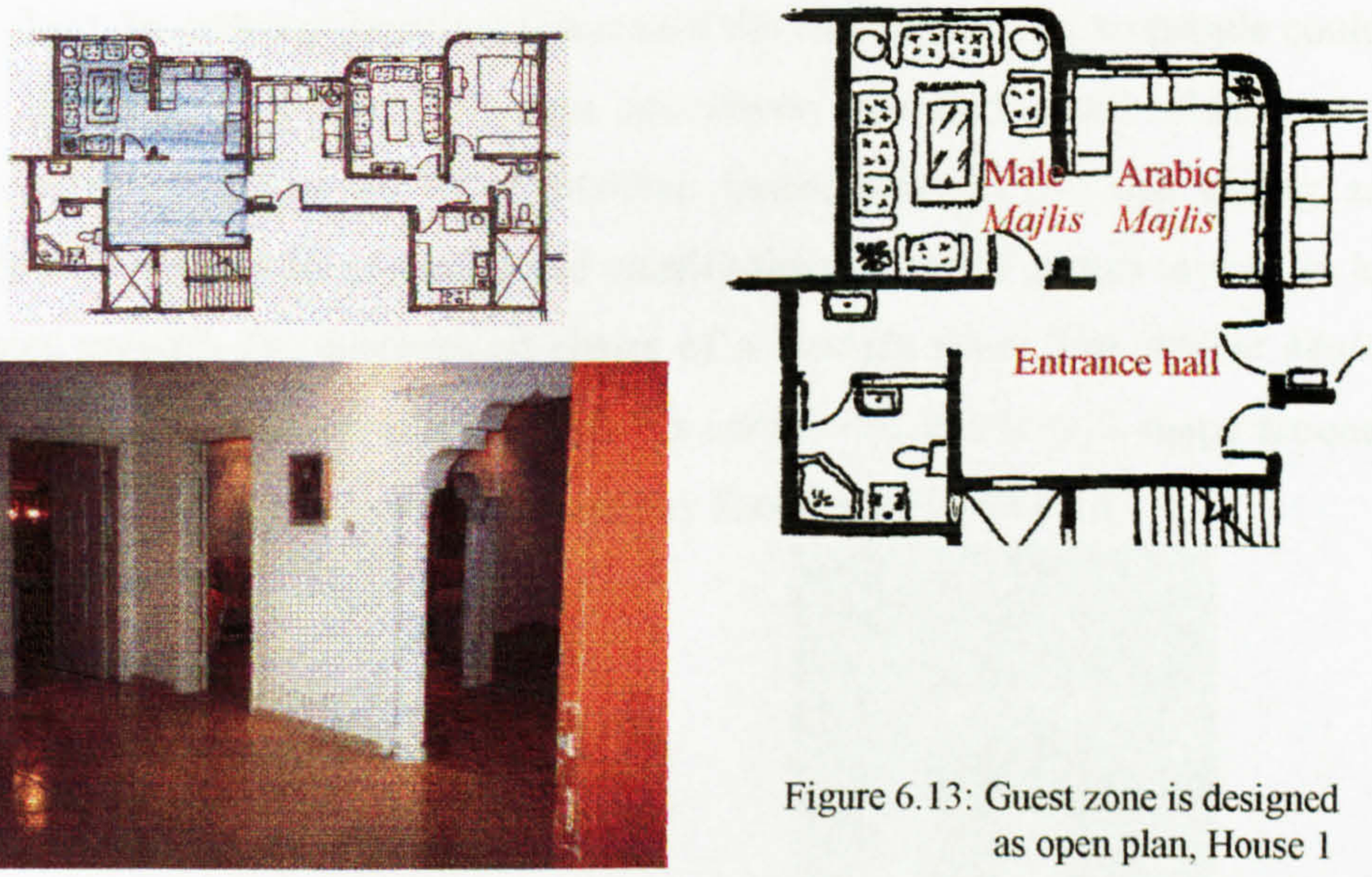


Figure 6.13: Guest zone is designed as open plan, House 1

In House 6 male guests use a huge area designed as open plan. This zone is furnished with a modern suite and the floor is covered with marble. In Arab society the men guests usually take off their shoes when they enter the guest room. However, due to the floor of this zone being covered with marble, the men guests do not take their shoes off when they enter the *Majlis* or dining room. Why do they

not take their shoes off when they enter? Maybe because the marble is cold. According to many designers from different architects' offices in Makkah the open plan design is not suitable for hot climates because it need lots of air conditioning to cool this area so it uses lots of electricity.

As shown in chapter 4 the *Majlis* of the Makkah traditional house is characterised by two or three large openings covered with *Rowshan* to provide the movement of air and natural light. The modern *Majlis* has a limited opening that is one or two openings made of aluminium and white glass and covered with decorated curtains. This means there is no utilitarian function to these windows because the occupants depend on electricity (lights and air conditioning).

6.3.2 Dining room or Arabic *Majlis*

Usually the dining room or Arabic *Majlis* is located in the guest zone, which is next to the male *Majlis* and as near as possible to the kitchen. It is usually the same size as the male *Majlis*. As mentioned in chapter 4 the Arabic people usually sit and lie on the floor. In addition *Tawaweel* increased the freedom of use, so people could sit, lie on their sides, stretch their legs whichever way they liked. *Baturmah* is a development of *tawaweel*. Most Makkah households do not use dining suites because they occupy large spaces and usually the number of guests invited to lunch or dinner exceeds the numbers of chairs of a modern suite. The Arabic *Majils* is usually furnished with carpets; *baturmah* is continuous in a U or L shape around the room and the central area is left without any furniture (Figure 6.14).

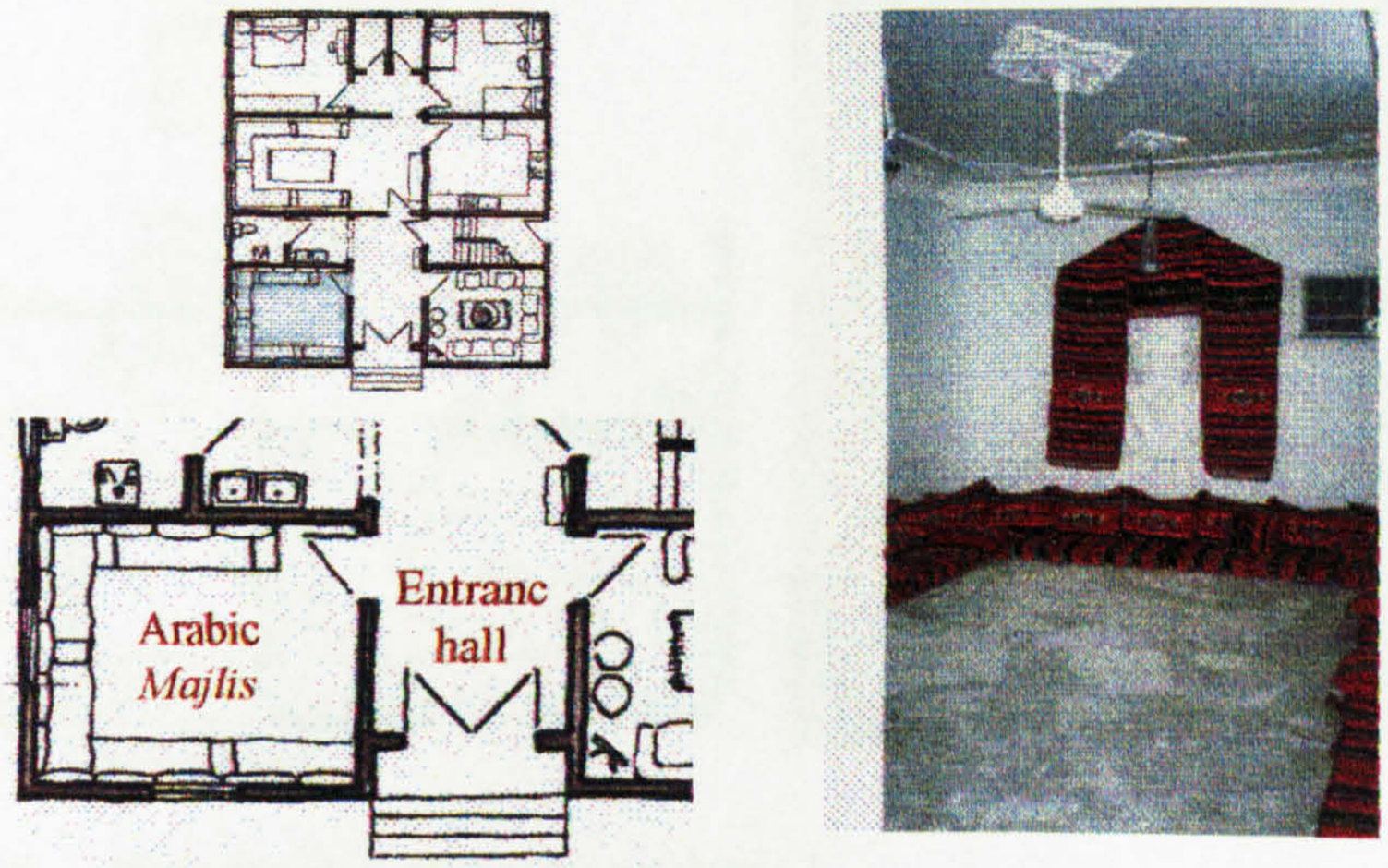


Figure 6.14: Dining room or Arabic *Majlis*, House 3

In House 6, which is villa type, the household use the dining room one way as a modern dining room furnished with a modern suite. However the dining suite does not seat a large number of guests when they are invited to lunch or dinner, so this dining suite is intended to convey fashion more than to be used. The information from the householder of House 6 is that, when they invite a large number of male guests for lunch or dinner, the householder uses the male *Majlis* to serve the lunch or dinner. All tables, which are in the centre of the male *Majlis*, are moved to the corner or the side. Large rugs are put on the marble and plastic sheets are put on the rugs to put the food on. After lunch or dinner all items, tables, vases and small rugs are put back in their places.

In House 4 men guests mainly use the Arabic *Majlis* when they are invited for lunch or dinner. Male relatives usually use this room more than the *Majlis* during their visits and their family use the family zone. The guest male relatives feel more freedom of use in the Arabic *Majlis* than the modern suite in the male *Majlis*. This room is also used for accommodating any relative visiting when they stay for several days or a night. The walls, windows and ceiling of this room are treated in a similar way to the male *Majlis*. For example, the walls are painted white, curtains cover the windows and the ceiling is decorated with geometric gypsum. (Figure 6.15)

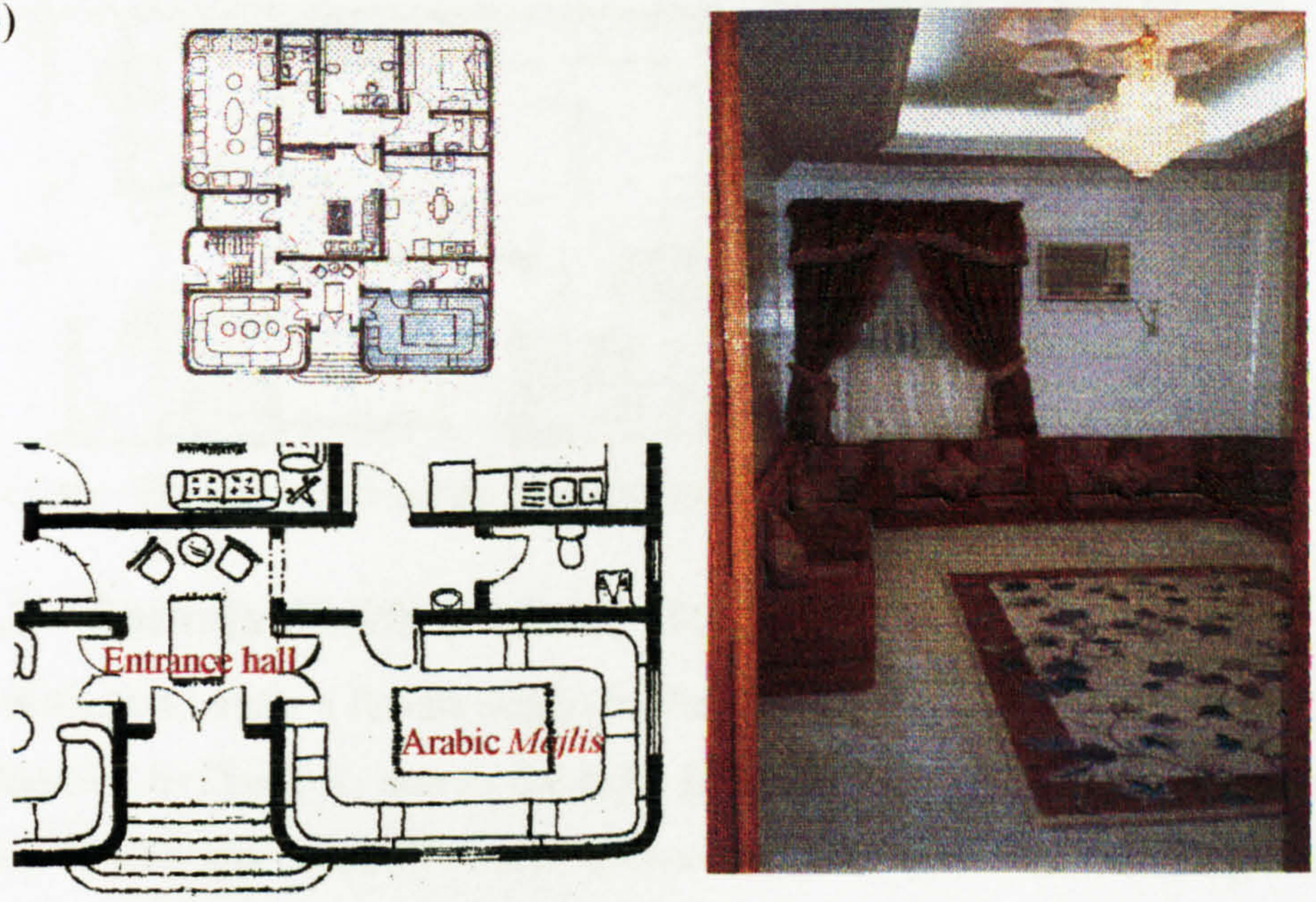


Figure 6.15: Dining room or Arabic *Majlis*, House 4

In House 3 the Arabic *Majlis* is used as a multi-purpose room. The householder receives the male guests in it while his wife receives the female guests in the men's *Majlis*. In addition some of the children use the Arabic *Majlis* as a study room while the brothers or sisters are sleeping or playing in the bedroom, as well as the parents watching television in the living area. In Houses 1, 2, 3, 4 and 5 the Arabic *Majlis* is also used when the number of guests exceeds the number of men's *Majlis* chairs, for example at a party or similar occasion.

In House 2 there are two doors that lead from the guest zone to the family zone. The first door connects the entrance hall and family hall. The second door is between the Arabic *Majlis* and family hall too. The household decided to close the door that connected the Arabic *Majlis* and family hall (Figure 6.16). The researcher asked the householder, "What are the reasons for closing this door?" The answer was to maintain the privacy of his family when the male guests occupy the Arabic *Majlis*.

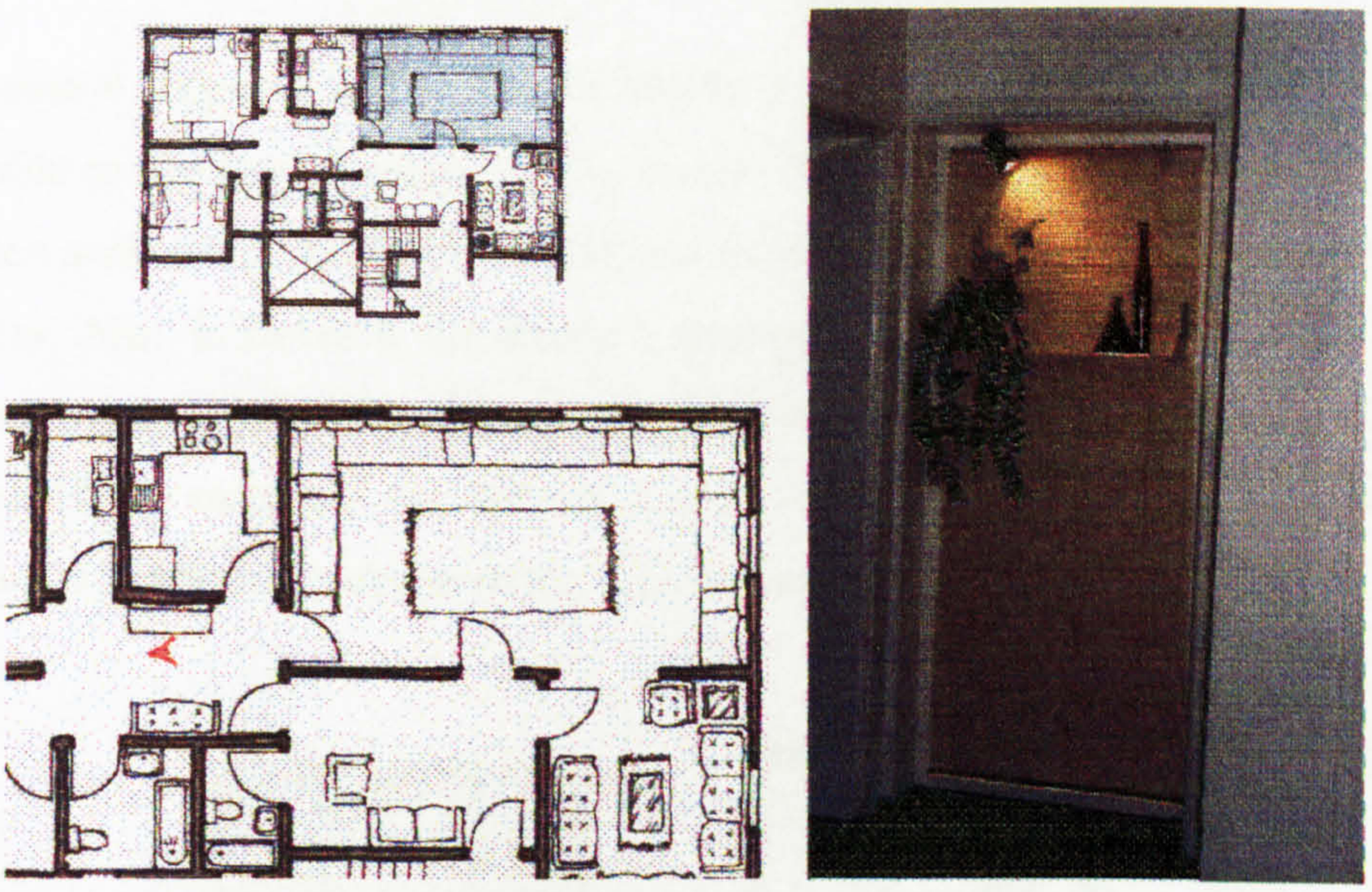


Figure 6.16: The door connecting the Arabic *Majlis* and family hall, House 2

6.3.3 Female *Majlis* (Female Guests)

It is difficult to make a female *Majlis* in the apartments where the number of rooms are limited. In House 1, due to the open plan of the guest zone (male *Majlis* and Arabic *Majlis*), the housewife must receive the female guests in the living area (see section 6.4.1). The males of the family cannot go through the living area to their

bedrooms or to the kitchen at all while the female guests occupy the living room. This means the male family members must stay in the guest zone until the female guests leave. Usually the female *Majlis* is furnished with a modern suite, rugs, sofa, armchairs, corner tables, coffee tables, vases, artificial plants or flowers, framed paintings, decorated curtains and the floor is covered with carpet or marble. In addition the ceiling is decorated with geometric gypsum and candles. (Figure 6.17)

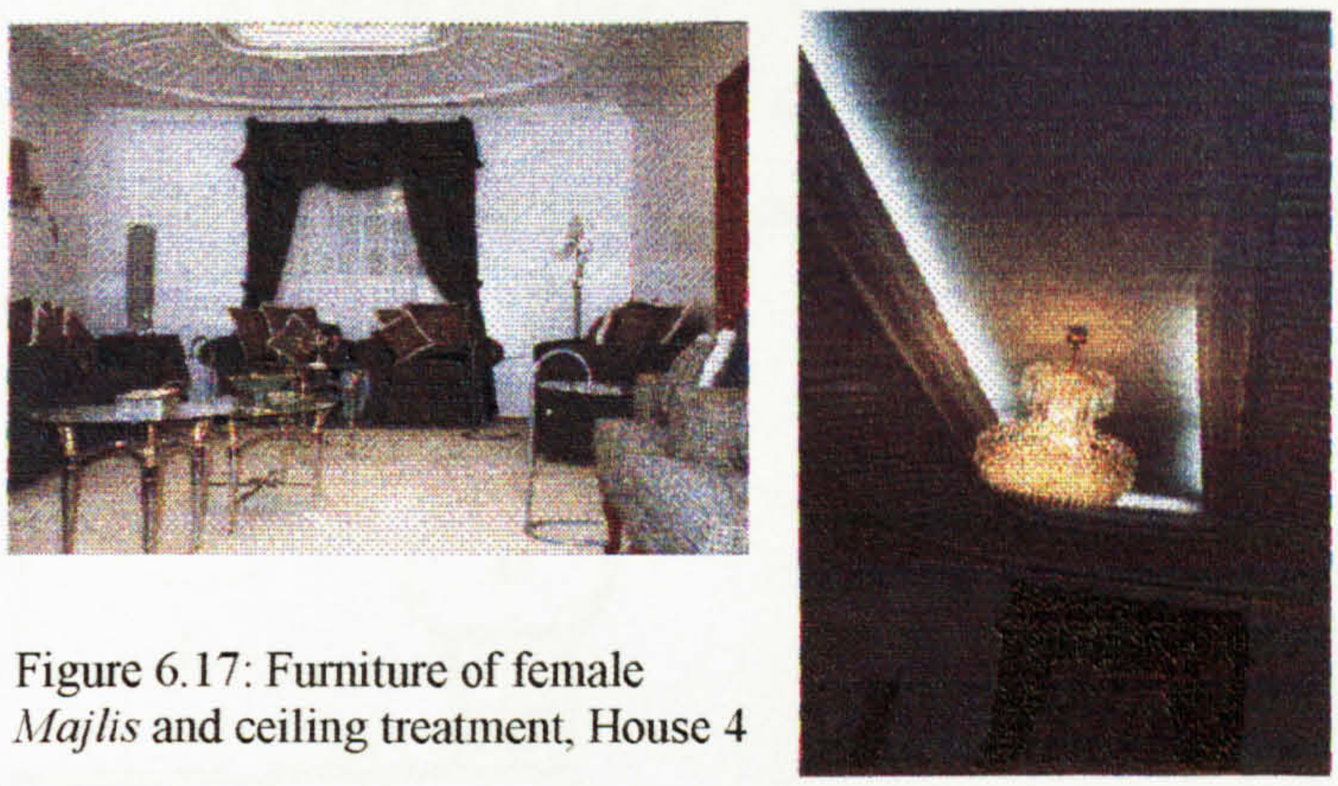


Figure 6.17: Furniture of female *Majlis* and ceiling treatment, House 4

In House 4 (Figure 6.18) the female *Majlis* is located in the family zone, as near as possible to the family entrance. The female *Majlis* in these houses have a special service area (toilet and sink). In addition the family members use this toilet during the day. Also, in House 4, the female guests must go through the living area to go to the women's *Majlis*. The males of the family must leave the living area while the housewife is receiving the female guests. Usually when the female guests are invited to lunch or dinner the living area is used as a dining room.

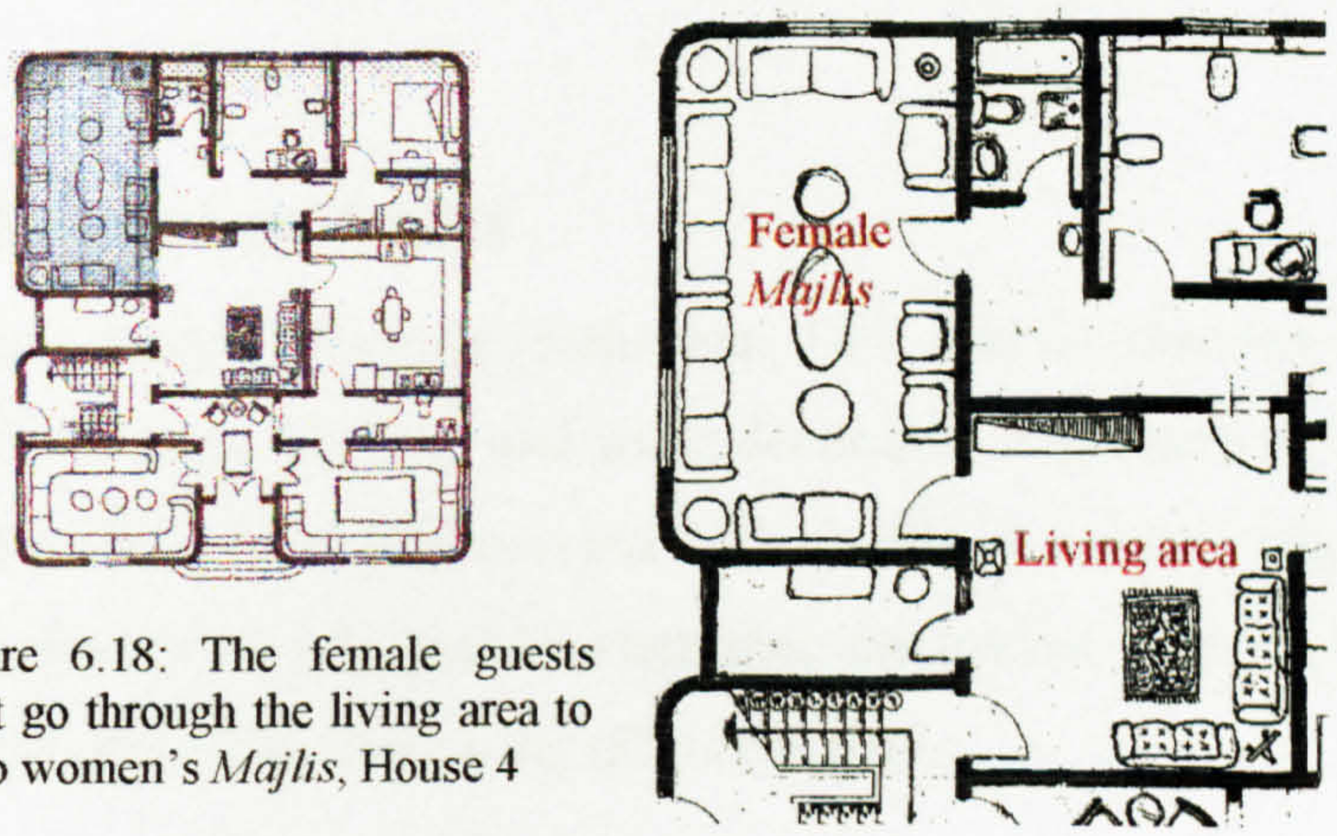
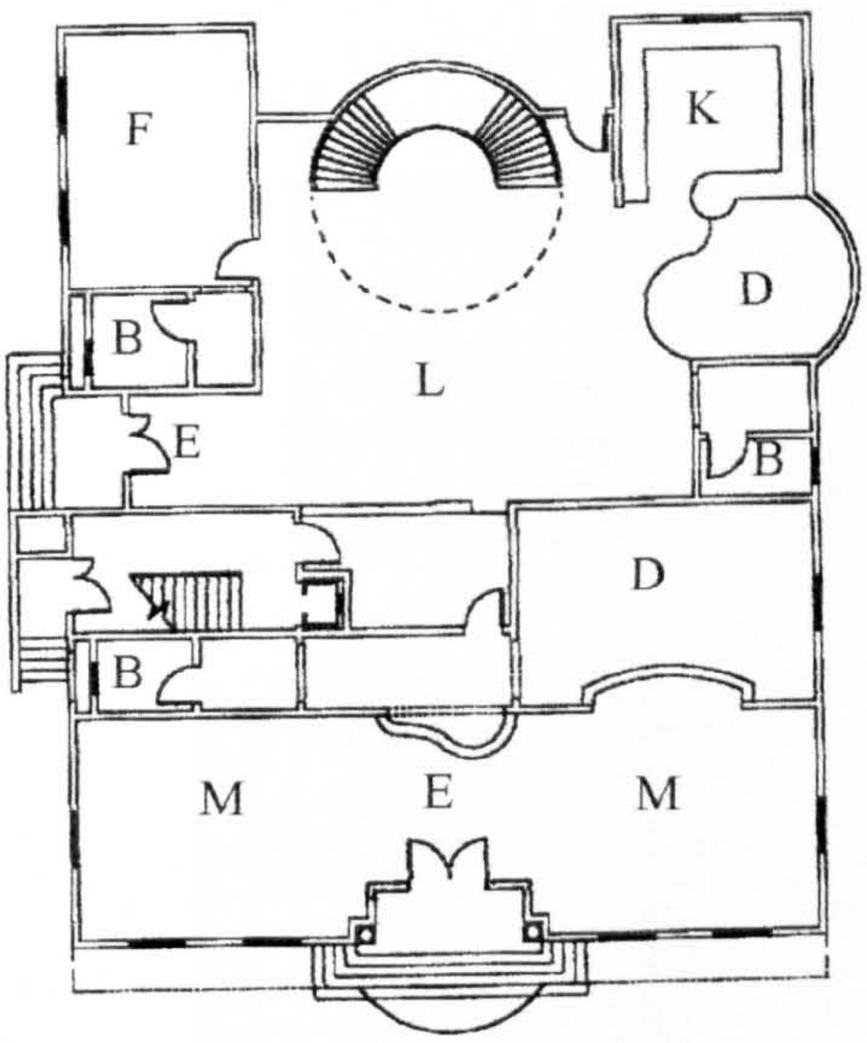


Figure 6.18: The female guests must go through the living area to go to women's *Majlis*, House 4

In house 6, the female guests' *Majlis* is in the family zone on the ground floor (Figure 6.19). Female guests must go through the living area to go to the female *Majlis*. The researcher asked the householder "Why did you design the entrance of the female *Majlis* so far away from the main family entrance, when you could have designed it to be as near as possible to it?" The answer was the householder designed this zone as open plan and he wants the female guests to go through the living area to show his wealth and fashion; thus the guests will see the living area, the curved stairs, the family dining area and the kitchen. However, nowadays spiral stairs which are within the living area are popular in most of the villas.



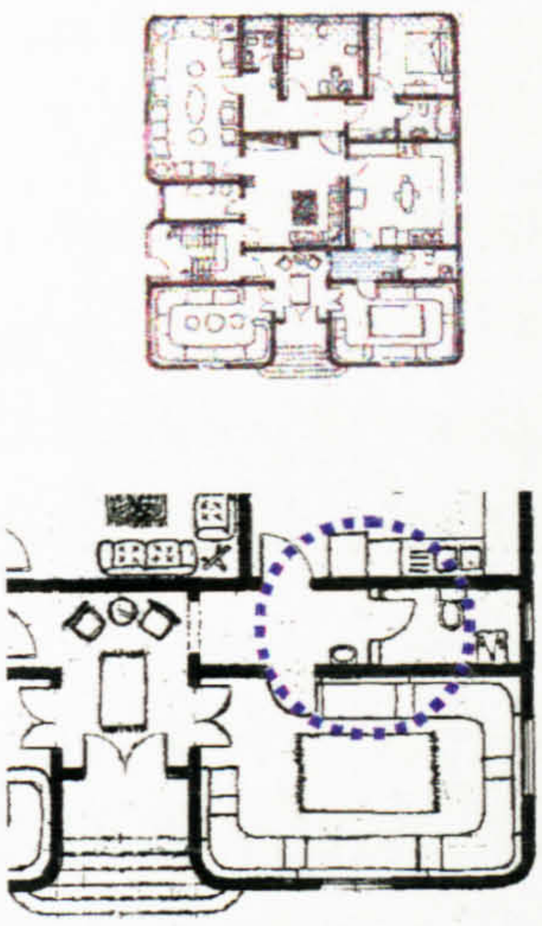
Ground floor, House 6

E	Entrance hall	F	Female guest reception		
D	Dining room	L	Living area	K	Kitchen

Figure 6.19: Family zone, House 6

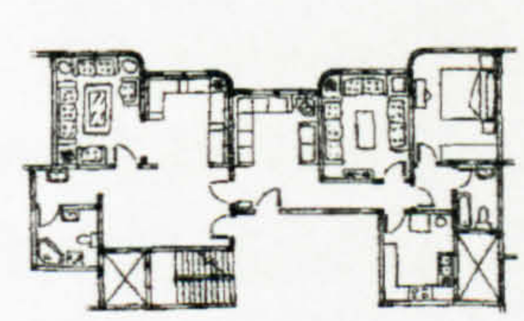
6.3.4 Bathroom or Toilet

Usually there is a lobby before the bathroom. This area is furnished with sinks, wastepaper basket, mirror, shelves, and some decorative items such as flowers and wall painting. The floor is usually covered with marble or ceramic and small rugs. These sinks are mainly used by guests when they are invited to lunch or dinner to wash their hands before and after eating (Figure 6.20).



House 4

House 3



House 1

Figure 6.20: The small area before the bathroom, House 1, 3 and 4

The bathroom or toilet is usually furnished with a western lavatory pan and Arabic toilet chair too. (Figure 6.21) Usually the Arabic toilet is used by most of the guests because the Muslims' frequent use of water means the western toilet is difficult to use with traditional male dress called *Thoab*.

Figure 6.21: Bathroom, House 4

Tally

In Houses 1 and 2, due to the limited number of bathrooms in the apartment, the bathroom is furnished with toilet and bathtubs as well. This bathroom is used by the family members during the day. The walls are usually covered with ceramic tiles because of the problem with humidity. The electric fan removes the bad smells, so the small window is seldom used. In Houses 1, 2, 3, 4 and 5 a strict control is kept over the door that separates the guest zone and family zone when the men guests go through the entrance hall and from it to the bathroom.

6.4 Family Zone

6.4.1 Living Room

Most of the family members' activities in the house take place in the living room which is a communal room for the whole family. The family members have their breakfast, lunch, dinner, tea and coffee in the living room, they also watch television, chat, make telephone calls, and children play in this room. However, this room is usually furnished with *batermah* arranged peripherally around it. In addition some houses have their living room furnished with a modern suite, for example sofa and armchairs.

In House 1, as mentioned before, the guest zone is designed as open plan (entrance hall, men's *Majlis* and dining room or Arabic *Majlis* are an open area). Female guests must be received in the living area when men guests occupy the men's *Majlis* and Arabic *Majlis*. This means men of the family cannot go through the living area or the family zone at all. (Figure 6.22)

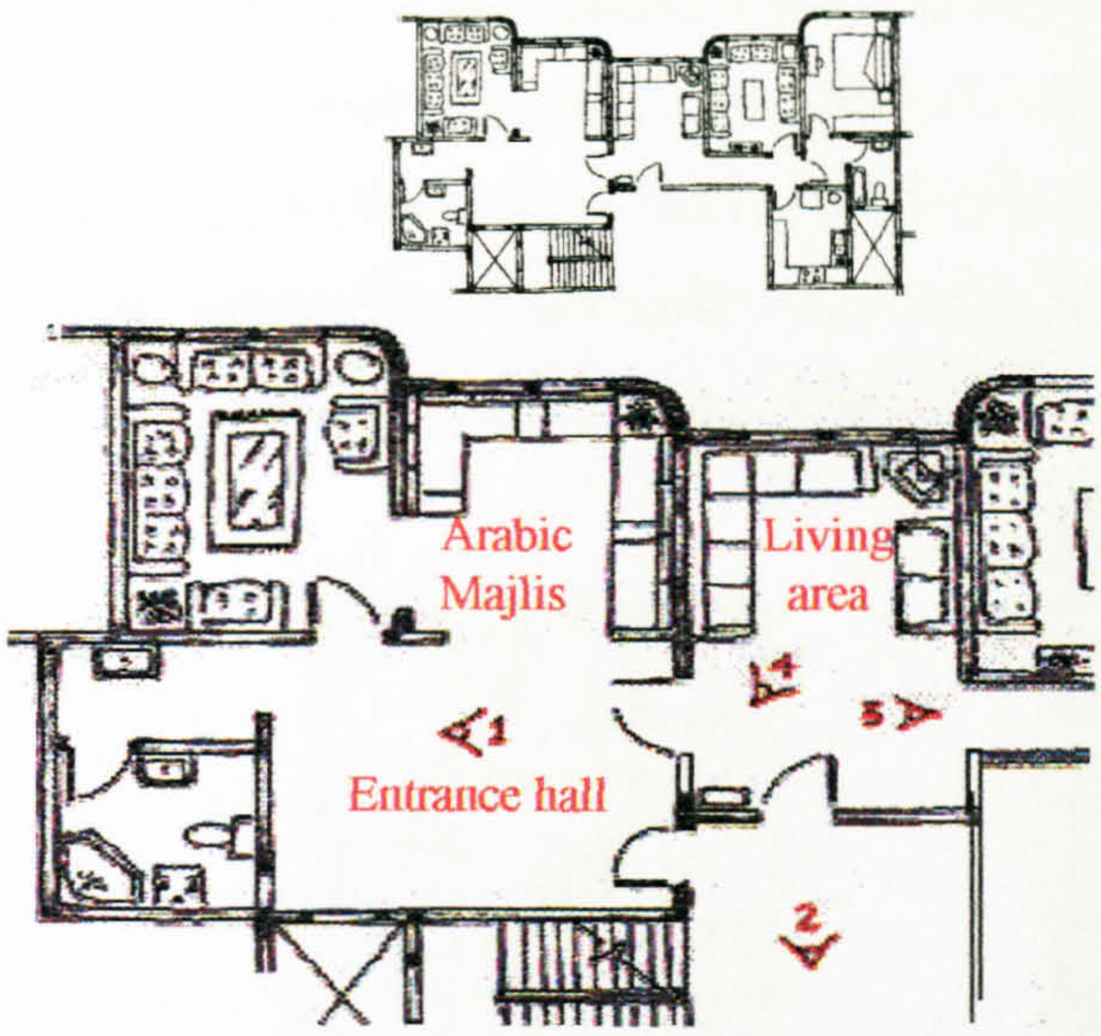


Photo 1

Photo 2

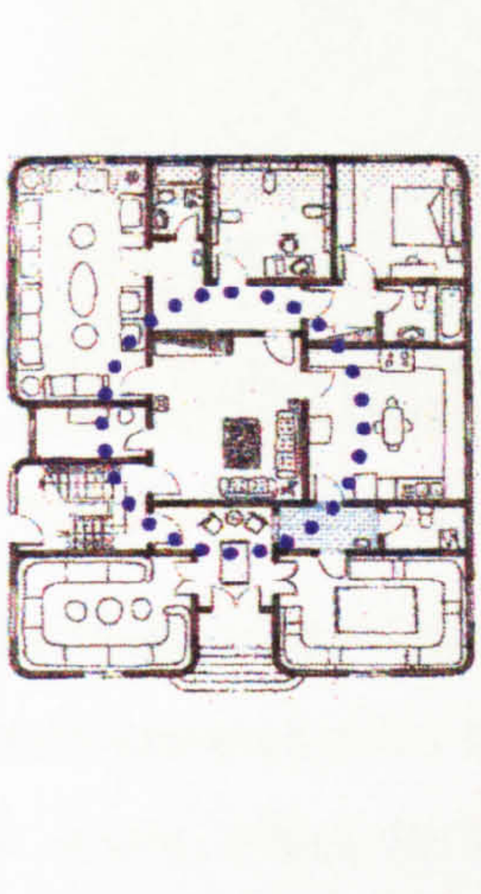
Photo 3

Photo 4

Figure 6.22: Living area, House 1

In House 3 when a large number of men are invited to lunch or dinner they are received in the men's guest area (men's *Majlis* and Arabic *Majlis*). Usually the doors of the men's *Majlis* and Arabic *Majlis* are kept open while the guests are using the guest zone for a party or special occasion. A strict control is kept over the men's *Majlis* door and Arabic *Majlis* door while the females go through the entrance hall to the living area to the family zone. In addition there is strict control over the door that separates the guest zone and family zone to maintain female privacy. The householder and his older sons cannot go to the family zone at all.

In House 4 the family entrance hall is used as a living area. The female guests must go through the living area to the women's *Majlis* and the door between the women's *Majlis* and living area, as well as the kitchen door, is usually kept open to serve the female guests. The householder must leave the living area and the kitchen when his wife is receiving female guests. (Figure 6.23)



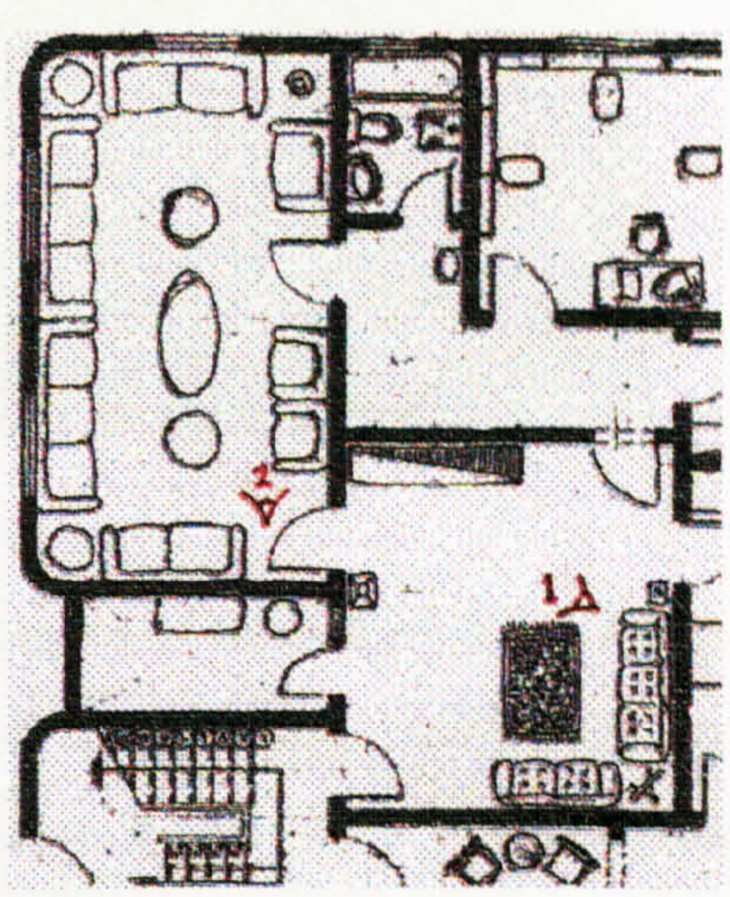


Photo 1

Photo 2

Figure 6.23: Living area, House 4

As we have seen in chapter 4 and chapter 5 the living areas of Makkah traditional houses are characterized by large openings that are covered with *Rowshan*. These openings help with ventilation and natural light. However the living areas in the modern houses usually have one or two small windows that measure about 1.2x1.2 metres. These windows are covered with decorative curtains, which mean they are difficult to open. In addition the occupants cannot have both privacy and ventilation at the same time. The information from Houses 1 and 3 shows that the living area has one small window only and they did not use it at all because it is overlooked (see results from the questionnaire in chapter 7). (Figure 6.24)

Figure 6.24: living area, House 3

In House 4 the living area is located in the centre of the house. Five doors open onto this area (family entrance door, kitchen door, female *Majlis* door, washing area door and bedroom door), which looks like a large lobby more than a living area. In addition this living area does not have windows; that means this area cannot function without electricity. (Figure 6.25)

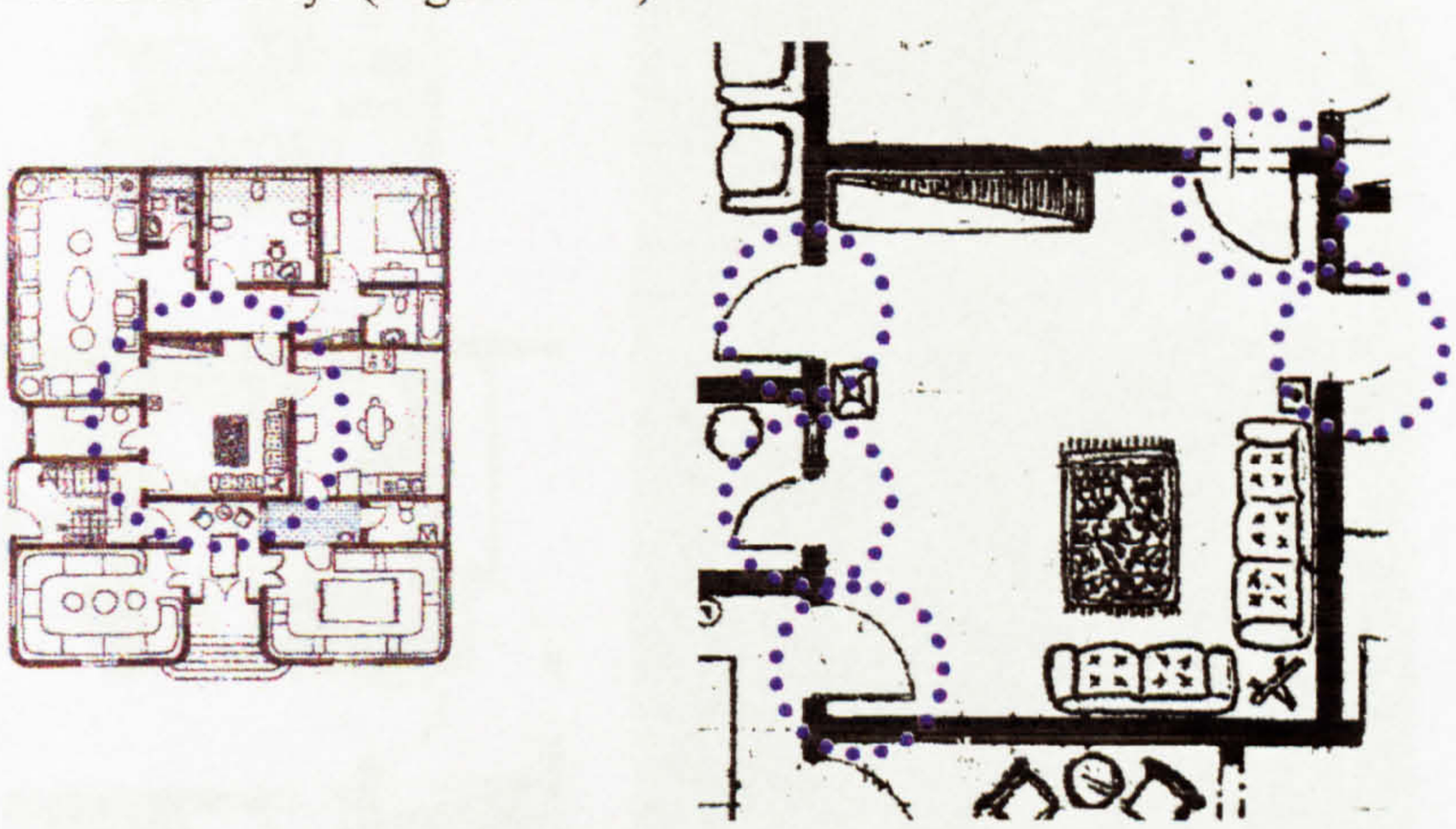


Figure 6.25: Location of the living room, House 4

6.4.2 Multi-purpose Room

The multi-purpose room is furnished with a carpet or rugs and its walls are decorated with framed pictures, or in some houses it is kept empty, the windows are covered with curtains. However some houses have two multi-purpose rooms, one in the guest zone which is used to accommodate more female guests, playing or sleeping children, and another one in the family zone which is used to accommodate

close relatives, for example a married son or daughter with his/her family during their visit. On the other hand the multi-purpose room is not indispensable in every family, as is the *Majlis* or living room or master bedroom for example. However as seen in chapter 5 the Makkah traditional houses are rich in multi-purpose rooms. The contemporary house does not have many multi-purpose rooms, especially the apartments.

In Houses 1, 2 and 3 there is no multi-purpose room at all. The visiting relatives have to sleep in the guests' zone (male *Majlis* or Arabic *Majlis*) when they stay for a day or more. (See also other modern houses in Appendix B) House 4 is occupied by a newly-married couple. The multi-purpose room that is located in the family zone is used as a household office and for the housemaid to sleep at night. This multi-purpose room will be the children's room in the future. (Figure 6.26)

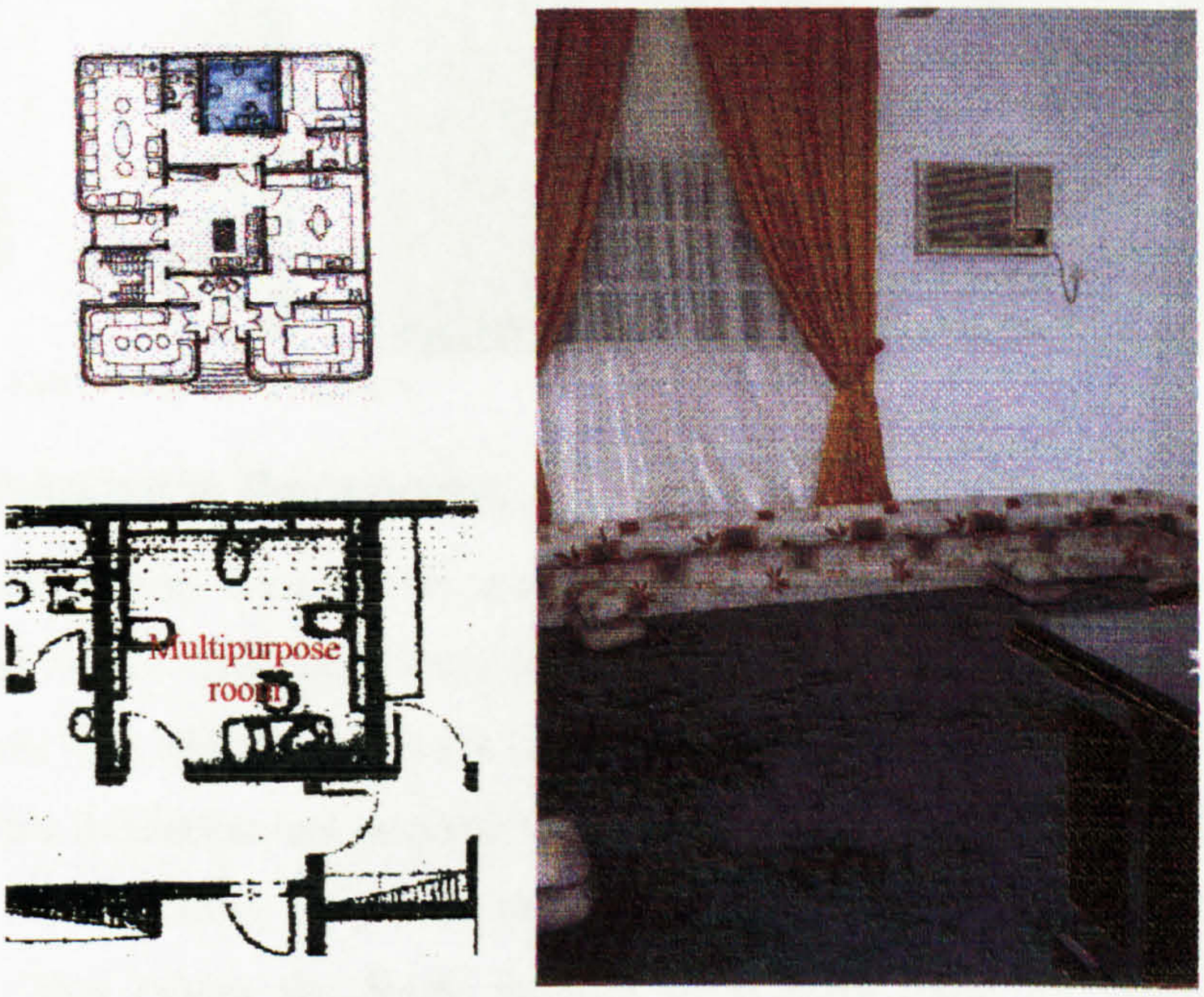


Figure 6.26: Multi-purpose room, House 4

6.4.3 Master Bedroom

Usually the master bedroom is located in the family zone. The master bedroom is the private room of the parents and it has become an essential part of any house. The furnishings are comprised of a double bed, two bedside cabinets, a wardrobe, a

dresser with a mirror and a chair (Figure 6.27). Most of these pieces of furniture are imported from Italy or the United States or other countries, as well as being made locally. The master bedroom is used for sleeping, taking afternoon naps, praying and watching television. In addition this room is usually kept closed in the daytime and used by parents only.

Usually the occupants look for a large room with a special bathroom to use as the master bedroom when they want to rent a flat, because most of the apartments have limited bedroom areas without an *en suite* bathroom.

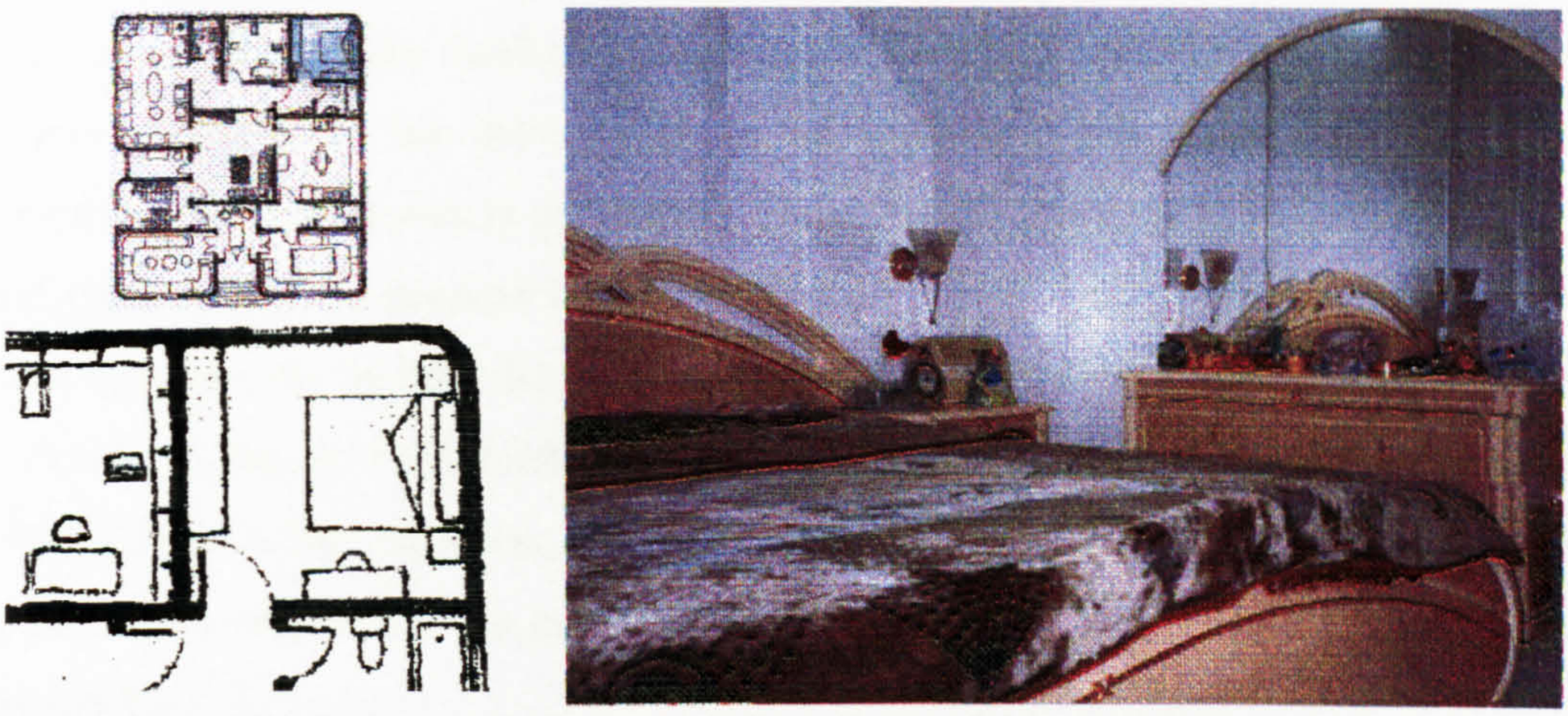


Figure 6.27: Master bedroom, House 4

6.4.4 Children's Bedrooms

As mentioned before, most of the apartments in Makkah are designed as though they are final, which does not always flexibility for Saudi families in the future. So the occupants are obliged to make a number of decisions according to their priorities. This limitation has resulted in the lack of independent bedrooms for the children and consequently they have to sleep and study in the living area or in the guest zone. That means the Saudi families need extra room for children. (See Appendix B)

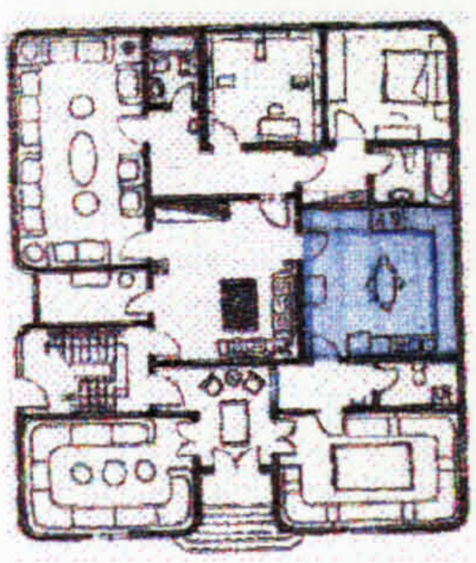
The villa types are more suitable for Saudi families than the flats because of the number of rooms. Usually the villa types have two children's bedrooms at least for daughters and sons. These rooms are furnished with modern bedroom suites, which comprise a single bed, a desk and chair and cabinet. In the flat type most of the children still sleep on the floor in the multi-purpose room because of the limited

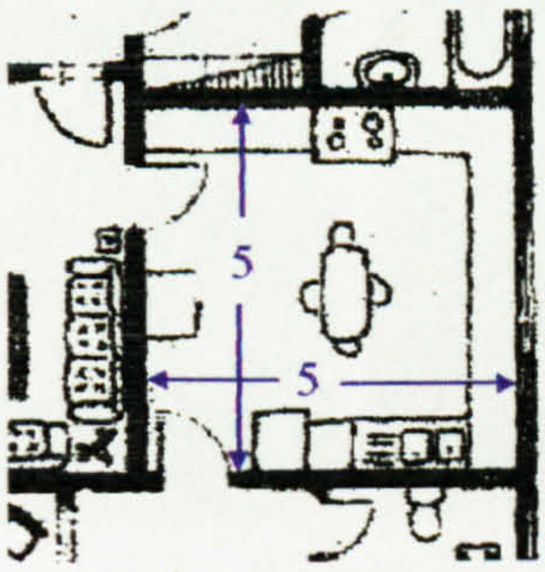
number of rooms. This room is furnished with *Tawaweel* and *Massaned* or only *Massaned* and a small cabinet for schoolbooks. (See section 6.4.2)

House 3 has one bedroom that is used for daughters and sons sleep in the Arabic *Majlis* in the guest zone, as well as using the Arabic *Majlis* as a studying room while their sisters are sleeping or playing in their bedroom and the parents are watching television in the living area.

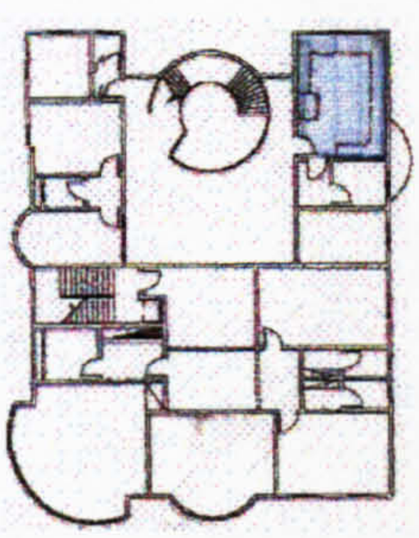
6.4.5 Kitchen

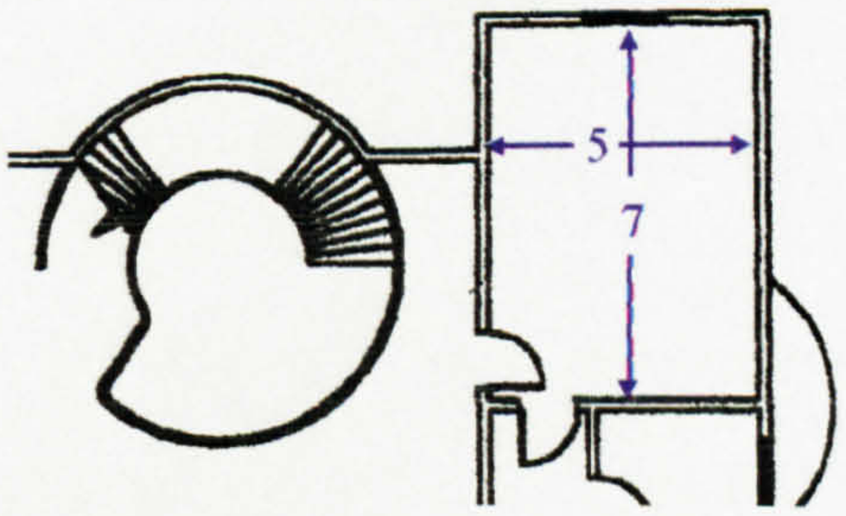
The kitchen in the modern Makkah houses is situated in the family zone, which is near as possible to the family area and guest dining room. The kitchen area has improved during the last thirty years. In the apartments that were built during the seventies the kitchen area is very small, about $4m^2$ in some flats. From the nineties the kitchen area has become larger than before, about $12m^2$ – $16m^2$ in some flats (See Appendix B). In the villa types or semi detached houses a huge area of kitchen is found. In House 4 the kitchen area is $25m^2$ and in House 6 the kitchen area is $35m^2$ (Figure 6.28). However, in House 6 there are two large kitchens, one on the ground floor that serves the guests and the other on the first floor that serves only the family.





Kitchen of $25m^2$, House 4





Kitchen area of $35m^2$, House 6

Figure 6.28: Kitchen area in villa and semi detached types, Houses 4 and 6

6.4.6 Clothes Washing Area

As mentioned in chapter 4 the *Kharijah* in traditional Makkah house was considered a good refreshment area for family activities. In addition it was used as a clothes washing and drying area (see chapter 4, section 4.2.9). The Saudi families still practise traditional activities and clothes washing as one of the daily activities inside the house. So the clothes washing area is considered one of the important areas in the modern houses.

Most of the villa types and semi-detached houses are provided with a clothes-washing area, because usually these types of building are built on a large plot. In the apartments the clothes washing area is disregarded, maybe because of the small area of the apartment. From the case studies of modern houses, built during last thirty years, most of the flats do not have a clothes washing area (See Appendix B). So the occupants use one of the bathrooms for the washing machine, and use the entrance hall or living area to dry the clothes. (Figure 6.29) Nowadays, clothes washing areas are added to the villas and some of the big flats.

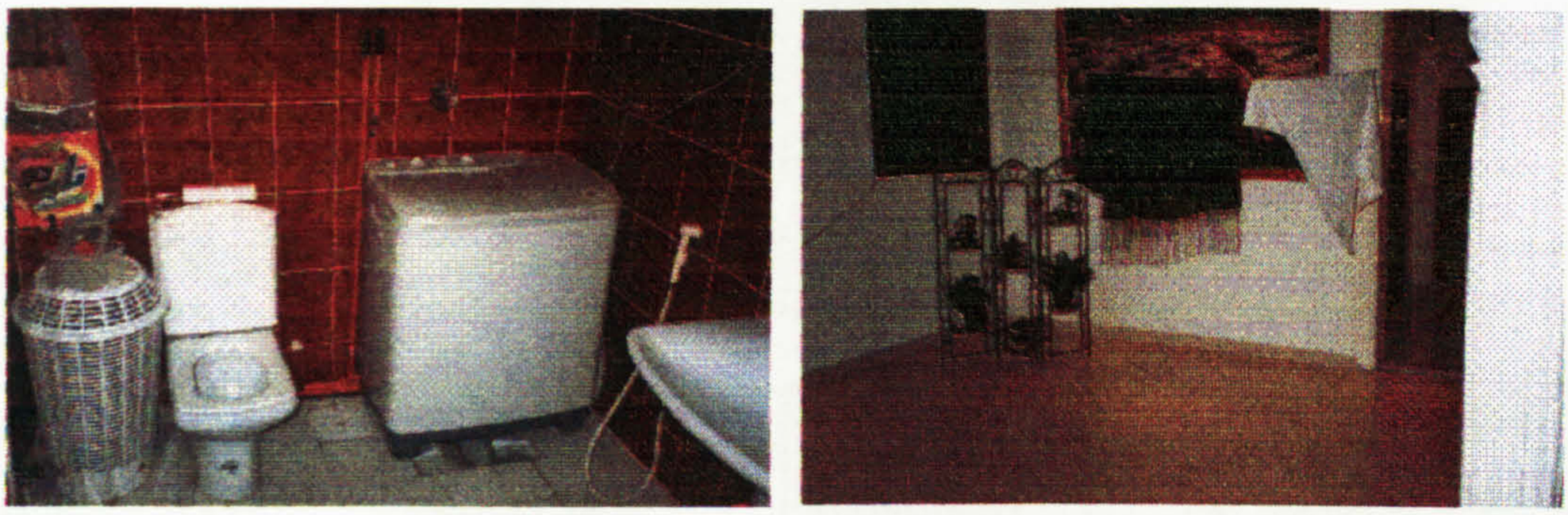
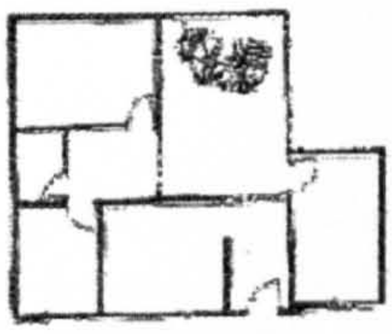


Figure 6.29: Bathroom is used as a clothes-washing area and the entrance hall is used as a drying area, House 1

6.5 Reflection

The city witnessed rapid growth due to the influx of people from outside and inside the country. People from different ethnic groups settled in the city, a matter which affected its social and physical condition. The introduction of the vehicle had a clear impact upon the urban tissue of the city. Many housing types have emerged in the transitional areas of the city. They differ from traditional houses in plan and concept, building materials and form. (Table 6.1) The new building techniques and materials have replaced the traditional building materials.

Makkah Traditional house	***Bait Shaby***	**Villas**	***Shoqah* (Apartment)**
Plan:			
Room arranged around central stairs.	 Room arranged around ground floor courtyard.	Large hall, reception rooms, stair and kitchen on the ground floor, sleeping room on the first floor.	The circulation spaces in the flat around corridor or hall.
Height:			
4-5 stories high	1-2 stories high	2 stories high	2-5 stories high
Rooms:			
• No special function (multi-purpose) room. • Mostly rectangular rooms.	• No special function (multi-purpose) room. • Mostly rectangular rooms.	• Spacious rooms. • Rectangular or square rooms. • Each room restricted to special function.	• Identical in shape and size. • Rectangular or square rooms. • Some rooms restricted to special function.
Kitchen:			
• Small. • Not equipped with piped water. • Located at the rear of the house.	• Small. • Sometimes cooking is carried out in the courtyard. • Located at the rear of the house.	• Large. • Modern cooking equipment. • Equipped with piped water.	• Small. • Some modern cooking equipment. Equipped with piped water.

Bathroom:			
• Small. • Not equipped with piped water. • Located as near as possible to the stairs.	• One or two. • Not all equipped with piped water.	• Three or more, (*Hammam franji* and Arabic *hammam*). • Equipped with piped water. • Washbasin, bathtub, two bidets.	• Usually two bathrooms, (*Hammam franji* and Arabic *hammam*). • Equipped with piped water. • Washbasin, shower, two bidets.
Balconies:			
• Rarely found.	• No balconies.	• Large open balconies. • Commonly used.	• Small open balconies. • Rarely used.
Roof:			
• Surrounded by parapet walls with small openings constructed from brick, called locally *Shawabeer*. • Commonly used.	• Not all have parapet walls. • Rarely used.	• Not all have parapet walls. • Rarely used	• Surrounded by parapet solid walls. • Rarely used.
Building materials:			
• Coral reef stone. • Sand-cement blocks. • Sand-cement bricks. • Wood. • Paint.	• Sand-cement blocks. • Sand-cement bricks. • Cement. • Wood • Paint.	• Sand-cement blocks. • Sand-cement bricks. • Cement. • Steel. • Wood • Glass. • Aluminium. • Paint.	• Sand-cement blocks. • Sand-cement bricks. • Cement. • Steel. • Wood • Glass. • Aluminium. • Paint.

Table 6.1: Housing types have emerged in the transitional areas of the city.

It has been found that the occupants of villas and semi detached houses have not suffered from the limitation of internal spaces as much as occupants who live in flats, who have fewer rooms as well as no open area (terrace). Also the flats lack some important areas such as children's bedrooms, dressing room and clothes washing area. In the following table the character of some of the modern spaces e.g. (living area, sleeping area and cooking area) are analysed using Parker Morris categories, against the model of the Makkah traditional houses. (Table 6.2)In the process we hope to establish to what extent these contemporary living areas are providing adequately for the Saudi family's needs, and what could be learnt from traditional houses.

Parker Morris	Traditional house	Makkah Modern house (apartments)
Living area:		
• Accommodation for family will need to provide a living area. • In the family home the living areas will still remain in use for family meetings, chatting, watching television, homework, children's play, making calls, receiving relatives or friends. • The living room must provide space sufficient for two or three easy chairs, a settee, a television set, small tables, and place suitable for a reasonable quantity of other possessions.	• No single use of rooms. • *Muakhkhar* was the principal multi-purpose room, used to prepare quick snacks, for eating, children sleeping and general family entertainment. • The furnishings were simple Indian rugs and sponge cushions called *liyanat*. • Characterized by large openings that are covered with *Rowshan*.	The limitation of space in flats has resulted in the lack of an independent living room area. Therefore a room in the family zone is use as a multi-purpose room. Most of the family member's activities in the house take place in it. Female guests could be received in the living area. It is used as a sleeping room for children. Usually furnished with *batermah* arranged peripherally around it. Some houses have furnished with a modern suite (sofa and armchairs). Usually have one or two small windows that measure 1.2x1.2 metres.
Eating area:		
• Parker Morris [1] pointed out that eating arrangements should have the following: - First, a working kitchen enlarged to provide a meal space for the whole family, there being no other eating space. - Second, an arrangement to be favoured is a working area with a meal space differentiated from it, but close to it and with direct access to it. - The third arrangement, suitable for slightly bigger houses, would be separate room that would be used for meals..	No single use of rooms. *Muakhkhar* was the principal multi-purpose room, used for eating.	The limitation of space in flats has resulted in the lack of an independent living room area. Therefore most of the people have their breakfast, lunch and dinner in the multi-purpose room.
Cooking area:		
• Kitchen sequences were indicated by Parker Morris, for example - Movement in food preparation. - A work surface on each side of the cooker. - Serving up main meals. - Storage of cooking utensils. • He also showed some examples of the arrangement of work surfaces as follow: - Straight line arrangement L and U shape arrangement.	Small kitchen, not all were equipped with piped water.	In the Makkah modern houses there is no standard for the kitchen area.

[1] Parker Morris (1960) *Home for Today and Tomorrow*, p. 10

Sleeping area:		
• The family of four people should have at least two bedrooms, a double bedroom as a master bedroom and another bedroom for children.	• No single use of rooms. • Most rooms in the house could be used as a sleeping area.	• The master bedroom suite and facilities have become an essential part of any house. The limitation of rooms in flats has resulted in the unavailability of separate children's bedrooms. Children still sleep on the floor in the multi-purpose room in the traditional way.
Clothes washing area:		
• Parker Morris[2] stated that clothes washing could be as follows: - Washing machine in the kitchen. - Washing machine in the bathroom. - Utility room.	• The *Kharijah* was used as clothes washing and a drying area for laundry.	It became clear also from the case studies of modern houses, built during last thirty years, that most of the flats do not have a dedicated clothes washing area.
Storage:		
1. 15 sq. ft. [450 cm sq.] should always be provided in flats.	Small space used as a store. However, the *Mabit* could be used as storage for *Kharijah* furniture (*tawaliat and liyanat*).	In most of flats there no storage area.

Table 6.2: Comparing and contrasting space-use in modern Makkah residences against Parker Morris criteria

According to Parker Morris' principles, modern flats which have limited numbers of rooms cannot function properly for family needs. Therefore, drawing on Western models, in next chapters 8 and 10 the researcher will try to establish new design guidelines that could be useful for ensuring a good quality life space for Saudi family needs, but first the social and cultural consequence of the living conditions in modern Saudi houses need to be articulated more clearly, as demonstrated by the findings of a users questionnaire conducted by the researcher.

[2] Parker Morris (1960) *Home for Today and Tomorrow*, pp. 20-21

PART IV

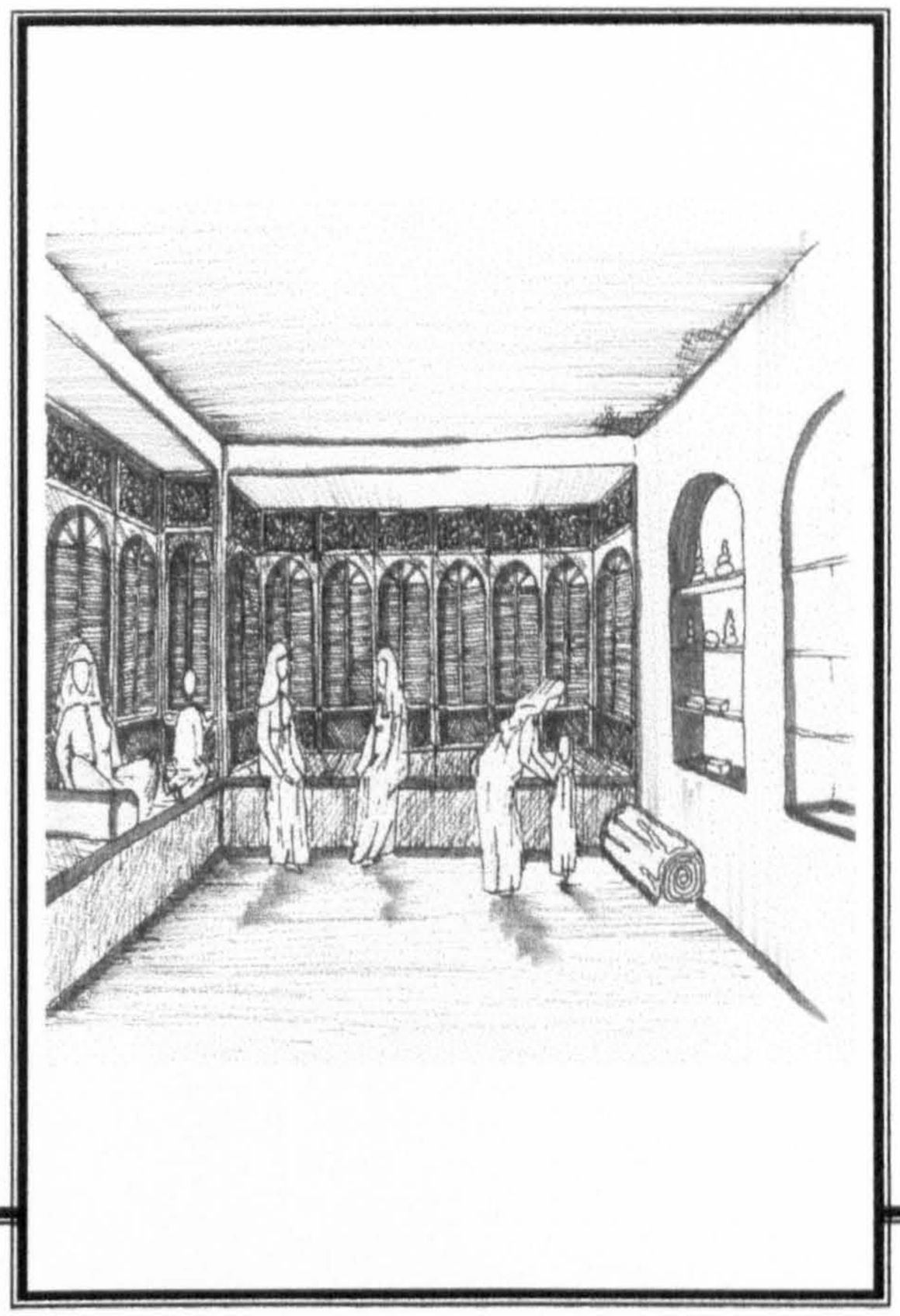
MECHANISMS FOR CHANGE: Principles and Policy

Chapter 7: Findings of Main Survey and Recapitulation

Chapter 8: A Pattern Language for a Modern Saudi Home

Chapter 9: A Home for Today and Tomorrow: New Guidelines for the Saudi Home

Chapter 10: Conclusion



CHAPTER 7

FINDINGS OF THE MAIN SURVEY AND RECAPITULATIONS

7.1 Introduction

7.2 Findings of the Main Survey (Questionnaire)

7.2.1 The Internal Spaces
7.2.2 The External Spaces

7.3 Recapitulations

7.1 Introduction

Survey research and data analysis are essential elements in social science research. It is important to understand what and how people think with regard to the built environment, which surrounds them. Questionnaires are a helpful and well-organized data gathering method.[1] They permit us to study public opinion and attitudes; they can also be used to find information.[2] The aim of this chapter is to discuss the findings of the main survey (questionnaire) by analysing the statistical data by using the SPSS program mentioned in chapter 2, and then correlating the investigation in previous chapters e.g. case-studies as well as to recapitulate through a discussion the main findings of this research.

7.2 Findings of the Main Survey (Questionnaire)

The survey results may be seen as giving a good picture of Makkah contemporary houses as perceived by their occupants. The range and variety of questions produced much useful information about the modern houses of Makkah. The questionnaire included 24 preliminary questions about the kind of residence (villa, apartment); the numbers of years the inhabitants have lived in the houses, the number of floors and the main entrances, whether the house is privately owned or rented and the number of house dwellers. Some modifications were made to the questions, some questions were added and some omitted. Then 350 copies of the questionnaire were distributed to the community and about 200 completed copies were returned.

This chapter consists of a detailed analysis of the findings of the questionnaire, item by item, followed by review of the implications of the results. This system is used so as to make it easy for the reader to grasp such detailed information. In addition copies of the Arabic questionnaire and its English translation are included in Appendix C together with further back-up graphs and tables.

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[1] Friedmanns, A. Zimning, C and Zube, E. (1978) *Environmental Design Evaluation*, New York: Plenum Press. p.207

[2] Herbert, F. W. and Bruce, D. B. (1977) *Survey Research and Data Analysis*, W. H. Freeman Company, San Francisco, p.16

Questions are known by question No. For example Q22 defines the question number 22. All the questions and the charts are found in Appendix C.

The question results are grouped into three broad categories as follows:

1- The Internal Space: This section contains the largest portion of the questionnaire as the study is concentrated in the first place on the domestic interior and the number of questions dealing the internal space of the modern houses and their use total 18.

2- The External Space: It was important to highlight the inside and outside relationship and the questions deal with transitional spaces such as windows, balconies and terraces ...etc. The windows in the modern houses are considered the main element in natural air circulation and light. The reasons behind not using the windows are due to many issues and some of these are the lack of desire by the residents to use them so that cool air is kept inside and also to keep their privacy intact. The windows are considered the main connection between the internal space and the external surrounding environment. Numbers of questions were 6.

7.2.1 The Internal Spaces

Question:

What type of house do you live in? (Q1)

Outcome:

58% of residences are flats, 9.5% are semi-detached houses, 25.5% of residences are villas and 7% of answers were "other". For example, some of families live in two flats. The lower floor is use for guests and the upper floor used for the family.

Number of entrances (Q2)

Question:

- How many entrances are there in your house?

Outcome:

47.5% have one entrance, 41.5% have two entrances and 11% more than two entrances. Most of the flats contain one entrance and most of the semi-detached and villa types contain two or more entrances. (See Table 7.1) Therefore there is a correlation between the type of house and the number of entrances. (See Table 7.2)

TYPES * ENTRANCE Crosstabulation

Count

		ENTRANCE			Total
		one entrance	two entrance	more than two	
TYPES	Flat	78	34	4	116
	semi detatch	4	12	3	19
	Villa	6	33	12	51
	Other	7	4	3	14
Total		95	83	22	200

Table 7.1: Types of the house and entrance (Cross tabulation)

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.419	.066	6.485	.000[c]
Ordinal by Ordinal	Spearman Correlation	.448	.064	7.060	.000[c]
N of Valid Cases		200			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

Table 7.2: Types of house and entrance (Correlation)

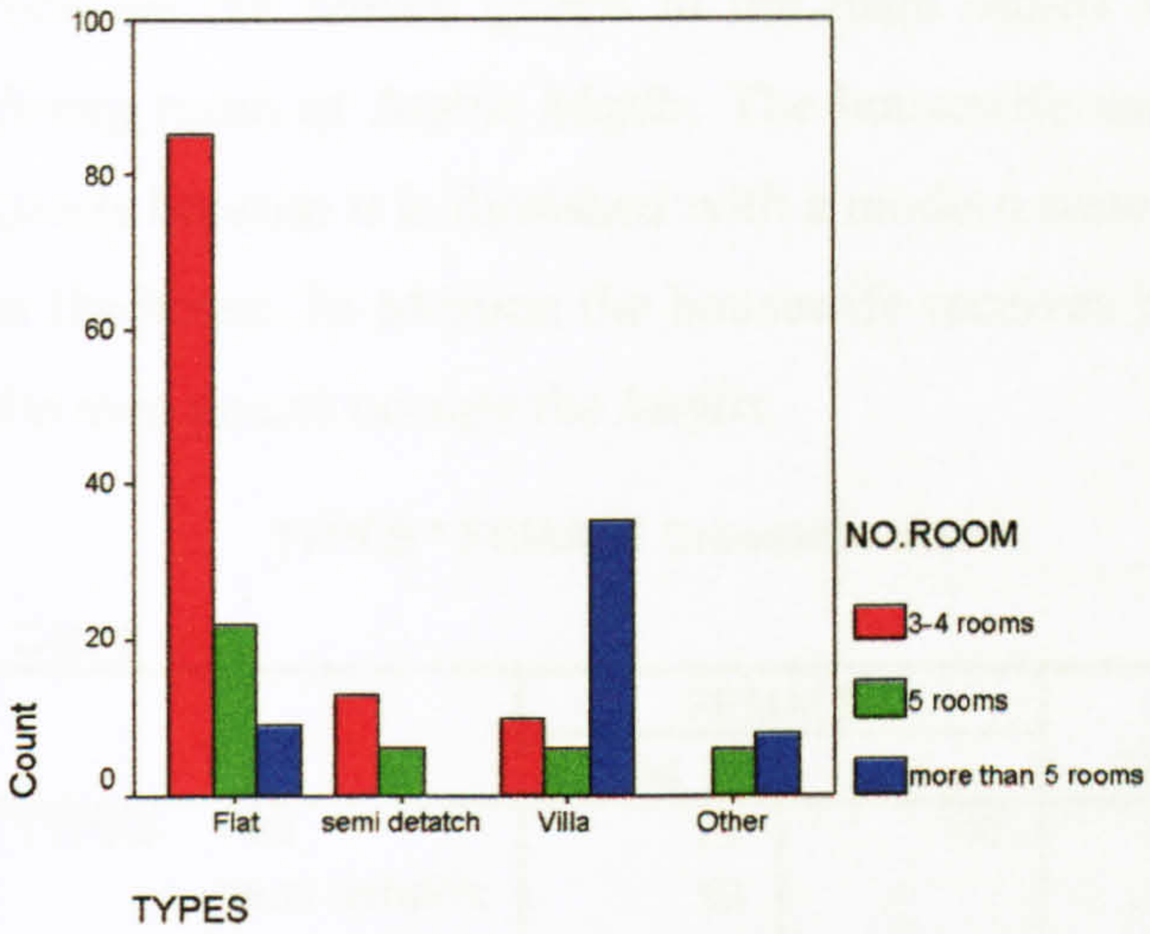
Number of rooms (Q3)

Question:

- How many rooms are there in your house?

Outcome:

54% of houses contain 3-4 rooms, 20% have five rooms and 26% more than five rooms. The correlation between types of house and the number of the rooms is also strong, because the largest percentage of flats, (85 flats from a total 116) contains 3-4 rooms and the largest percentage of the villa type, (35 villas from a total 51) contains more than five rooms. (See Table 7.3 and see also Appendix C)



TYPES * NO.ROOM Crosstabulation

Count

		NO.ROOM			
		3-4 rooms	5 rooms	more than 5 rooms	Total
TYPES	Flat	85	22	9	116
	semi detatch	13	6		19
	Villa	10	6	35	51
	Other		6	8	14
Total		108	40	52	200

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.604	.051	10.658	.000[c]
Ordinal by Ordinal	Spearman Correlation	.578	.054	9.973	.000[c]
N of Valid Cases		200			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

Table 7.3: Types of house and number of rooms (cross tabulation and correlation)

Male guest's reception (Q4) and female reception (Q5)

As mentioned earlier the Arab houses and Makkah traditional houses contained two zones, guest zone and family zone. The modern house of Makkah also contains a special section for guests. Therefore 100% of all house types contained a male guest's reception room. However 46% of flats do not have a female reception room because of the limitation of the rooms. (See Table 7.4) So the housewife

receives the female guests in the male *Majlis* while the men guests occupy the dining room or Arabic *Majlis*. The housewife uses the men's *Majlis* to receive her guests because it is furnished with a modern suite and it is the most decorative room in the house. In addition the housewife receives her guests in the living room while the men guests occupy the *Majlis*.

TYPES * FEMALE Crosstabulation

Count

		FEMALE		Total
		yes	no	
TYPES	Flat	70	46	116
	semi detatch	19		19
	Villa	41	10	51
	Other	14		14
Total		144	56	200

Table 7.4: Types of house and female reception (Correlation)

Number of bedrooms (Q6)

Question:

- How many bedrooms are there in your house?

Outcome:

28.5% of the houses contain one bedroom, 45.5% contain two bedrooms, 11.5% contain three bedrooms, 7% contain four bedrooms and 7.5% contain more than four bedrooms. Therefore the majority of flats contain 1-2 bedrooms, 51 flats contain one bedroom, 56 flats contain two bedrooms, 6 flats have three bedrooms and only 3 flats from the total 116 flats contain 4 bedrooms. However 13 villas from the total of 51 have three bedrooms and 15 villas contain more than four bedrooms (See Table 7.5). The occupants of flats are obliged to make a number of decisions according to their priorities due to the limited number of rooms. Therefore there is a strong relationship between the number of bedroom and the house type. The numbers of bedrooms is dependent on the house type: for example, most of the villas contain at least three bedrooms while most flats have 1-2 bedrooms. (See Table 7.6)

TYPES * BEDROOM Crosstabulation

Count

		BEDROOM					
		1 bedroom	2 bedroom	3 bedroom	4 bedroom	more than 4	Total
TYPES	Flat	51	56	6	3		116
	semi detatch	6	13				19
	Villa		16	13	7	15	51
	Other		6	4	4		14
Total		57	91	23	14	15	200

Table 7.5: Types of house and number of bedroom (Cross tabulation)

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.596	.040	10.445	.000[c]
Ordinal by Ordinal	Spearman Correlation	.597	.043	10.460	.000[c]
N of Valid Cases		200			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

Table 7.6: Types of house and number of bedroom (Correlation)

As mentioned in chapter 5, section 5.4.2.2, the children, still slept on the floor because of the limited number of rooms in the flat. This limitation resulted in the unavailability of independent bedrooms for the children and consequently they had to sleep in the living room and in the multi-purpose room. However as in the earlier discussion in chapter 6, section 6.4.4, House 3 has one children's bedroom that is used for daughters, while the sons sleep in the Arabic *Majlis* in the guest zone, as well as using the Arabic *Majlis* as a studying room while their sisters are sleeping or playing in their bedroom and the parents are watching television in the living area. So it has become clear from the case-studies and also from the questionnaire that there are not enough bedrooms in the Makkah modern house, which is possibly influenced by the limitation of rooms. From table 7.7 it can be seen that 36 from a total of 36 five person-households have only two bedrooms, 20 from a total of 50 six person-households also have two bedrooms and 36 of a total 61 six person-households have only one or two bedrooms.

NO. FAMILY * BEDROOM Crosstabulation

Count

		BEDROOM					
		1 bedroom	2 bedroom	3 bedroom	4 bedroom	more than 4	Total
NO.FAMIL	2 person	14	2	6			22
	3 person	7	5				12
	4 person	10	9				19
	5 person		36				36
	6 person	9	20	8	9	4	50
	more than 6	17	19	9	5	11	61
Total		57	91	23	14	15	200

Table 7.7: Number of family and number of bedroom (Cross tabulation)

Number of bathrooms (Q7)

Question:

- How many bathrooms or toilets in your house?

Outcome:

Most of the flats contain two bathrooms, 83 from a total of 116 flats, and most of villa types contain more than four bathrooms, 23 villas from a total of 51 (See Table 7.8 and see Table 7.9 for cross tabulation between types of house, number of rooms and number of bathrooms).

TYPES * BATHROOM Crosstabulation

Count

		BATHROOM					
		one bathroom	two bathroom	three bathroom	four bathroom	more than 4	Total
TYPES	Flat	4	83	26	3		116
	semi detatch		7	12			19
	Villa		16	3	9	23	51
	Other		7	3	4		14
Total		4	113	44	16	23	200

Table 7.8: Types of house and number of bathroom (Cross tabulation)

TYPES * NO.ROOM * BATHROOM Crosstabulation

Count

BATHROOM			NO.ROOMS			Total
			3-4 rooms	5 rooms	more than 5 rooms	
one bathroom	TYPES	Flat	4			4
	Total		4			4
two bathroom	TYPES	Flat	70	10	3	83
		semi detatch	7			7
		Villa	10	6		16
		Other		3	4	7
	Total		87	19	7	113
three bathroom	TYPES	Flat	11	12	3	26
		semi detatch	6	6		12
		Villa			3	3
		Other		3		3
	Total		17	21	6	44
four bathroom	TYPES	Flat			3	3
		Villa			9	9
		Other			4	4
	Total				16	16
more than 4	TYPES	Villa			23	23
	Total				23	23

Table 7.9: Types of the house, number of room and number of the bathroom (Cross tabulation)

The storage (Q8)

Question:

- Do you have storage in your house?

Outcome:

It is clear from the question that 63.5 % of Makkah modern houses do not contain a separate storage space, and 91 flats from the total of 116 do not; likewise 3 semi-detached from the total 19 and 23 of the 51 villas. That means most flats do not contain a storage space. (See Table 7.10 and Table 7.11)

STORAGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	73	36.5	36.5	36.5
	no	127	63.5	63.5	100.0
	Total	200	100.0	100.0	

Table 7.10: Storage capacity (percentage)

TYPES * STORAGE Crosstabulation

Count

		STORAGE		Total
		yes	no	
TYPES	Flat	25	91	116
	semi detatch	16	3	19
	Villa	28	23	51
	Other	4	10	14
Total		73	127	200

Table 7.11: Types of house and storage (Cross tabulation)

The living room (Q9)

Question:

- Do you have a living room in your house?

Outcome:

It is clear from the question that 92 % contain a living room; that means the living room is a very important area in Makkah modern houses. However, 9 flats and 7 semi-detached houses do not contain a living room which may be due to their limited number of rooms. (See Tables 7.12 and 7.13)

LIVING

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	184	92.0	92.0	92.0
	no	16	8.0	8.0	100.0
	Total	200	100.0	100.0	

Table 7.12: Provision of living rooms (percentage)

TYPES * LIVING Crosstabulation

Count

		LIVING		Total
		yes	no	
TYPES	Flat	107	9	116
	semi detatch	12	7	19
	Villa	51		51
	Other	14		14
Total		184	16	200

Table 7.13: Types of house and living room (Cross tabulation)

Size of family (Q10)

Question:

- How many persons occupy this house?

Outcome:

From the question and Table 7.14 it can be seen that 73.5% of the Makkah families are 5 persons and more than 5 persons, of which 18.0% are 5 persons households, 25% are 6 person households and 30.5% are more than 6 persons.

NO.FAMIL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 person	22	11.0	11.0	11.0
	3 person	12	6.0	6.0	17.0
	4 person	19	9.5	9.5	26.5
	5 person	36	18.0	18.0	44.5
	6 person	50	25.0	25.0	69.5
	more than 6	61	30.5	30.5	100.0
	Total	200	100.0	100.0	

Table 7.14: Size of family (percentage)

It is clear also from the cross tabulation between type of house, number of family and numbers of rooms that most flats contain 3-4 rooms, which is 85 flats from the total of 116. In addition 13 families of five persons, 17 families of 6 persons and 25 families of more than 6 persons are resident in 3-4 room flats (Table 7.15).

TYPES * NO.FAMIL * NO.ROOM Crosstabulation

Count

NO ROOM			NO FAMIL						Total
			2 person	3 person	4 person	5 person	6 person	more than 6	
3-4 rooms	TYPES	Flat	8	11	11	13	17	25	85
		semi detatch	3			4	3	3	13
		Villa				6	4		10
	Total		11	11	11	23	24	28	108
5 rooms	TYPES	Flat	3			9	5	5	22
		semi detatch	2	1	2	1			6
		Villa			3	3			6
		Other			3			3	6
	Total		5	1	8	13	5	8	40
more than 5 rooms	TYPES	Flat	6				2	1	9
		Villa					11	24	35
		Other					8		8
	Total		6				21	25	52

Table 7.15: House type, size of family and number of rooms (cross tabulation)

Satisfaction with interior spatial arrangement (Q11)

Question:

- Are you satisfied with your house as an internal space?

For example (number of rooms, location of the rooms, distribution of rooms, services ... etc)

To answer the question there are three options as follows:

( ) I am satisfied with it.
( ) I am satisfied with some spaces in my houses as internal spaces.
( ) I am not satisfied.

Outcome:

It was deduced from the survey Table 7.16 that 32.5% are completely satisfied with their houses as internal spaces, 38.5% are dissatisfied with some spaces and 29 are not satisfied with their internal spaces. It is clear also that most of the residents who are not satisfied with their houses or are satisfied only with some spaces, occupy the flat type of dwelling. 38 families from the total 116 who reside in flats are satisfied with some spaces and 45 families of the 116 who are resident in flats are not satisfied with their houses. On the other hand many of the residents who are satisfied with their house occupy the villa type; of these 30 families from the total 51 are completely satisfied with their houses. (Table 7.17)

Most of this latter group are satisfied with the internal space of their houses even though there are some things which they are not completely satisfied with e.g. there is no clear partition between the family and guest zones. This partition must have some separation doors between the two zones, which must be closed during visits and, if this is not possible, it will cause discomfort to the family members when entering or exiting (for more information see chapters 5 and 6). As mentioned in chapter 5, section 5.4.2, some people demolished the wall between the balcony and the room in order to extend the area of the room. For example, it was shown also in chapter 5, Figure 5.24, that the householder demolished the wall between the balcony and the son's bedroom to provide two bedrooms. Therefore some of those residents intend to increase the number of rooms to provide more comfort for the children so that, for example, for every two boys or two girls there is a room.

USER SATISFIED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Satisfied	65	32.5	32.5	32.5
	Satisfied some space	77	38.5	38.5	71.0
	Not satisfied	58	29.0	29.0	100.0
	Total	200	100.0	100.0	

Table 7.16: Satisfied with the house as internal spaces (percentage)

SATISFIED Crosstabulation

Count

		SATISFIED			Total
		Fully satisfied	Satisfied some space	Not satisfied	
TYPES	Flat	33	38	45	116
	semi detatch	2	17		19
	Villa	30	15	6	51
	Other		7	7	14
Total		65	77	58	200

Table 7.17: Satisfied with the type of the house (cross tabulation)

As already mentioned, there is correlation between the type of house and owner/occupier satisfaction. Also there is a correlation between the type of house, the number of rooms and the degree of satisfaction. From Table 8.18 it can be seen that 25 families from the total of 85 families who occupy flats of 3-4 rooms are satisfied with some spaces in their houses and 45 families also who occupy flats of 3-4 rooms are not satisfied with their houses as interior design. (Table 7.18) However 29 families of the 35 who occupy villa types of more than 5 rooms are satisfied with their houses. The reason could be that most of these residents live in villas, which have a sufficient number of rooms and suitable areas as well as a clear separation between the guest's zone and that of the family.

TYPES * SATISFACTION * NO.ROOM Crosstabulation

Count

NO.ROOM			Satisfaction			Total
			Satisfied	Satisfied Some spaces	Not Satisfied	
3-4 rooms	TYPES	Flat	15	25	45	85
		semi detatch	2	11		13
		Villa	1	9		10
	Total		18	45	45	108
5 rooms	TYPES	Flat	12	10		22
		semi detatch		6		6
		Villa		3	3	6
		Other		3	3	6
	Total		12	22	6	40
more than 5 rooms	TYPES	Flat	6	3		9
		Villa	29	3	3	35
		Other		4	4	8
	Total		35	10	7	52

Table 7.18: Satisfaction level for type of the house and number of the rooms (correlation)

A further question on this issue was aimed at obtaining more detailed information (Q12).

Question:

- If you are not satisfied with your house as interior design, what are the reasons?

Outcome:

The reasons for the dissatisfaction of this group of people are:

Some of them wanted to reduce the costs of the building so the architect's office gave them a pre-prepared design, which was meant for another person. It did not cost the office much to adapt this so that the design could suit the alternative site. However, it is not always the case that this old design will suit another family e.g. a small family, which may have different requirements and needs. The question arises: Is there a standard for house type on the market in Makkah or Saudi Arabia? The researcher asked M. Al Saadi who built his house (apartment) in Al Hamra area in Makkah, in late 2005: "When you decided to design your building, what did the municipal regulations require?" The answer was the most important requirement was a front set back at least one fifth of a street width from the building boundary and a minimum two meters around the other three sides. The building area must not exceed 60% of the land coverage as well as having a light well at least $6m^2$. The researcher also asked him if there were any municipal regulations regarding internal

space; the answer was "No". The researcher also asked Arch. Kh. Ba Jandooh, in Makkah municipal offices "Are there municipal regulations for internal spaces?" the answer again was "No". This failure resulted from a lack of understanding of the architectural aspects by owners as well as a lack of official design standards for housing. For example; the mass housing in market in Britain is provided for by speculative builders who put a range of standard house types on the market in housing estates. People then select from them. Very few people in the British community can afford to have houses bespoke, i.e. made to measure privately, mainly due to the cost of land. This obviously could be a part of the problem in Saudi Arabia as well.

- Other customers concentrated on a fashionable exterior (geometric form) of the house as this represented grandness and a show of wealth. This resulted in the useless spaces such as superfluous balconies and weirdly shaped rooms.
- Another common problem arose when a block of flats was built essentially as a commercial project for rent: in such a case the architect often will design the project with as many flats as possible without sufficient consideration to the number of rooms, the size and natural light and ventilation. A typical example of this is where the flats contain only four rooms which do not serve for most Makkah families yet are too large for single occupation. Such flats will only serve certain groups of people, mainly the newly married. The four-roomed flats of this kind are usually used so that one room (*Majlis*) remains for the guests and another serves as a dining room for guests. The family then has a master bedroom and a living room in the other two rooms and consequently there are no rooms left for children or multi-purpose usage, which does not suit families with children.

Family requirements (Q13)

Question:

- Does the house you live in supply all your needs?

(i.e. does the internal design of your house provide you with the required number of rooms to receive men and women as well as enough bedrooms and service areas, and does it provide the necessary privacy?)

Outcome:

58% feel that their houses fully provide for their needs, i.e. they are suitable for the

size and the requirements of the family, and 42% feel that their houses do not provide for their needs and requirements (Table 7.19). However it is clear from Table 7.20 that there are correlations between the type of house and family requirements; 70 families from the total 116 who occupy flats said that their houses do not provide all their needs and requirements. In contrast 45 families from the 51 who occupy villas feel that their houses provide for their needs.

FAMILY NEEDS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	116	58.0	58.0	58.0
	no	84	42.0	42.0	100.0
	Total	200	100.0	100.0	

Table 7.19: Family requirements (percentage)

TYPES * NEEDS Crosstabulation

Count

		NEEDS		Total
		yes	no	
TYPES	Flat	46	70	116
	semi detatch	16	3	19
	Villa	45	6	51
	Other	9	5	14
Total		116	84	200

Table 7.20: Type of house and family requirements (correlation)

To find out the requirements and needs of the residents in Makkah and to gain more insight for research an additional question (Q14) was added in the cases where the answer was "No".

Question:

- **If the answer is "No" what are the things you need that are not available in your house?**

Outcome:

It is clear from the replies that the most important needs are the number of the rooms, which are suitable for the number of family members. 23 families of 5 persons from a total of 36 are occupying 3-4 rooms, 24 families of 6 persons that from a total of 50 are occupying 3-4 rooms and 28 out of 61 families of more than 6 persons are occupying 3-4 rooms only. (Table 7.21)

SIZE OF FAMILY * NO.ROOM Crosstabulation

Count

Size of Family		NO.ROOM			Total
		3-4 rooms	5 rooms	more than 5 rooms	
NO.FAMIL	2 person	11	5	6	22
	3 person	11	1		12
	4 person	11	8		19
	5 person	23	13		36
	6 person	24	5	21	50
	more than 6	28	8	25	61
Total		108	40	52	200

Table 7.21: Size of family and numbers of room (correlation)

Design flaws (Q15)

The question about the problems which were created due to the design of the internal space (e.g. number of entrance, number of rooms, small spaces, width of spaces... etc) was as follows:

Question:

- What are the problems in your house in the internal spaces?

Outcome:

42.5% of the respondents are preoccupied with the presence of one entry only, while they desire the presence of two entries: one for the family members and another for the guests. 22.5% said that their houses are too small. 27% find the number of rooms is not enough for their family. Therefore they use the guest rooms for children to sleep in or as study rooms (see chapter 6). 11% reported that the rooms are very small, and do not satisfy their daily life requirements. 44% said that their windows are exposed to the view of the neighbours. 21% do not feel that there is enough privacy in their houses. 34.5% do not have a terrace and they desire the presence of a space open to the sky, such as a terrace or courtyard. 19% reported that their houses suffer a deficiency of natural lighting and 28.5% lacked ventilation because of the poor use of the windows (See Appendix D for Tables and graphs).

Alterations (Q16 and 17)

The questions were about the alterations, which the proprietor had made to the interior of the house.

Question:

- Did you make any changes to the internal design of your house after you moved in?

(Such as partition of some rooms or combination of some rooms with each other ...etc)

- If the answer is (Yes) what were those changes and why?

Outcome:

41% made some changes in the internal spaces after they moved in. Some of these changes were essential and were major changes of the internal space e.g. dividing a large room into two rooms to be used by boys and girls, possibly because of the lack of rooms. There were also less major changes such as adding a balcony area to the neighbouring room and demolishing the separating wall and building another wall on the external part of the balcony do this. Another example of the other changes is the closing one of the internal doors and decorating it to make it less apparent. This is done in order to provide more privacy especially when receiving guests (see chapter 6). As for most of the other changes, they were intended for decoration e.g. lime on ceilings, changes of colours or substituting the floor with marble or ceramics.

Essential ingredients of a house (Q18)

The question was asking if the family has an opportunity to build a new house, what will be the important things that they will need to provide in this new house.

Question:

- If you have the chance to build a house, what are the things you need to be in your house?

Outcome:

88.5% were looking for the separation of the family entry from the guest entrance. 79.5% reported that the number of rooms must fit the family members. The rest said they wanted extra rooms to be used as multi-purpose rooms for children and relatives when they come for a visit and stay for several days. 72% agreed with taking into consideration the number of the family members in the future. 79% needed a design to cater for the privacy of the family and guests. 75.5% would investigate a new design to utilize the natural lighting and ventilation and the rest consider the natural lighting in the hot regions and especially at midday when it

affects the air-conditioning system and will leak hot air to the internal spaces. 73% were looking for an open space (terrace) and 82.5% needed some storage in their houses. Other issues, which were highlighted by the survey, are:

- Provision of a courtyard to make the house liveable.
- Some of them will need a room as an office for personal work and reading.
- Some of the respondents want an open-plan design e.g. making an opening between the guest room and guest dining room or the kitchen and living room to show off wealth and grandness.

7.2.2 The External Spaces

Balconies (Q19)

The question was about the balconies and whether they satisfy the purpose they are built for from the social perspective.

Question:

- If your house has balconies, do you agree that they do not function well for social activities and they should not be built?

Outcome:

79% do not accept the balconies and said that they do not suit the customs and manners of Saudi society, essentially for the following reasons:

- They do not suit the customs and traditions of Saudi society in Makkah.
- The hot weather does not permit their use for most of the day.

The rest think they are an external decorative element for the building even though they are useless.

Terrace (roof space) (Q20, 21 and 22)

Question:

- Do you and your family use the terrace?

- If you use the terrace, what are the reasons?

- If you do not use the terrace, what are the reasons?

Outcome:

32% of the residents are using the terrace for the following purposes:

- Social celebrations.
- Drying clothes.
- Children playing.

68% do not use the terrace for the following reasons:

- Neighbours overlook the terrace.
- The terrace does not belong to the family.

It is clear from the results that 32% of residents are still using the terrace area provided. The largest percentage of them, which is 68% do not have this space or they cannot use it because their terrace is overlooked by neighbours.

Use of windows (Q23 and 24)

Question:

- Do you and your family make use of your windows?

- If you make use of some of the windows or if you do not use the windows, what are the reasons?

Outcome:

The results from Q 23 and Q 24 were as follows:

13.5% can use all their windows, 66.5% can use some of their windows and 20% they cannot use any of their windows. The main reason for not using some or all of their windows is being overlooked by neighbours. (Table 7.22)

USE OF WINDOWS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	use all	27	13.5	13.5	13.5
	use some window	133	66.5	66.5	80.0
	not use	40	20.0	20.0	100.0
	Total	200	100.0	100.0	

Table 7.22: Use of windows (percentage)

7.3 Recapitulation

As mentioned earlier in chapter 2, section 2.2.2.7, the main aim of the questionnaire was to establish the extent to which the modern houses satisfy the needs of the different families in the city of Makkah. This is the critical question that has to be answered in this final section in which the researcher tries to summaries the questionnaire findings.

The researcher asked some general questions, such as Q11 and Q13 to obtain a statistical result from the residents as to whether the home provides for all the needs of the family or not. Table 7.16 shows 38.5% are dissatisfied with some spaces and 29 % are not satisfied with their internal spaces. In addition table 7.19 shows 58% feel that their houses fully provide for their needs and 42% feel that their houses do not provide for their needs. According to Q13 the residents who feel that their houses fully provide for their needs are a higher percentage than the resident who feel that their houses do not provide for their needs. So, it may be difficult to obtain an answer to a question directly. The researcher therefore added other questions to obtain satisfactory outcome. For example, comparing Q13 (family requirements) and Q1 (type of house). Table 7.20 shows that 70 families from the total of 116 who occupy flats said that their houses do not provide all their needs and requirements. In addition 45 families from the 51 who occupy villas feel that their houses provide for their needs. From the comparison of answers to Q13 and Q1 it is found that a large percentage (58%) of the residents feels that their houses provide for their needs. So Q13 could not give a clear answer but the comparison with Q1 shows that the70 families from the total of 116 who occupy flats said that their houses do not provide all their needs and requirements. However, since the study focused on the flat type rather than the villa the previous comparison have given a significant result.

The researcher asked some other questions, such as Q3 (number of rooms) and Q10 (size of family) to get acquainted with the reasons why 70 families from the total 116 who occupy flats said that their houses do not provide all their needs and requirements.

A comparison of the previous questions (Q3 and Q10) with Q1 (type of house) turned on the flats that most flats containing 3-4 rooms, which is 85 flats from the total 116. In addition it should be pointed out that, 13 families of five persons, 17 families of 6 persons and 25 families of more than 6 persons are resident in 3-4 room flats (Table 7.15). So, if these flats contain rooms such as a guest room, living room and master bedroom that means the fourth room will be used as the children's bedroom. The question here is, is one additional bedroom enough for a family of 5, 6 or more persons?

Christopher Alexander stressed that it is important to, "Give each member of the family a room of his own, especially adults". Parker Morris also stated that the "minimum bedroom provision for a family of four is two double rooms". However, it became clear from Q1, Q3, Q10 and Q13 that due to the limitation of the flat rooms there are no independent bedroom for children. So the children perhaps use the guest zone or living room to sleep at night. (see chapter 8, section 8.2.6 and chapter 9, section 9.3.1.3). From of the previous description it could be concluded that due to lack of variety in the arrangement of apartments these could not satisfy the needs of the different families in the city of Makkah.

To find out the requirements and needs of the residents in Makkah and to gain more insight into the problem an additional question (Q14) was added in the cases where the answer was "No". It is clear from the replies that the most important need is the number of the rooms, which are appropriate for the number of family members. However, to ensure that there is indeed a lack of the number of rooms commensurate with the size of the family, the researcher compared Q3 (number of rooms) and Q10 (size of family). Table 7.21 shows that 23 families of 5 persons from a total of 36 are occupying 3-4 rooms, 24 families of 6 persons that from a total of 50 are occupying 3-4 rooms and 28 out of 61 families of more than 6 persons are occupying 3-4 rooms only.

The researcher asked Q15 to identify problems which were created due to the design of the internal space. It became clear from Q15 that problems suffered by residents as follows:

- Number of rooms: 27% find the number of rooms is not enough for their family's need.
- Windows: 44% said that their windows are exposed to view of the neighbors; 19% reported that their house suffers a deficiency of natural light and 28.5% lacked ventilation because of poor use of windows. It could be seen that the artificial lighting and ventilation are important elements determining the character the quality of the existing built environment for inhabitants. It could also be flaws of the designs in the use of natural lighting and ventilation effective that are causing the problems.
- Terrace: 24.5% do not have a terrace.
- Privacy: 21% do not feel that is enough privacy in their house.

After identifying the above mention problems the researcher tried to gain more specific information and the following is a summary of there findings:

Number of rooms: It is clear from Q1, Q3, Q10 and Q13 that, due to the limitation of the rooms in flats there are no independent bedroom for children. In addition some of the rooms e.g. living room and guest zone are used as multi-purpose room. (table 7.15)

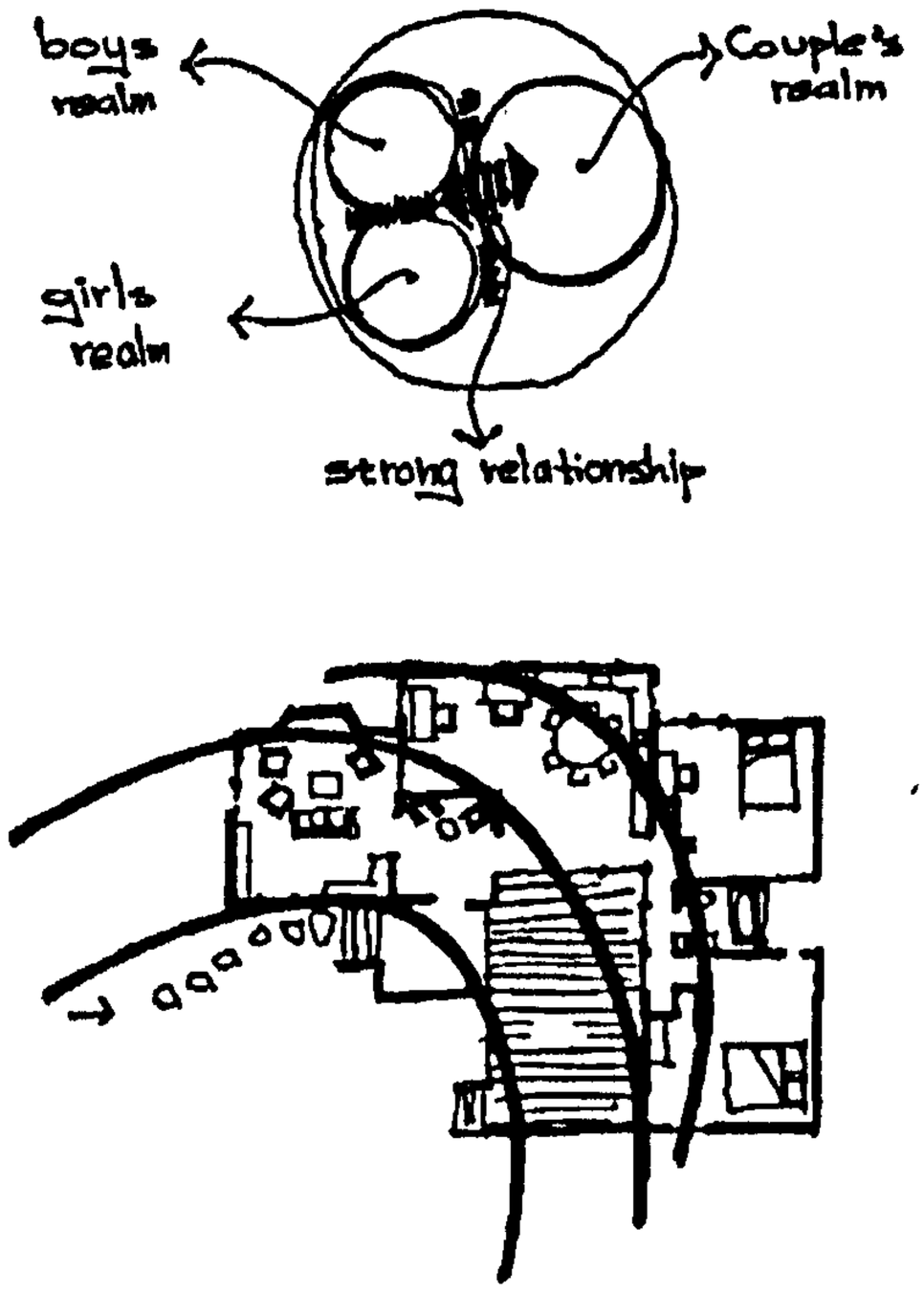
Windows: Table 7.22 shows that 66.5% of inhabitants can use some of their windows and 20% say they cannot use any of their windows. The main reason for not being able some or all of their windows is that of being overlooked by neighbors. While artificial lighting is necessary for modern life, natural lighting is necessary too. It is apparent from the examples that the design of modern flats in Makkah ignores the full use of natural light during the daytime. There are some other causes as well, for example, the positioning of air conditioning in the windows which leads to the closing off of windows and the closing of the curtains for reasons of privacy and decoration all the time.

Terrace: The largest percentage of residents, namely, 68% does not have this space or they cannot use it because their terrace is overlooked by neighbors.

Privacy: The main focus of the questionnaire was to investigate the family privacy situation and the satisfaction of the residents within their houses in this respect.

Below are the critical issues that emerged which could from the research related to this important aspect of Saudi culture.

- Number of entrances: Table 7.1 shows that most of flats contain only one entrance. On the other hand most of the semi-detached and villa type residences contain two or more entrances. It could be concluded that two entrances are ideal in new designs as perhaps the most effective way of providing the necessary family privacy. Two entrances would serve a social function by assigning one entrance for males and the other for family and their female guests.
- Windows: The use of windows (Q23) and the reasons for not using some or all windows (Q24). These questions investigate the situation of windows and their role in protecting family privacy. It was found that main reason for not using some or all of their windows is being overlooked by neighbors. The residents perhaps feel that their privacy is not protected with the existing type of window. Therefore a lot of them use curtains to protect it. (see chapter 5, section 5.4.2) which could be because windows are located in positions facing each other. This dose not provides the residents privacy as a result of the setback requirements and the type of windows using clear glass. (see chapter 5,section 5.3.1.2)
- Terrace: The use of the terrace (Q20), the reasons for using the terrace (Q21) and the reasons for not using it (Q22). It was clear from our investigation of these questions that the largest percentage of residents, 68%, does not have this space or they cannot use it because their terrace is overlooked by neighbors. So, future design should consider the protection of terrace from outside factors. It could be that the height of the terrace wall way plays a major role in its future use. (see chapter 4, section 4.2.9)
- Balconies: Q19 investigate function of the balconies. 79% of people questioned do not accept the balconies and said that they do not suit the customs and manners of Saudi society. This is possibly related to the privacy issue and the fact that balconies are a western style feature which cannot be used by the family, especially the females.



CHAPTER 8

A PATTERN LANGUAGE FOR A MODERN SAUDI HOME

8.1 Introduction

8.2 A Pattern Language

8.2.1 Intimacy Gradient (Pattern No. 127)
8.2.2 Common areas at the heart (Pattern No. 129)
8.2.3 Cooking layout (Pattern No. 184)
8.2.4 Couple's realm (Pattern No. 136)
8.2.5 Dressing room (Pattern No. 189)
8.2.6 A room of one's own (Pattern No. 141)
8.2.7 Bulk storage (Pattern No. 145)
8.2.8 Light on two sides of every room (Pattern No. 159)
8.2.9 Window place (Pattern No. 180)
8.2.10 Corner doors (Pattern No. 196)

8.3 Reflection

8.1 Introduction

The purpose of this chapter is to establish the criteria for the design of the interior environment for Makkah families in the future. In other words, a theoretical framework, which has the family's basic, needs as foundation, hence our interest in the work of Christopher Alexander. Following will try exploring the applicability of Alexander's "Pattern Language" to modern Saudi domestic design in more detail.

8.2 A Pattern Language

8.2.1 Intimacy Gradient (Pattern No. 127)

Every building has a relationship between the public area and private areas, which is most important. Alexander has described the intimacy gradient in buildings as follows:

> "Unless the spaces in a building are arranged in a sequence which corresponds to their degrees of private-ness, the visits made by strangers, friends, guests, clients, family, will always be a little awkward"[1]

As previously explained (chapter 4), Alexander suggested the following procedure for this in practice:

> "Lay out the spaces of a building so that they create a sequence which begins with the entrance and the most public parts of the building, then leads into slightly more private areas, and finally to the most private domains"[2] (Figures 8.1 and 8.2)

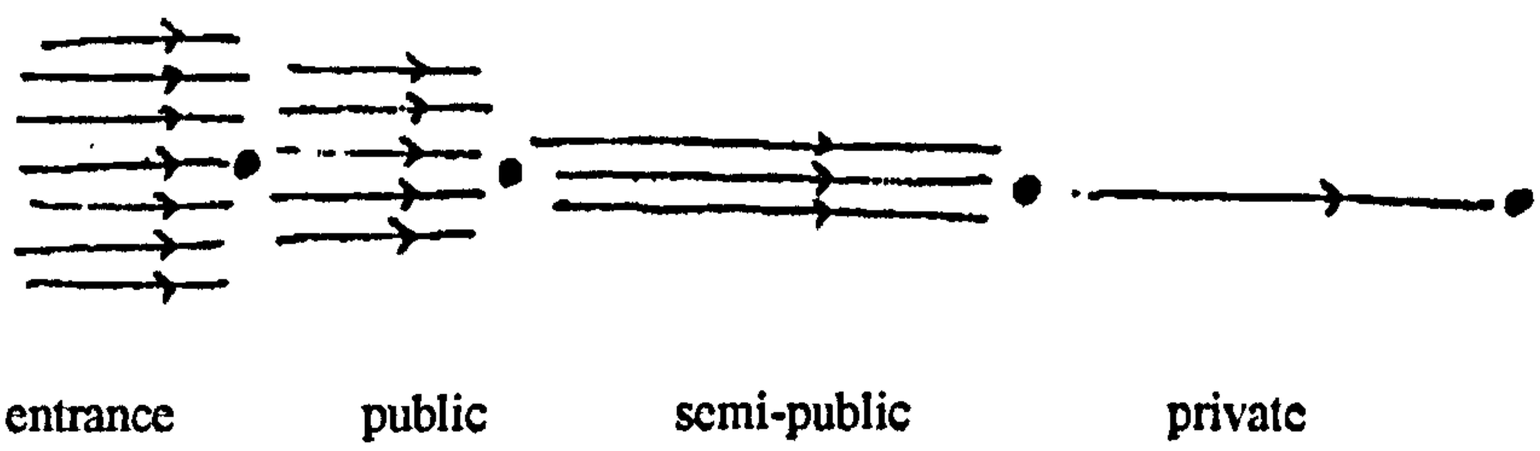


Figure 8.1: Laying out the spaces of the building
Source: Alexander, C. 1977, p.613

[1] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 610
[2] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 613

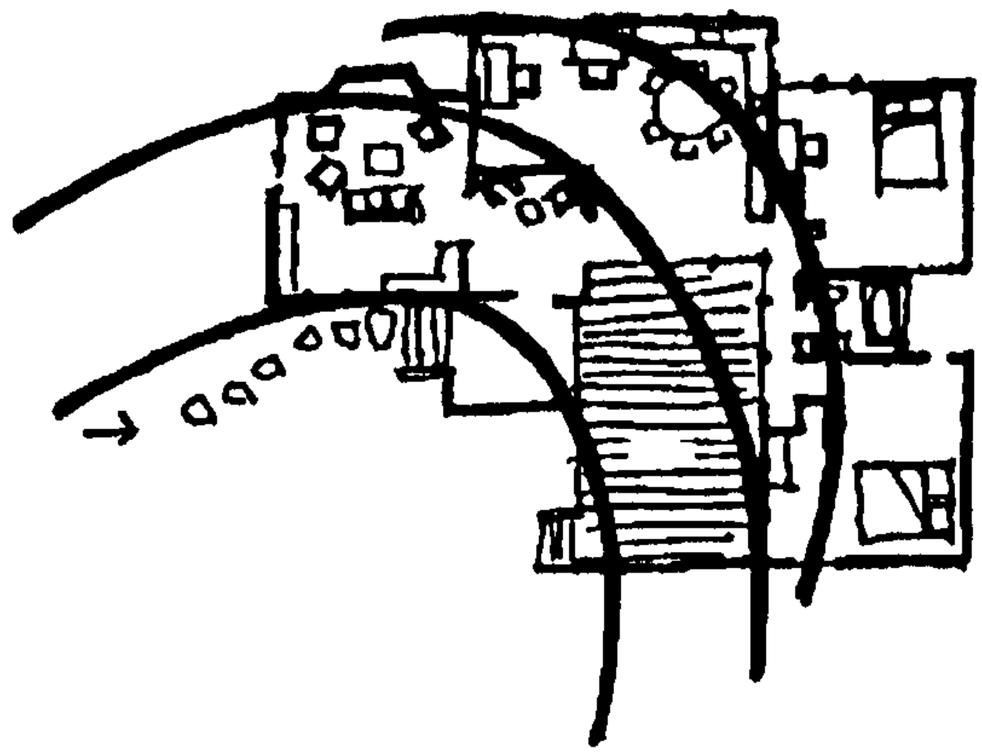


Figure 8.2: Intimacy gradient in a house
Source: Alexander, C. 1977, p.612

The Saudi people's concept of privacy at all levels is rooted in their faith. Islam is the religion of all the people of Saudi Arabia and the Kingdom is founded on the Islamic faith. So there is a direct, unique, relationship between Islam and the Saudi built environment, with Makkah as its natural focus.[3] In addition Islam is the way of life for all Saudis and most Arab people. It is a practical religion, which is not only practised in Mosques, but everywhere at any time. The built environment provided the setting in which a Muslim both practices Islam and obeys the orders of Allah (God).[4]

It is important to understand the direct teaching requirements of Islam regarding the built environment. It should be noted that Islam is not a narrow religion, which requires the Muslim to cut himself off from others. It is a religion, which lets the Muslim enjoy his life without harming himself or others.

It has been mentioned before that the vertical extension in building was the most important feature of Makkah traditional houses, which led to the establishment of a vertical order in the use of floor space. The lowest floor was used for the men of the family and their guests, with provision for female guests on the first floor. The upper floors were for private use only, with bedrooms, living rooms and other family gathering spaces. The top floor was used for sleeping as well, and so was the

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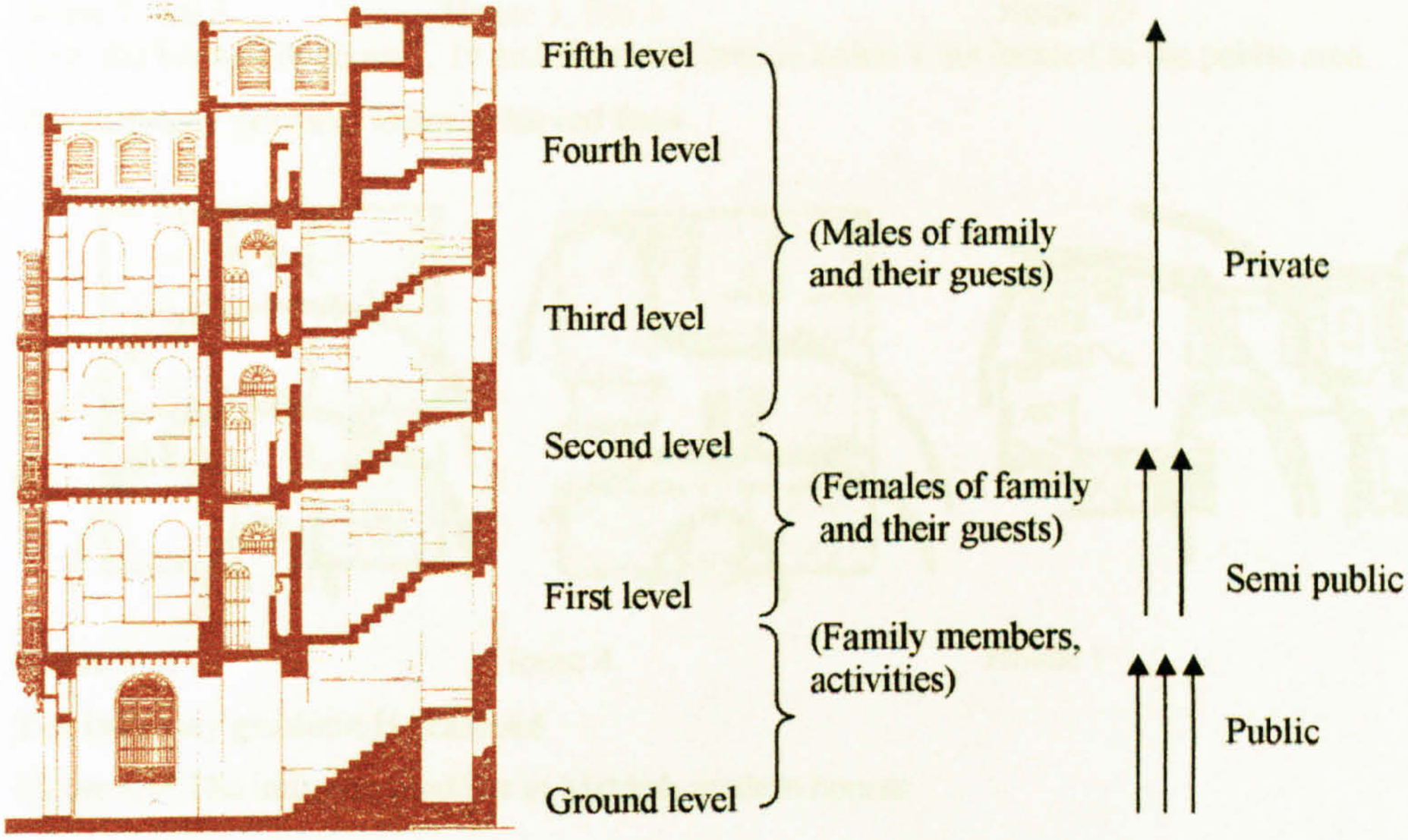
[3] Human, M. (1980) *Thought about Islamic Architecture and basis of Holy Quran and Sunna.* Riyadh: Al- Sharief Printing. p.29

[4] Hariri, M. (1989) *Principles of House design in Islamic Architecture*, Jeddah: The Saudi Company for publishing, p. 20

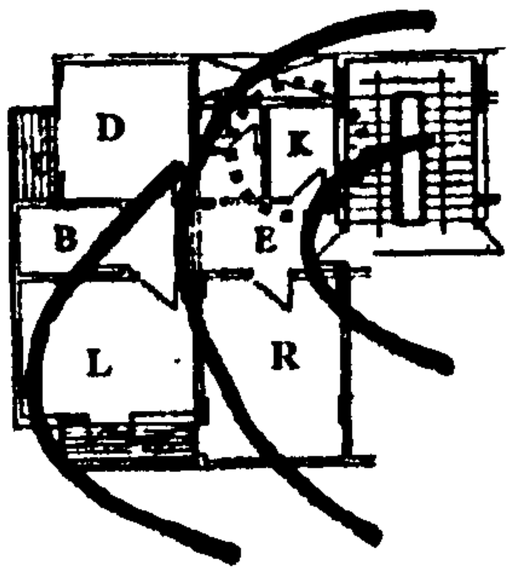
roof space, especially on hot summer nights. Therefore Alexander's theory, that is a sequence of the spaces which begins with the entrance and the most public parts of the building, then leads into the slightly more private areas and finally to the most private domains, was clearly manifested in Makkah traditional houses (Figure 8.3). In addition the vertical extension in building, the two zones that are the male guests' zone and female family members and their guests, were clearly expressed.



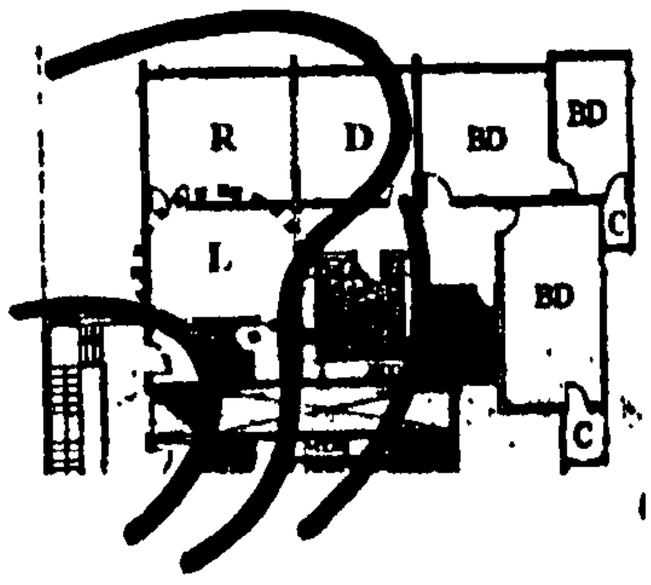
Section A.A, Omar Al Sorahi house

Figure 8.3: Intimacy gradient in the Makkah traditional House

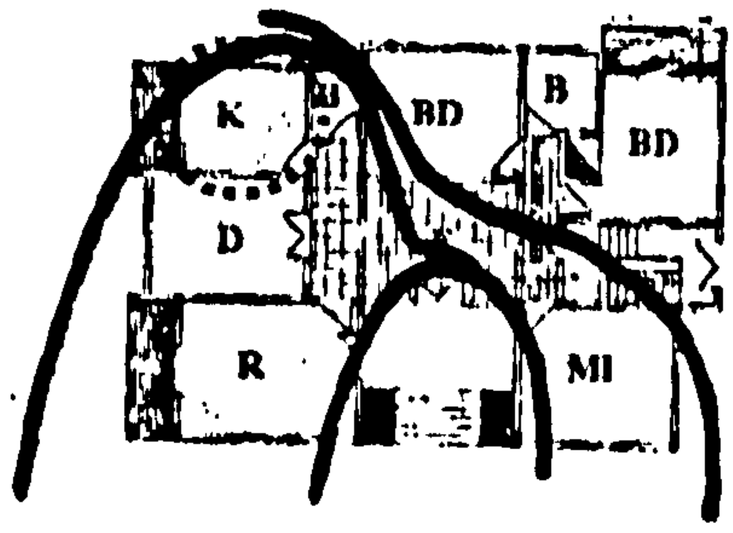
In the Makkah contemporary house, by contrast, the space is divided into two horizontal zones. One is designated for male guests and this is close to the main entrance and the other zone is designated for family members as well as receiving female guests. The sequence of the spaces which begins with the entrance and the most public parts of the building, then leads into the slightly more private areas, and finally to the most private domains, and which was achieved in Makkah traditional houses has became weak or is not at all clear in many of Makkah modern flats. (Figure 8.4) (For more examples see Appendix B).



House 7, flat 1



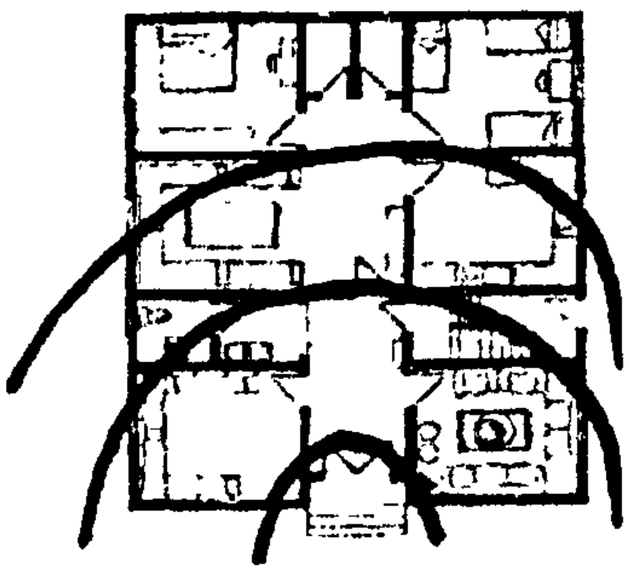
House 1, flat 1



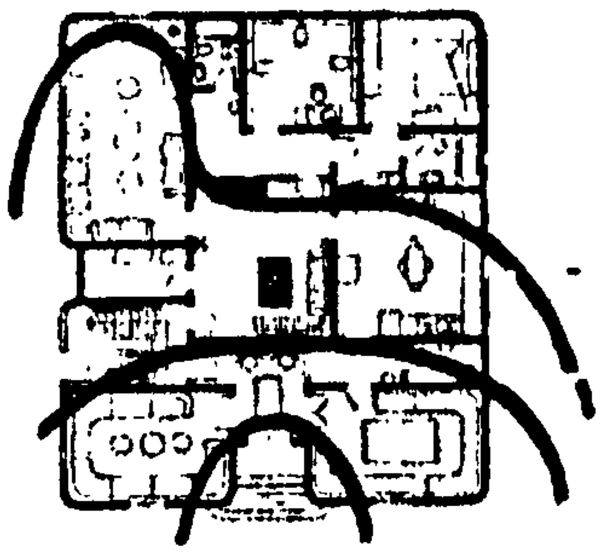
House 19

Note, the kitchen in house 7, 19 and the living area in house 1 are located in the public area.

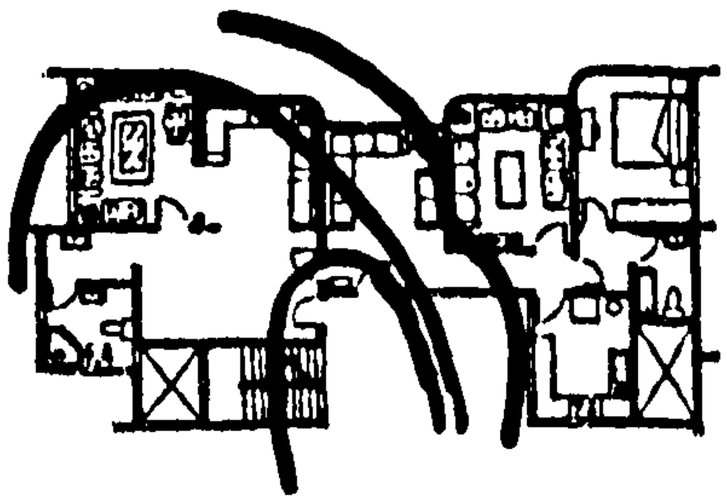
The intimacy gradient is not achieved flats



House 3



House 4

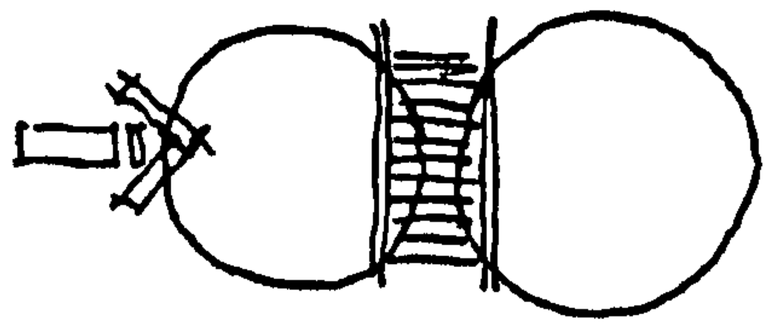


House 1

The intimacy gradient is achieved

Figure 8.4: The intimacy gradient in Makkah modern houses

In chapters 5 and 6 it is shown how, in most of Makkah contemporary flats, there is usually a door that separates the guest zone and the family zone to maintain the occupants' privacy. There is strict control over this door when the male guests go through the main entrance hall to the Majlis as well as when the male guests go through the entrance hall from the *Majlis* to the service area (toilet and sink). Some of these doors are located so that the male guests can see into the heart of the family zone, such as living area or the kitchen, when they go through the entrance hall. Therefore, according to Alexander's theory, the sequence of spaces is not clear. In addition the separation of unrelated men and women is a cultural requirement for Muslims. So the partition which is between the guest zone and family zone also must be clear to maintain the privacy of the family when they receive male guests in the guest zone or opposite. (Figure 8.5)



entrance guest zone family zone

Figure 8.5: Area between guest zone and family zone

8.2.2 Common Areas at the Heart (Pattern No. 129)

Alexander stated the following:

> "No social group - whether a family, a work group, or a school group - can survive without constant informal contact among its members"[5]

Alexander pointed out, as well, that the form and location of the common areas is critical. In addition Alexander described the family room in a Peruvian worker's house. For a low-income Peruvian family, the family room is the heart of family life. The family eat, watch television in this room, and everyone who comes to the house comes into this room to say hello, shake hands and exchange news. In addition Alexander generalizes from this example:

- If a common area is located at the end of corridor and people have to make a special deliberate effort to go there, they are not likely to use it informally and spontaneously. (Figure 8.6)

Figure 8.6: At one end
Source: Alexander, C. 1977, p.619

- If the circulation path cuts deeply through the common area, the space will be too exposed, it will not be comfortable to linger there and settle down. (Figure 8.7)

[5] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 618

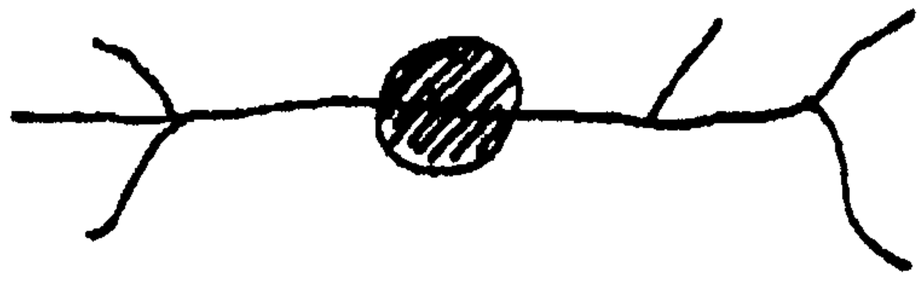


Figure 8.7: Through the middle
Source: Alexander, C. 1977, p.619

- The only balanced situation is the one where a common path, which people use every day, runs tangentally to the common areas and is open to them in passing. Then people will be constantly passing the space; but because the path is to one side, they are not forced to stop. If they want to, they can keep going. If they want to, they can stop for a moment, and see what's happening; if they want to, they can come right in and settle down. (Figure 8.8)

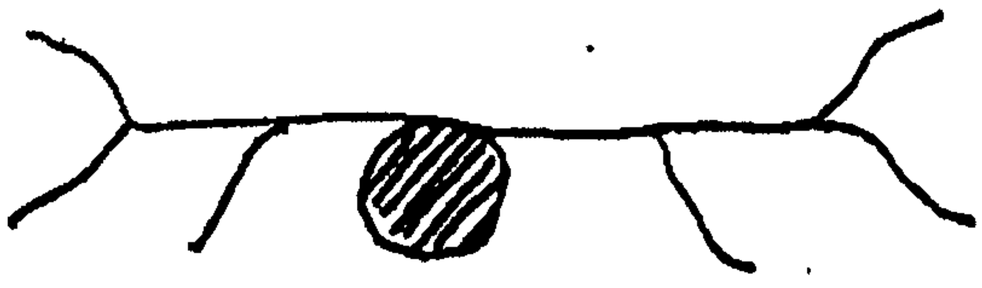


Figure 8.8: Tangent
Source: Alexander, C. 1977, p.619

Therefore Alexander suggested:

> "Create a single common area for every social group. Locate it at the centre of gravity of all the spaces the group occupies, and in such a way that the paths which go in and out of the building lie tangent it."[6] (Figure 8.9)

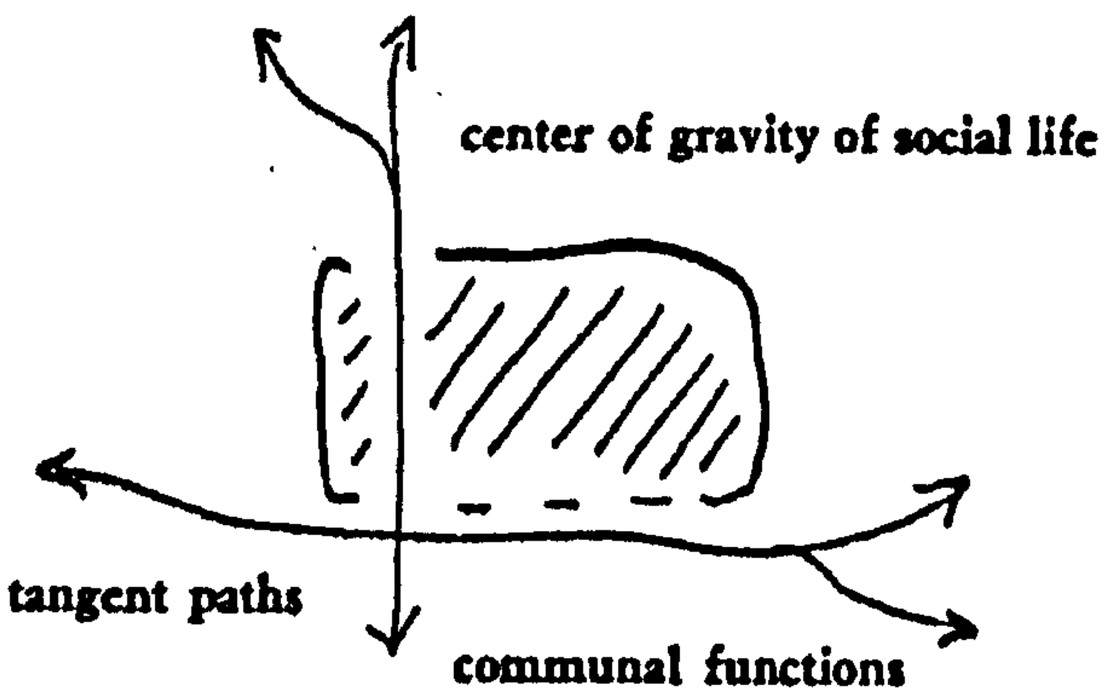


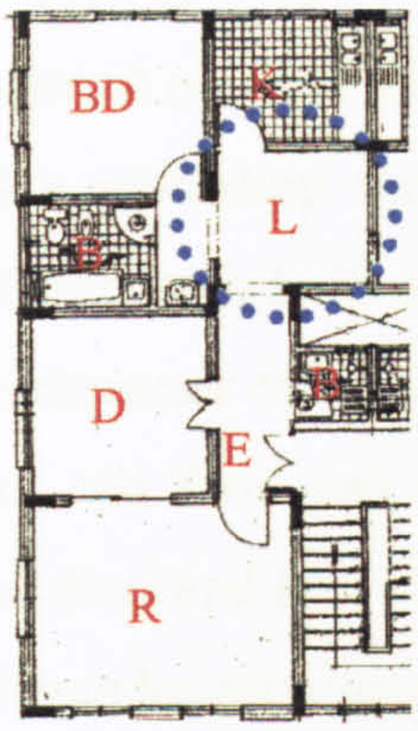
Figure 8.9: Location of the common area
Source: Alexander, C. 1977, p.621

[6] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 621

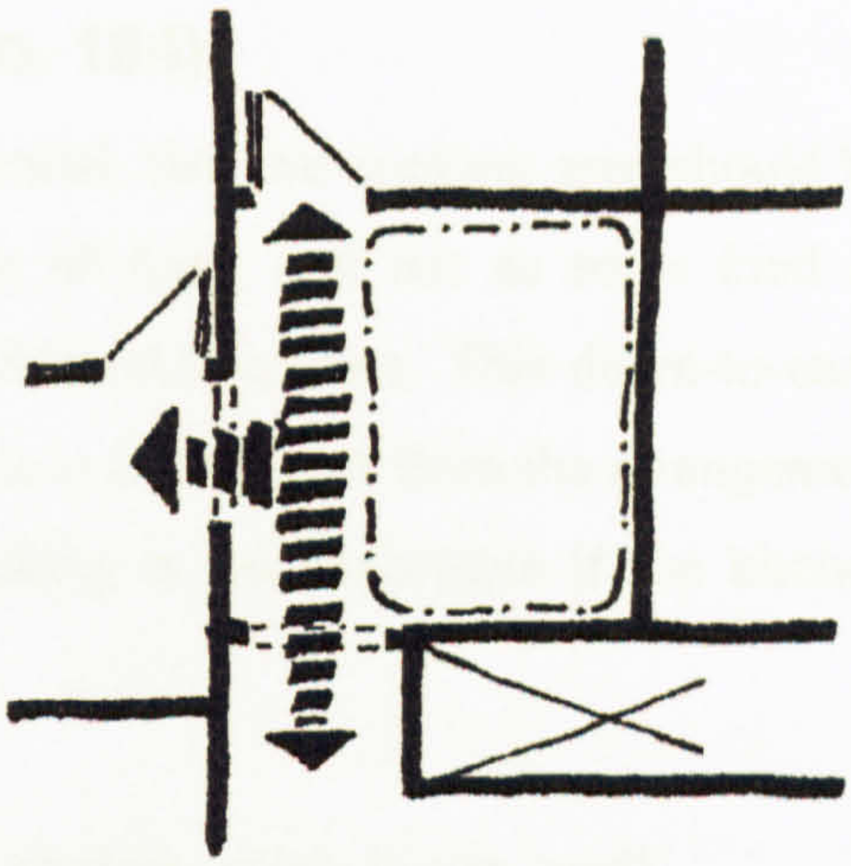
In Makkah traditional houses the *Muakhkhar* was the living room where the family stayed most of their time as well as being used as a sleeping room in the winter nights, so it was used as multi-purpose room. From the case studies of Makkah traditional houses it was found that the living room "*Muakhkhar*" was usually located on the main façade and characterized by having a large opening covered with *Rowshan* to provide cross ventilation and natural lighting. Female family members were able enjoy the outside without being seen. Therefore the living room "*Muakhkhar*" provided a good relationship between internal and external space. In addition it was near to other spaces such as *Majlis*, *Markab*, *bayt alma*, and the staircase.

The living area in the villas is usually located in the family zone as well as near to other spaces such as the kitchen and toilet or bathrooms. However, in the flats the residents choose the nearest room to the kitchen in the family zone and use it as a living room. Therefore the living rooms in the flats depend on the kitchen area.

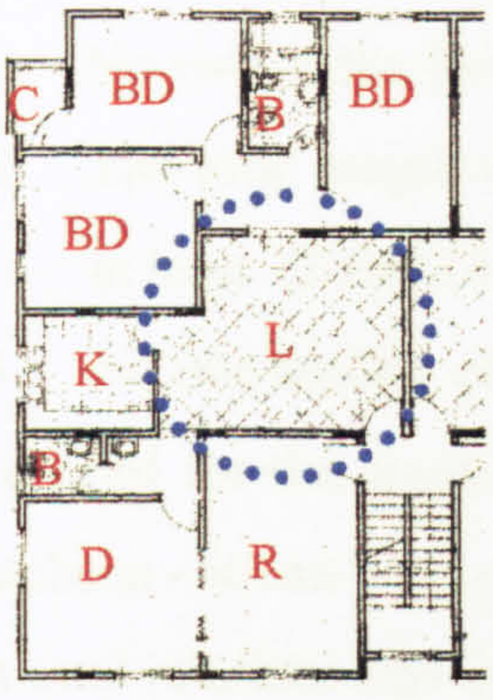
Therefore in most living areas, especially in the flats, the designer needs to understand and practise Alexander's theory of common areas at the heart and other theories to provide good sunlight as well as the placing of doors to provide a comfortable area for family activities (Figure 8.10).



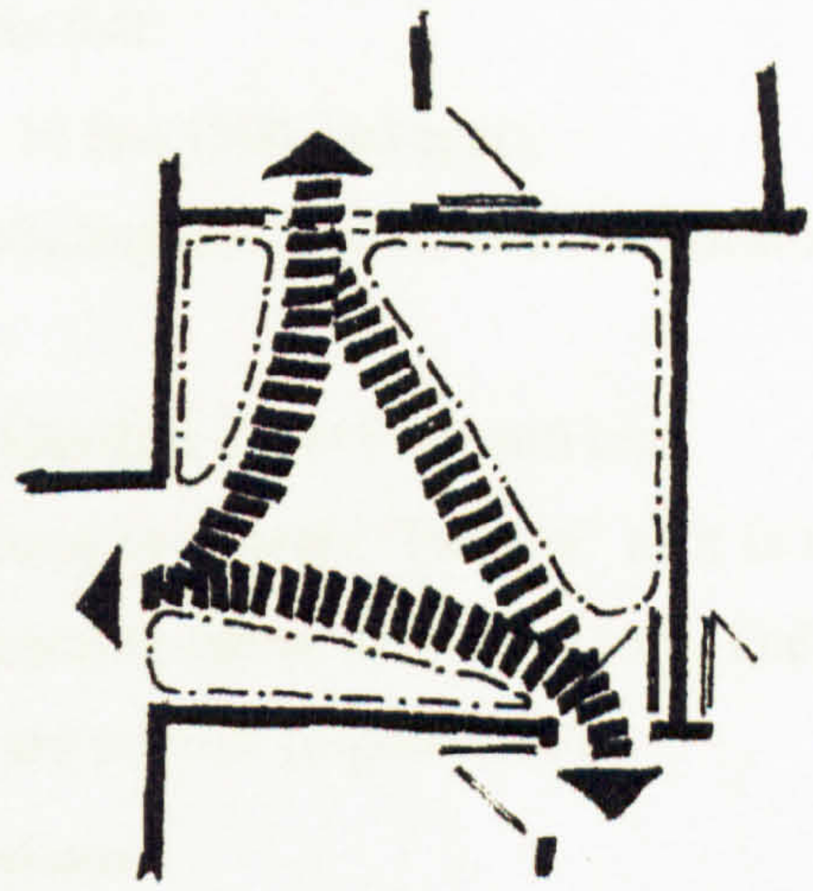
House 22, flat No. 1, (1980)



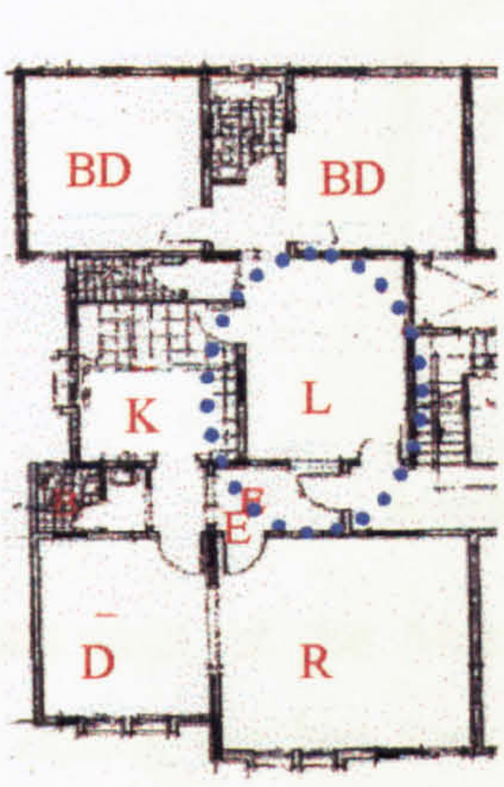
Good but too small



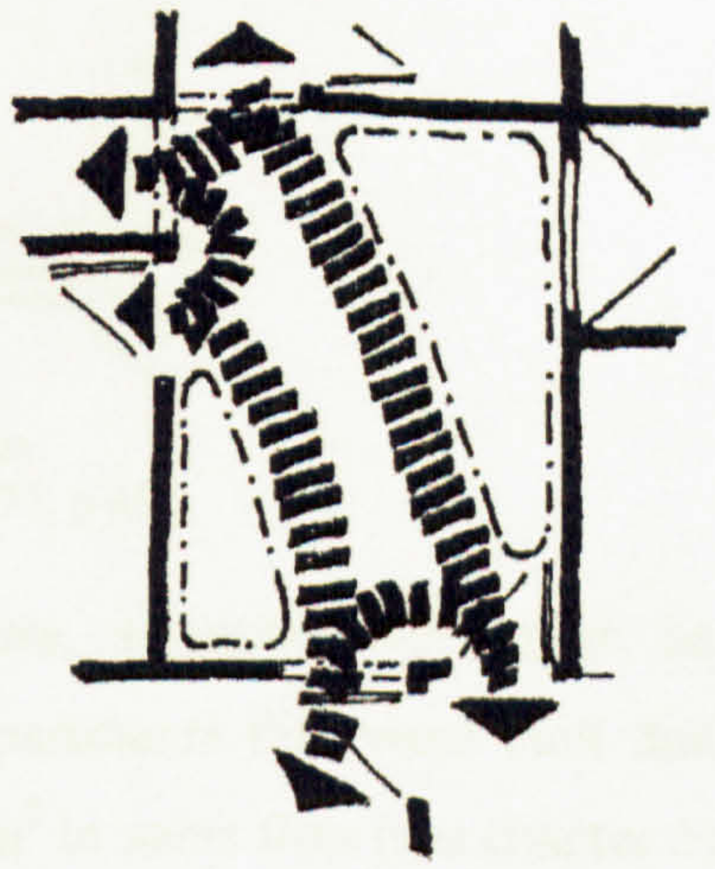
House 26, flat No. 2, (1984)



No useful spaces lost



House 32, flat No. 1, (1999)



No useful spaces lost

Figure 8.10: An example of the living area in the modern flat showing how poor position of doors fragment spaces leaving little useful floor and wall area.

8.2.3 Cooking Layout (Pattern No. 184)

Alexander pointed out that the kitchen is essential, that the cooking area should be fashioned as a workshop for the preparation of food, and not as some kind of magazine kitchen with built-in counters and decorator colours. This down-to-earth and working character of a good kitchen comes in a large part from the arrangement of the cooker and food and counter. So cooking is uncomfortable if the kitchen counter is too short and also if it is too long.

Therefore Alexander proposes the following[7]:

> "To strike the balance between the kitchen which is too small, and the kitchen which is too spread out, place the stove, sink, and food storage and counter in such a way that:
>
> 1. No two of the four are more that 10 feet (300 cm) apart.
> 2. The total length of counter - excluding sink, stove, and refrigerator - is at least 12 feet (360 cm).
> 3. No one section of the counter is less than 4 feet (120 cm) long.

There is no need for the counter to be continuous or entirely "built-in" as it is many modern kitchens - it can even consist of freestanding tables or counter tops. Only the three functional relationships described above are critical. (Figure 8.11)

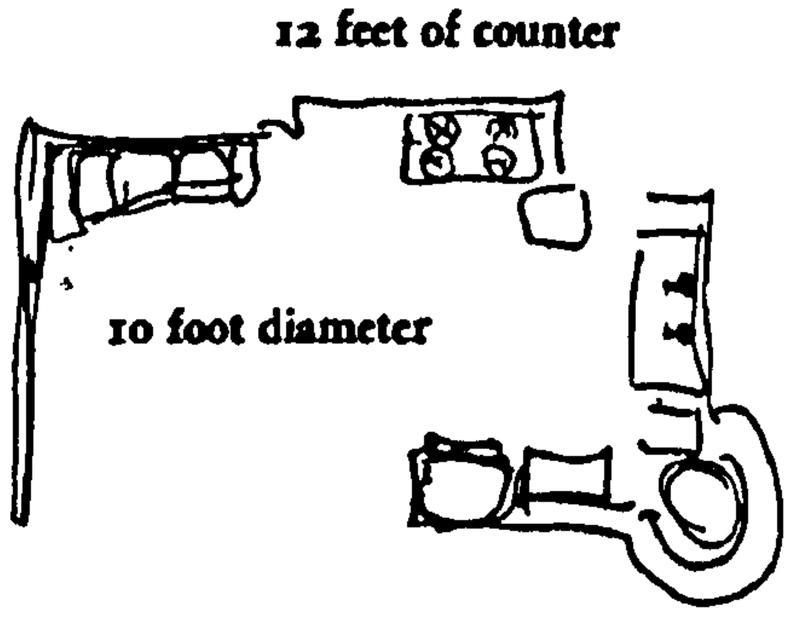


Figure 8.11: Cooking layout
Source: Alexander, C. 1977, p.856

The kitchen area of the Makkah modern house, as mentioned earlier, has been improved during the last forty years. In the apartments that were built during the seventies the kitchen area is very small, about $4m^2$ in some flats (see chapter 5). In the nineties and now the kitchen area has become larger than before, about $12m^2$–$16m^2$ in most flats. In the villas or semi detached houses the kitchen is often huge in floor area.

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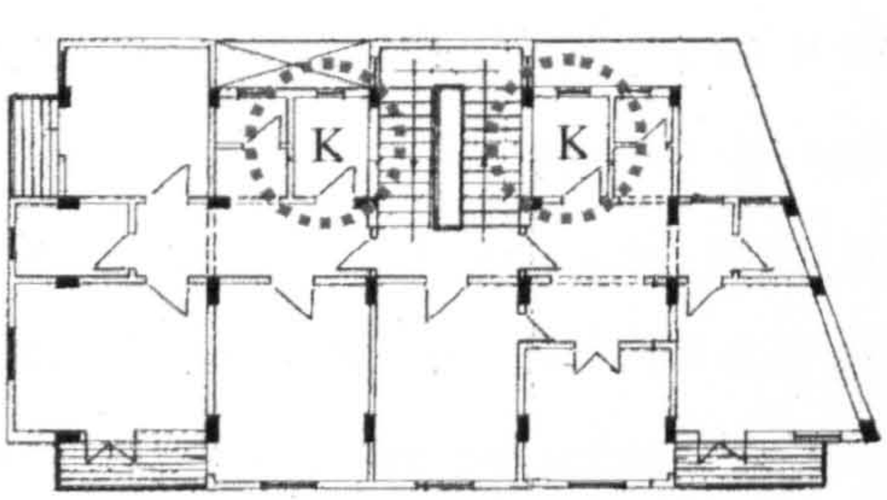
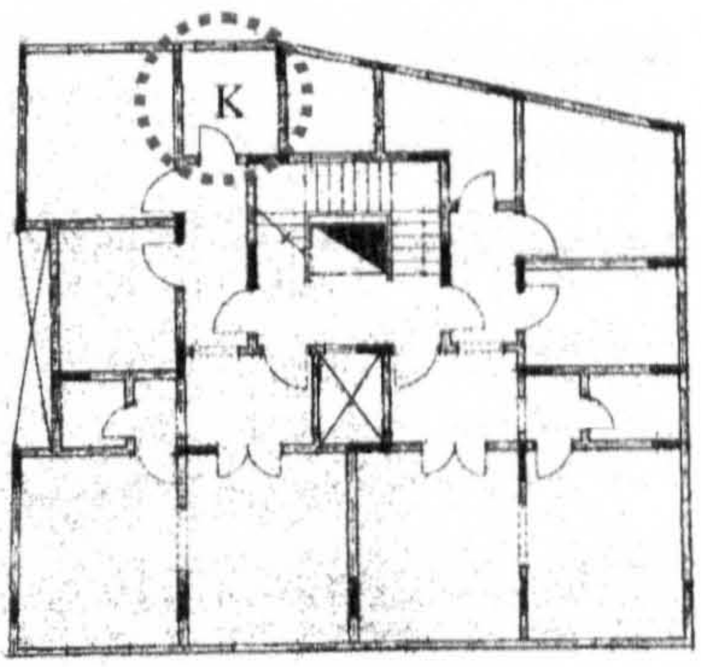
[7] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*,, p. 855

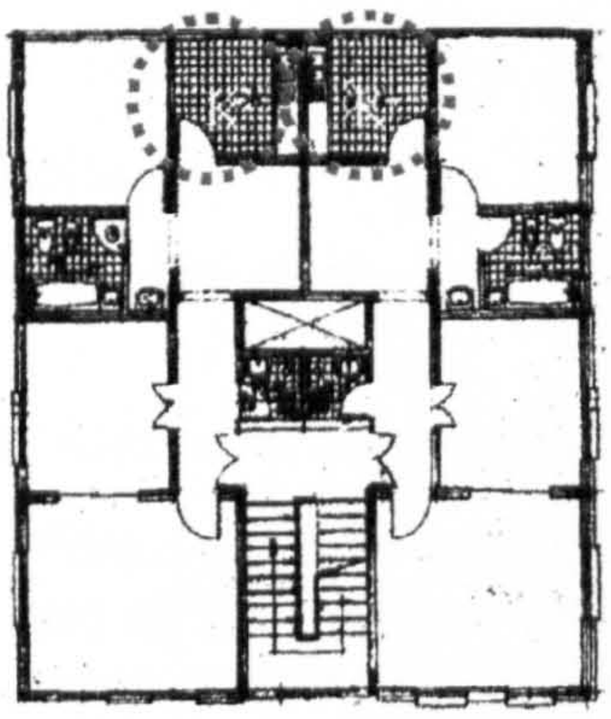
(Figure 8.12) Usually it is the owners who decide the area of the kitchen of their own building and the designers arrange the sink and kitchen window. Therefore there is no theory or guideline for the kitchen area and its furniture for Saudi domestic design, so Alexander's theory of "cooking layout" can be used as a guide to the essential layout of the kitchen area.



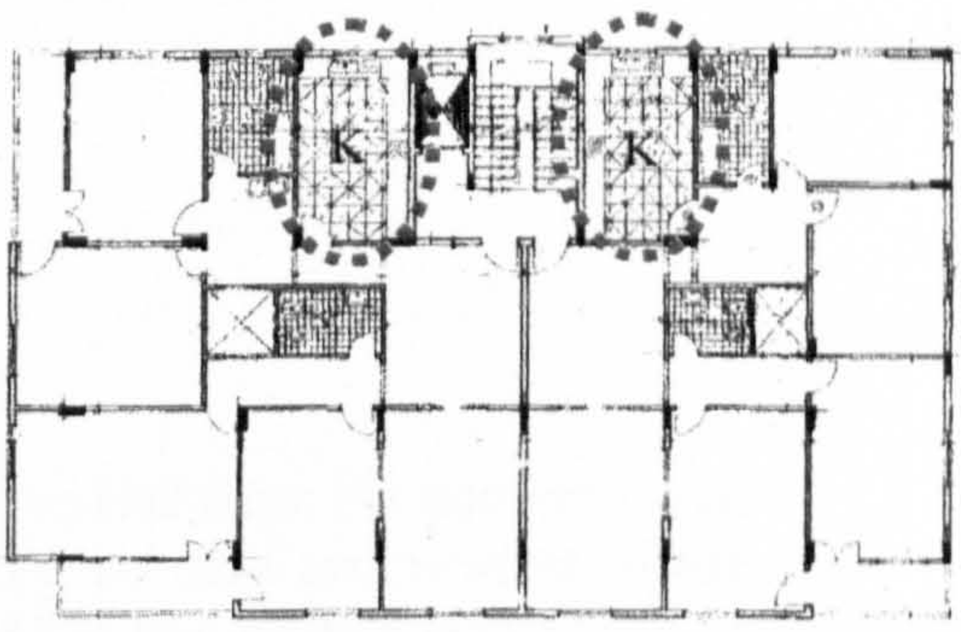
House 7, (1970), the kitchen area about 4.5 m^2



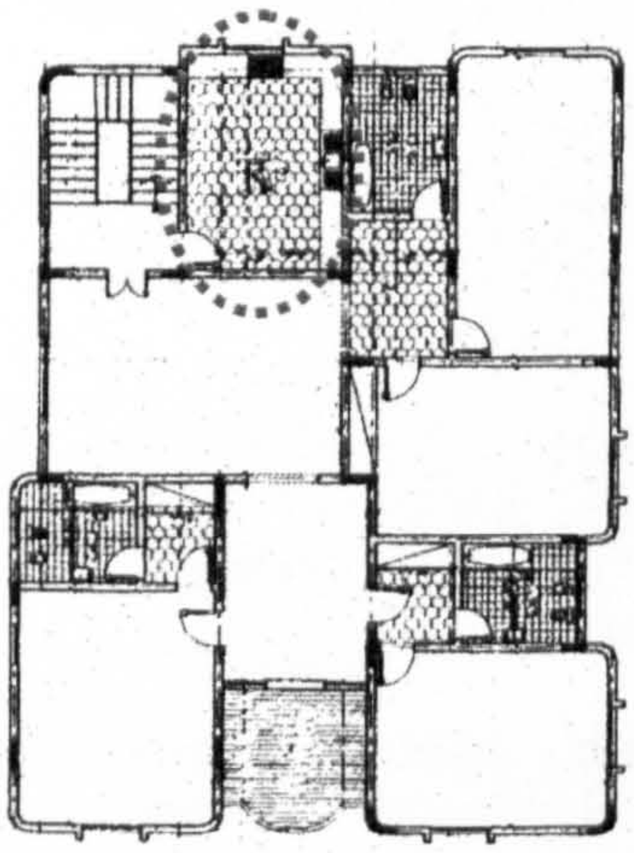
House 10, (1975), the kitchen area about 7.5 m^2



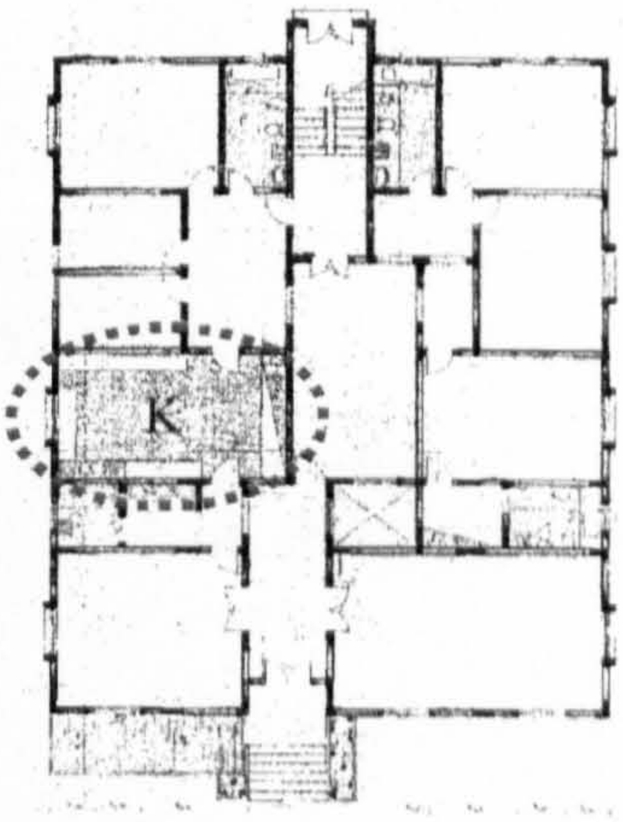
House 22, (1980), the kitchen area about 9m^2



House 25, (1982), the kitchen area about 19.25 m^2



House 28, (1988), the kitchen area about 20 m^2



House 34, (2001), the kitchen area about 35 m^2

Figure 8.12: An example of the kitchen area of flats built in seventies, eighties and nowadays

Note: There is no theory or guideline for the kitchen area regarding either location or size.

8.2.4 Couple's Realm (Pattern No. 136)

Alexander wrote as follows:

> "The presence of children in a family often destroys the closeness and the special privacy which a man and wife need together"[8]

In some houses this leak of privacy is aggravated by the physical design of the environment. Specifically this means that usually children are able to run everywhere in the house which means that no rooms are private. Although the couples need a private room, they do not want to be completely separated from the children's room. Alexander also pointed out that this problem can only be solved if there is a part of the house which can be called the couple's realm. The couple's realm, according to him needs to be:

1- A place that one can sit in and talk privately.
2- A place that has living space.
3- A place of privacy.
4- A conjugal place.

Therefore Alexander suggested the following:

> "Make a special part of the house distinct from the common area and all the children's rooms, where the man and woman of the house can be together in private. Give this place a quick path to children's rooms, but, at all costs make it a distinctly separate realm"[9] (Figure 8.13)

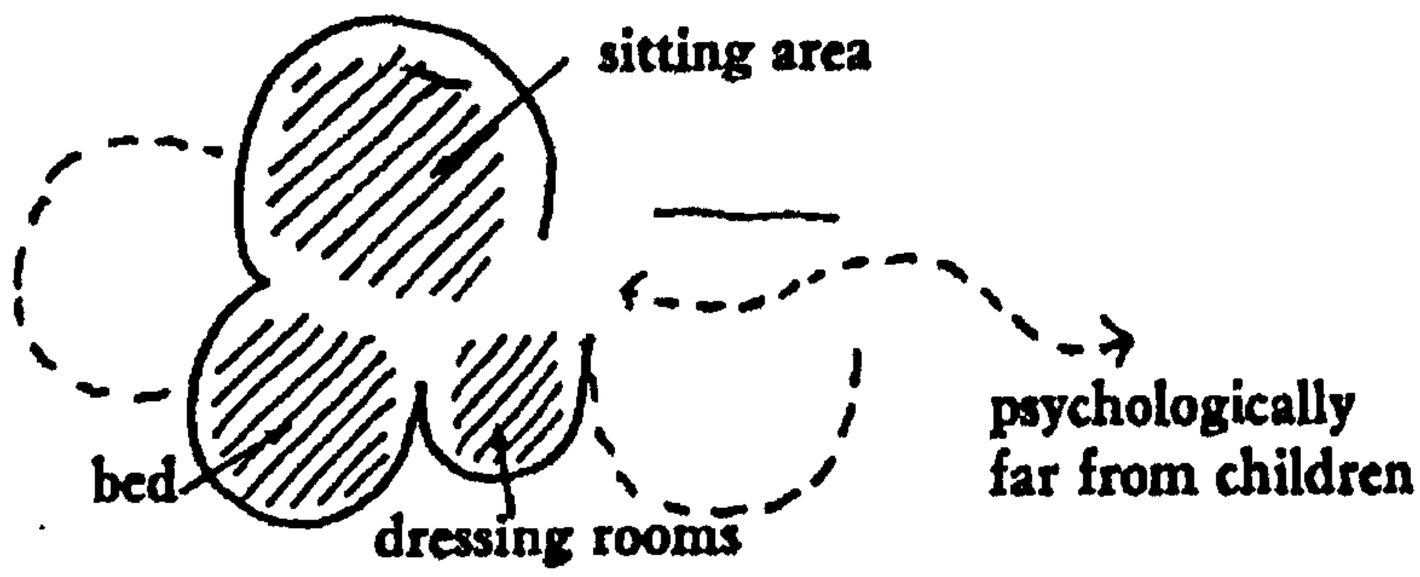


Figure 8.13: Couple's realm
Source: Alexander, C. 1977, p.650

[8] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 649
[9] Ibid, p. 650

The relationship between parents and children is also a required issue for Muslims. The life in the house requires respect from each member of the family for others, especially the privacy of parents in the bedrooms. This privacy needs to be protected from children at different times of day and night.

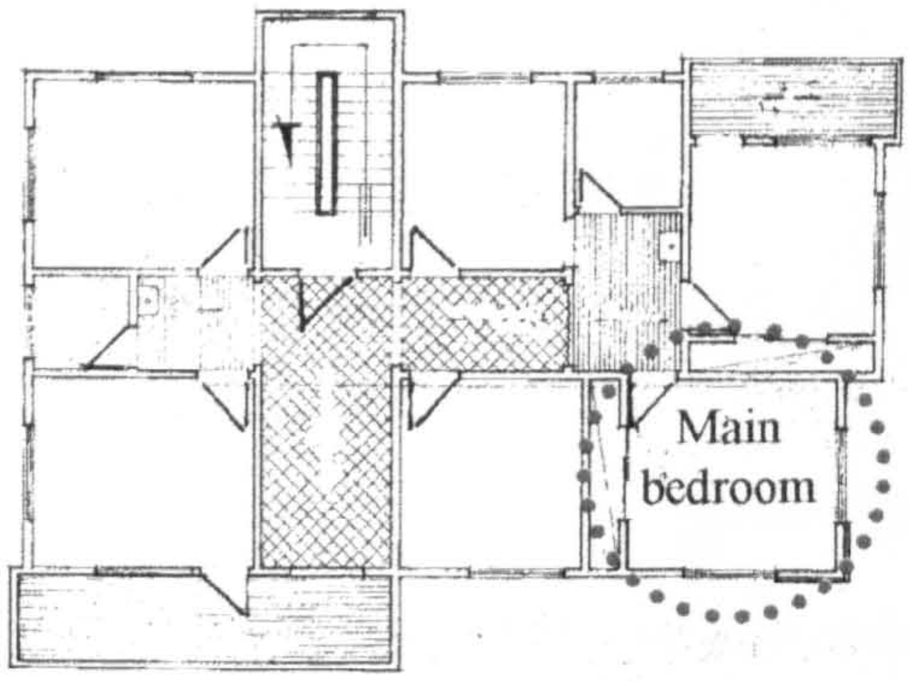
This is a clear limit in which the privacy of parents is protected from the eyes of their children. This is what Islam teaches Muslims to respect, that only the positive side of people should be observed.

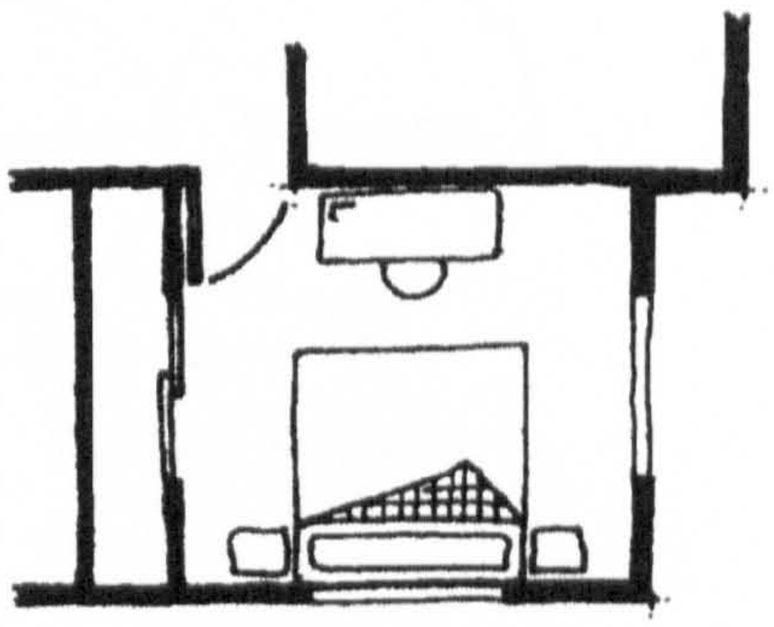
In chapter 4 it was mentioned that most of the spaces in Makkah traditional houses were used as multi-purpose spaces. *Majlis* was used as female reception and the parents slept in it during the winter nights. However the *Muakhkhar* was used as a living room as well as the children sleeping in it during winter nights. Therefore no special part of the house was distinct for the parents. Usually there was a relationship between the *Majlis* and the *Muakhkhar*, which were usually close together, so that meant a quick path to where children sleep.

In the second Saudi transformation, (late 1970s onwards) the main bedroom suite and its facilities became an essential part of any house. This room is composed of a large bed, a dressing table and a wardrobe as well as a mirror and cabinet. Therefore the modern bedroom has added more comfort to the main bedrooms, as well becoming a special part of the house distinct for parents, for more information see chapters 6 and 7.

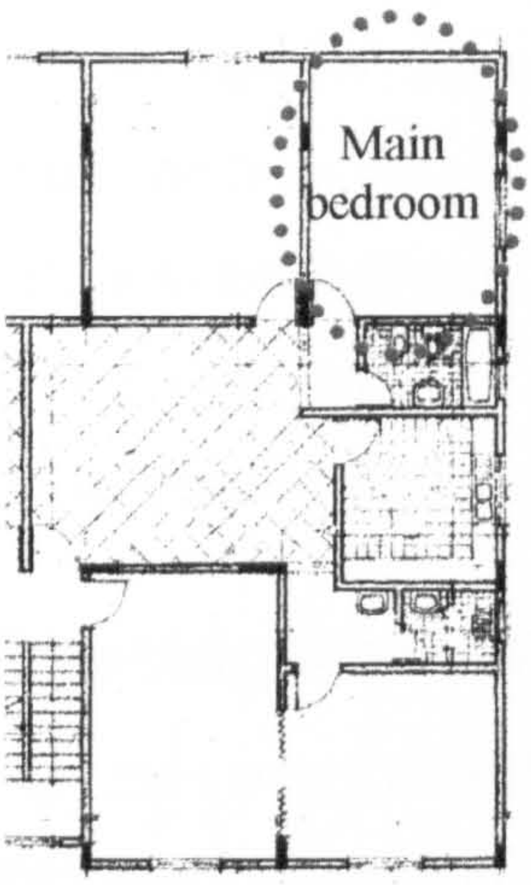
However due to the limitation of the total area of flats and the limitation of rooms, the main bedroom has all the suite items in one room. Therefore no space is used as a sitting area and no special space is used as a dressing room. (Figure 8.14)

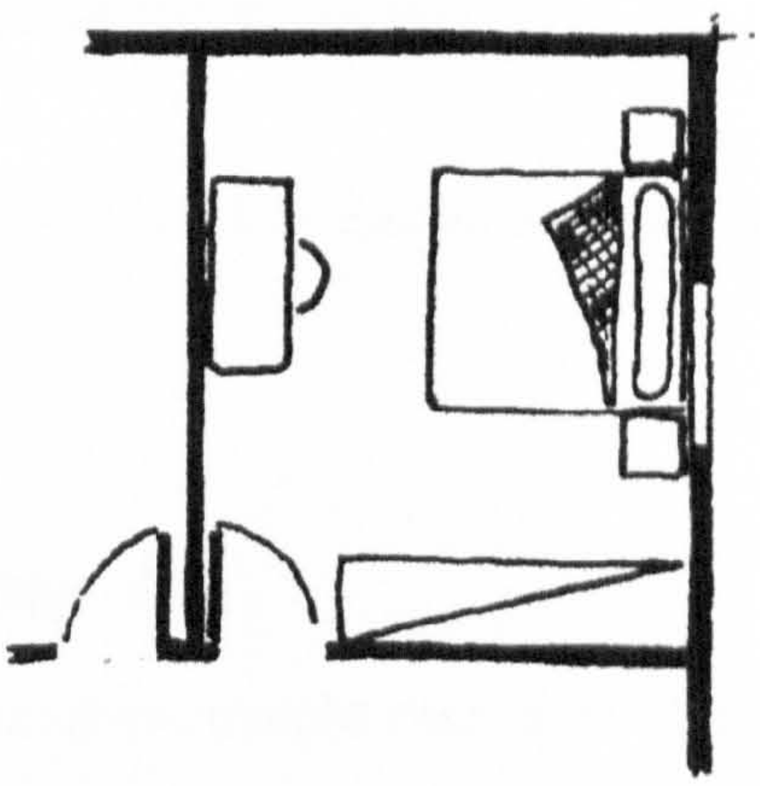
As mentioned earlier, Saudi houses have two zones, guest zone and family zone. The family zone could be separated into two parts too. The first zone consists of the common area (living room, kitchen and bathrooms). The second part is the private zone (parents' bedroom and children bedrooms). (Figure 8.15)



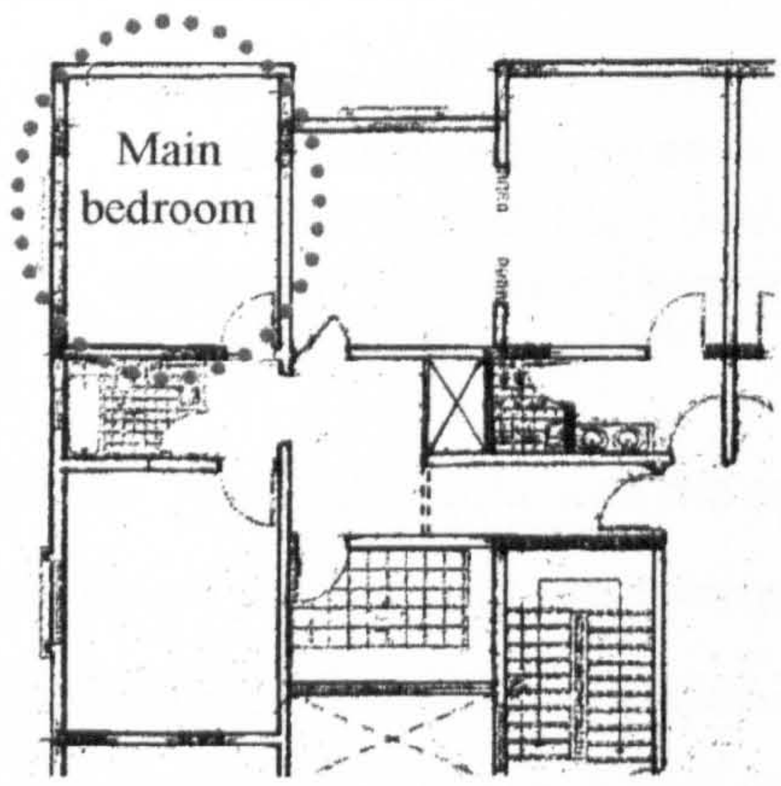


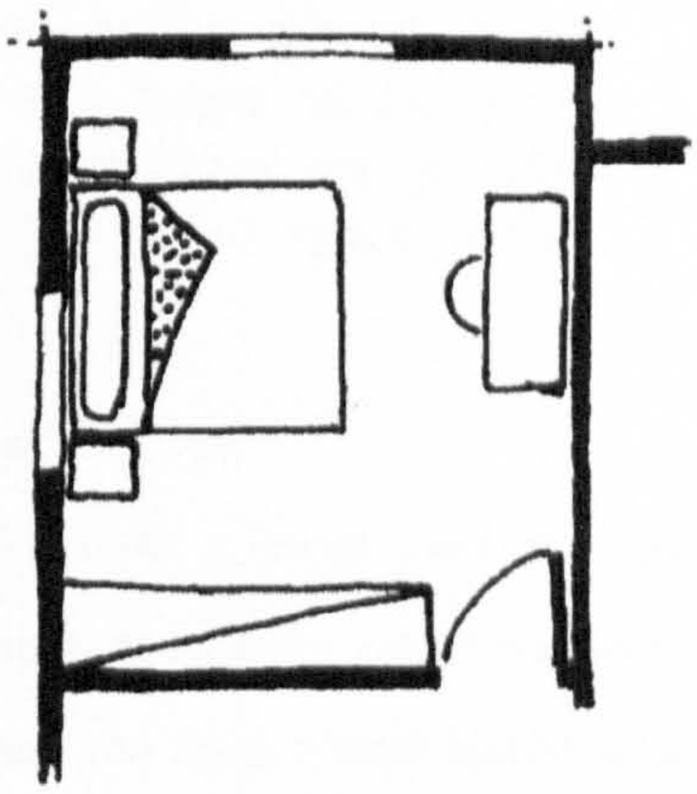
House 12, (1976)





House 26, flat No.1, (1984)





House 37, flat No.1, (2004)

Figure 8.14: the main bedroom has all the suite items in one space

Note: No space is dedicated as a sitting area and no special provision is made for a dressing room.

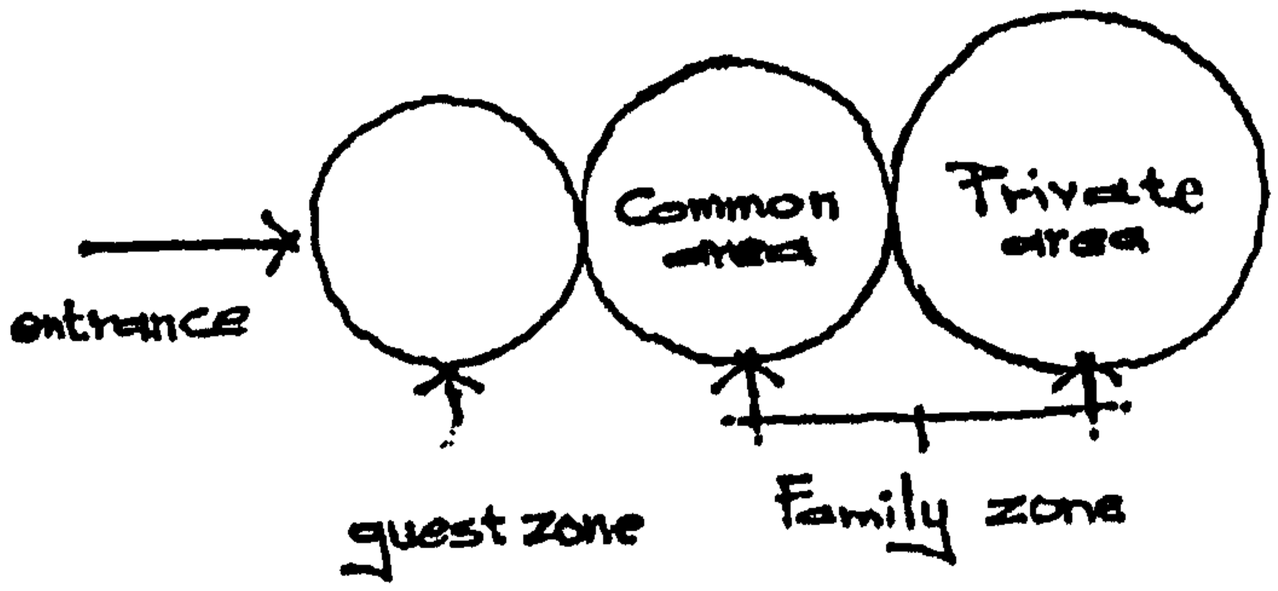


Figure 8.15: Two parts of family zone

According to Alexander's theory of the couple's realm, adjusted to Islamic requirements, the married couple's zone requires the following:

1- To be separate from the children
2- To be close to the children's rooms, especially while the children are young.
3- It needs a sitting area.
4- If possible a special bathroom.

8.2.5 Dressing Room (Pattern No. 189)

The dressing space refers to both the closets where people keep their clothes and to the space they use for dressing. Alexander has given detailed attention to this space. Alexander pointed out:

> "Dressing and undressing, storing clothes, having clothes lying around, have no reason to be part of any larger complex of activities. Indeed they disturb other activities: they are so self-contained that they themselves need concentrated space which has no other function"[10]

In addition Alexander indicated the arrangements as follows;

1- "Clothes lying around are messy; they can take over a great deal of space; they need some kind of individual space. A dressing space can be for one person or shared by a couple. The important thing is that it be organized as a small space where it is comfortable to store clothes and to dress. When such a space is not provided, *the whole bedroom* is potentially the dressing room; and this can destroy its integrity as a room. It becomes more a big closet to "keep neat," than a room to stay in and relax.

2- People tend to take up a private position while they dress, even where they are relatively intimate with the people they live with. Even in a locker room, people will

[10] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 873

make a half-turn away from others as they dress. This suggests that the space for dressing should be relatively private. The old fashioned standing screens in a green room or a boudoir worked this way; they created a half-private dressing space.

3- The time of dressing, the activity, is a natural moment of transition in the day. It is a time when people think about the day ahead, or unwind at the end of the day and get ready for bed. If you dwell, for a moment, on this transitional quality of dressing, it seems clear that the dressing space can be made to help support it. For example, a good place to dress will have beautiful natural light; give this as much thought in your design as any room.

4- The dressing space should be large enough, with room to stretch your arms and turn around. This means six or seven feet of open area. It must also have about six feet of clothes hanging space, another six feet of open shelves, and a few drawers for each person."

In Makkah traditional houses there was no special room called the dressing room, as most of the rooms were used as multi-purpose rooms. People kept their clothes in *Saisam* boxes (see chapter 4 and 5). However, these buildings were large, with many rooms. Due to the limitation of the total area of each modern flat and the limitation of limited numbers of rooms, there are no separate dressing spaces in most of Makkah modern houses, apart from villas and semi detached types. (Figure 8.16)

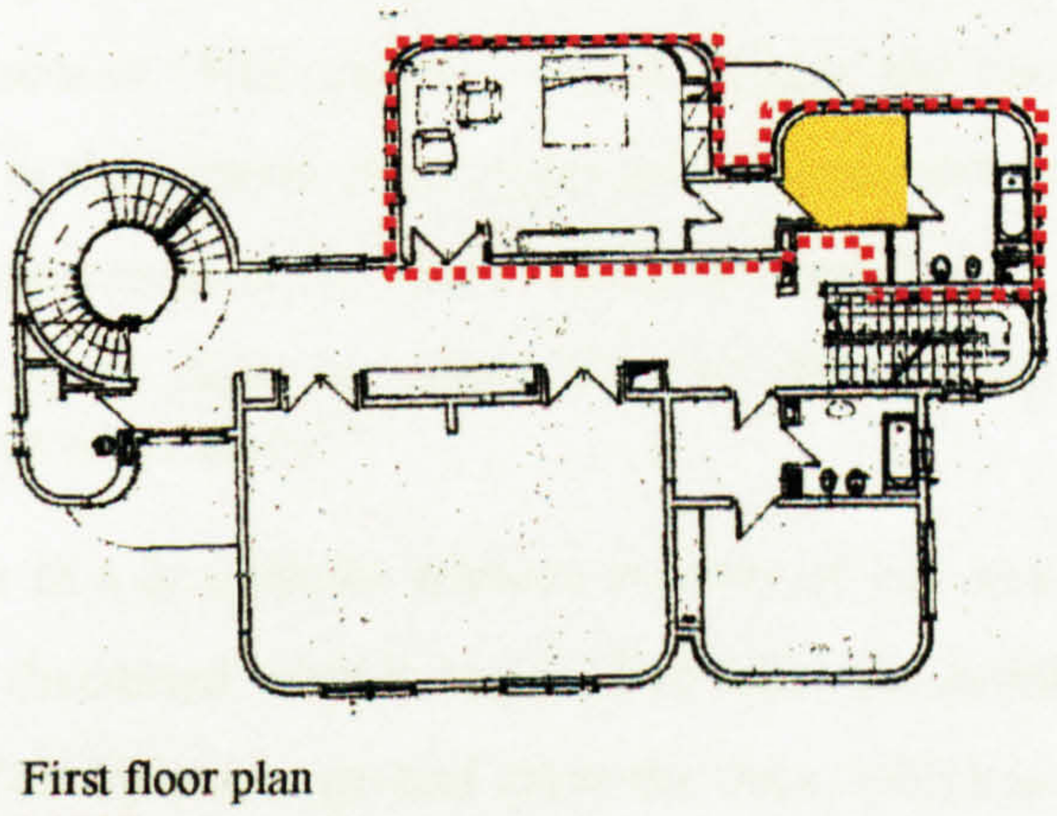


Figure 8.16: Dressing room, House 24, Al Khaiat villa, built in 1981

Note: that only one villa from 37 case-studies contained a dressing room

Therefore although not essential Alexander's theory for "dressing room" is an attraction facility which can be a guide for every Makkah modern house, as follows:

> "Give everyone a dressing room - either private or shared - between their bed and the bathing room. Make this dressing room big enough so there is an open area in it at least six feet in diameter; about six linear feet of clothes hanging space; and another six feet of open shelves; two or three drawers; and mirror."[11] (Figure. 9.17)

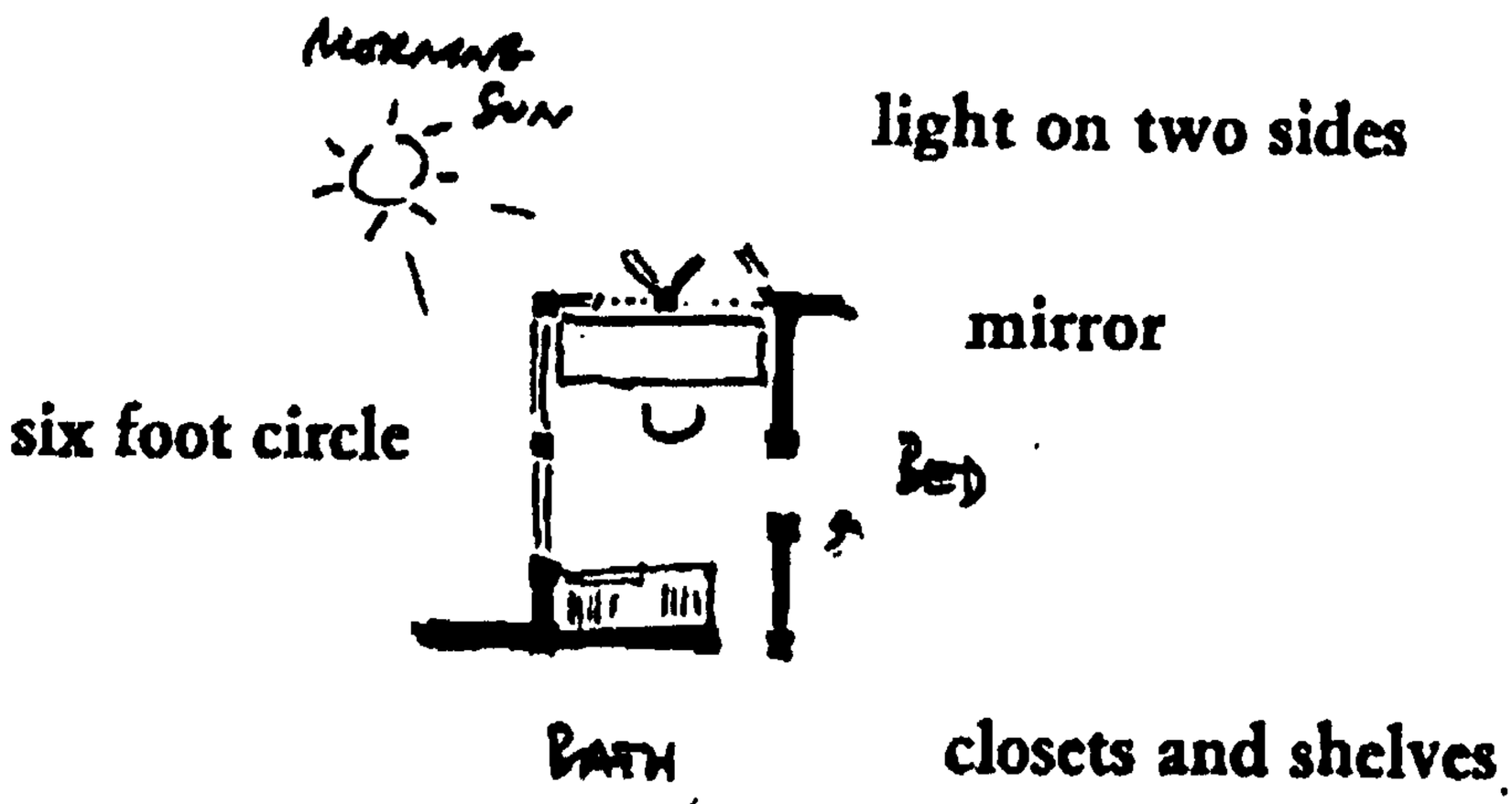


Figure 9.17: Dressing room
Source: Alexander, C. 1977, p.874

8.2.6 A Room of One's Own (Pattern No. 141)

Alexander argues it is clear that every house should have rooms where individuals can be alone. In any household, which has more than one person, this need is fundamental and essential. This pattern, which defines the rooms the people can have to themselves, is the natural counterpart and complement to the social activity provided for in common areas at the heart. Alexander said:

> "No one can be close to others without also having frequent opportunities to be alone"[12]

In addition a person in a household without a room of his own will always have a problem. Alexander discussed what is required to solve the problem. Simply, a room of one's own as well as a place to go and close the door, which is a private room. This room must be located at the extremities of the house as well as at the end of the intimacy gradient, that is, far from the common area. In addition Alexander looked at

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[11] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 874
[12] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 669

the individual members of the family one at a time, in slightly more detail, such as the wife, husband, teenagers and children.

As a result, Alexander pointed out the following:

> "Give each member of the family a room of his own, especially adults. A minimum room of one's own is an alcove with desk, shelves, and curtain.... In all cases, especially the adult ones, place these rooms at the far ends of the intimacy gradient - far from the common rooms."[13] (Figure 9.18)

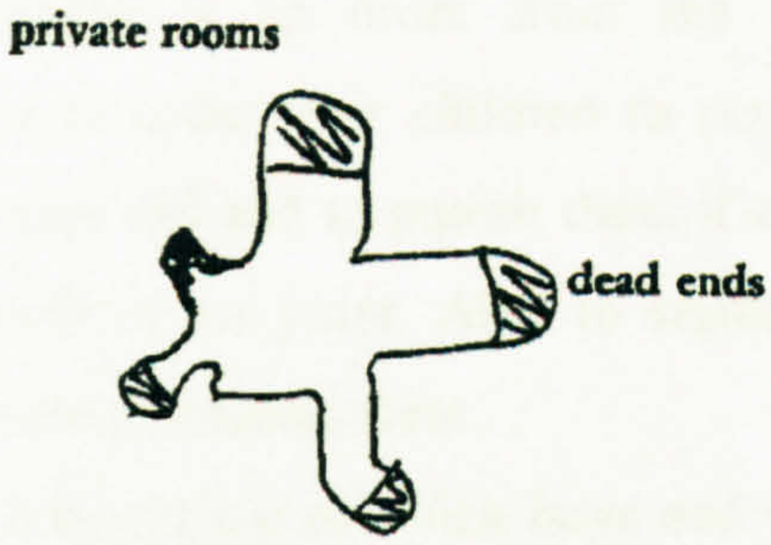

Figure 9.18: A room of one's own
Source: Alexander, C. 1977, p.671

It was mentioned in chapter 4 that *Makhlawan* in Makkah traditional houses was a place where one can get privacy and it was found on any floor of the house. The *Makhlawan* was also used as a resting place for guests after lunch, as well as older people could rest there, for example (Figure 9.19). However, these spaces where people can sit alone have disappeared in Makkah modern houses (see chapter 6 and Appendix B).

Figure 9.19: *Makhlawan* (resting room), Makkah traditional House

a) Ground floor, Omar Al Shorahi, House (a and b)
b) Ground floor, Omar Al Shorahi, House (c)
c) Ground floor, Omar Al Shorahi, House (d)

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 36,44 and 52

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[13] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*,, p. 671

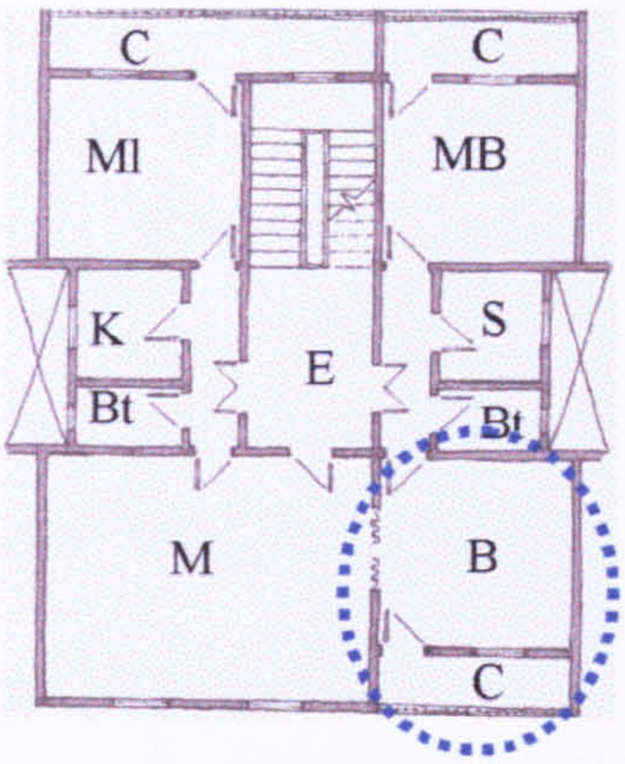
Due to the limitation of the total area of each flat and the small number of rooms it became clear from the case-studies of modern houses that there are no special rooms for children so the children perhaps use the guest zone and family room to sleep at night. (Figure 8.20) On the other hand, according to Alexander's theory as well as being a required issue of Muslims - the separation of boys and girls - can be the idea about own rooms for boys and girls.

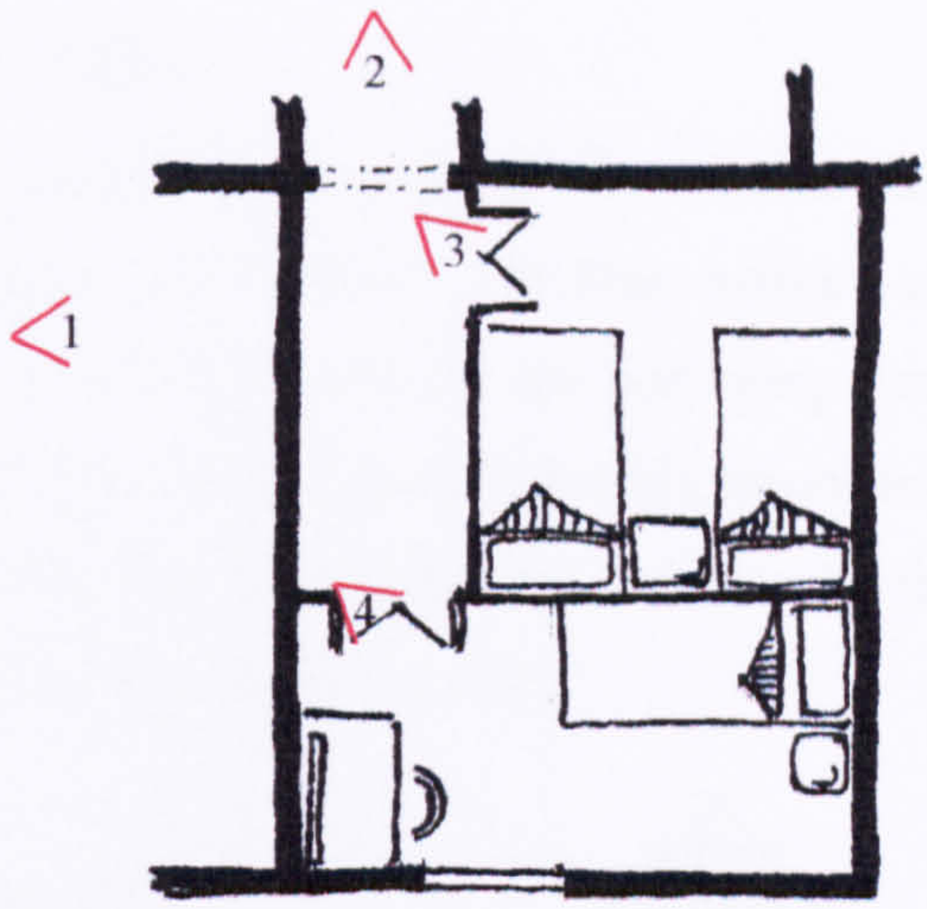
This is derived from *Sunna*[14]:

> This *Hadith* is an order from the Prophet to the Muslims to order their children to pray when each is seven years old and to punish them if they do not pray when each is ten years. **Also to separate boys from girls during sleeping time**...

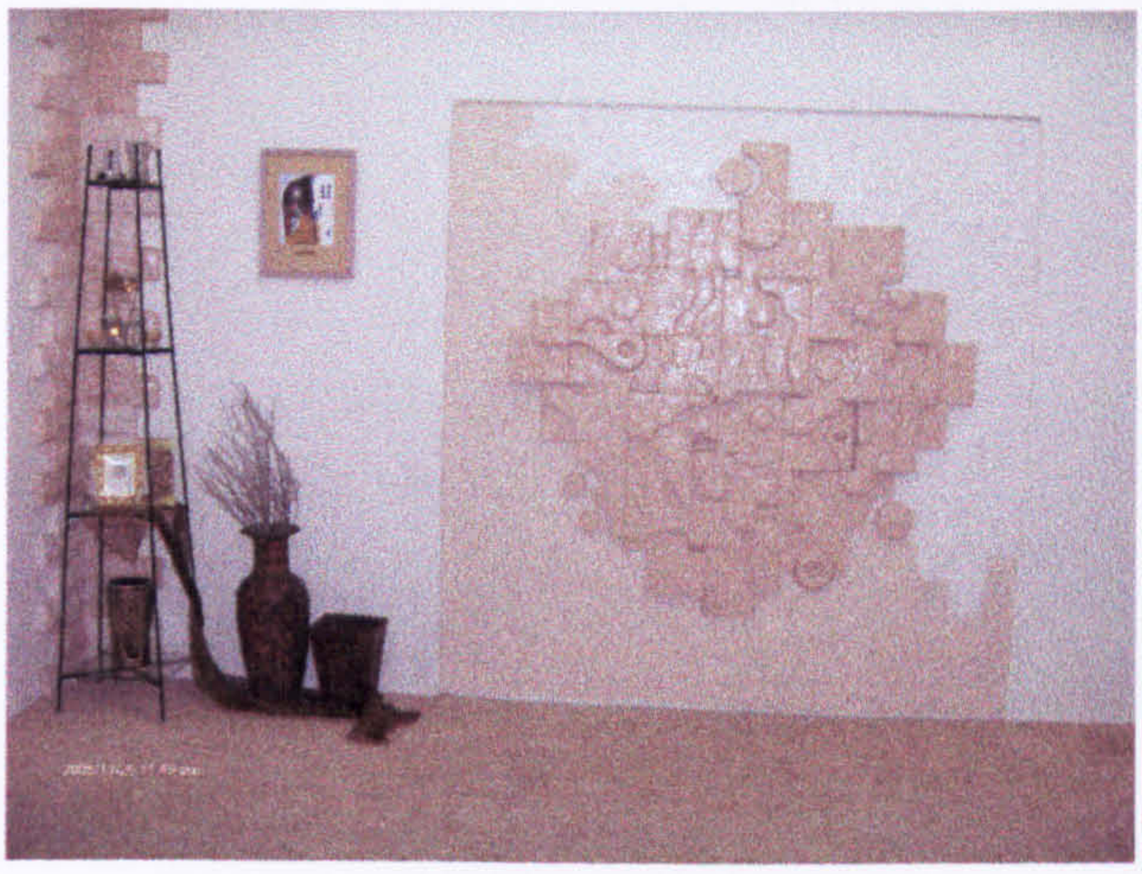
This is to define the critical time at which boys and girls reach the age of puberty. Separate beds, which require different rooms or spaces, are the simple solution to a lot of problems.

[14] "*Sunna*" or "*Hadith*" which literally means the way or method, in practice it means the saying and deeds of Prophet Mohammed (Peace be upon Him). *Sunna* is merely explaining the traditions of the Prophet, which is needed to explore and demonstrate how Muslims should carry out certain injunctions mentioned in the Holy Quran and furnish them with the explanation of the Quran verses.

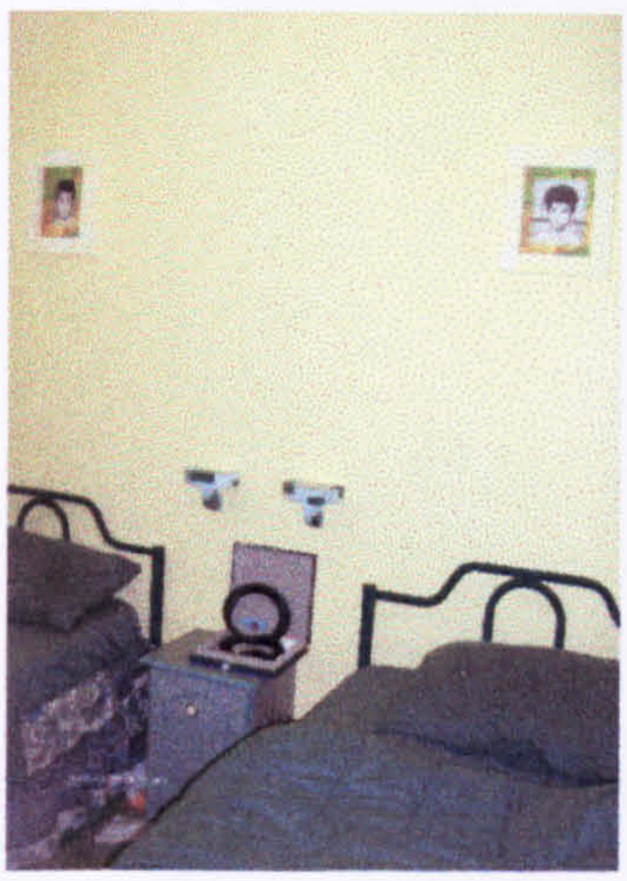


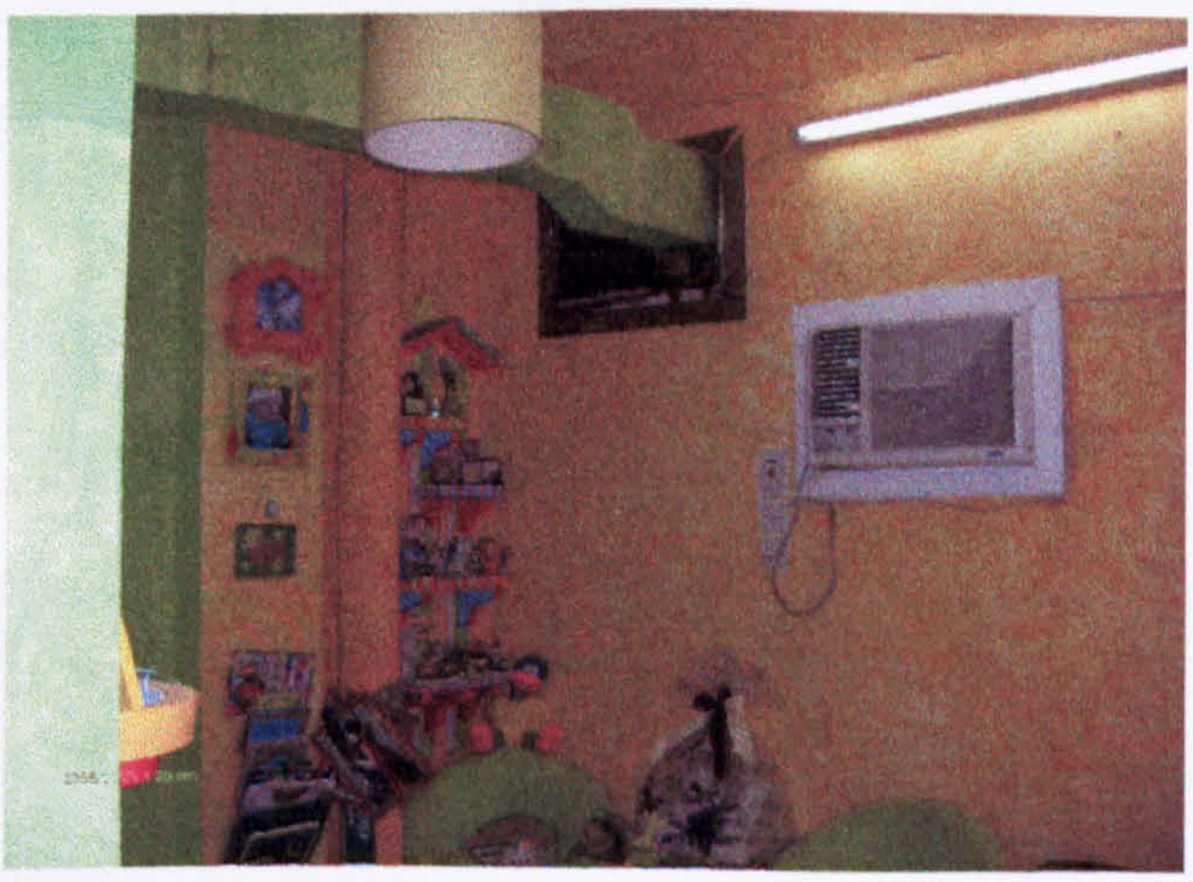


The multi-purpose room before the wall between it and the balcony were demolished in order to extend the area of the room



The door between the guest room and children's room was closed by decorative board.





Boy's bedroom

Girl's bedroom

Figure 8.20: An example of children bedroom needs

8.2.7 Bulk Storage (Pattern No. 145)

Alexander showed that in houses and workplaces there is always some need for bulk storage space; a place for things like suitcases, old furniture, old files, boxes - all those things which you are not ready to throw away, and yet are not being used everyday. In addition, in his experience, the bulk storage space is terribly important; and when it is not provided, it usually means that some other space becomes the receptacle for all the bulk, marginal things that people need to store.

Therefore Alexander stated:
"Do not leave bulk storage till last or forget it. Include a volume for bulk storage in the building - its floor area at least 15 to 20 per cent of the whole building area - not less. Place this storage somewhere in the building where it costs less than rooms - because, of course, it doesn't need a finish."[15] (Figure 8.21)

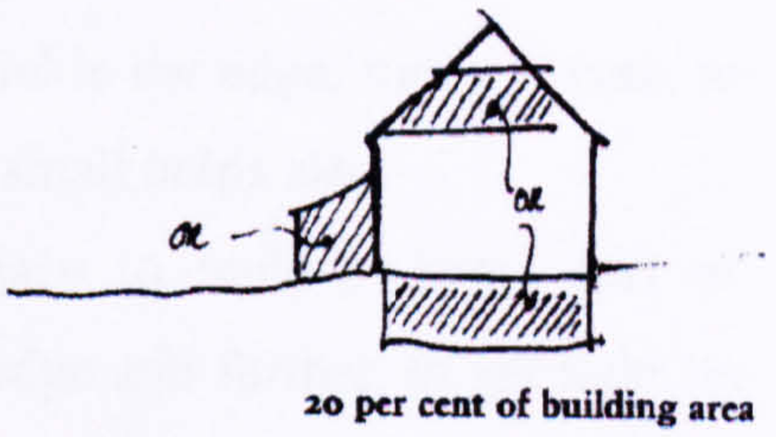
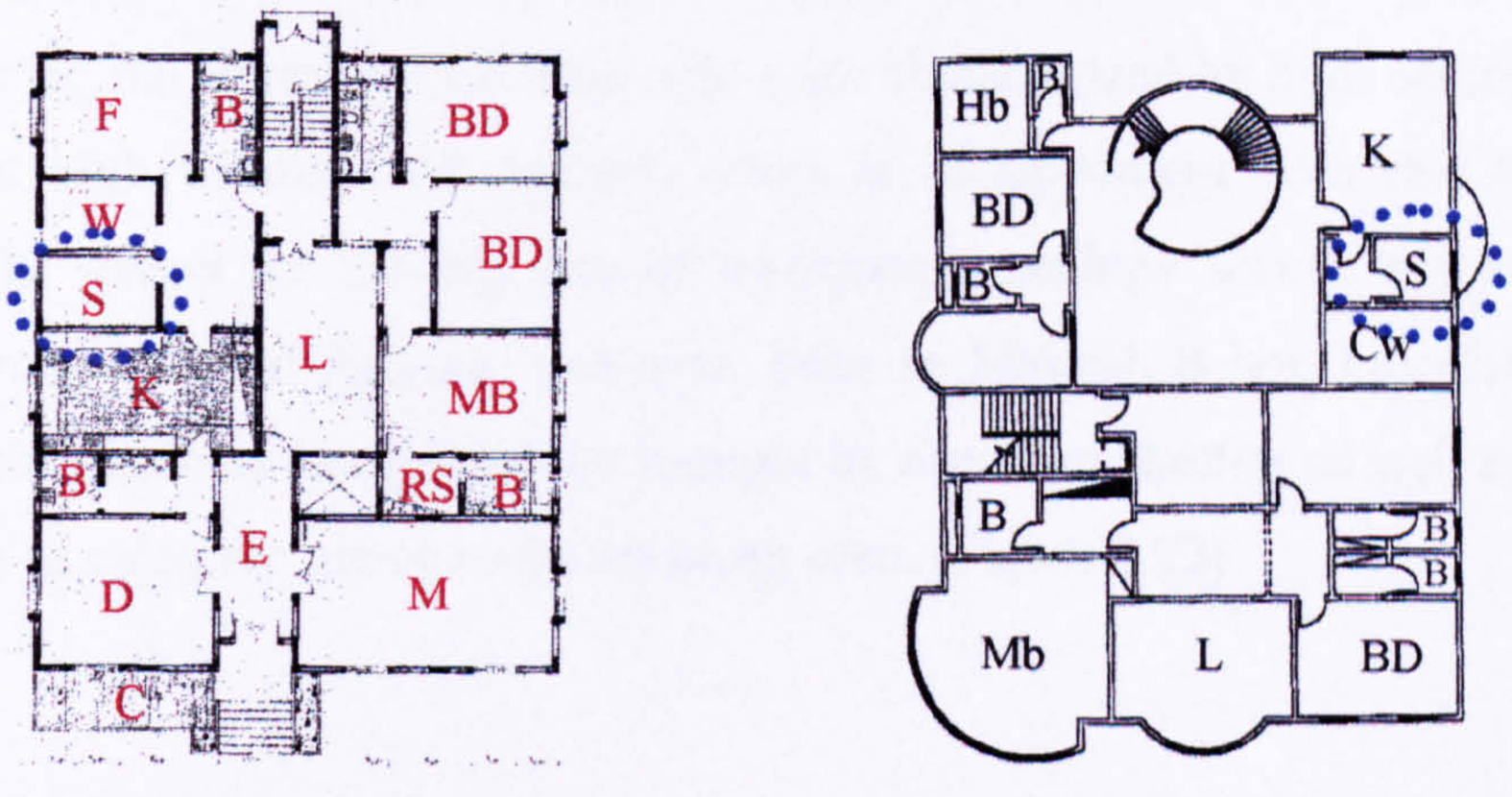


Figure 8.21: Bulk storage
Source: Alexander, C. 1977, p.688

Makkah traditional houses were characterized by the existence of stores almost everywhere. However Makkah modern houses are bereft of this important area of storage. (See the case-studies of Makkah modern houses, chapter 6). From case-studies of Makkah modern houses we found that of seventy-five houses there are just two houses which have a separate storage area (Figure 8.22).



House 34, flat No.1 First floor, House 6

E	entrance hall	R	male reception	F	female reception	D	dining room
L	living area	MB	master bedroom	BD	bedroom	RS	dressing room
Hb	housemaid room	W	washing clothe	K	kitchen	S	storage	B	bathroom

Figure 8.22: Two houses from seventy-three houses have a separate storage area

[15] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 688

8.2.8 Light on Two Sides of Every Room (Pattern No. 159)

Alexander pointed out that, when they have a choice, people will always gravitate to those rooms which have light on two sides, and leave the rooms which are lit only from one side unused and empty. In addition Alexander discusses the light on two sides of every room for different sizes of building as follows:

- In small buildings, it is easy to give every room light on two sides: one room in each of the four corners of house does it automatically.
- In a slightly larger building, it is necessary to wrinkle the edge, turn a corner, to get the same effect. Juxtaposition of large rooms and small helps also.
- In an even larger building, it may be necessary to build-in some sort of systematic widening in the plan or to convolute the edge still further, to get light on two sides for every room.
- And finally, if a room simply has to be more than eight feet deep, but cannot have light from two sides - then the problem can be solved by making the ceiling very high, by painting the walls very white, and by putting great high windows in the wall, set into very deep recesses, deep enough to offset the glare.

As discussed in chapter 4, in Makkah traditional houses most of the rooms were characterized by light from two sides. In addition the rooms were located in the middle facing the street or if on other side were characterized by high ceilings, white walls, and high windows (*Rowshan*), which is in agreement with the Alexander theory. The reason for the big size of traditional openings was to provide cross-ventilation and natural lighting. However, because Makkah is hot, especially in the summer, the residents can control the sunlight by *Rowshan* shutters as well as females being able to enjoy the outside without being seen. (Figure 8.23)

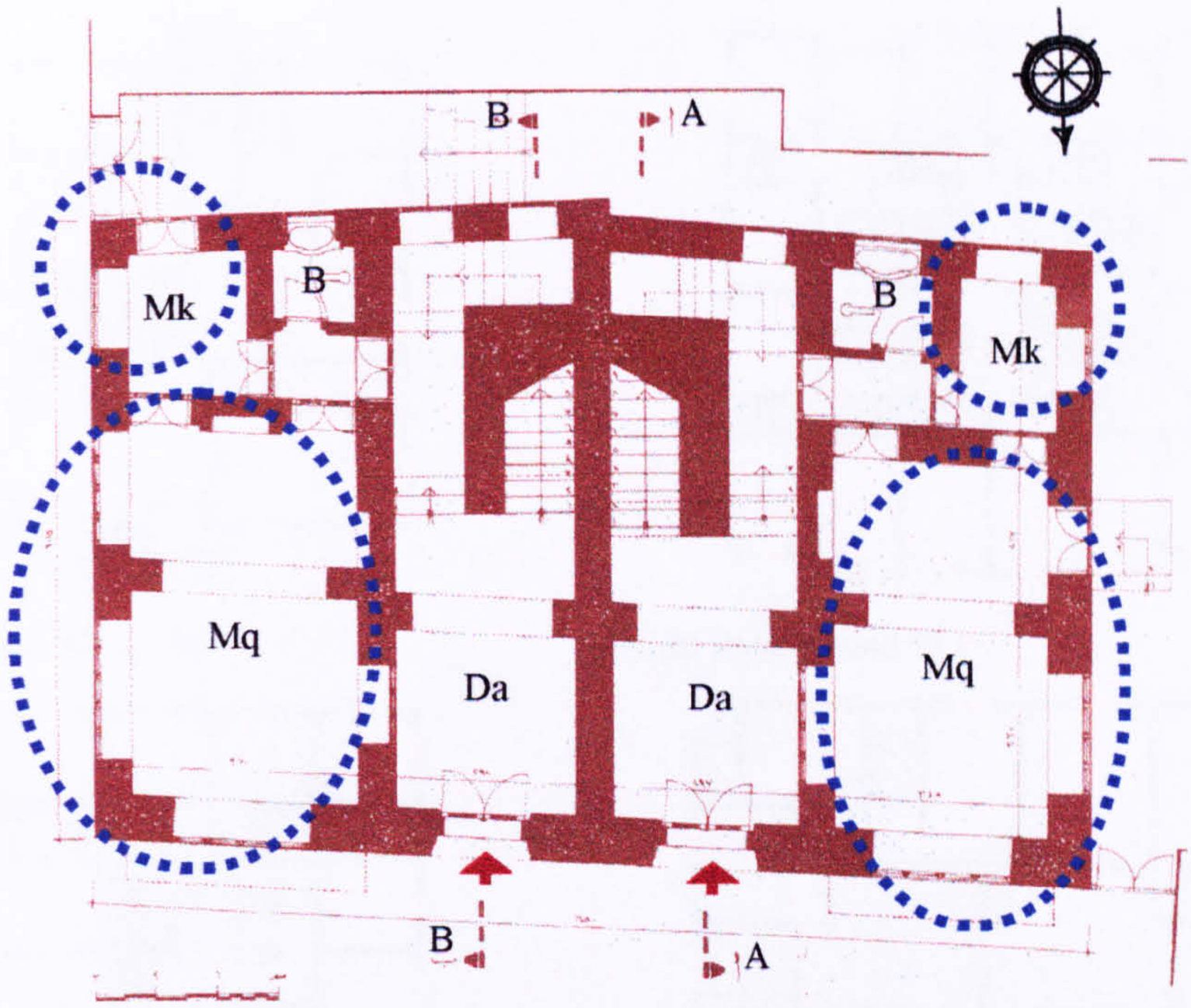
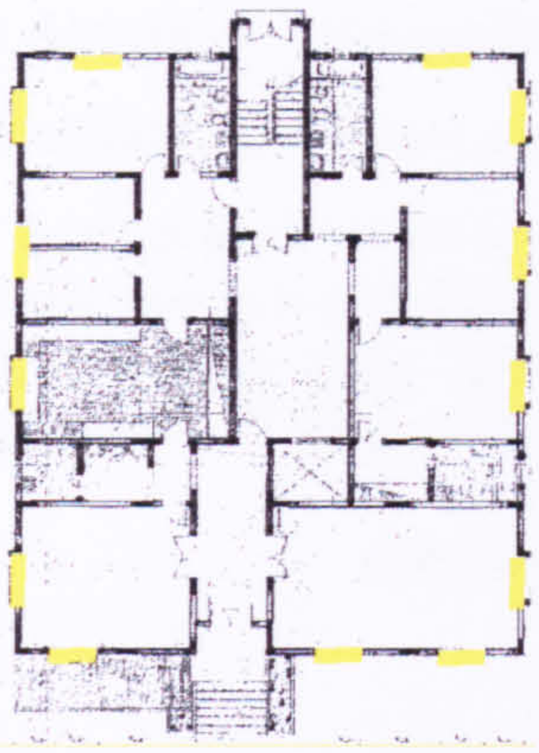


Figure 8.23: Light on two sides, Ground floor, Omar Al Shorahi, House (a and b)

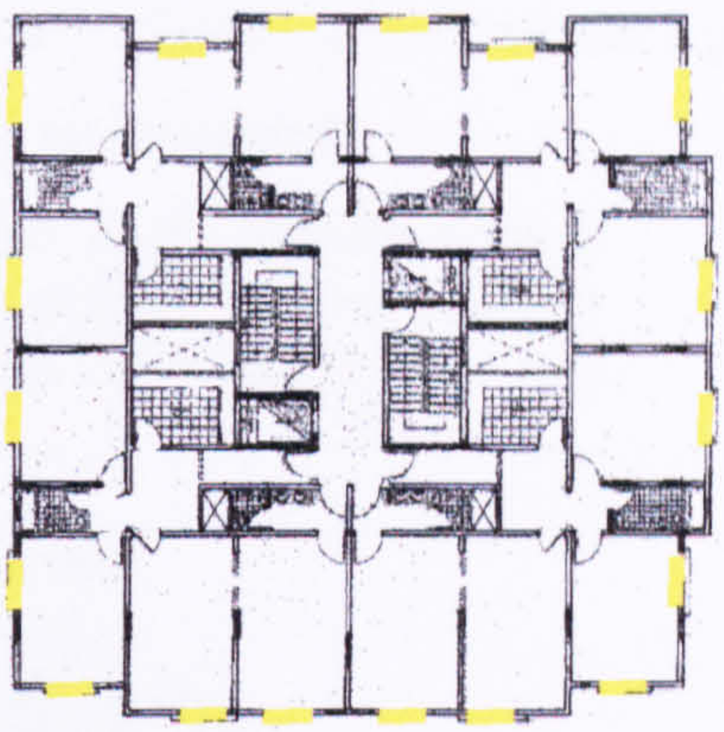
Da *Dehliz* (Entrance hall)
Mq *Maq'ad* (Sitting room)
Mk *Makhlawan* (Small room)
B *Bayt alma* (Bathroom)

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 36

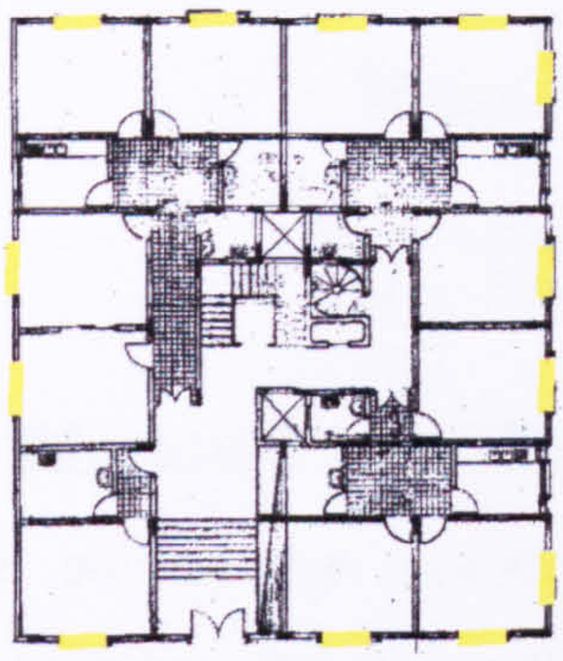
It was mentioned earlier, in chapter 5, that the modern building materials led to the emergence of the new type of windows, which differ from the old types (wooden shutters and *Rowshan*) by being much smaller (1.20 x 1.20m) and made of aluminium and clear glass. Every room in the flat has one or two of these small windows that means there is no variety of the window size according to what is suitable for the space. (Figure 8.24) Probably the main reason for this small size of opening is to keep the cool air from the air-conditioning within the space. However, most of the residents control the daylight with curtains.



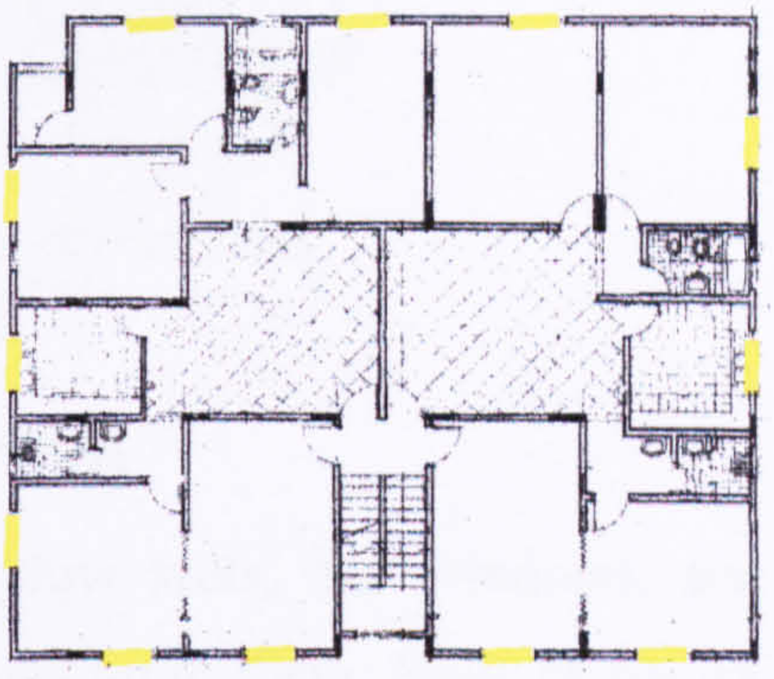
Ground floor, House 34



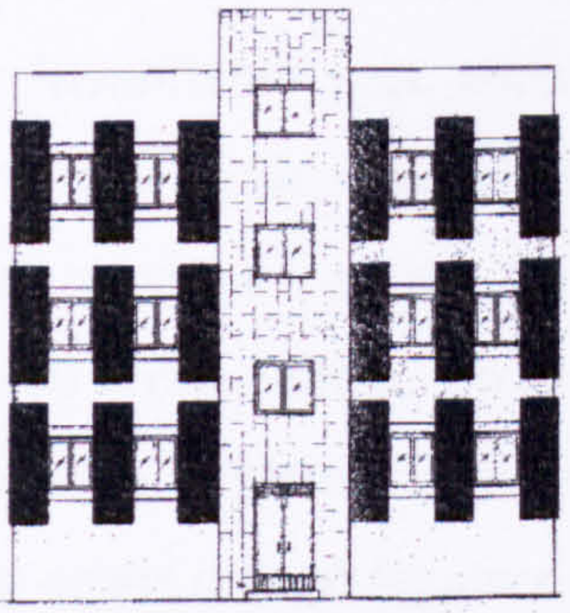
Typical floor, House 37



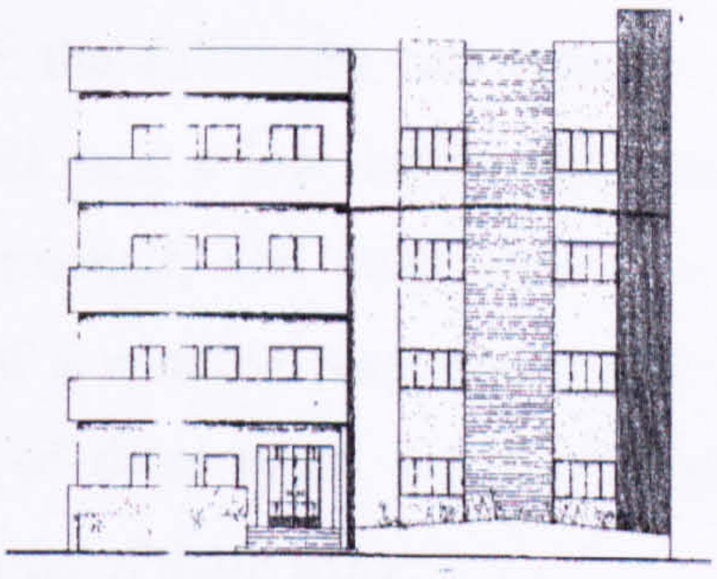
Ground floor, House 21



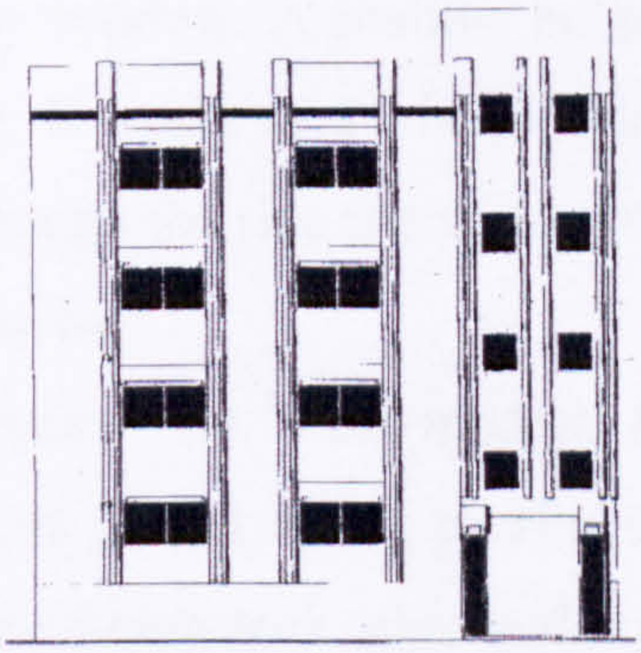
Typical floor, House 22



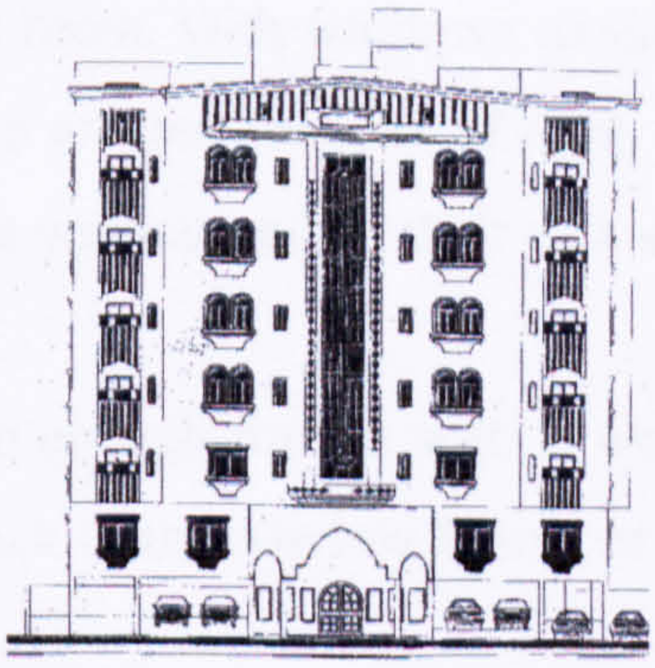
Main elevation, House 22



Main elevation, House 12



Main elevation, House 37



Main elevation, House 32

Figure 8.24: No variety of window size

Therefore Alexander's theory of "light on two sides of every room" can be a guide to provide natural light falling into every room, as he suggested:

> "Locate each room so that it has outdoor space outside it on at least two sides, and then place windows in these outdoor walls so that natural light falls into every room from more than one direction."[16] (Figure 8.25)

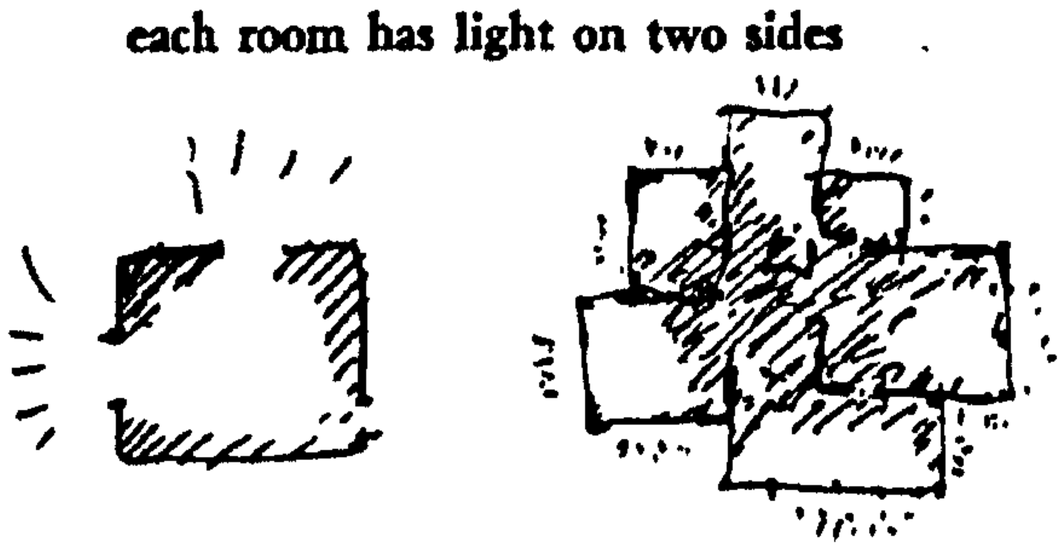


Figure 8.25: Light on two sides of every room
Source: Alexander, C. 1977, p.750

8.4.9 Window Place (Pattern No. 180)

Alexander pointed that everybody loves window seats, bay windows, and big windows with low and comfortable chairs drawn up to them. Now, of course it is hard to give an exact definition of "place". Essentially a "place" is a partly enclosed, distinctly identifiable spot within a room. All of the following can function as "places" in this sense: bay windows, window seats, and a low windowsill where there is an obvious position for a comfortable armchair, and deep alcoves with windows all around them. To make the concept of a window place more precise, Alexander also explains some examples of each of these types, together with a discussion of the critical features which make each one of them work.

- A bay window. A shallow bulge at one end of a room, with windows wrapped around it. It works as a window place because of the greater intensity of light, the views through the side the windows, and the fact that you can pull a chair or a sofa up into the bay.
- A window seat. More modest. A niche, just deep enough for the seat. It works best for one person, sitting parallel to the window, back to the window frame, or for two people facing each other in this position.

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[16] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 750

- A low sill. The most modest of all. The right sill height for a window place, with a comfortable chair, is very low: 12 to 14 inches. The feeling of enclosure comes from the armchair, best of all, one with a high back.

Therefore Alexander suggested the following action:

> "In every room where you spend any length of time during the day, make at least one window into a "window place"."[17] (Figure 8.26)

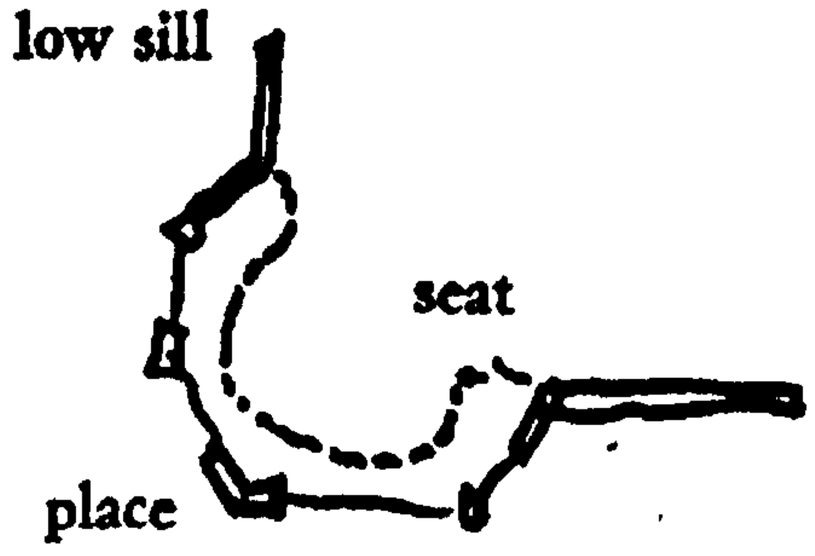

Figure 8.26: Window place
Source: Alexander, C. 1977, p.837

In the Arab traditional house, as described in chapter 3, *Rowshan* or *Mashrabyyah* fulfilled two main functions. Transparent wooden screens allowed cross-ventilation as well as privacy for family life from the outside. Paul Oliver explains it thus:

> "The use of screen windows or balconies has been a noticeable feature of Islamic Architecture ... In hot, humid climates screened balconies, (mashrabiyyat or rowshan) performed essential functions: privacy to occupants, the rooms by means of grilles".[18]

As in many Arab countries (Egypt, Iraq and Yemen) Makkah traditional houses were characterized by *Rowshan* or *Mashrabyyah*. In addition the *Dakkah* (sand-cement bench) was considered the most important piece in the interiors of the traditional houses of Makkah because it was part of the construction of *Rowshan* or *Mashrabyyah*. (See chapter 3, section 3.2.5 and section 4.3.4.1). In addition it was most important place in Makkah traditional house for females to sit and enjoy looking outside or to the street without being seen as well as being a place for all family members to lie and enjoy the natural ventilation and light (Figure 8.27). However

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[17] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 837
[18] Paul Oliver, (1997) *Encyclopedia*, p.121

most of Makkah modern houses (especially apartments) are deprived of this idea of "window place". Therefore because of the advantages of *Rowshan* or *Mashrabyyah* of Arab and Makkah traditional houses, as well as according to Alexander's solution of a "window place", at least one window should be made into a "window place" in the house.

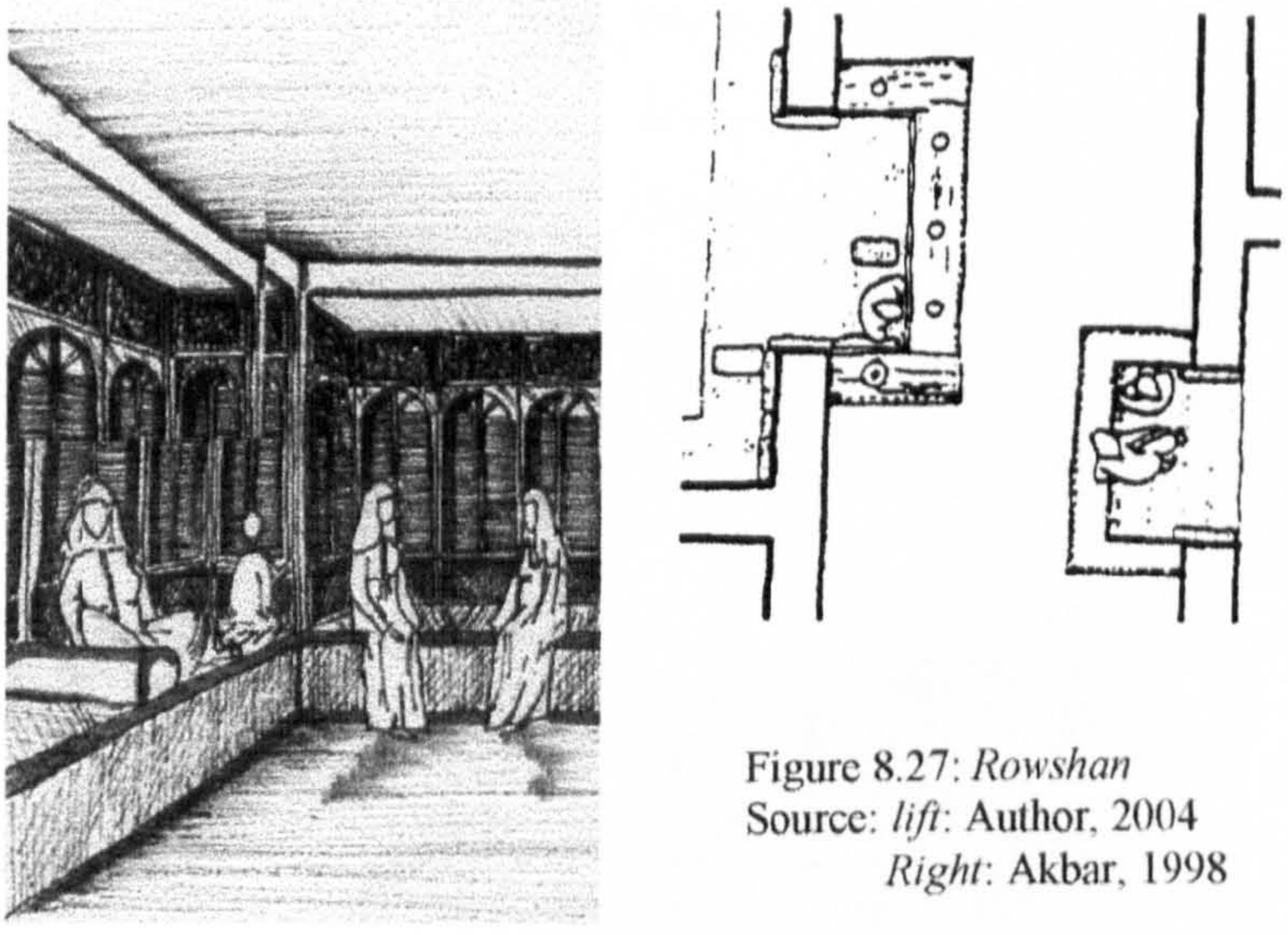

Figure 8.27: *Rowshan*
Source: *lift*: Author, 2004
Right: Akbar, 1998

8.4.10 Corner Doors (Pattern No. 196)

This pattern helps you place doors appropriately. Alexander wrote:

> "The success of a room depends to a great extent on the position of the doors. If the doors create a pattern of movement which destroys the places in the room, the room will never allow people to be comfortable."[19]

Alexander discussed the case of a room with a single door and a room with two or more doors as follows:

- First, the case of a room with a single door: In general, it is best if this door is in a corner. When it is in the middle of a wall, it almost always creates a pattern of movement, which breaks the room in two, destroys the centre, and leaves no single area which is large enough to use. The central door is especially useful when the room has two partly separate functions, which fall naturally into its two halves. (Figure 8.28)

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[19] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 904

Figure 8.28: room with one door
Source: Alexander, C. 1977, p.904

- Second, a room with two or more doors: the individual doors should still be in the corners for the reasons given above. But we must now consider not only the position of the individual doors, but the relation between the doors. If possible, they should be placed more or less along the same side, so as to leave the rest of the room untouched by movement. So, more generally, if we draw lines which connect the doors, then the spaces which are left uncut by these lines should be large enough to be useful. (Figure 8.29)

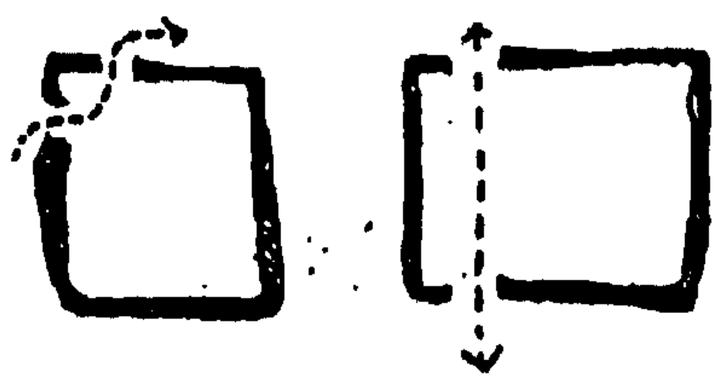


Figure 8.29: Room with more than one door
Source: Alexander, C. 1977, p.905

Consequently Alexander stated:

> "Except in very large rooms, a door only rarely makes sense in the middle of a wall. It does in an entrance room, for instance, because this room gets its character essentially from the door. But in most rooms, especially small ones put the door as near the corners of the room as possible. If the room has two doors, and people move through it, keep both doors at one end of the room."[20] (Figure 8.30)

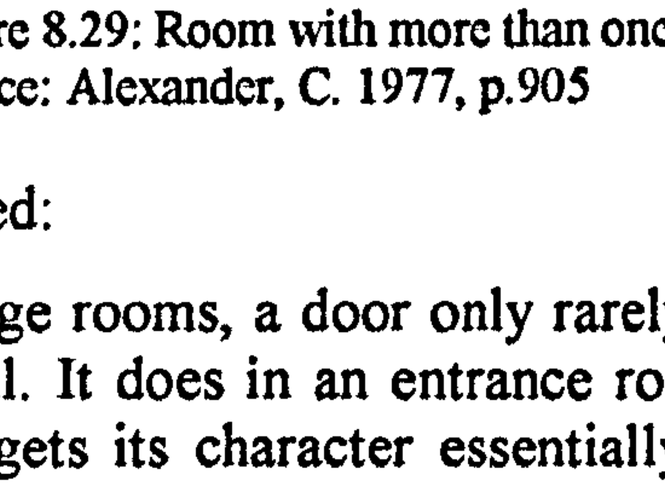


Figure 8.30: Corner door
Source: Alexander, C. 1977, p.905

[20] Alexander, C. Ishikawa, and Silverstein, M. (1977) *A Pattern Language*, p. 905

From the case studies of both the traditional houses and the modern houses it was found that most of the internal doors are put at the corner (see Appendix B and C). However, in some of Makkah's modern houses the living area is located in the central part of the house. Therefore more than two doors open into this area, for example the entrance door, kitchen door and bedroom doors...etc, which creates a pattern of movement that breaks the area. As result there is not enough area to be useful. (Figure 8. 31) (see also figure 8.10) (For more examples see Appendix B, House11, 25,26,31,32 and 33)

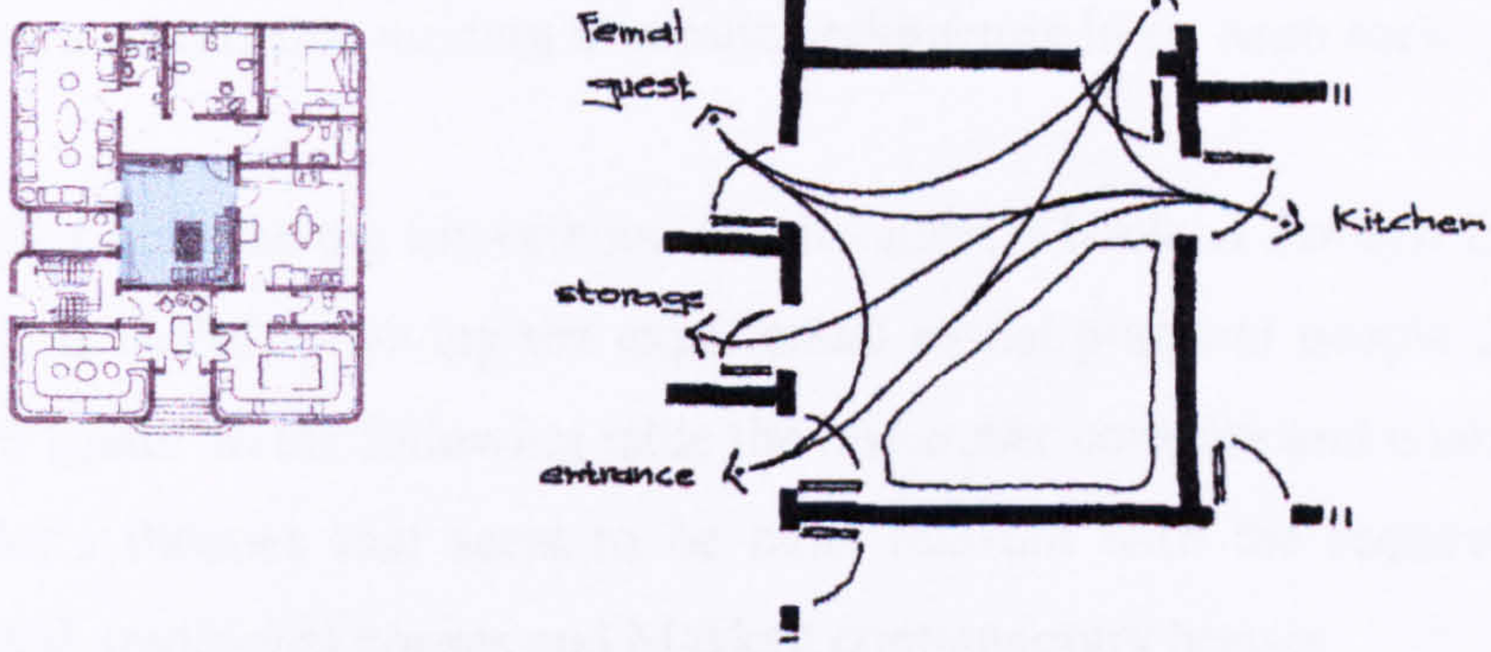


Figure 8.31: Not enough area to be of use in the living area, House4

8.3 Reflection

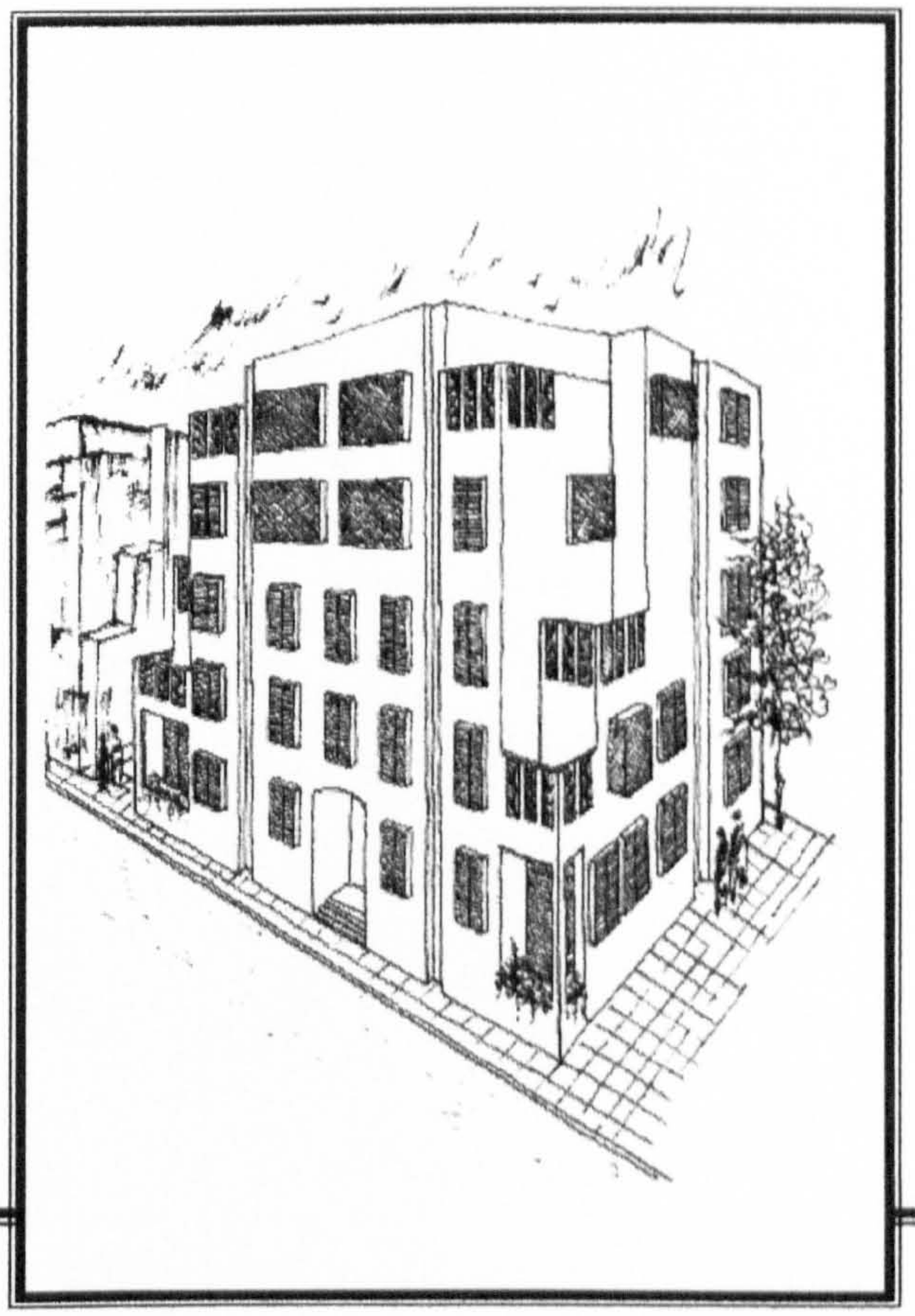
As mentioned earlier the researcher came to this study as a designer, a practical architect who believes that something can and should be done to counter the negative impact of rapid westernization, commercialism and inadequate professional service upon the quality of the domestic environment in Saudi Arabia. At the same time he recognises the need for a sound theoretical foundation for such an effort and the need for good models for practice. Therefore Christopher Alexander's theory, 'Pattern Language', which is regarded as one of the most holistic of modern approaches to architectural design, is proposed as a mechanism for achieving a sustainable modern domestic architecture in an Arab society.

The researcher believes the importance of Alexander's book, *A Pattern Language*, lay in that it is useful by giving the experiential model practical people can easily keep in their heads. In the following table the researcher compare and contrast some of Alexander's theories that seem to be most relevant with the requirements of Islam, Makkah traditional houses and Makkah contemporary houses.

Christopher Alexander	Requirements of Islam	Makkah traditional house	Makkah Modern flats
Intimacy Gradient:			
Layout of the spaces of a building: -Public. -Semi-public. -Private.	Separation between unrelated men and women. So, lay out the spaces of a building must be clear to maintain the privacy of the family.	Layout the spaces of a building: -Public. -Semi-public. -Private. Were clear due to vertical extension in building.	The sequences of the spaces have become weak or not clear in some of flats due to being cramped and on some level.
Common Areas at the Heart:			
The form and located of the common area is critical Location the common area at the centre of gravity.	Organized according to the responsibility of parents towards other members of the family, the relationship between parents and children	Access to all floors was obtained by means of a central staircase. In many cases *Muakhkhar* which used as a living room was found on first, second or third floor as near as possible to the staircase.	The residents chose a room close to the kitchen in the family zone for a living room. So, its location depends on the siting of the kitchen area.
Cooking Layout:			
Cooking is uncomfortable if the kitchen counter is too short and also if it too large. So place the stove, sink, and food storage and counter in such a way that: - No two of the four are more that 10 feet (300 cm) apart. - The total length of counter - excluding sink, stove, and refrigerator - is at least 12 feet (360 cm). - No one section of the counter is less than 4 feet (120 cm) long.	-----	- Small. - Not equipped with piped water.	Usually it is the owners who decide the area of the kitchen of their own building and the designers arrange the sink and kitchen window.
Couple's Realm:			
- Make a special part of the house where the man and women of the house can be together in private. This part should be: - Separate from the children. - Close to the children's room, especially young. - It needs a sitting area. - If possible a special bathroom.	- The responsibility of parents towards other members of the family. - The relationship between parents and children. - Respect from each member of the family to others, especially the privacy of parents in the bedrooms.	- No special function (multi-purpose room). - *Majlis* was used as female reception and the parents slept in it during the winter nights. - So, no special part of the house was distinct for the parents.	- The master bedroom suite and facilities have become an essential part of any house. - Mostly there is no sitting room. - Mostly there are no a special bathroom.

Dressing Room:			
- Give everyone a dressing room - either private or shared - between their bed and the bathing room. - Make this dressing room big enough so there is an open area in it at least 6 feet (180 cm) in diameter. - Abut six linear feet of clothes hanging space; and another six feet of open shelves; two or three drawers; and mirror.	-----	- No special function (multi-purpose room). - There was no special room called the dressing room.	- Limitation number of rooms. - There are no dressing rooms.
A Room of One's Own:			
- Give each member of the family a room of his own, especially adults. - place these rooms at the far ends of the intimacy gradient - far from the common rooms	- Separation between boys and girls during sleeping time.	- No special function (multi-purpose room). - *Makhlawan* (resting place) was a place where one can sit in privacy and it could be located on any floor of the house.	- Limited number of rooms - Children do not have their own bedroom. - The guest rooms and living room are used as a sleeping room at night.
Bulk Storage:			
- Do not leave bulk storage till last or forget it. - - Its floor area at least 15 to 20 per cent of the whole building area - not less.	-----	- The existence of stores almost everywhere.	- lack this important area of storage.
Light on Two Sides of Every Room:			
- Give every room light on two sides.	-----	- Most of the rooms were characterized by light on two sides.	- Every room has one or two of these small (120 cm^2) windows.
Window Place:			
- In every room where you spend any length of time during the day, make at least one window into a "window place".	-----	- Provided by *Rowshan* and *Dakkah* (sand-cement bench).	- There is no "window place".
Corner Doors:			
- In most rooms, especially small ones put the door as near the corners of the room as possible. If the room has two doors, and people move through it, keep both doors at one end of the room.	-----	- Most of the internal doors are put at the corner.	- Most of the internal doors are put at the corner.

Table 8.1: Comparing and contrasting space-use in modern Makkah residences against Christopher Alexander theories



CHAPTER 9

A HOME FOR TODAY AND TOMORROW:

New Guidelines for the Saudi Home

9.1 Introduction

9.2 Home for Today and Tomorrow

9.2.1 Space in the Home

9.2.1.1 The hall
9.2.1.2 Living area
9.2.1.3 Sleeping area
9.2.1.4 Eating area
9.2.1.5 Cooking area
9.2.1.6 Storage

9.3 Reflection

9.1 Introduction

It was mentioned in chapter 6 that most of Makkah's flats contain four rooms and there are no different types of space which make them suitable for different sizes of families, so occupants are obliged to make a number of decisions according their priorities (see also Appendix B). This limitation has resulted in the unavailability of independent children's bedrooms and consequently they had to use some other spaces such as living area or male guest area for sleep or study. Moreover, the storage space which was found everywhere in Makkah traditional houses is also missing in most of the modern flats. It is obvious that the different sizes of Saudi families need different spaces, which are suitable and comfortable for them and their guests. The purpose of this chapter is to establish new guidelines for Saudi homes that would have these qualities.

9.2 Home for Today and Tomorrow

9.2.1 Space in the Home

Parker Morris[1] discussed the homes as a vehicle for satisfying family needs, and pointed out the requirements of different families, such as a family with children, married couples, persons living alone, elderly people, and very small houses as well as bungalows. This study is about the Saudi families in Makkah. Therefore homes for families with children will be the focus of this study.

Parker Morris indicated that the home of the family has to provide for a way of life, which is complex. So the design of the house must provide reasonable privacy for groups and individuals as well as making available family life facilities that are part of the community of relations and friends. The house has to provide a really wide range of activities during every stage of family life; and yet when the couples' and children's realms come to be put to wider daytime and late afternoon use, in the family home the living areas will still be in use for family meetings, chatting, watching television, homework, children's play, making calls, receiving relatives or friends.

[1] Parker Morris (1960) *Home for Today and Tomorrow*, pp. 7-8

The structure of the family life could, however, change completely over the course of twenty or thirty years as Parker Morris explained:

- "When the first baby is born the mother begins to spend most of her time in the house and cares for the baby.
- When further children come along, the parents will live with many interrupted daytimes and nights. They have to clean the floor after mealtimes, visits to the shops will be rapid and children need rests. In addition some mothers take up part-time work when the children start school.
- Within a few years the children need quiet every evening to do their homework. The children evolve into young adults with more things to do such as more homework and hobbies, they need bigger beds, most acquire incomes of their own, they have greater needs for privacy, a larger number of possessions, often noisy ways of passing their time, and increasingly a real need for somewhere to work at their further learning".

9.2.1.1 The Hall

As mentioned earlier in chapter 4 the *Dehliz* (entrance hall) was the first space experienced by anyone who entered the house and it considered as a transitional space, from public to private. In Makkah and other Arab traditional houses, sometimes the entrance was offset, in order to provide privacy. The *Dehliz* had a number of functions which were described earlier. The entrance halls of Makkah traditional houses are usually located in the ground floor, as near as possible to the guest reception. Sometimes there were two entrance halls, one for the men guests and the other for family and their female guests. However, the entrance halls of Makkah modern houses are usually located in the guest zone, close to the *Majlis* and the dining room or Arabic *Majlis*. In the villas or semi detached houses usually there are two entrances. The first entrance is used by the guests and is usually located on the main façade which is, as mentioned earlier, as near as possible to the men guests' zone. The second entrance is for the family members and that is located on the side façade on the staircase. In addition the family entrance usually leads to the living area. In some cases the flats also have two entrances for guests and family, which tend to be close together. However female guests hang the black cloth that covers their body, called *abayah,* on a hanger here.

It was clear from the case-studies, (Houses 1, 2, 3 and 5) that in the entrance hall there should be a door that separates the guest zone and the family zone to maintain the privacy of the occupants. Therefore when male guests pass through the entrance hall there is a strict control over the door. The male *Majlis* and Arabic *Majlis* doors must be closed when the women guests or family females go through the entrance hall when the men guests occupy the male *Majlis*, Arabic *Majlis* so that family privacy is never compromised.

It was clear also from the case-studies that in Makkah contemporary houses there is no standard size for the entrance hall (Figure 9.1). The owners of the building can decide the size or be guided by the architect during the design of the building. The case studies show that the entrance halls normally vary between $9m^2$ and $12m^2$, which is the normal area of a contemporary entrance hall. Occasionally the hall is much larger, as in House 1 where the area of the entrance hall is about $28m^2$, and thus a huge area is lost from the flat without any utilitarian function.

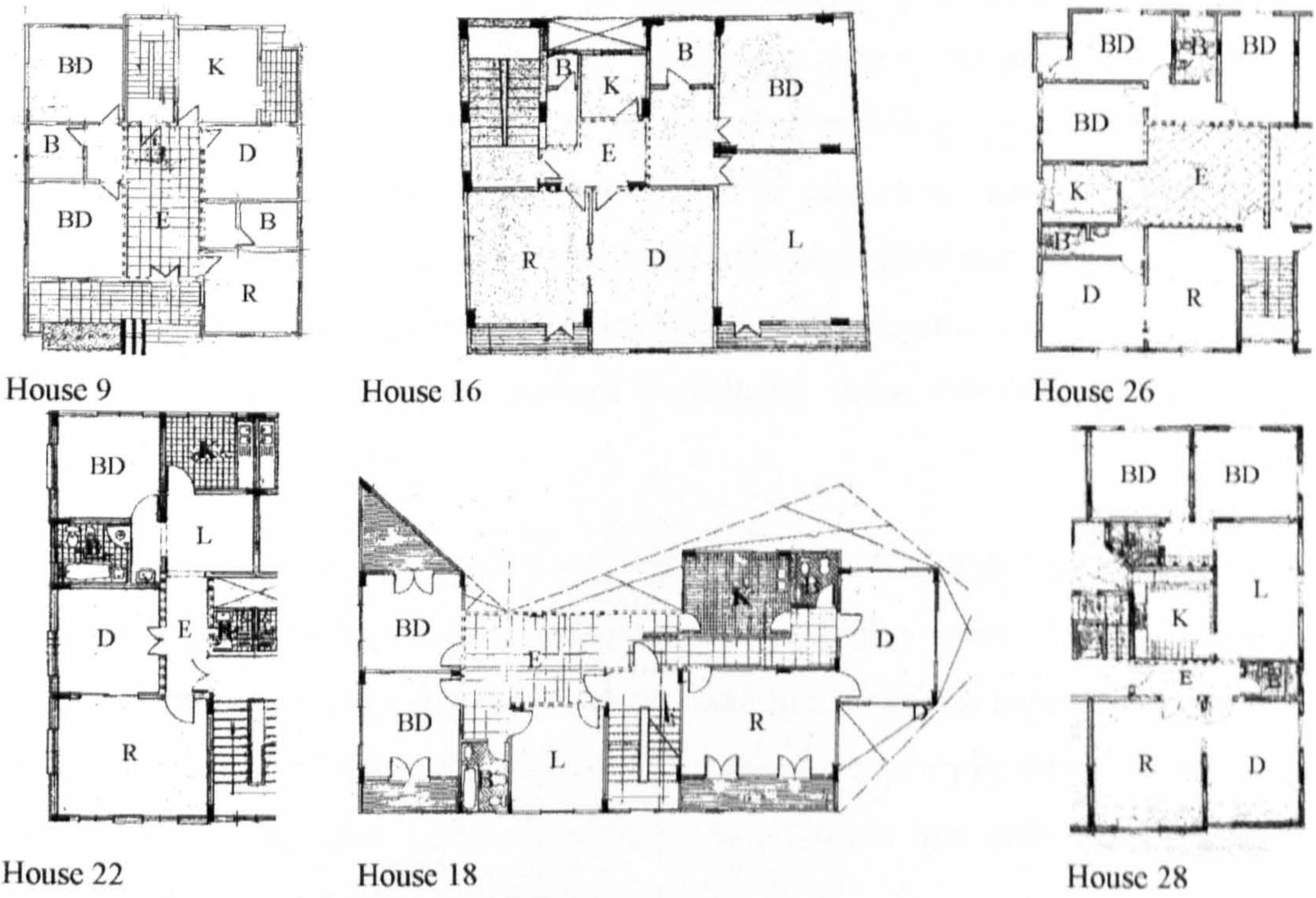


Figure 9.1: Entrance hall of Makkah contemporary houses

Note there is no standard size for the entrance hall

Parker Morris[2] pointed out that:

> "If a home is large enough it can have a fair-size hall without detriment to other requirements, though in home for small families a solution using a porch or lobby with outer and inner doors may be more satisfactory, taken as a whole"

According to the requirements of Islam two entrances to a residence would be more suitable for Arab society than having only one entrance. The first entrance is used by the male guests and is usually located on the guest zone, while the second is for family members and their female guests and leads to the family zone. However, the designer could, as Parker Morris suggests, design a fair-sized hall for a large home without any detriment to other requirements, and a porch or lobby could be a solution in homes for small families.

9.2.1.2 Living Area

Parker Morris[3] pointed out that the accommodation for a married couple will need to provide a living area, a double bedroom, a kitchen, and combined bathroom and WC. The living area must accommodate activities ranging from leisure, watching television, or hobbies and sewing and mending, to reading, writing letters, and comfort. Living space also should be considered space for two easy chairs, a sofa, television set and a low small table and place suitable for a logical number of other possessions such as sewing box, radiogram and bookcase. He also believed that the self-contained bed-sitting room dwelling is likely to continue to be acceptable.

As mentioned in chapter 6, most of the people in Makkah houses have their breakfast, lunch, dinner, tea and coffee in the living room, they also watch television, chat, make telephone calls, and children play in this room. However, this room is usually furnished with *batermah* arranged peripherally arround the living space. Nowadays, some houses have their living room furnished with a modern suite, for example sofa and armchairs.

It became clear from the case-studies of modern houses that the villa and semi-detached residence are characterized by the availability of an independent living

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[2] Parker Morris (1960) *Home for Today and Tomorrow*, p.9
[3] Parker Morris (1960) *Home for Today and Tomorrow*, pp. 9-10

room, which is a communal area for the whole family. However, the limitation of rooms in flats has resulted in the unavailability of separate living rooms. Therefore the occupants have to prioritize their requirements, choosing a room in the family zone and as near the kitchen to be a multi-purpose room. Family members' activities in the house take place in this room as well as used at night as a sleeping room for children. Parker Morris[4] suggested the following:

> ".. the objective in designing a home for four or more should provide at least one room in the living area which can cater for activities needing privacy and freedom from disturbance"

It is proposed, therefore that the designer should provide at least one room that can be used as a living room.

9.2.1.3 Sleeping Area

In the discussion in chapter 5 it was noted that the master bedroom suite and facilities have become an essential part of any Saudi house. It is usually located in the family zone. The master bedroom is the private room of the parents and it could become an essential part of all houses. However, it became clear from the previous description and from the case-studies of modern houses that the limited numbers of rooms in flat have resulted in the unavailability of separate children's bedrooms and children sleep on the floor in the multi-purpose room in the traditional way. Therefore the villa type could be providing more success fully for the family's need than the flats with fewer rooms.

Parker Morris stated that the "minimum bedroom provision for a family of four is two double rooms. Where the children are of opposite sexes this is unsuitable as they each need a room. According to Muslim codes which demands separation between boys and girls. Parker Morris suggests that adolescent and adult children should preferably have a room each even if they are of the same sex, "for they need a place of their own".[5]

As the result a family of four people should have a double bedroom as a master bedroom and one or more bedroom for children. The children's rooms must be

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[4] Parker Morris (1960) *Home for Today and Tomorrow*, p.10
[5] Parker Morris (1960) *Home for Today and Tomorrow*, p.10

provided with a bed or sofa, a bedside table, clothes storage, and storage for personal possessions. When the room is designed as a study it needs space for a desk, a chair and bookcase as well as a space for at least one easy chair that is needed for a bed-sitter. Double study bedrooms for two active children may create difficulties if they are expected to do their homework in them without management. Therefore the bedroom might reasonably be designed as a bed-sitting room for two children. In addition the room should provide enough space for two single beds, beside tables, clothes storage, and storage for personal possessions as well as two chairs and a table. However two-tier bunks will provide the children with extra space and the room will be really useful.

9.2.1.4 Eating Area

Most of the people in Makkah houses have their breakfast, lunch and dinner in the living room. Nowadays, some of Saudi residents have their meals in the kitchen. For example, in House 4 (Figure 9.2) the kitchen area is $25m^2$ and the household is furnished the central of the kitchen with table and four chairs. The researcher asked the householder "Do you and your family have all meals in the kitchen?" The answer was that usually they have breakfast and lunch the in the kitchen and mostly they have dinner in the living area. The researcher also asked the household "Why do you have dinner in the living room?" The answer was because at dinner-time there is often an interesting programme on the television.

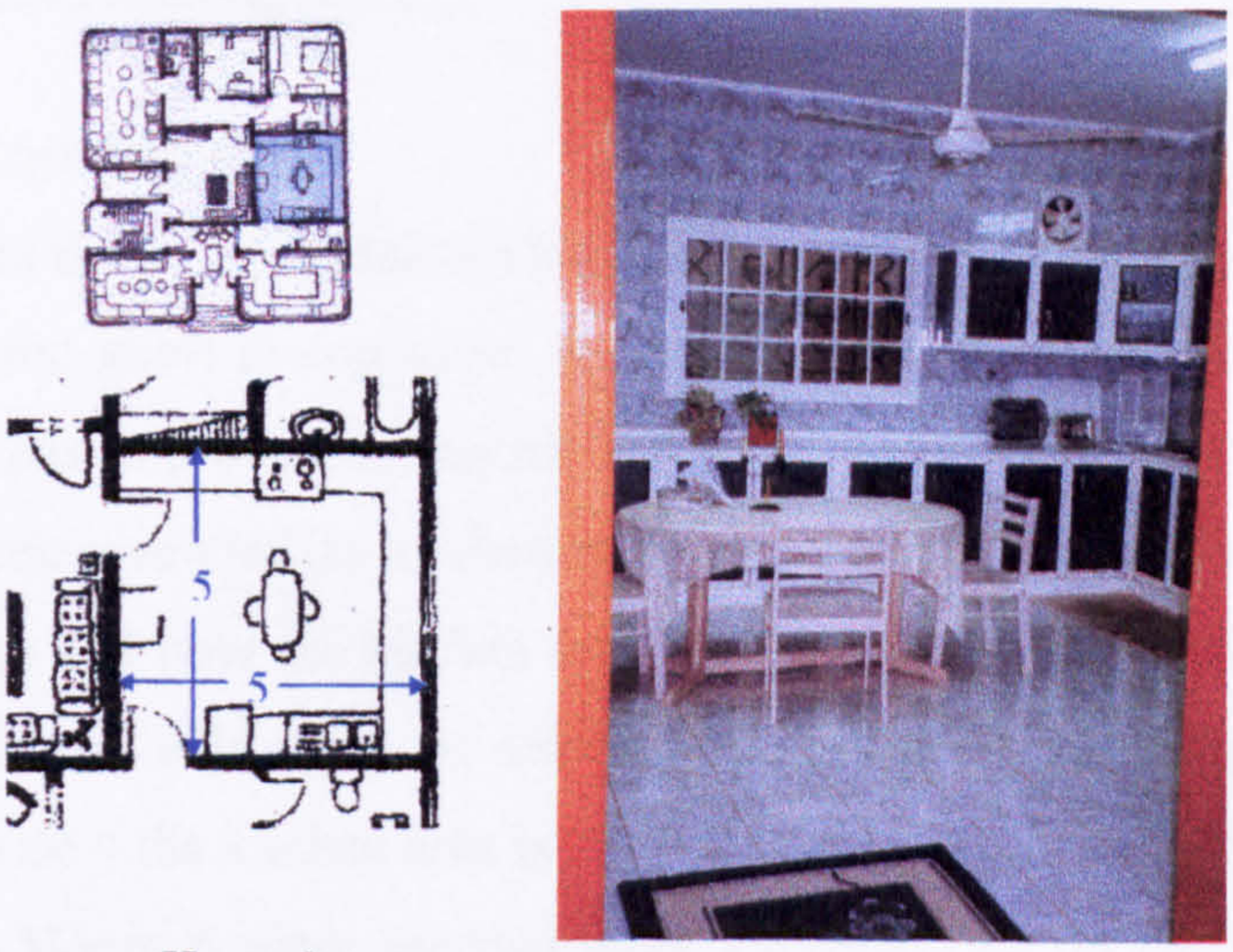

Figure 9.2: Eating area, House 4

Parker Morris stated: [6]

> "People in all parts of the country [UK], and in whatever social and economic group, have at least some meals in the kitchen"

this is true as well of Saudi society, therefore, there should be somewhere in the kitchen where two or three people can sit down to eat, even in a kitchen that is not designed for the family to eat in and that is designed mainly as a working centre.

Parker Morris [7] pointed out that, in rising order of preference, the various possible kitchens and eating arrangements might be listed as follows:

- First, a working kitchen enlarged to provide a meal space for the whole family, there being no other eating space. This arrangement, which is the regular local authority "dining kitchen", does not allow for the separation of the work area from the eating area, whether for tidiness or to keep small children away from the cooking operations.
- Second, an arrangement to be favoured is a working area with a meal space differentiated from it, but close to it and with direct access to it. This allows a separation of functions within the dining kitchen and meets sensibly well the requirements of familiar meals, family meals, and entertaining.
- The third arrangement, suitable for slightly bigger houses, would be separate room that would be used for meals with all the family present, for entertaining, and for activities needing privacy.

9.2.1.5 Cooking Area

The kitchen in the modern Makkah houses is situated in the family zone, near to the family area and guest dining room. It became clear from the case-studies that the kitchen area has improved during the last thirty years. In the apartments that were built during the seventies the kitchen area is very small, sometimes only about $4m^2$. In the nineties and now the kitchen area has become larger, about $12m^2 - 16m^2$ in some flats. In the villa types or semi detached houses much bigger kitchens are found. In House 4 the kitchen area is $25m^2$ and in House 6 the kitchen area is $35m^2$. However, in House 6 there are two large kitchens, one on the ground floor that

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[6] Parker Morris (1960) *Home for Today and Tomorrow*, p. 10
[7] Parker Morris (1960) *Home for Today and Tomorrow*, p. 10

serves the guests and the other on the first floor that serves only the family. Consequently the conclusion must be that in the Makkah modern houses there is perhaps no standard for the kitchen area. (Figure 9.3)

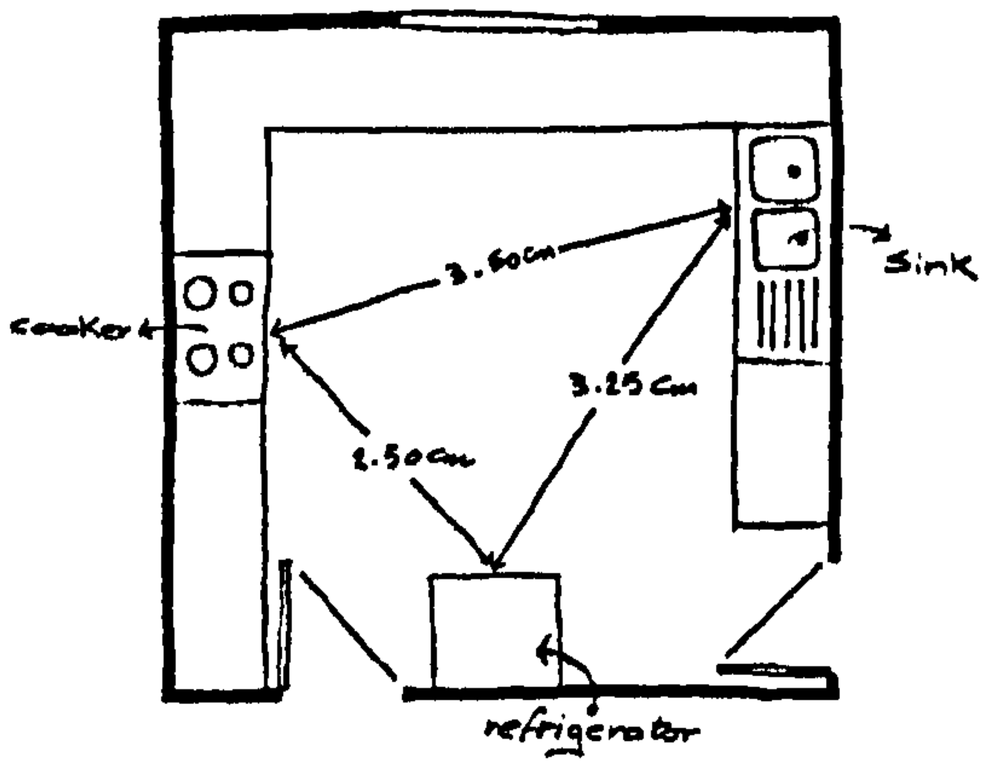

Figure 9.3: The area between cooker, sink and refrigerator, House 4

Parker Morris showed that the kitchen is the most intensively used space in the house and yet it is also the space that in many new houses retains some of the quality of the nineteenth century scullery. In local authority houses a small number of kitchens at the time (1960s) reached a really high standard.

Four important findings of kitchen sequences were indicated by Parker Morris as follow:

a) Most moves in food preparation take place between the cooker and the sink, and the cooker and the work surface, as well as a very few moves between working area and food stores (refrigerator, larder, dry goods store).
b) A work surface on each side of the cooker is highly advantageous, because pan handles project, and pans have to be put down beside the cooker.
c) For serving up main meals, one work surface should be large enough.
d) It is most suitable to store the cooking utensils near to the sink and cooker where they are used (e.g. above the central work surface). The best location also of the small utensils and tools is in a drawer in this area.

To satisfy the above criteria which still seem very relevant today, even in Saudi Arabia these considerations led to the setting up of a work sequence standard

design. It should include work surface/cooker/work surface/ sink/work surface, or the same in reverse order that is not interrupted by a door or other traffic way, and arranged either in a straight line or in an L or a U shape. The analysis of the plans in Makkah case-studies showed that only 5 per cent of kitchens conformed to this very exact standard while almost one-quarter showed no identifiable sequence at all.

Parker Morris believed this arrangement of working areas, unbroken by the access door or larders, alone would serve to save the great majority of future kitchen work areas from the bad defects of much present practice. He showed some examples of the arrangement of work surfaces as follow:

- Straight line arrangement: if there is a working surface 3 feet 6 inches (about 115 cm) wide between the cooker and the sink, and if a refrigerator larder unit is included in the sequence, a straight line arrangement requires a continuous wall space of 12 feet 3 inches (about 367.5 cm).
- L-shape arrangement: also if there is a working surface 3 feet 6 inches (about 115 cm) wide between the cooker and the sink, and if a refrigerator larder unit is included in the sequence, the L-shape arrangement requires an uninterrupted wall space of 7 feet (about 210 cm) on one wall plus 8 feet 9 inches (about 262.5 cm) on the adjoining wall at right angles to it. (Figure 9.4) However the requirements of the U shape depended upon the conditions.

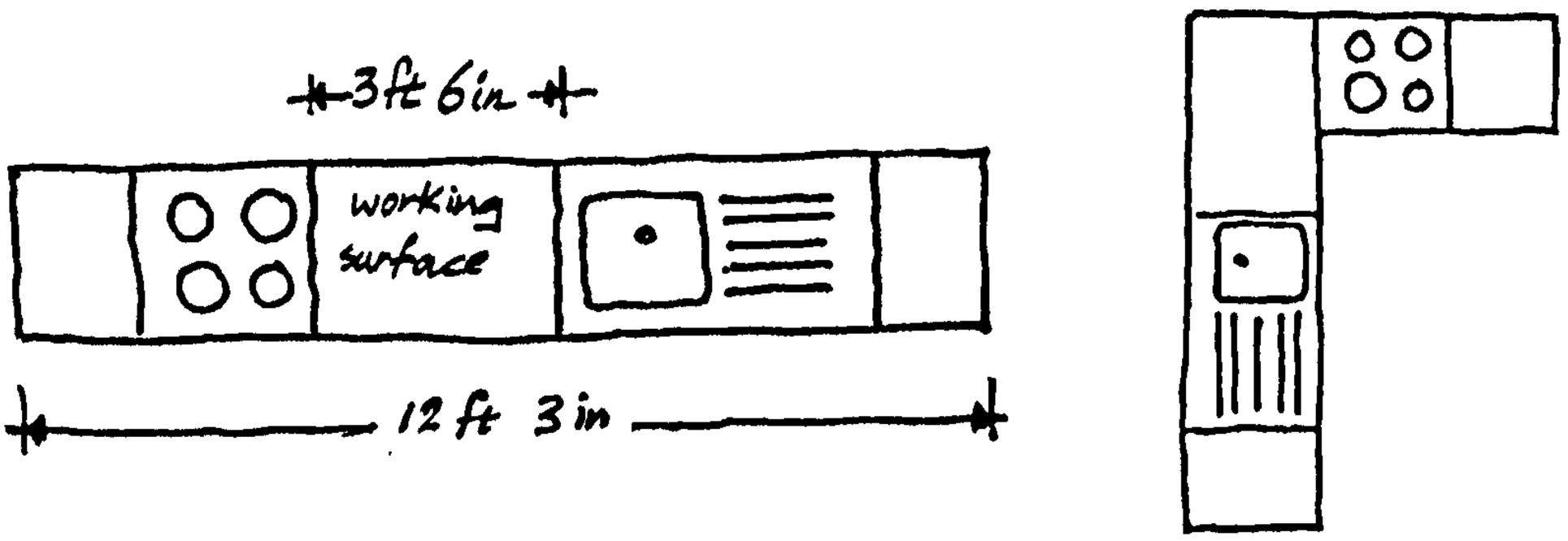

Figure 9.4: Straight line and L-shape arrangement

In the present Saudi market most washing machines and driers depend on the sink for water disposal and supply, and it seems desirable to store them near where they are to be used. Parker Morris noted that the designer should provide enough

space near the sink for this reason. However some of the designers have the solution of utilizing the bathroom as the room in which laundry is done, and where the washing machine can be built in. The separation of activities such as household washing from the kitchen is aimed at the future kitchen which will specialize in functions connected with storage, preparation, and cooking of food and serving, eating and clearing up of meals.

The increase in the type of machines and appliances of households is likely to be accompanied by other changes to machines as well as some machines now not often found, such as washing-up machines which will become increasingly common, and appliances not yet invented will make their appearance. In addition with the increase of types of appliance it is probable that more floor space will be needed.

Therefore Parker Morris recommended the following:

> "The designer must provide for the housewife to keep washing machinery near the sink and space in or near the working area for additional machinery in the future"[8]

All of the kitchen operations include cleaning, and usually household washing and ironing involve storage requirements, and much of the storage should be arranged with an eye to the way in which it is probably to be used, near to the kitchen table and working surfaces, though some of the storage can be elsewhere. Most of the items to be stored, such as food and drink, crockery, pots, pans, kitchen utensils, cleaning materials and equipments all need a great deal of space. Therefore Parker Morris recommended that the kitchen must have adequate storage space in or close to it. This space will be at least 80 cubic feet of the family house.

9.2.1.6 Storage

As mentioned earlier in chapter 1 most families still maintain some of the traditional Saudi customs, for example parents meet up with their married sons or daughters and stay for several days or up to week. They sleep mostly in the multi-purpose room on the floor. They sleep on the *tawaliat* and then in the morning it is folded and put

[8] Parker Morris (1960) *Home for Today and Tomorrow*, p.51

away. Therefore the modern house should provide an area to storing the *tawaliat*, cushions and covers.

Many things need to be stored for some eventuality, such as winter or summer clothes which are only seasonal, some things that are needed only from time to time such as luggage trunks and many quite huge things that need to be stored for many years, such as equipment for babies. Parker Morris indicated that too few the households would not find reasonable storage requirements met in the housing arrangements. Especially there is a requirement for storage space within the flat. Therefore Parker Morris recommends that:

> "15 sq. ft. [450 cm sq.] should always be provided in flats and maisonettes for 4 or more persons, with slightly less for smaller families. There should also be a separate store elsewhere of 20 sq. ft. [600 cm sq.] for each dwelling."[9]

Parker Morris provided a table of recommended standards relating to floor space. This table sets out the minimum areas that are needed in the home to build in the future for occupation by one, two, three, four, five, or six people with the required general storage area. (Table 10.1)

A home to be built in the future for occupation by:

6 persons	5 persons	4 persons	3 persons	2 persons	1 person

The general storage as follows:

Square feet & centimetre

Houses	50 ft 1500 cm	50 ft 1500 cm	50 ft 1500 cm	45 1350 cm	40 1200 cm	30 900 cm
Flats and Maisonettes Inside the dwelling	15 450 cm	15 450 cm	15 450 cm	12 360 cm	10 300 cm	8 240 cm

Table 9.1: Table of recommended standards relating to floor space

Source: Based on Parker Morris. 1960, P.35

So, the modern flats in Saudi Arabia should provide storage area – it floor area at least 8-15 sq. ft. (240-450 cm sq.) – not less.

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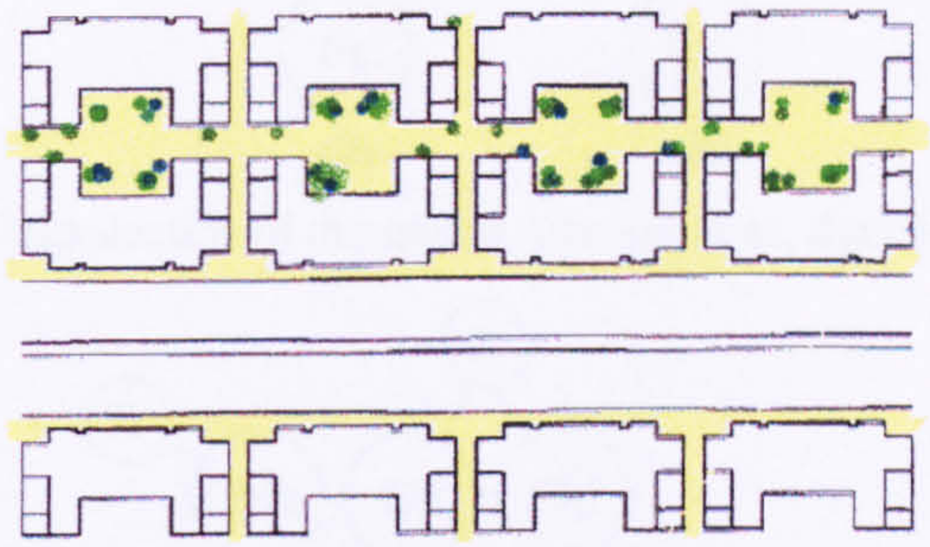
[9]Parker Morris (1960) *Home for Today and Tomorrow*, p 24

9.3 Reflection

In this section the researcher will show, by example, how a typical apartment dwelling could be arranged so as to fulfil all the basic norms for living according to Muslim rule in modern urban environment. (Figure 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 9.11, 9.12, 913, 9.14 and 9.15) The design of the proposed interior environment for the future Makkah family house will ensure that the new homes live up to the standards of traditional Saudi houses. However the flat type is chosen for the following reasons:

- Most economical.
- Common for ordinary people.
- More difficult to solve.



Site plan

Figure 9.5: An example of site plan

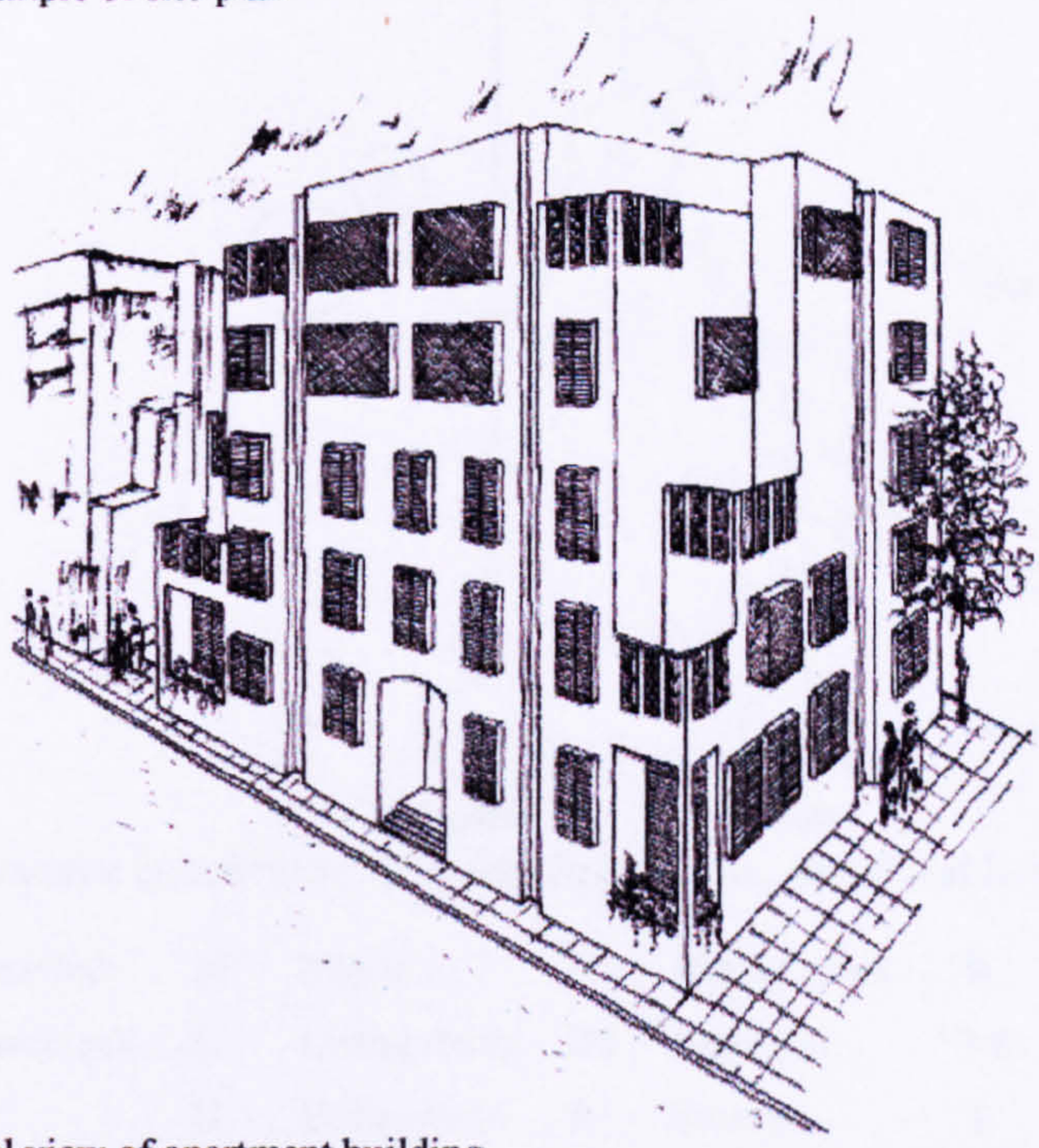


Figure 9.6: General view of apartment building.

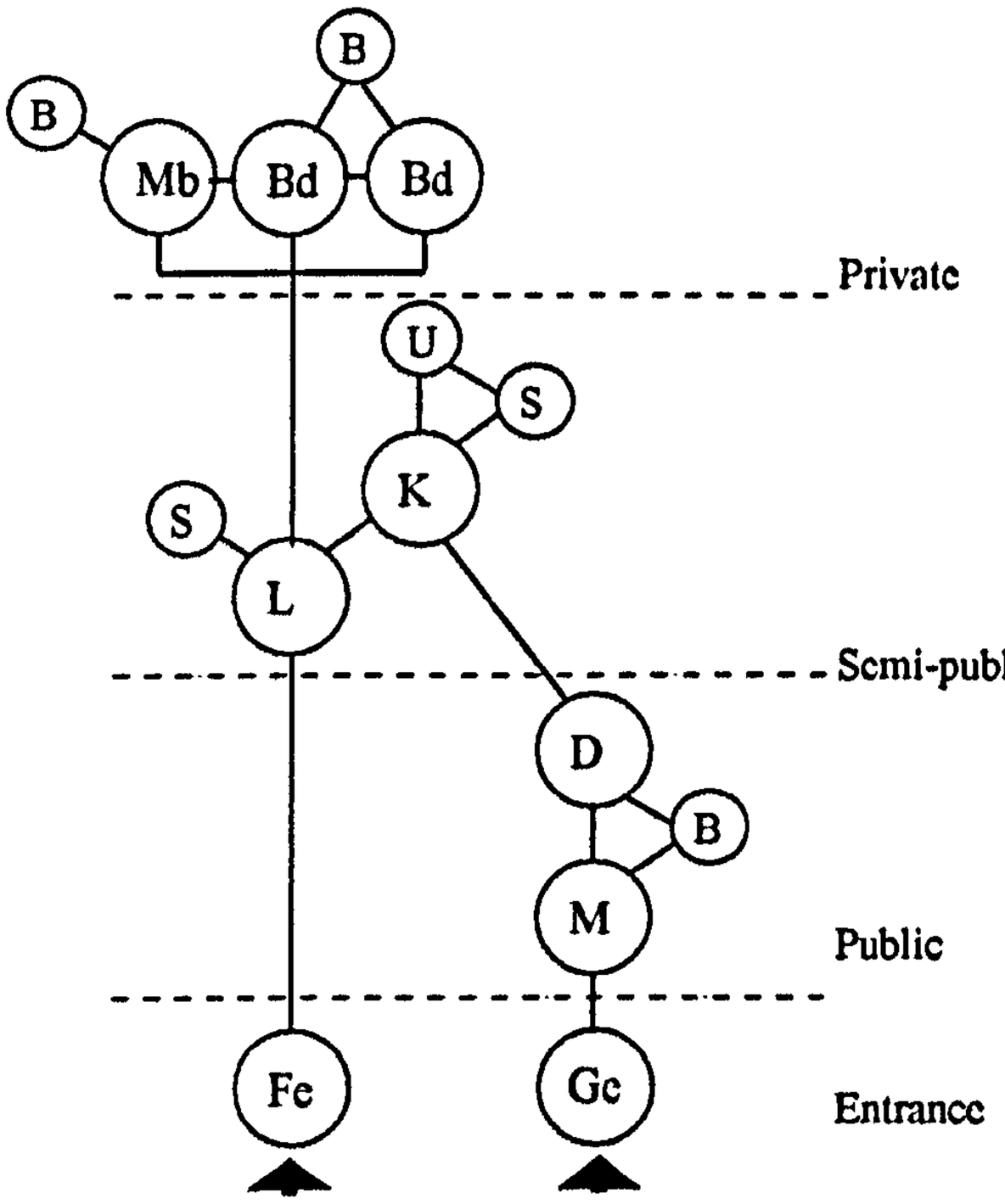


Figure 9.7: Diagrammatic organization of the spaces, Ground floor, flats A and B. (compare Fig 9.11)

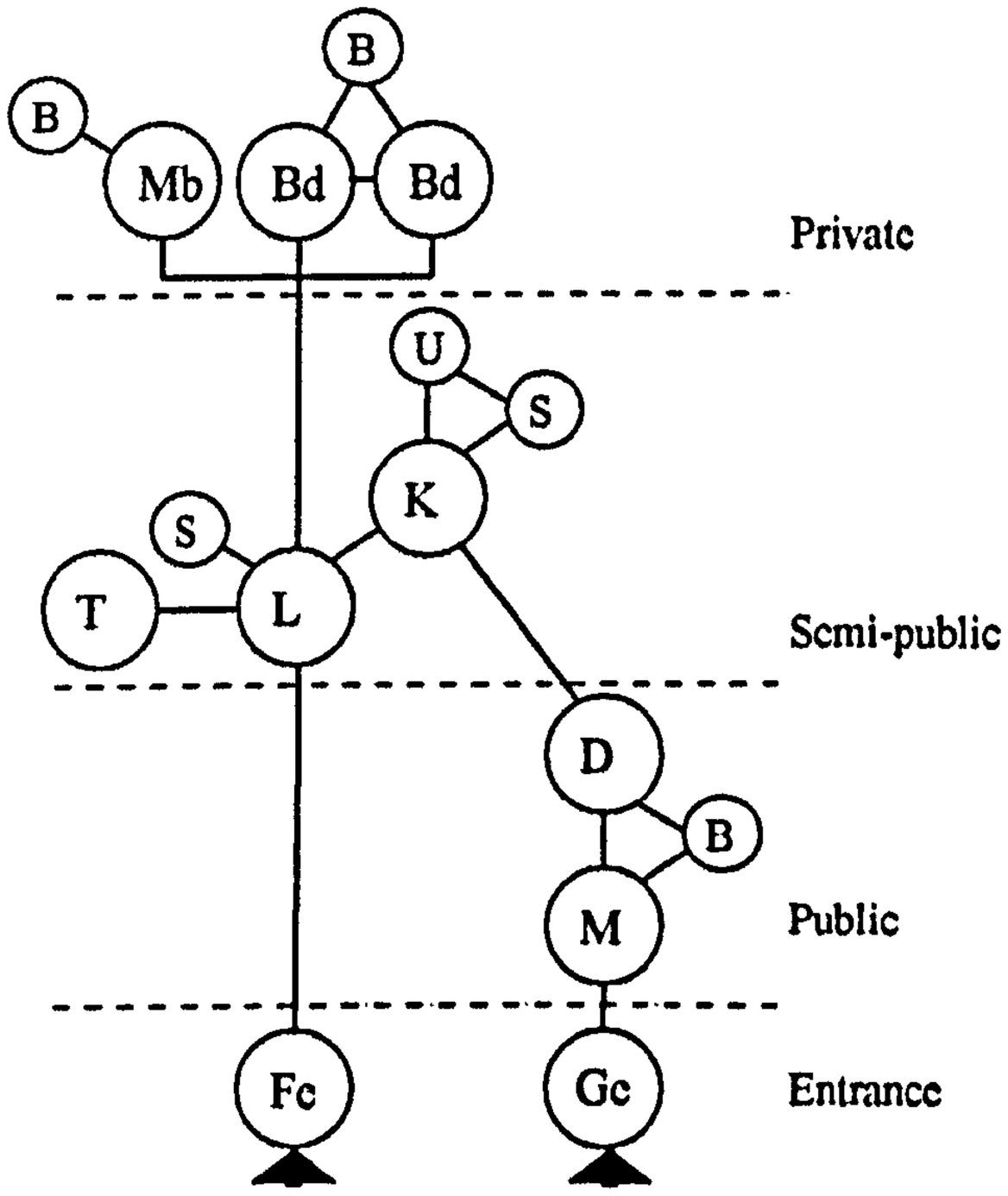


Figure 9.8: Diagrammatic organization of the spaces, First floor, flats C and D. (compare Fig 9.12)

Gc	Guest entrance hall	M	Majlis	D	Dining room	B	Bathroom
Fc	Family entrance hall	L	Living room	Bd	Bedroom	Mb	Master Bedroom
K	Kitchen	U	Utility room	S	Storage	T	Terrace

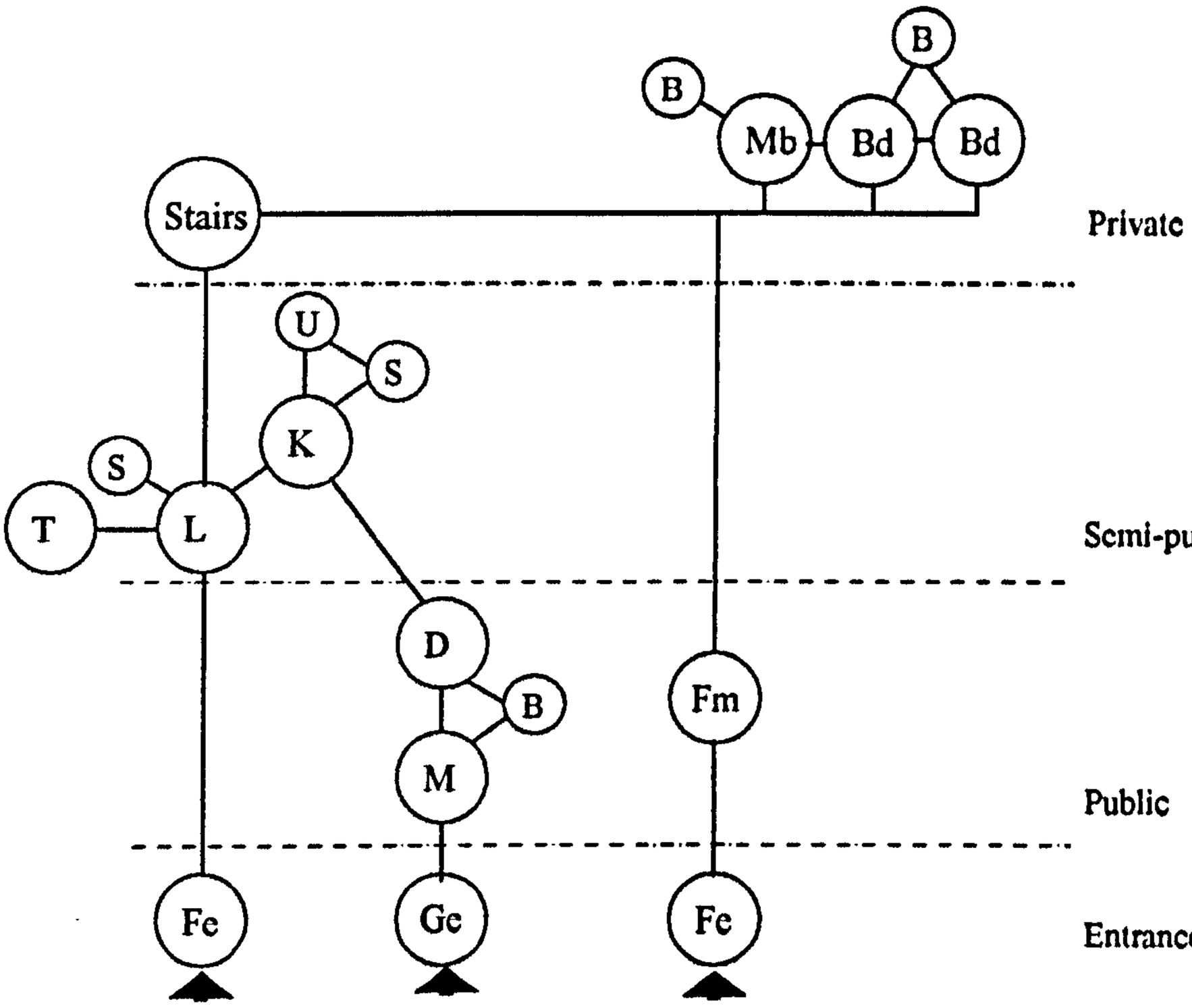


Figure 9.9: Diagrammatic organization of the spaces, Second and third floors, flats E and F (lower and upper floors). (compare Fig 9.13)

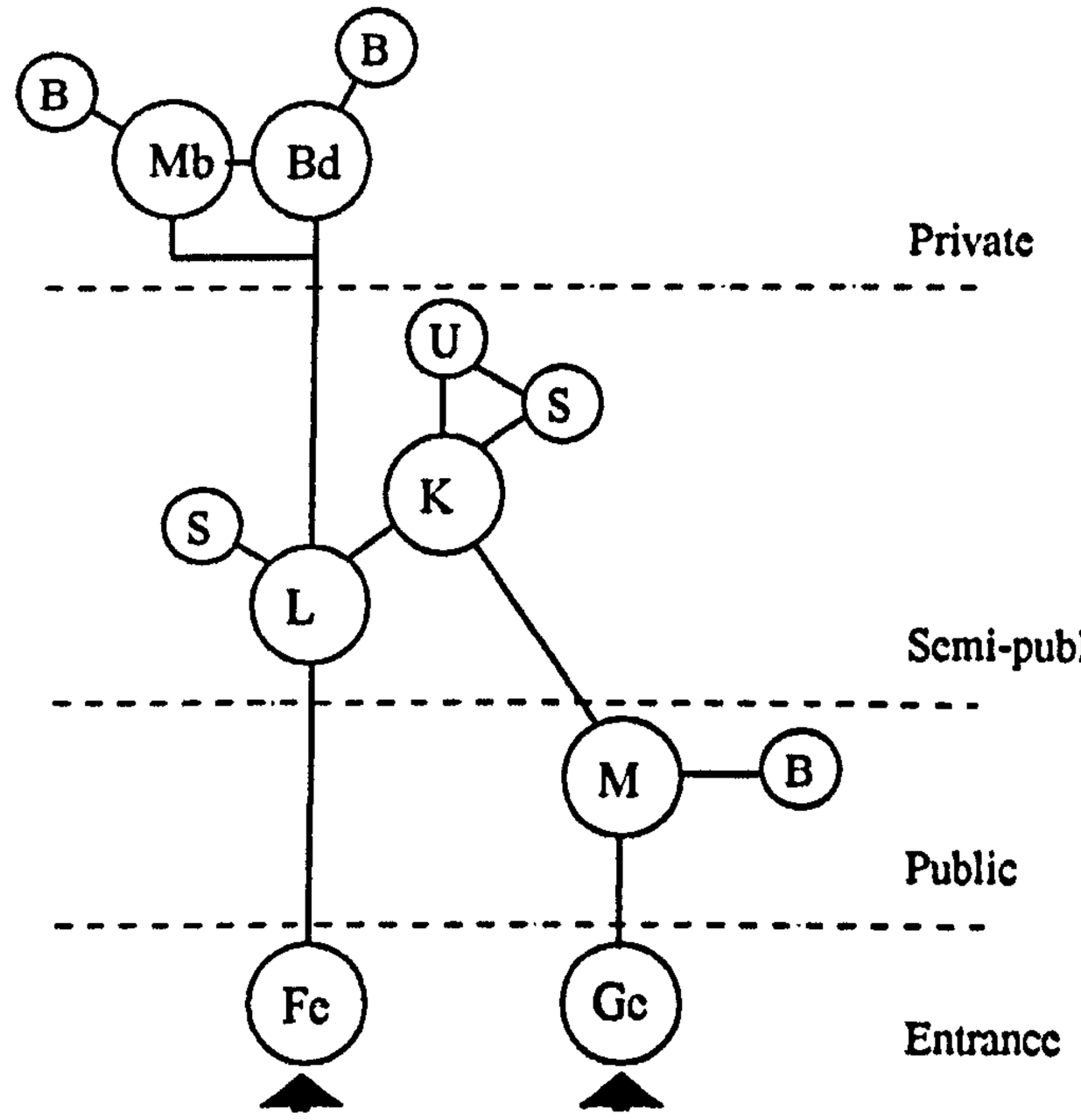
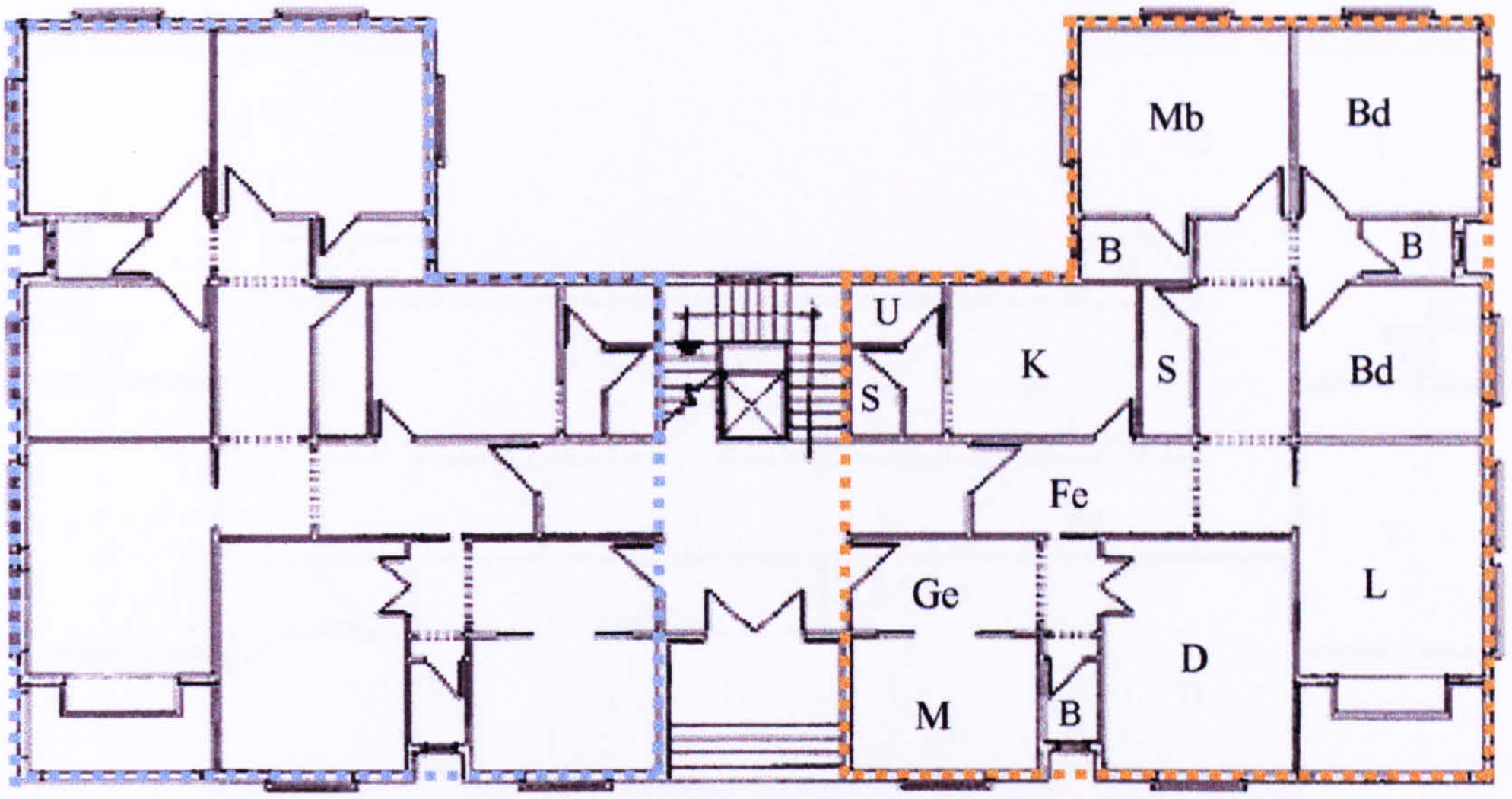


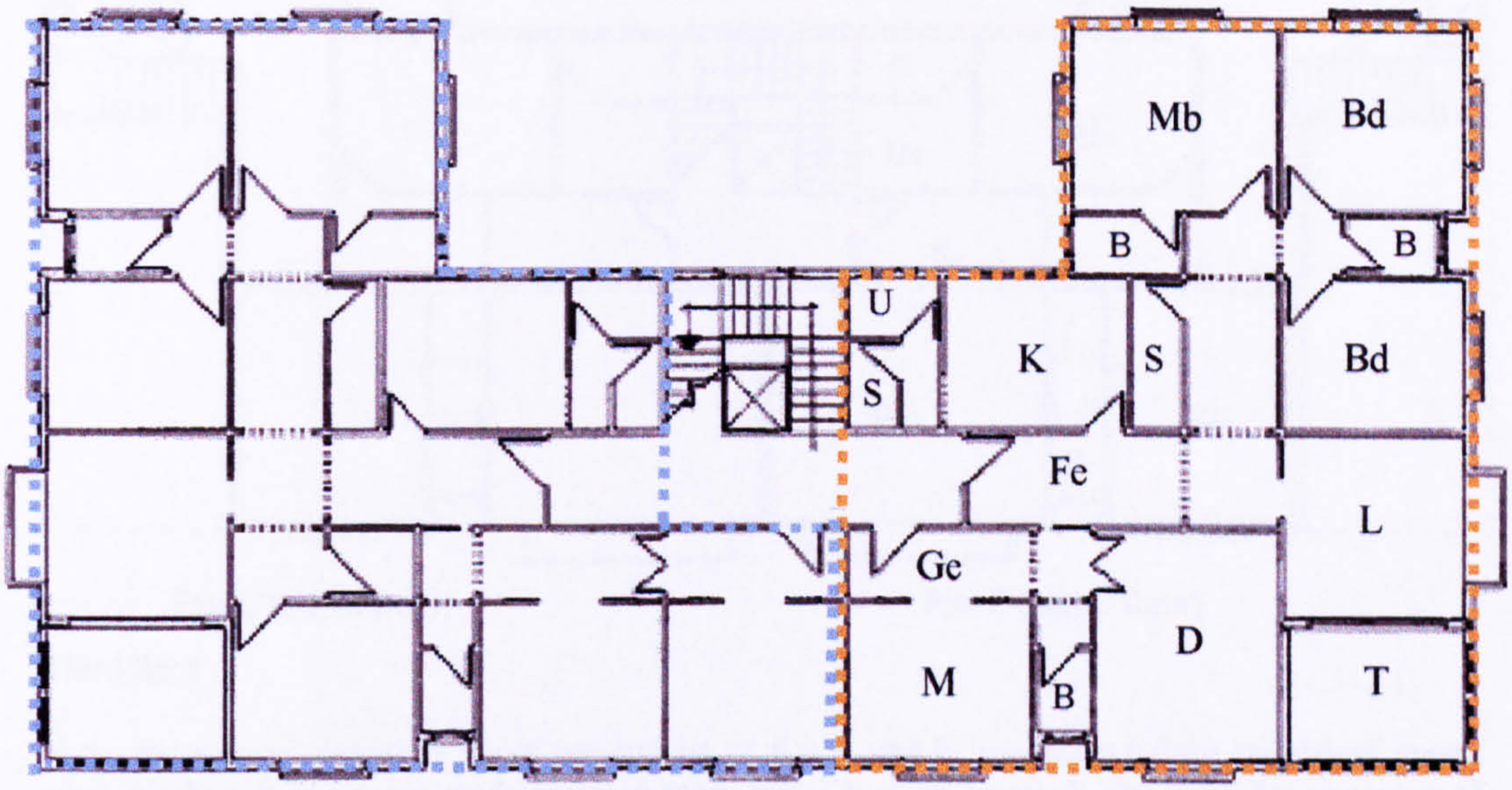
Figure 9.10: Diagrammatic organization of the spaces, Fourth floor, flats H and G. (compare Fig 9.14)



Note: Flats A and B in the ground floor are suitable for family of six persons.

Ge	Guest entrance hall	M	Majlis	D	Dining room	B	Bathroom
Fe	Family entrance hall	L	Living room	Bd	Bedroom	Mb	Master Bedroom
K	Kitchen	U	Utility room	S	Storage		

Figure 9.11: Ground floor.



Note: Flat C and D in the first floor are also suitable for family of six persons, *Kharijah* (terrace) is provided.

Figure 9.12: First floor.

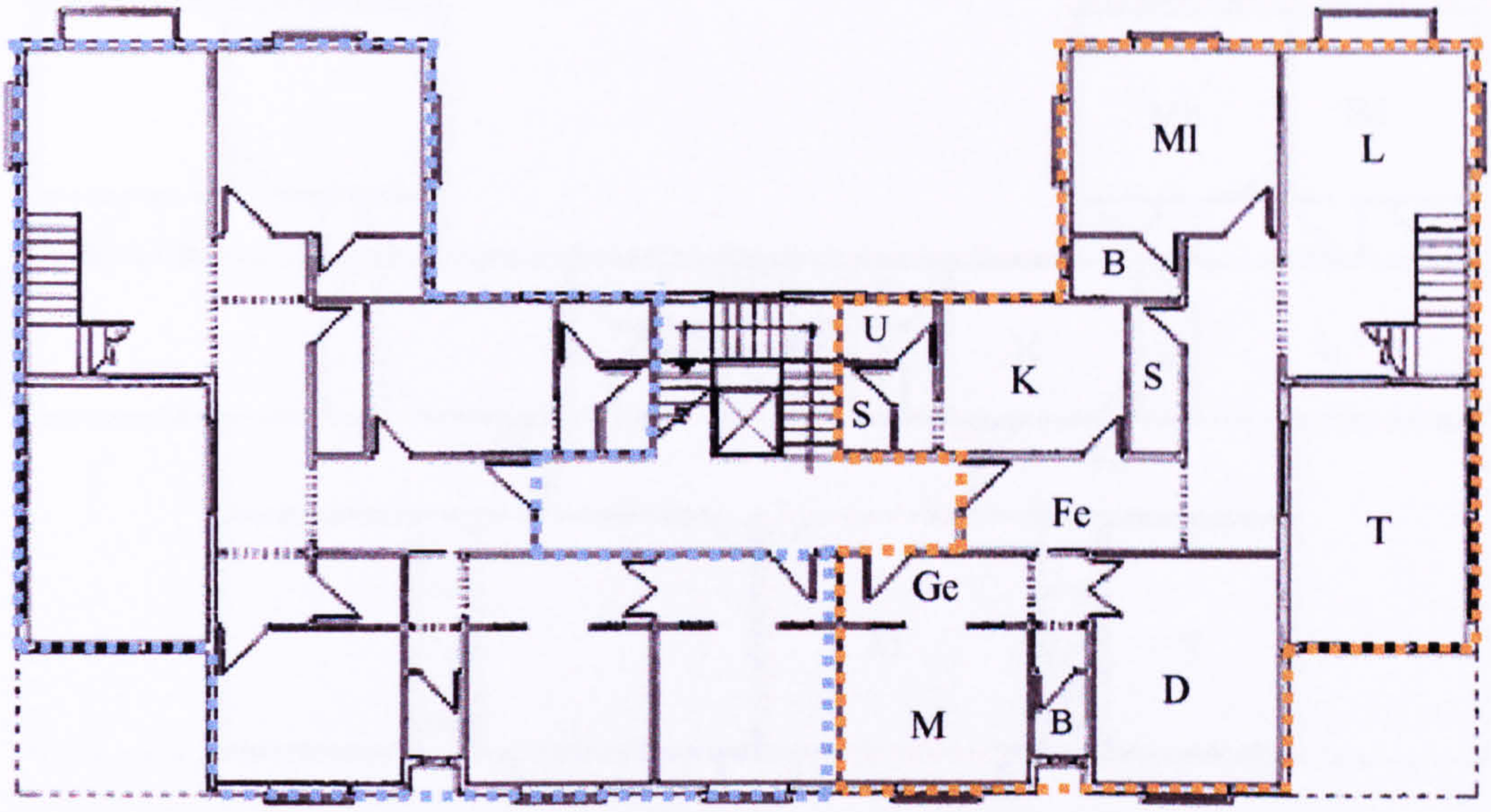
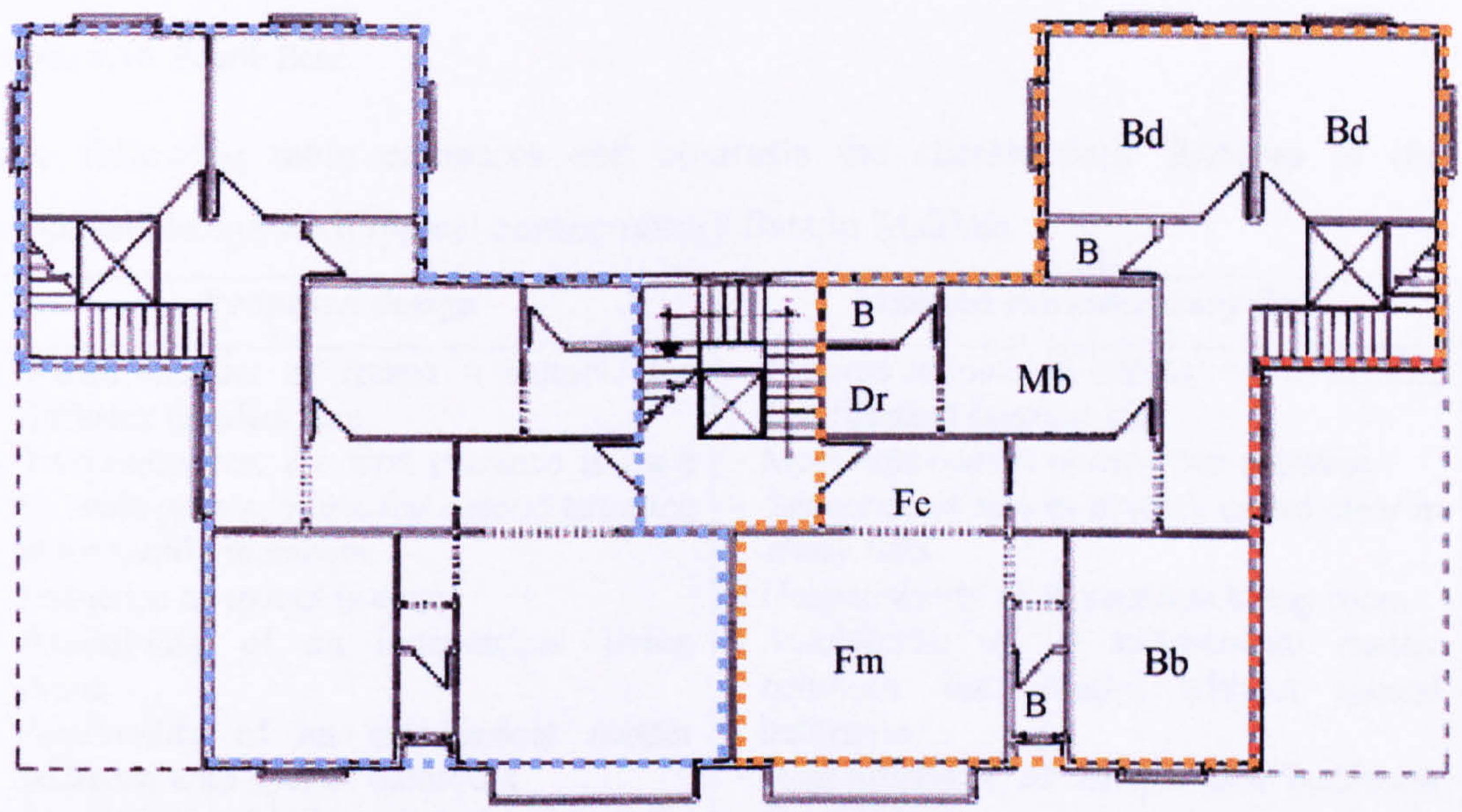


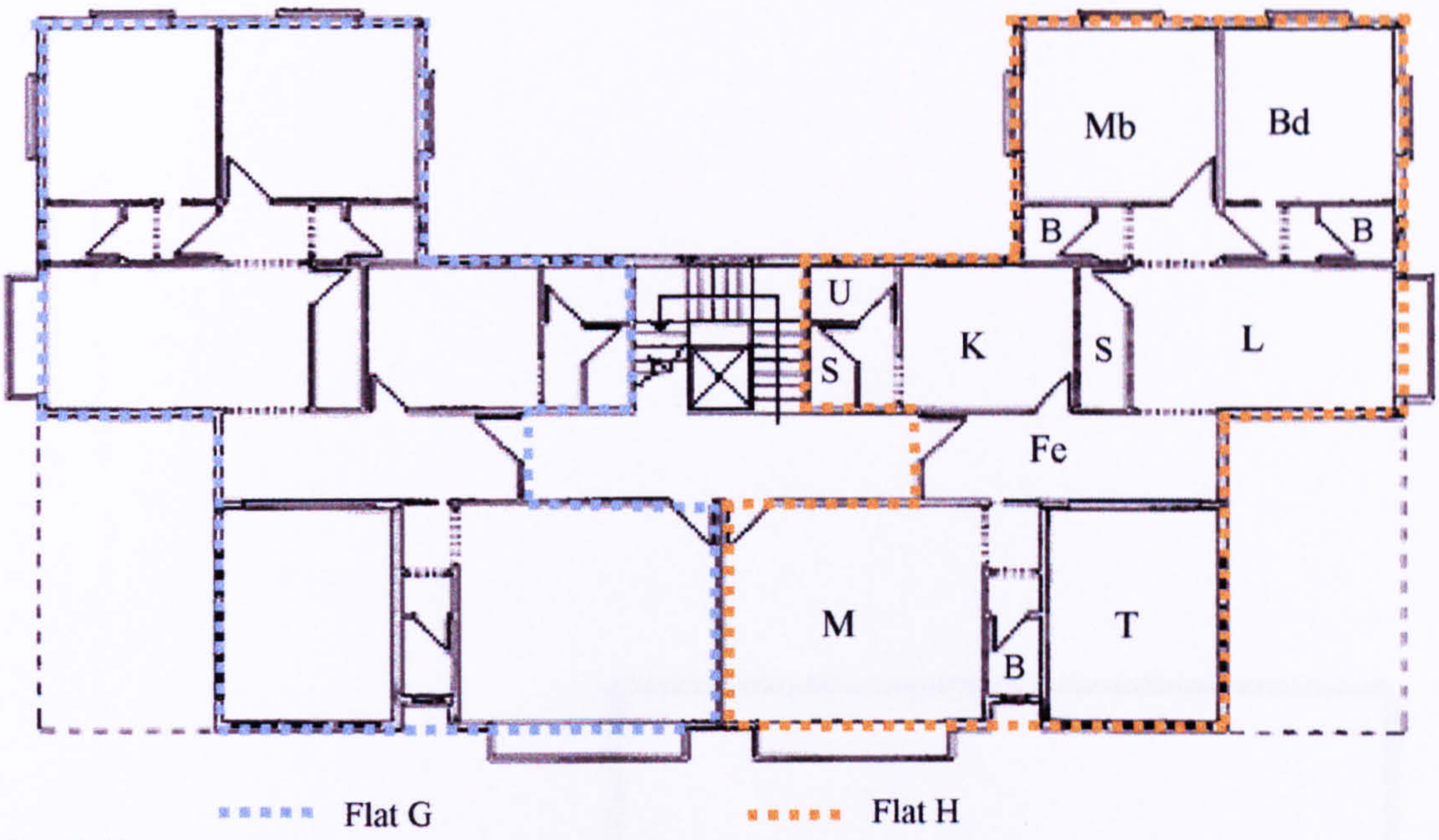
Figure 9.13: Second floor.



Third floor

Note: the second and third floors are consist of flat E and F, the second floor consist of guests zone, kitchen, living room, multi-purpose room and *Kharijah* (terrace). The third floor consists of bedrooms and female guest room. This flat could be suitable for big family.

Figure 9.14: Third floor.



Fourth floor

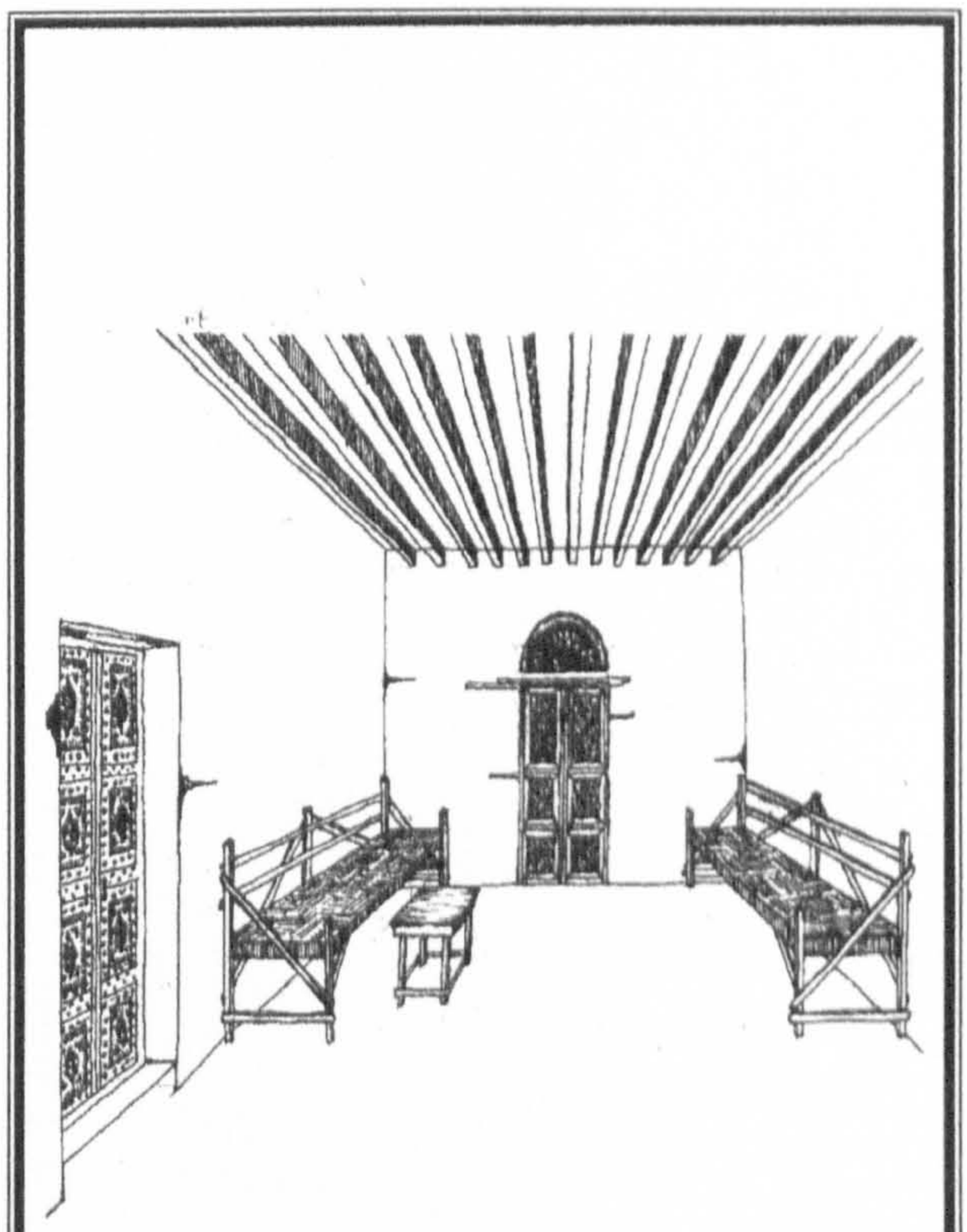
Note: Flat G and H consist of two bedrooms. It is suitable for family of four persons. *Kharijah* (terrace) is provided.

Figure 9.15: Fourth floor.

The following table compares and contrasts the characteristic features of the proposed design with typical contemporary flats in Makkah.

Proposed design	**Makkah contemporary flats**
- Varies number of rooms = suitable for different families size. - Two entrances, the first entrance is used by male guests, while the second entrance is for family members. - Sequence of spaces is clear. - Availability of an independent living room. - Availability of an independent master bedroom with special bathroom. - Availability of independent bedrooms for children. - Availability of *Kkarijah* (terrace). - Availability of storage area. - Variety of windows size. - Clear glass + simple screen. - Availability of both privacy and ventilation at the same time. - Availability of window place.	- Limited number of rooms = not suitable for different families size. - Most flats consist of only one entrance. - Sequence of spaces is weak or not clear in many flats. - Unavailability of an separate living room - Availability of an independent master bedroom, but mostly, without special bathroom. - Unavailability of independent bedrooms for children. - Unavailability *Kkarijah* (terrace). - Unavailability of storage area. - Same windows size 1.20 m^2. - Clear glass. - Unavailability of both privacy and ventilation at the same time. - Unavailability of window place

Table 9.2: Compare and contrast characteristic feature of the researcher design and Makkah contemporary flats.



CHAPTER 10
CONCLUSION

10.1 Conclusion

10.2 Study Recommendations

10.3 Further Research Directions

10.1 Conclusion

In this study the researcher has attempted to identify the main features characterizing the Arab and Makkah traditional houses. It was noted that the design of Makkah traditional houses reflected the Islamic faith, the traditional way of life in Makkah, the social value, social cohesion, climate and geography of Makkah area. However, there were many similarities between the Makkah traditional houses and traditional houses in other Arab cities such as Baghdad, Saukin, Sanaa and Cairo. In addition there were also differences found in the form of Makkah traditional houses from those of other Arab or Islamic traditional houses such as Baghdad in Iraq and Cairo in Egypt, in which the concept of central courtyard was the main element in the houses, which was the heart for all life activities, connections and movement. (see chapter 3, section 3.2.1)

Makkah traditional houses were mostly tall buildings densely packed or an urban form. This could have been the result of the topography and the relatively small area of house plots. However, in the Makkah traditional house form most of rooms were characterized by gaining light from two sides. This probably arose from the need to catch breezes and to provide cross-ventilation and natural light. The facilities of the Makkah traditional house were easily divided into various independent flats which were suitable for the Saudi extended family. This could be the result of the large number of house rooms. This may be a consequence of the desire to rent part of the property out during the Hajj season.

The central courtyard, which characterized some of Arab and Islamic traditional houses, was not common in Makkah. Roof terrace (Kharijah) on the various upper levels was instead the central courtyard. Therefore the internal floor area of Makkah traditional house was usually reduced in the levels above the third.

In addition to the characteristic architectural features mentioned above, other typical features of the Makkah trade house were: the vertical distribution of internal space among the different level of the house; the strictly controlled relationship between internal space and surrounding environment i.e. the *Rowshan* that allows the

occupants to have both privacy and ventilation at the same time; the flexibility in the living of internal spaces to form different-sized, independent units.

As mentioned earlier the internal space of the Makkah house has seen great changes in recent decades. In fact, modernization means that it is no longer possible to speak of the Makkah house as a separate entity within a larger context. Modern Makkah houses are exactly like houses in the rest of Saudi Arabia. The traditional concepts of interior space making are being ignored. An example of this is the vertical extension of space, once the most important feature of the traditional house in Makkah, which and provided the order in the use of floors, has gone. The new arrangement, which is the same for all cities in Saudi Arabia, brings together all the zones (guest zone and family zone) on a single level in apartments. These flats are designed as a final and complete unit and with a limited number of rooms. This limitation has resulted in the modern flats in Makkah not working for different size families. So it can be seen that the introduction of modern Western architectural fashions had a serious created impact on the local residential environment as well as social-cultural values.

Our research identified the following internal space units as the basic constituents of a modern Makkah house: entrance hall, living area, sleeping area, cooking area. The way in which these rooms are combined in the modern building causes many problems, which the researcher believes could be avoided by considered design sensitive to local customs.

Entrance Hall: From the case-studies of modern houses it can be seen that the arrangement of the entrances are often less than ideal, which means that care has to be taken when moving around the house so that the family's privacy is not compromised.

Living Area: It became clear from the case-studies of modern houses that the villa and semi detached homes are characterized by the availability of an independent living room. However, the limitation of rooms in flats has resulted in the

unavailability of an independent living room. It also became clear that in some cases the living areas are inadequately lit and ventilated. For example, some living rooms have only one or two small windows, and in other cases these window face the light well. Sometimes they have no window, because they are located in the centre of the house. Therefore, the occupants cannot have both privacy and ventilation at the same time.

Sleeping Area: It was found that the master bedroom is the private room of the parents and it is an essential part of all houses. However, it became clear from the case-studies of modern houses that the villa types usually have two children's bedrooms at least for daughters and sons, with modern bedroom suites. It became clear also that the shortage of rooms in flats has resulted in the unavailability of independent children's bedrooms. The children therefore still have to practice the traditional custom of sleeping on the floor in the multi-purpose room. It is obvious that the villa type could be providing the traditional family needs more than the flats with limited numbers of rooms. Villas, however, are the preserve of the rich.

Utility Area: It is clear from the previous discussion and from the case-studies of modern houses that most of the villa types and semi-detached houses are provided with a clothes-washing area. From the case studies of modern houses, which were built during last thirty years, it emerged that most of the flats do not have a clothes washing area at all.

Cooking Area: It was found that a after the second transformation (late 1970s), the size of the kitchen became much larger than before. In addition to its main function of cooking, families started to use it as a socializing place, since it was possible to put in it a small dining suite. The researcher also found that there was no standard for the kitchen size and the area could be decided by the owner or the designer and thus depended on the total area of the flat.

In conclusion if it is accepted that the Makkah traditional architecture provided the base-live for decent living do that necessarily mean that the modern architecture is inappropriate? This is not however the case in the past the peoples coexisted

harmoniously with traditional architectural form, but all cultures have to find their own appropriate built environment. It is therefore, not advocated here that we seek for a return to traditional architecture and ignore new technologies, but that the modern materials and technological know-how is used to learn from Makkah traditional architecture to provide the Saudi family needs.

We have noted that modern Saudi architecture was introduced from the West. This foreign import must however be made to fit with the different circumstances of Saudi families in Makkah. Therefore the designer should understand the origin of western architecture, as well as the characteristic of Makkah traditional architecture, social-cultural value and needs of Saudi families in Makkah in order to create anew satisfactory domestic environment.

For this reason the researcher sought for appropriate and congenial modern within western architecture that could facilitate the process of creating a better home for Makkah residents.

10.2 Study Recommendations

As mentioned earlier an attempt is made in this dissertation to establish new criteria for an appropriate and sustainable design of the interior environment for the future Makkah family home-one that would ensure that new homes live up to the standard of traditional Saudi houses. The researcher came to this study as a designer, who believes that something can and should be done to counter the negative impact of rapid westernization, commercialism and inadequate professional service upon the quality of the domestic environment that most Saudi residents have to endure. At the same time it is recognised that there is a need for a sound theoretical foundation for such an effort, and the need for good models. This is achieved in three ways: First, traditional Arab Muslim houses, which are generally regarded as a superior domestic culture, are studied as 'best practice' for modern design. Second, Christopher Alexander's theory, 'Pattern Language', which is regarded as one of the most holistic of modern approaches to architectural design, is proposed as a

mechanism for achieving a sustainable domestic architecture. Finally, Parker Morris, the British bench-marking standard for housing developed in 1960 is adopted as a model for developing a design guide for modern Saudi residences. The results of the study, which are made available to architects as a guideline for future Makkah domestic space, are the following: (the terminology used is derived both from Christopher Alexander and Parker Morris):

- **Intimacy Gradient:** The sequence of the space in houses, which begins with the entrance and leads from the most public parts of the building through to the most private domains, and which was achieved in Makkah traditional houses, has become weak and unclear in most of Makkah's modern flats. Therefore the designer should be careful to provide a clear, hierarchical sequence of space for Makkah modern houses.

- **The Entrance:** According to Parker Morris, as well as privacy requirements of Islam, having two entrances to a home would be more suitable for Arab society. The first entrance is to be used by the male guests and usually located on the guest zone, while the second is to be for family members and their female guests and leads to the family zone.

- **Common Areas at the Heart:** In the villa type it is relatively easy to achieve the living areas according to Alexander's thinking, but in the design of the smaller flats, one needs to have regard for both Alexander's theory of 'common areas at the heart' and other design criteria, for example, the need to provide good sunlight as well as the placing of doors to provide a comfortable area for family activities.

However, according to Parker Morris a home for four or more the designer should provide at least one room that can be used as a living area in order to cater for family daily activities. This space should be considered the following:

- Space fore two easy chair and sofa or the new local seating called *baturmah*.
- Television set.
- A low small table and place suitable for a logical number of other possessions such as sewing box and radiogram and bookcase.

- **Cooking Layout:** As there is no theory or guideline for the kitchen area and its furniture in Makkah modern houses, so Alexander's theory of "cooking layout" can be useful and used as a guide to the essential layout of the kitchen. He sets out space standards for working areas.

Parker Morris on the other believes the working areas, unbroken by the access door or larders, alone would serve in the greater majority of future kitchen work areas to avoid the bad defects of much present practice as long as they comply with certain basic plan arrangements:

- L-shape arrangement: also if there is a working surface 3 feet 6 inches (about 115 cm) wide between the cooker and the sink, and if a refrigerator larder unit is included in the sequence, the L-shape arrangement requires an uninterrupted wall space of 7 feet (about 210 cm) on one wale plus 8 feet 9 inches (about 262.5 cm) on the adjoining wall at right angles to it.
- U-shape arrangement: depended upon the conditions.

- **Eating Area:** According to Parker Morris somewhere in the kitchen should be a place where two or three people can sit down to eat, even in a kitchen that is not designed for the family normally to eat in. Therefore the various possible kitchen and eating arrangements might be listed as follows:
- Dining room: a working kitchen enlarged to provide a meal space for the whole family, there being no other eating space.
- Meal space: an arrangement to be favoured is a working area with a meal space differentiated from it. This space should be close to a working area and with direct access to it.
- Dining room: this arrangement suitable for slightly bigger houses. This separate room would be used for meal with all the family.

- **Sleeping Area:** Saudi houses have two zones, a guest zone and the family zone which can be separated into two parts. The first zone consists of the common area (living room, kitchen and bathrooms). The second part is the private zone (parents' bedroom and children bedrooms). This fits in with Alexander's theory of the

'couple's realm' requiring the following:

1- To be separate from the children

2- To be close to the children's rooms, especially while the children are young.

3- To have a sitting area.

4- To have an "en suite" bathroom.

According to Parker Morris the family for four people should have a double bedroom as a master bedroom and another bedroom for children, but it is requirement of Islam that adult children of different sex should have a room each. Parker Morris goes further and stipulates that even if they are of the same sex, for they need a place of their own.

The children bedroom should provide the following:

- A bed or sofa, and a bedside table.
- Clothes storage, and storage for personal possessions
- When the room is designed as a study it needs space for a desk, a chair and bookcase as well as a space for at least one easy chair that is needed for a bed-sitter.
- Double study bedrooms for two active children should provide enough space for two single beds, beside tables, clothes storage, and storage for personal possessions as well as two chairs and a table.

- **A Room of One's Own:** This rule of Alexander's, as well as being a required issue for Muslims (the separation of boys and girls) points to the desirability of having separate rooms for boys and girls. Therefore separate beds, which require different rooms or spaces, are the simple solution to a lot of problems.

- **Storage:** Having ample storage area is terribly important for Makkah modern houses as well. According to Alexander's teaching the Saudi designer should therefore give attention to the following:

1. Do not leave bulk storage till last or forget it.
2. Include a volume for bulk storage in the building - its floor area at least 15 to 20 per cent of the whole building area - not less.
3. Place this storage somewhere in the building where it costs less than rooms.

Parker Morris says that in the house there should always be provided 15 sq. (450 cm sq.) of storage space in flats and maisonettes for 4 or more persons, with slightly less for smaller families. There should also be a separate store elsewhere of 20 sq. ft. (600 cm sq.) for each dwelling. For minimum areas, which Parker Morris believes is needed in houses or flats for different sizes of families see table 10.2, section 9.4.

- **Light on Two Sides of Every Room:** Most rooms should have windows on two sides so that natural light falls into every room from more than one direction. However, they need to make a variety of window sizes which are suitable for the space. For example, the bedroom window size could be different from the size of the living room windows. On the other hand, where the occupants cannot have both privacy and ventilation at the same time the designer could provide for the family privacy from the outside only. For example, instead of *Rowshan* a simple screen made of aluminum, fiber-glass or other new materials could added to the modern windows.

- **Window Place:** Designers should learn from Arabic and Makkah traditional houses of the benefits of *Rowshan* or *Mashrabiyyah*, as well as Alexander's solution of 'window place', so that at least one window in the house should be turned into a 'window place' in the house. It is possible to achieve Alexander's solution of 'window place', with a simple screen added to it so that females can sit and enjoy looking outside or to the street without being seen.

- **Corner Doors:** The designer, in the case of a room with a single door and a room with two or more doors, should pay attention to the following:
- First, the room with a single door:
  1- In general, it is best if this door is in a corner.
  2- The central door is especially useful when the room has two partly separate functions, which fall naturally into its two halves.
- Second, a room with two or more doors:
  1- The individual doors should still be in the corners for the reasons given above as well as relations between the doors.

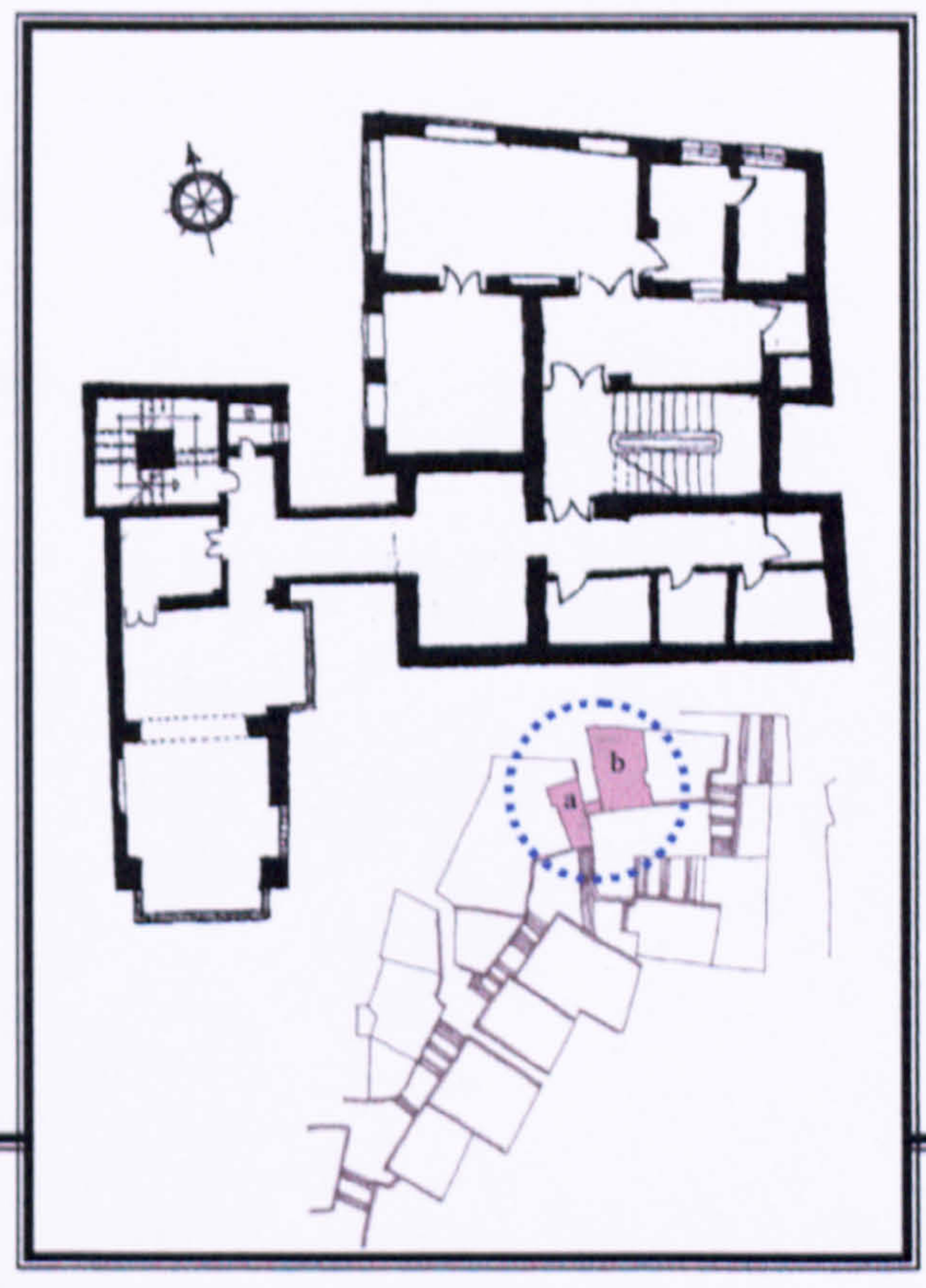
2- If possible, they should be placed more or less along the same side, so as to leave the rest of the room untouched by movement.

So, more generally, if designers draw corridors which connect the doors, then the spaces, which are left uncut by these movement zones, should be large enough still to be useful. In addition, designers also should draw in the furniture of the room to make sure that they are large enough to be useful.

10.3 Further Research Directions

The main objective of this study was to identify the type of internal space that would provide for the domestic needs of different-sized families in Makkah (newly married, small family, and big family...etc) in a way that is commensurate with Arabic Muslim value systems. It is hoped that the research contributed to an understanding of this important social domain which of course is valid not only for Makkah but all Arab communities. Another research direction may investigate of other types of internal spaces that could provide for domestic needs e.g. persons living alone and elderly people. It was suggested that general improvement is best achieved through having design guidelines.

The concept of introducing guidelines may in itself prove controversial, and much more research is required to establish its viability, both in a social and legalistic sense. The nature of these design criteria may vary and needs refinement through farther study. Ideally this is a task for a government body with adequate resource and the power of enforce compliance, but even if the idea is adopted only by private architects on an individual it is bound to have beneficial effects.



Appendix A

CASE STUDIES OF MAKKAH TRADITIONAL HOUSES

Introduction

The Case Studies of Makkah Traditional House as Interior Design

Simple Plan House
Case studies one, two, three and four: Omar Al Shorahi Houses (a, b, c and d)
Case study five: Aal Momenah house
Case study six: Al Qamah house (a)

Compound Plan House
Case study seven: Al Qamah house (b)

Complex Plan House
Case study eight: Aal Momenah house

Introduction

The interiors of Makkah traditional houses, which are characterised by local names, were explained in chapter four, as well as discussing building materials and furnishings. In addition, in the last chapter, the three types of Makkah traditional plan house were explained.

This chapter will investigate the Makkah traditional house as interior spaces. Eight case studies of different types of Makkah traditional plan house are discussed in this chapter. They include six examples of a simple plan house, one of a compound plan house and one of a complex plan house.

Discussion of the Case Studies: Makkah Traditional House as Interior Design

Simple Plan House

Case Studies One, Two, Three and Four: Omar Al Shorahi Houses (a, b, c and d)

The Site:

The houses are situated in one of the historical sites to the north east of the Holy Mosque. The area is known as Shib Aamir. (Figure A.1)

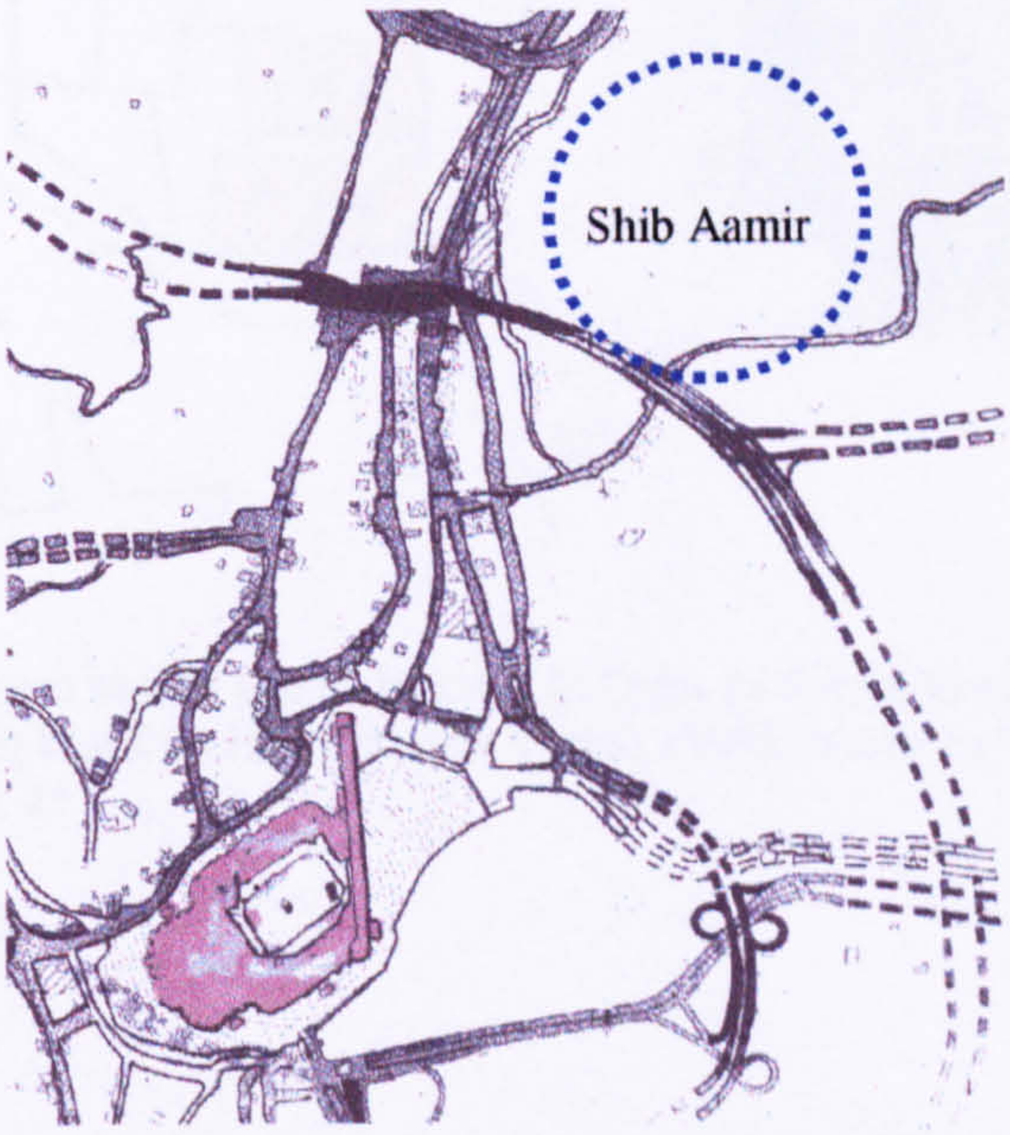


Figure A.1: The site of Omar Al Shorhi houses, Makkah
Source: Author drawing, based on Farsi, Z, Makkah map, 1998

The Plan Arrangement:

The site contains four houses (a, b, c and d) connected together and surrounded by a wall. The grouping of these buildings demonstrates the family linkage in Islamic society. The buildings look out on to three streets on the north, eastern, and west sides. Despite the family linkage and accumulation of the built form, the privacy of each house was maintained in a way that each building has its own private entrance from the street.

Although the basis of the complex is very simple, a maximum number of openings were provided in these buildings from the three frontages of each building. We see that in the passages between the buildings every point for windows in that façade was exploited. The narrow passages thus help to condition the climate by creating shaded areas between the shadows falling on the frontages of the four buildings. An external area left as a courtyard was used for breeding cattle or other animals. (Figure A.2)

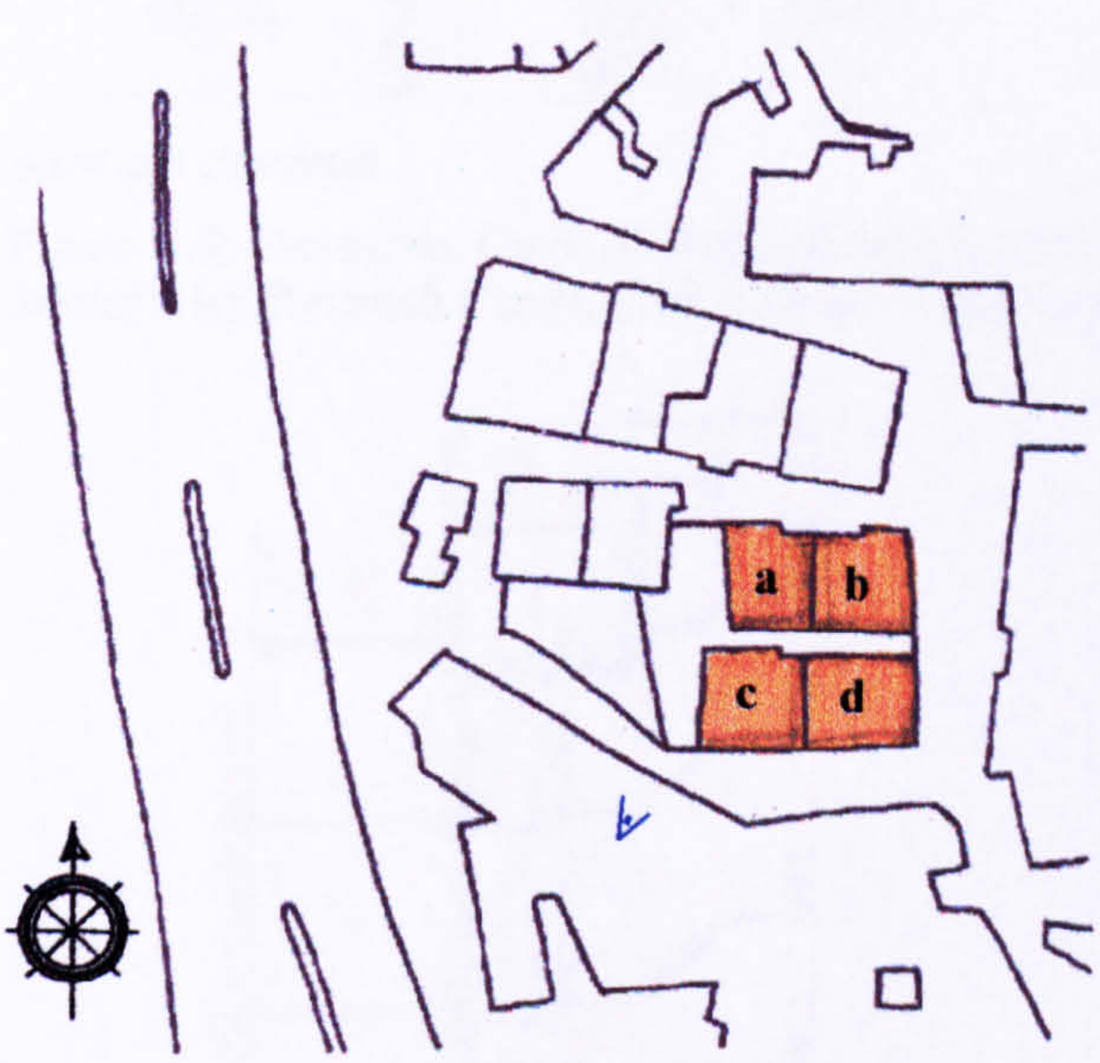
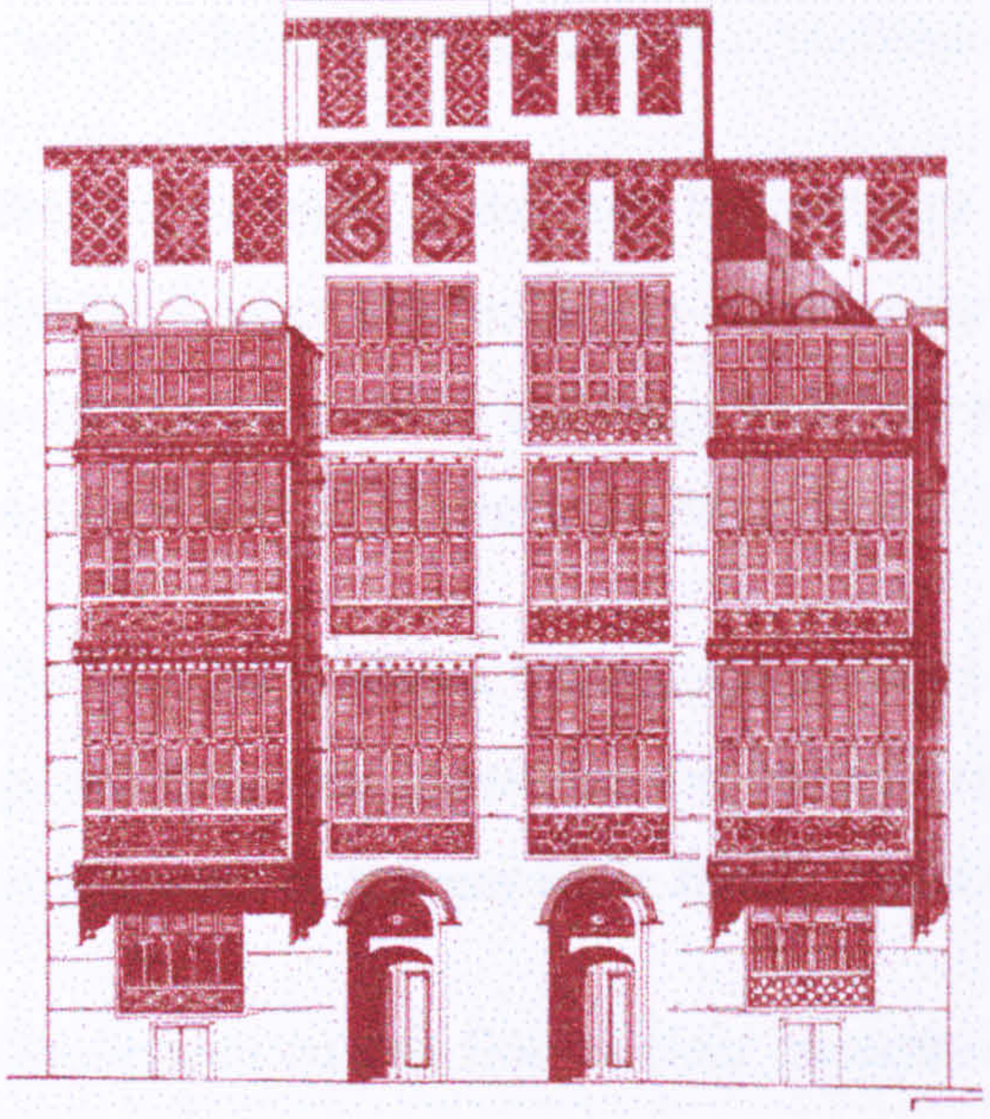


Figure A.2: Site plan of case studies one (a, b, c and d) Omar Al Sorahi house
Source: Author's drawing based on Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 25

Description of the Interior Design, House (a and b)

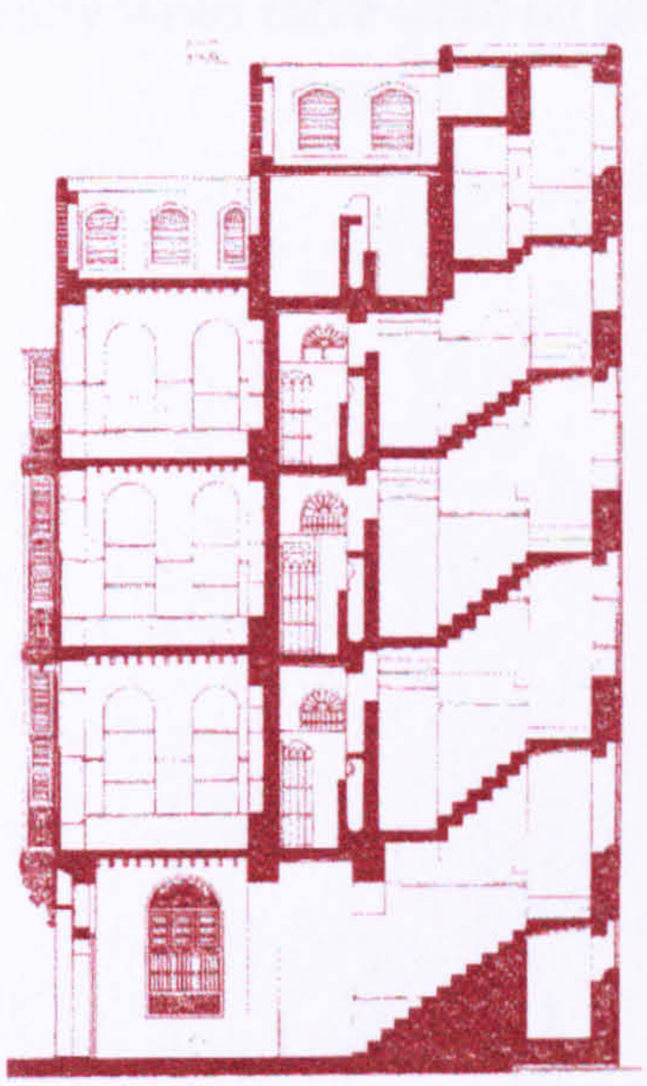
The buildings contain five floors. It is similar in the distribution of space to traditional houses. This means that Makkah's traditional houses have the same identity whether in their external elevations decorated by *Rowshan* or *Mashrabyyah* or in the distribution of internal spaces (Figure A.3 and A.4).



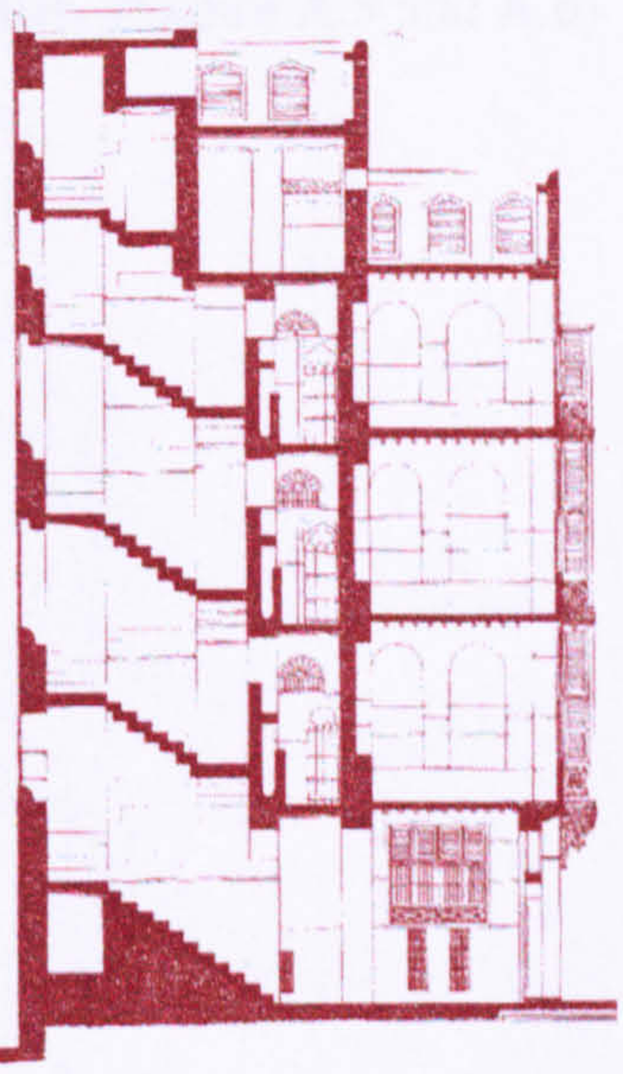
Southern elevation

Western elevation

Figure A.3: Elevations, Omar Al Sorahi house (a and b)
Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 42 and 43



Section A.A



Section B.B

Figure A.4: Section A.A and B.B, Omar Al Sorahi house (a and b)
Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 40 and 41

The Ground Floor:

As in traditional buildings similar in design, the main entrance leads to the *Dehliz* (entrance hall) with the *Maq'ad* to the right. This *Maq'ad* consists of two spaces connected by an archway about three meters wide to provide more area due to the structural limitation of the building materials, the timber beams that support the roof. The *Maq'ad* is connected to *Makhlawan* and *bayt alma*.

The *Dehliz* leads to the stair hall through an arch, which extends the space of the *Dehliz*. A large window looks out from the *Maq'ad* to the *Dehliz*. This arrangement is commuted in urban buildings with limited space. This window also helps with the movement of air between the *Maq'ad* and *Dehliz*.

The *Maq'ad* in House b was used as office during the pilgrimage season, so it had a special door that opened in the eastern façade. Usually this door was kept open to receive men customers while family members and their guests used the main door.

We observe on this floor a clear interest in obtaining connected internal space Not only visually, but the introduction of many openings on the ground floor encouraged cross-ventilation where all the doors were kept open, as was the case traditionally when there were no guest in the house. (Figure A.5 and A.6)

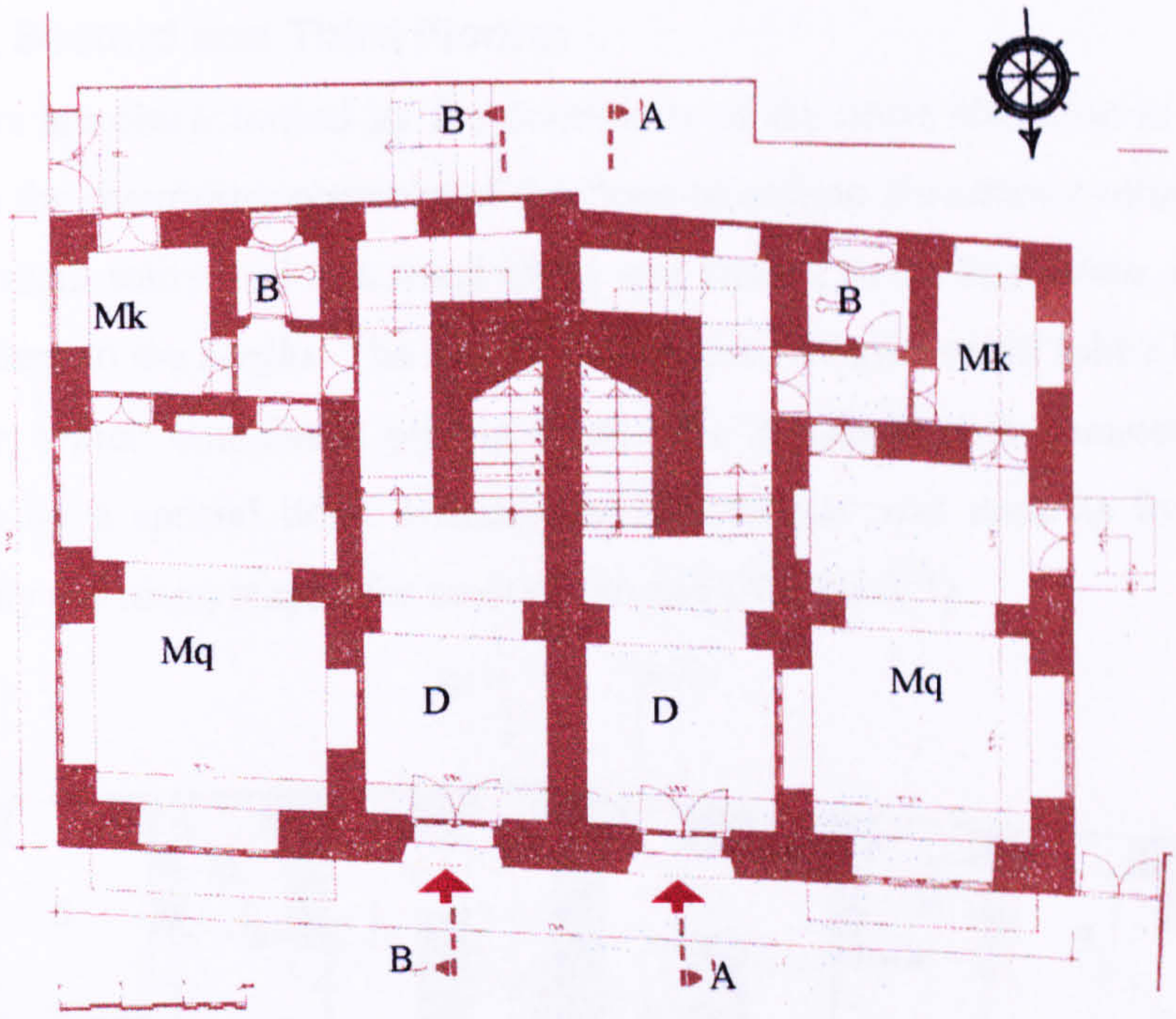


Figure A.5: Ground floor, Omar Al Shorahi, House (a and b)

D *Dehliz* (entrance hall)
Mq *Maq'ad* (sitting room)
Mk *Makhlawan* (small room)
B *Bayt alma* (bathroom)

Source: Hajj Research Center, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 36

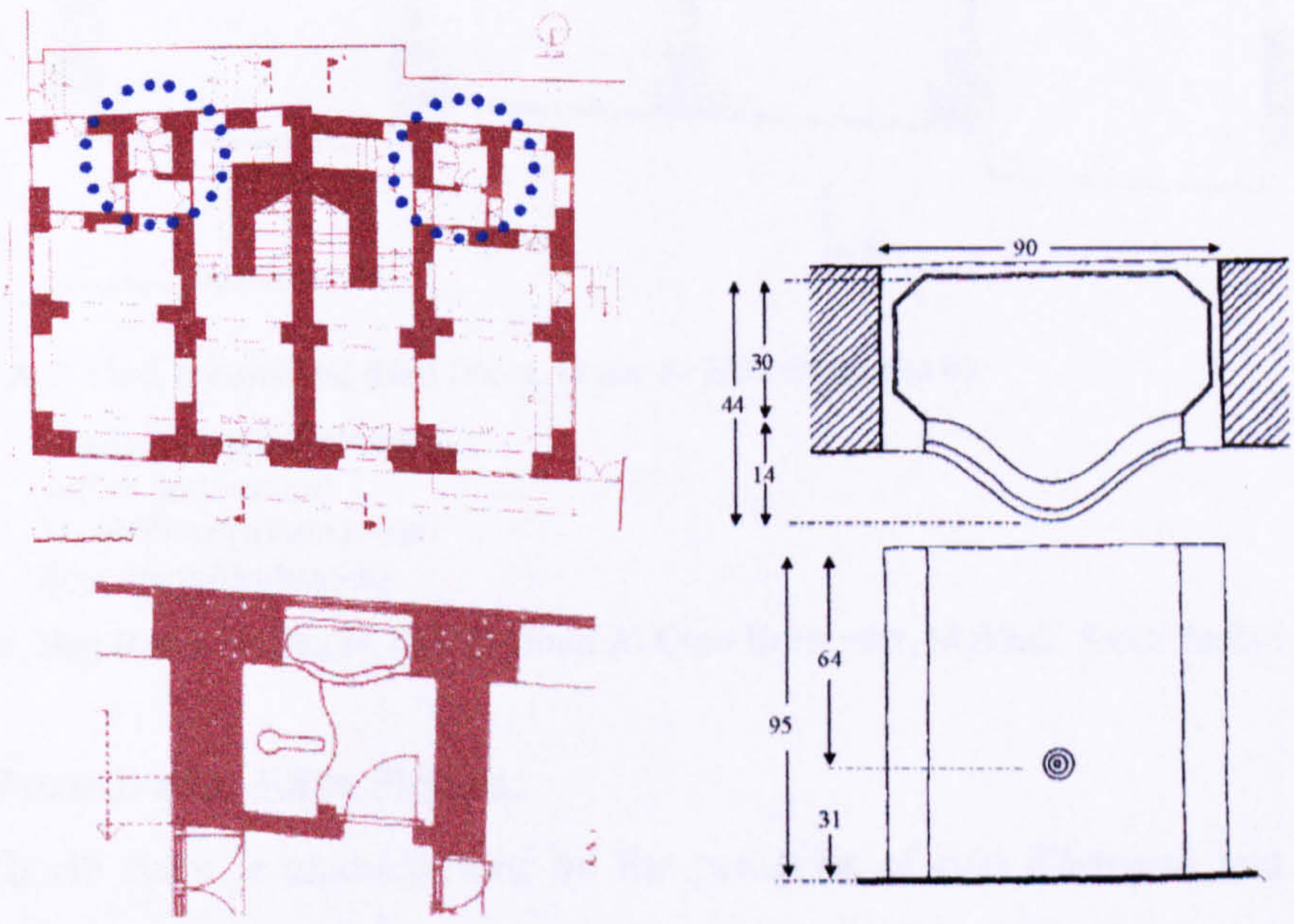


Figure A.6: *Bayt alma* (Bathroom), Details of hydrant (Hanafiah) Omar Al Shorahi (a and b)
Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia

The First, Second and Third Floors:

These floors are characterised by the dominions of the north elevation in the room layout with the overriding presence of the floor-to-ceiling *Rowshan* overlooking the street. The main stairs lead to a small lobby and from it to the *bayt alma*, the *Suffah* and from there to the *Majlis*. The *Majlis* opens on to another small lobby leading to *Muakhkhar*, which contains a private toilet. The *Muakhkhar* is connected to the main stairs by a special door. Usually the *Muakhkhar* was used as living room where family members stayed for most of the day (Figure A.7).

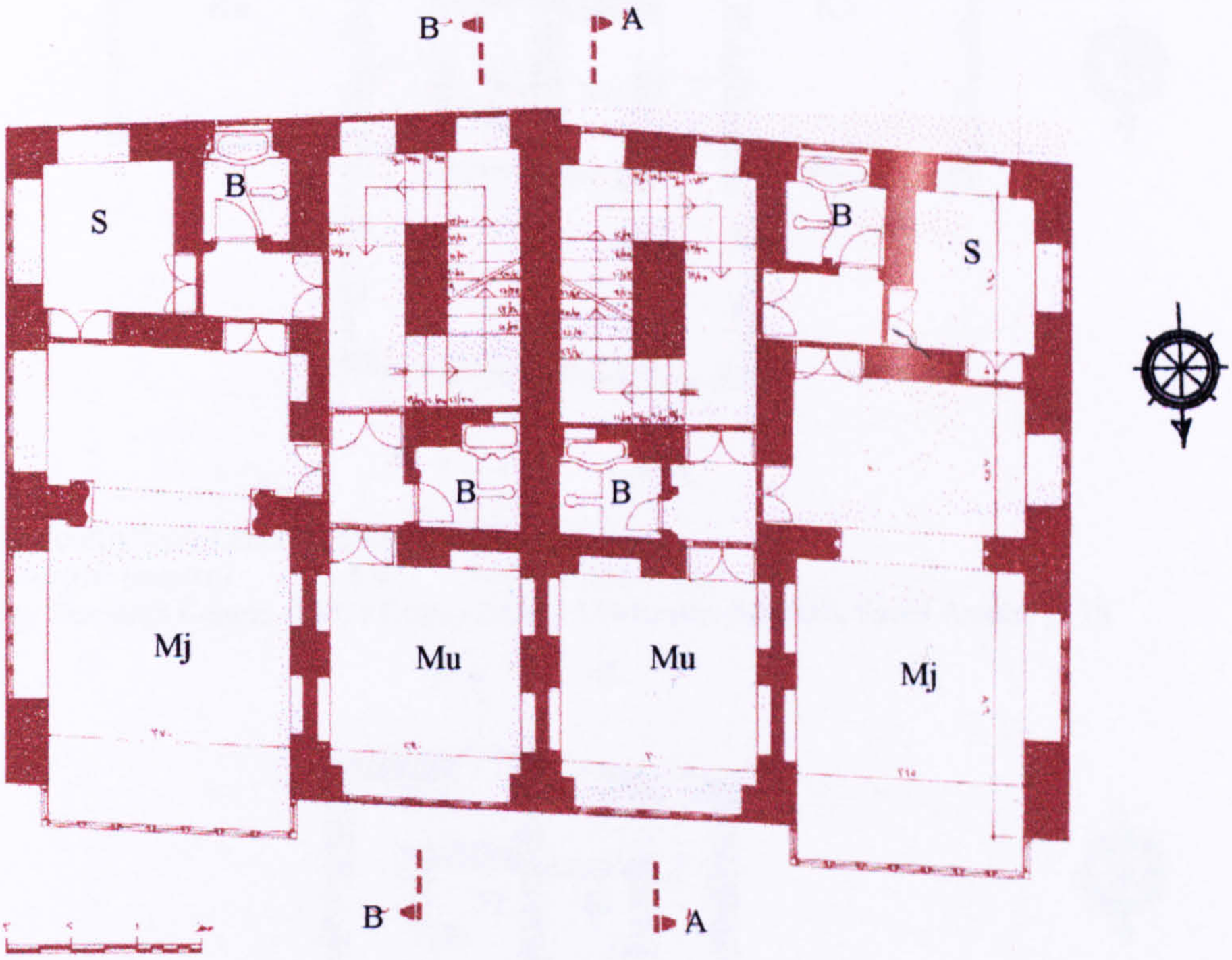


Figure A.7: First, second and third floors, Omar Al Shorahi (a and b)

Mj *Majlis* (reception room)
S *Suffah* (ante-room)
Mu *Muakhkhar* (living room)
B *Bayt alma* (Bathroom)

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 37

The Fourth and Fifth Floors:

The fourth floor is characterised by the presence of two *Kharijah* and a *Markab* (kitchen). We observe the presence of a big *Kharijah* and another small one. These provide for mutable activities. For example, the big *Kharijah* was used for family

activities during the night while the smaller one was used for drying the washing. We also observe a diminishing of the area as we go up until we reach the fifth floor, which is a small *Kharijah* decorated with *Shawabeer* on two sides and storage. (Figure A.8 and A.9)

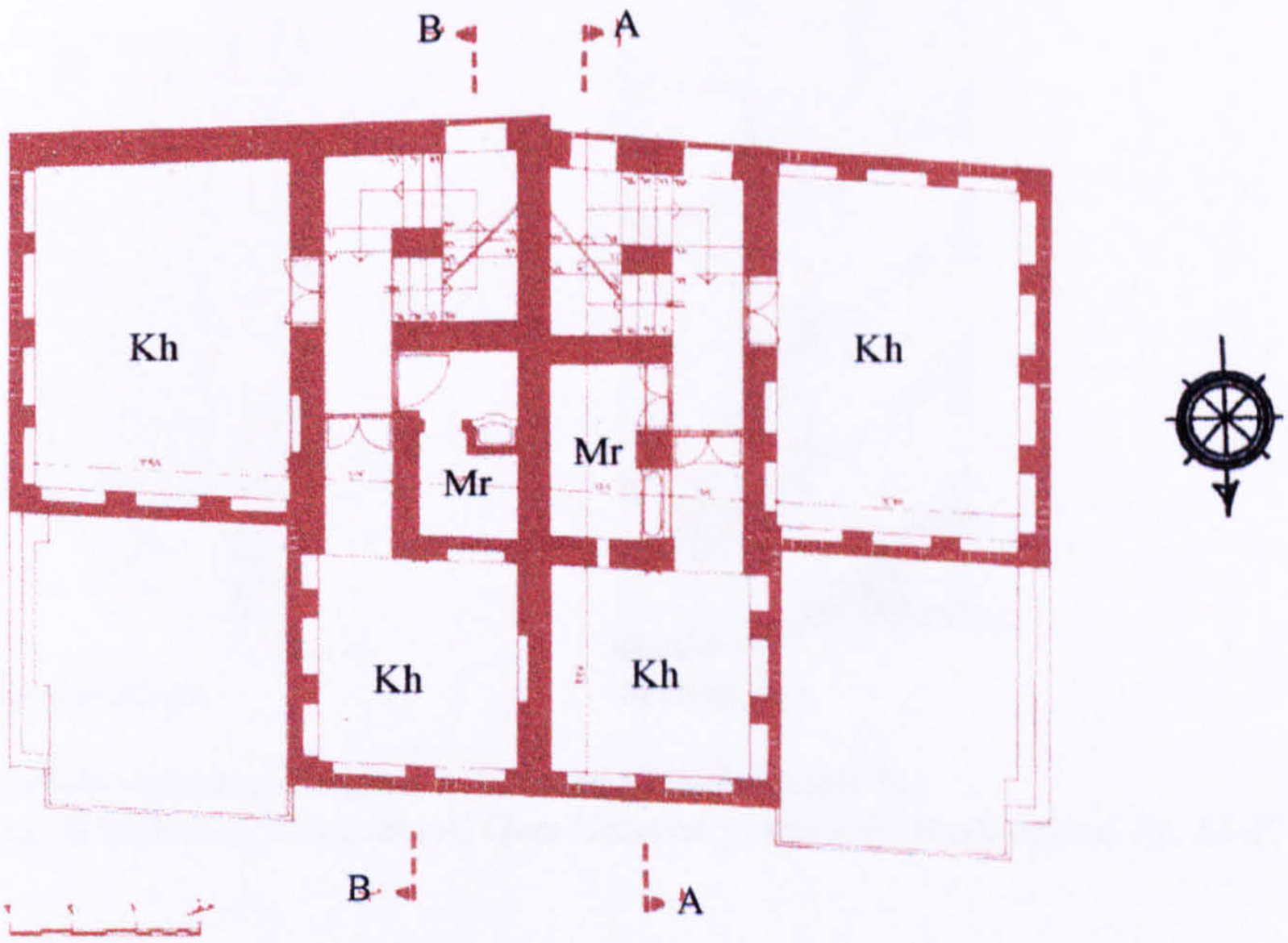


Figure A.8: Fourth floor, Omar Al Shorahi (a and b)
Kh *Kharijah* (terrace) Mr *Markab* (kitchen)
Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 38

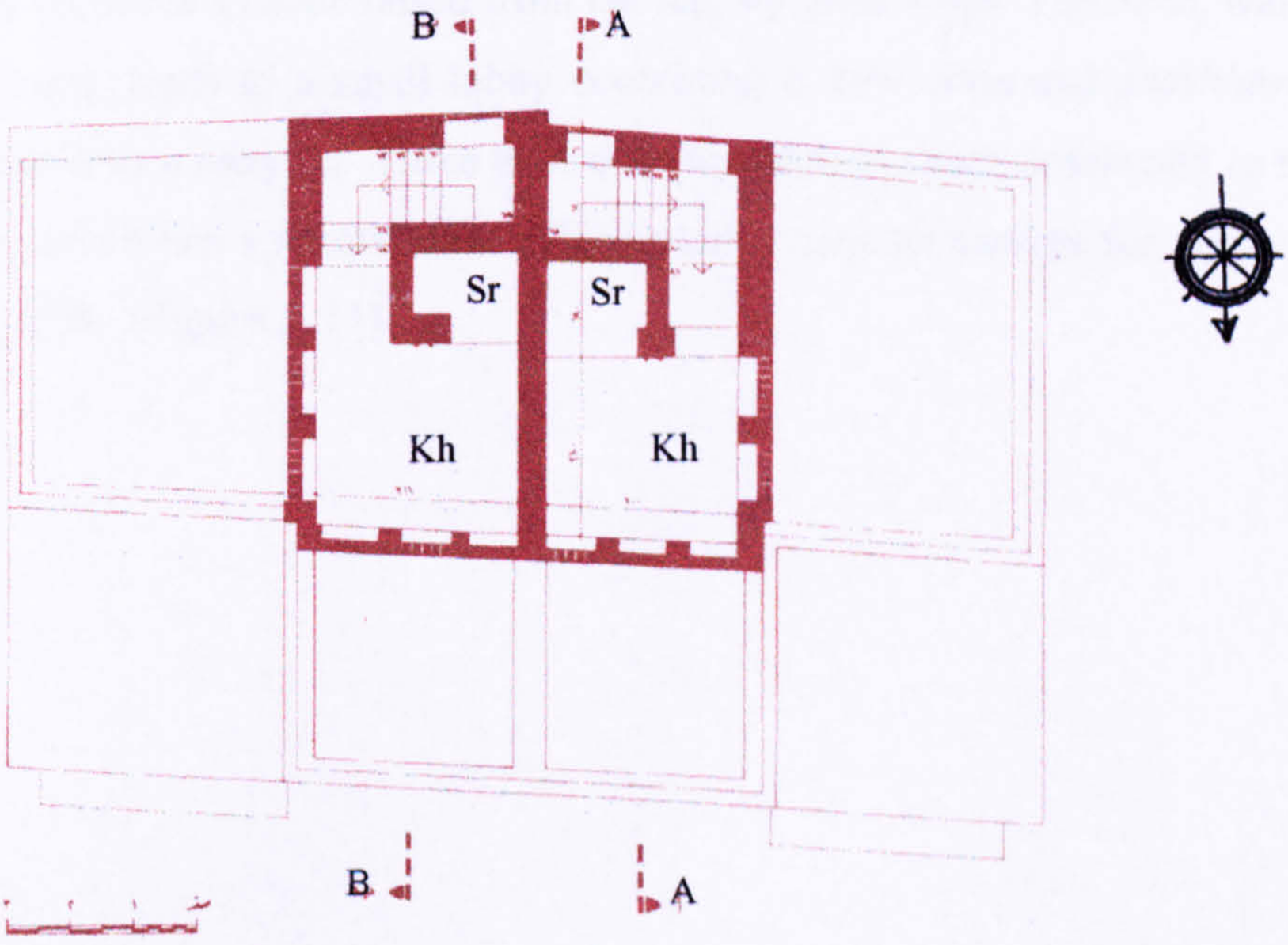
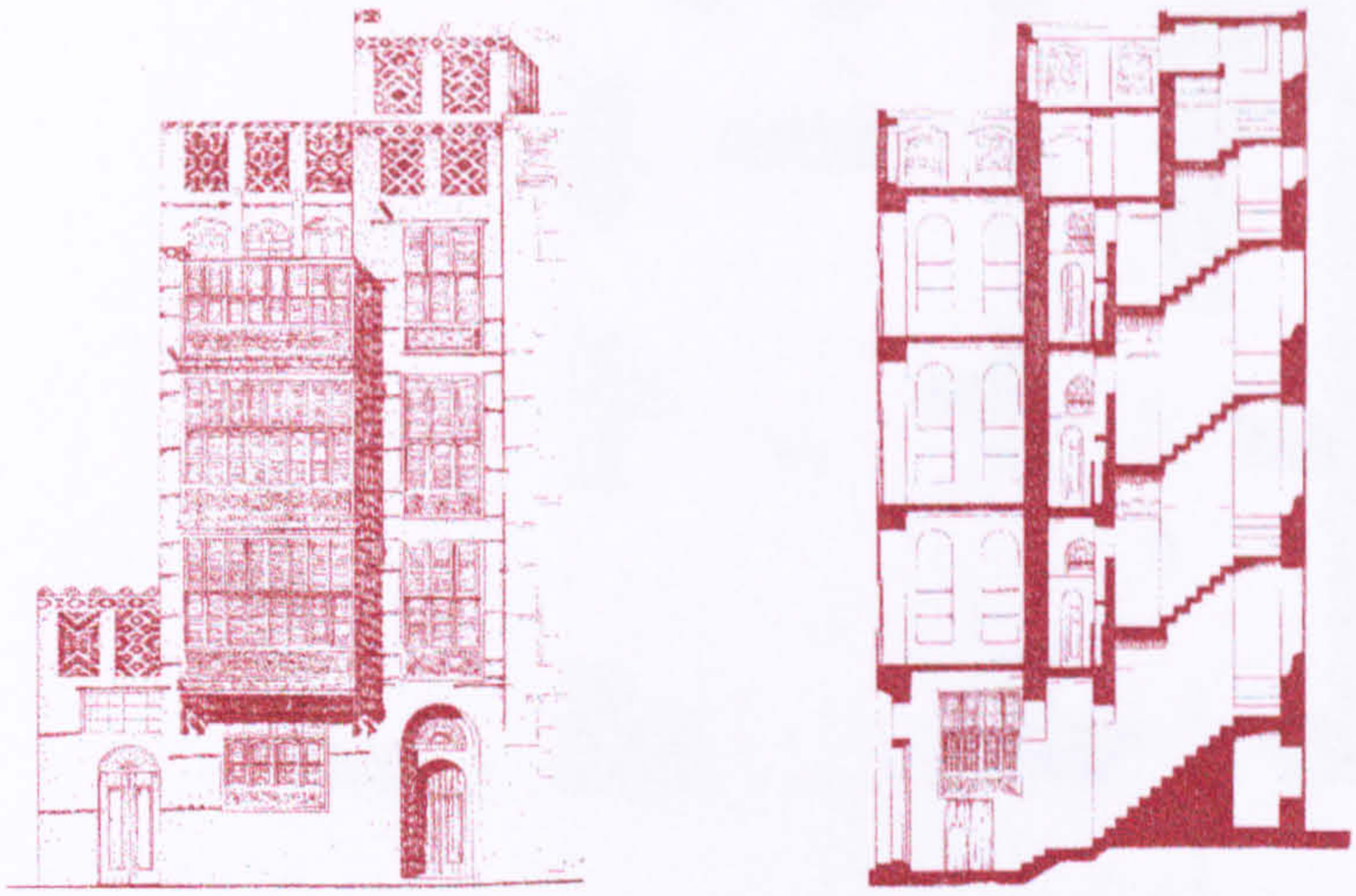


Figure A.9: Fifth floor, Omar Al Shorahi (a and b)
Kh *Kharijah* (terrace) Sr Storage

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 38

Description of the Interior Design, House (c)

The building contains five floors. Its external elevations are decorated by *Rowshan* or *Mashrabyyah* (Figure A.10).



Southern elevation

Section A.A

Figure A10: Southern elevation and section A.A, Omar Al Sorahi house (c)
Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. Pp. 56-57

The Ground Floor:

The *Dehliz* (entrance hall), which is characterised by a large window connecting it with the *Maq'ad*, leads to *Seeb* raised from the hall by three steps. The *Seeb*, which ends with a store, leads to a small lobby containing a *bayt alma* and *Makhlawan* room and from it to a *Maq'ad*. There is also a big external space connected to the ground floor, which has a special door. This space is used as storage for goods or for breeding cattle. (Figure A.11)

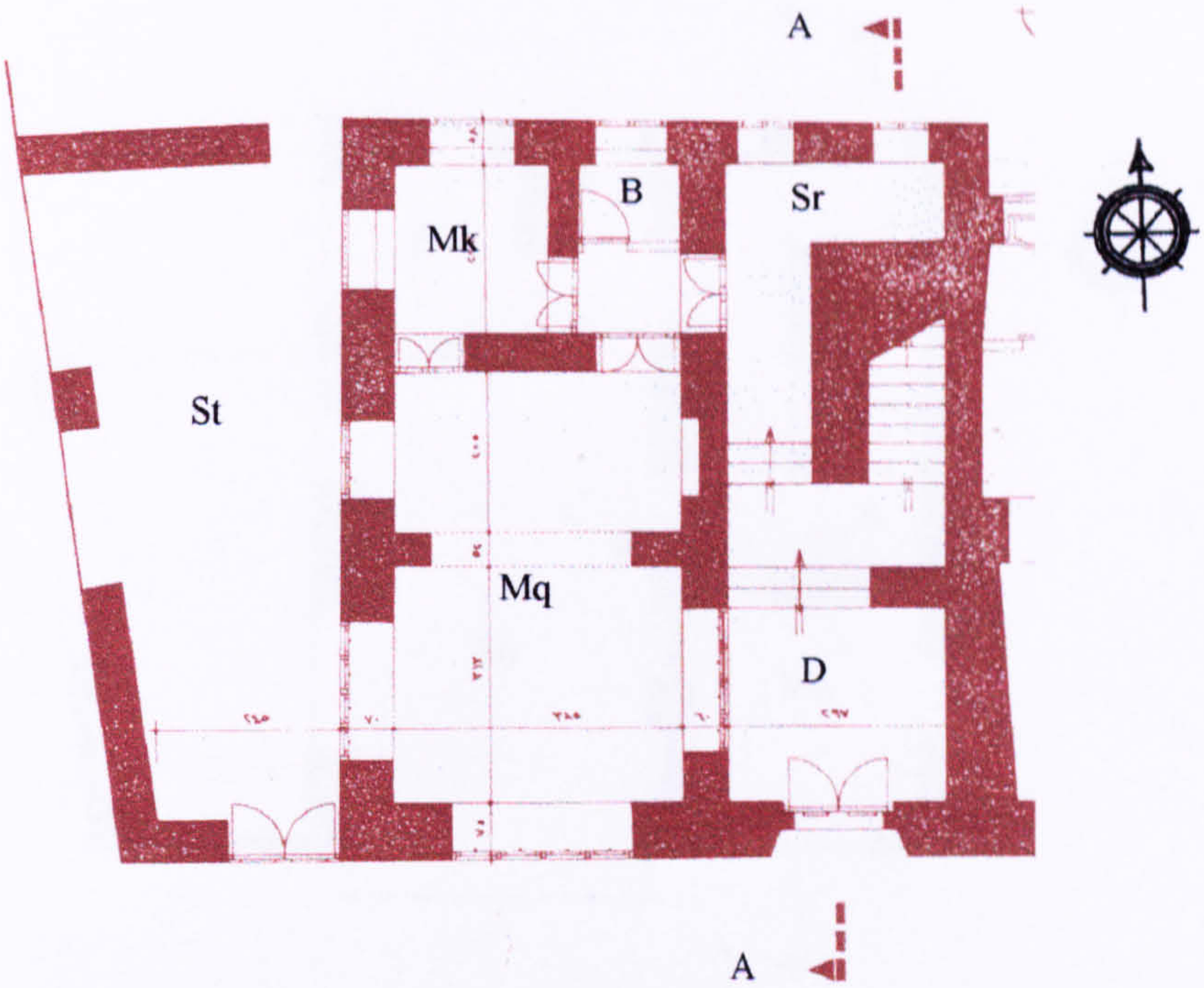


Figure A.11: Ground floor, Omar Al Shorahi, House (c)

D *Deliz* (Entrance hall)
Mq *Maq'ad* (Sitting room)
Mk *Makhlawan* (Resting place)
Sr Storage
B *Bayt alma* (Bathroom)

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 52

The First and Second Floors:

We find in these replicated floors a separation of *Muakhkhar* from *Majlis* while the *Majlis* is connected to a *bayt alma* and a *Suffah*. It is observed that the *Majlis* is the biggest space on the first floor and it is possible to use the space of the *Majlis* as a space for living in the upper floors, such as the second and third floors. In addition the *Markab* (kitchen) was located on the third and fourth floors, which were as far as possible from the guests' spaces, *Majlis* (Figure A.12).

Figure A.12: First and second floors, Omar Al Shorahi, House (c)

Mj *Majlis* (reception room)
Mu *Muakhkhar* (living room)
S *Suffah* (ante-room)
B *Bayt alma* (Bathroom)

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 53

The Third Floor:

This floor consisted of two multi-purpose rooms. One of these rooms was located on the main façade and characterised by large opening that was covered by *Rowshan*. Another multi-purpose room looked onto the first *Kharijah*. Family members only used these multi-purpose rooms as living areas and resting places. However this floor had good cross-ventilation, so the air could enter from the *Rowshan* situated in the main façade and exit from the other *Rowshan* that was in the northern façade. (Figure A.13 and A.14)

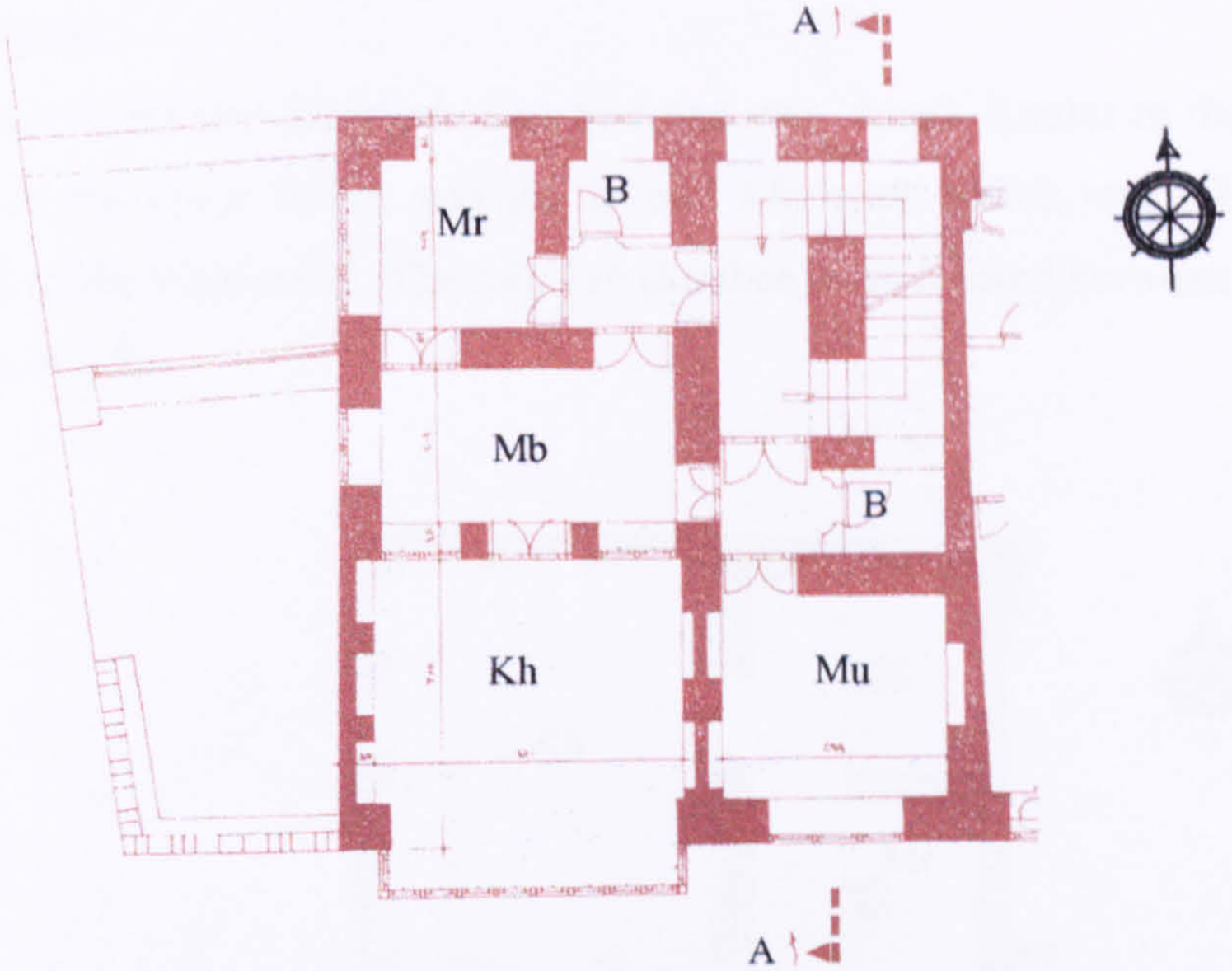


Figure A.13: Third floor, Omar Al Shorahi, House (c)

Mu *Muakhkhar* (living room)
Kh *Kharijah*
Mb *Mabit* (night room)
Mr *Markab* (kitchen)
B *Bayt alma* (Bathroom)

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 54

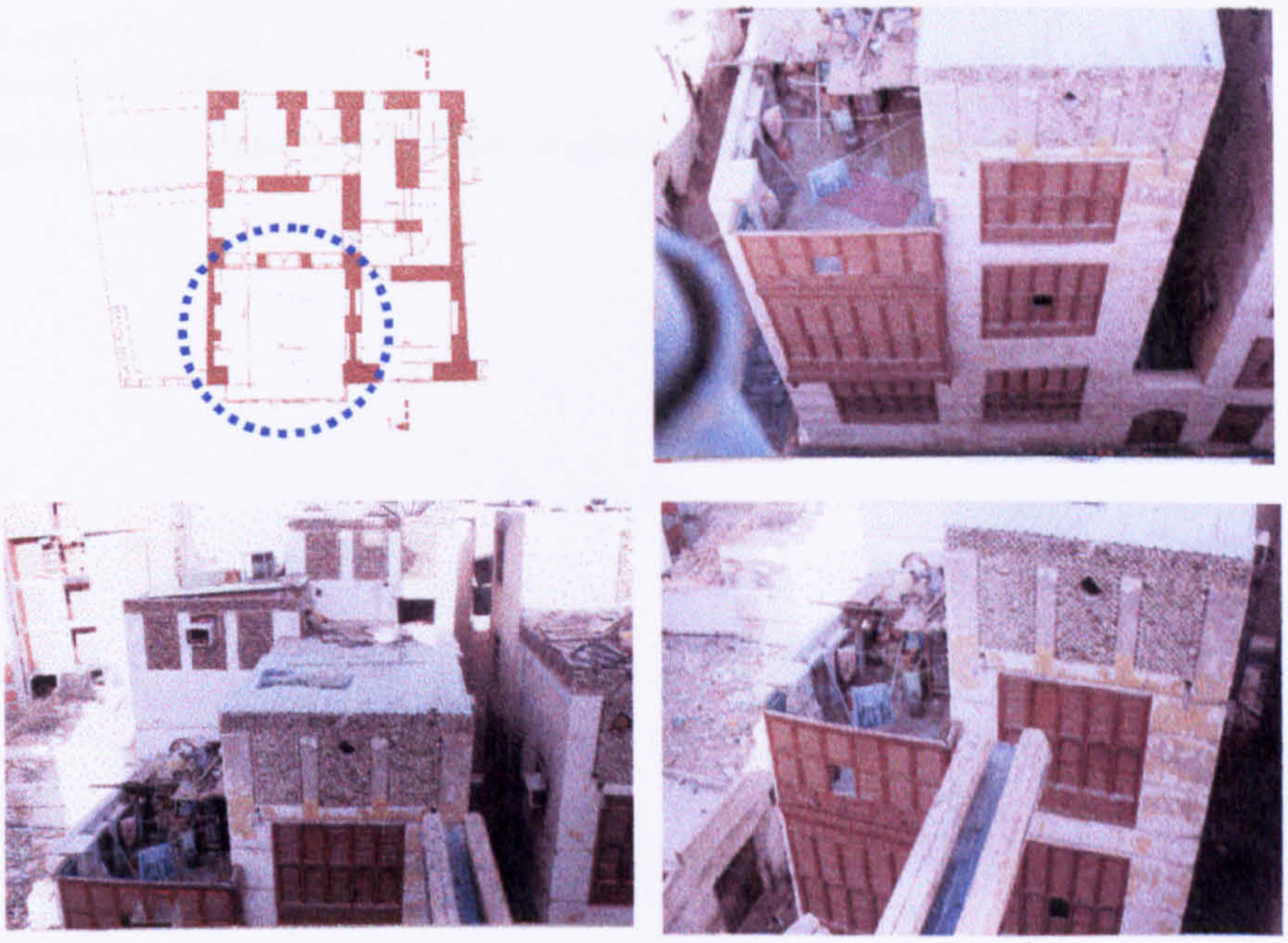


Figure A.14: Kharijah (terrace), Omar Al Shorahi, House (c)
Source: Umm Al Qura University, Architecture department report, 2000

The Fourth Floor:

On this floor there were two *Kharijah*. The first one was small, similar to the area of *Muakhkhar* in the lower floors, and the second *Kharijah*, which was a bigger size, was joined to the main stairs. The *Markab* (kitchen) was located between these *Karijah*. (Figure A.15)

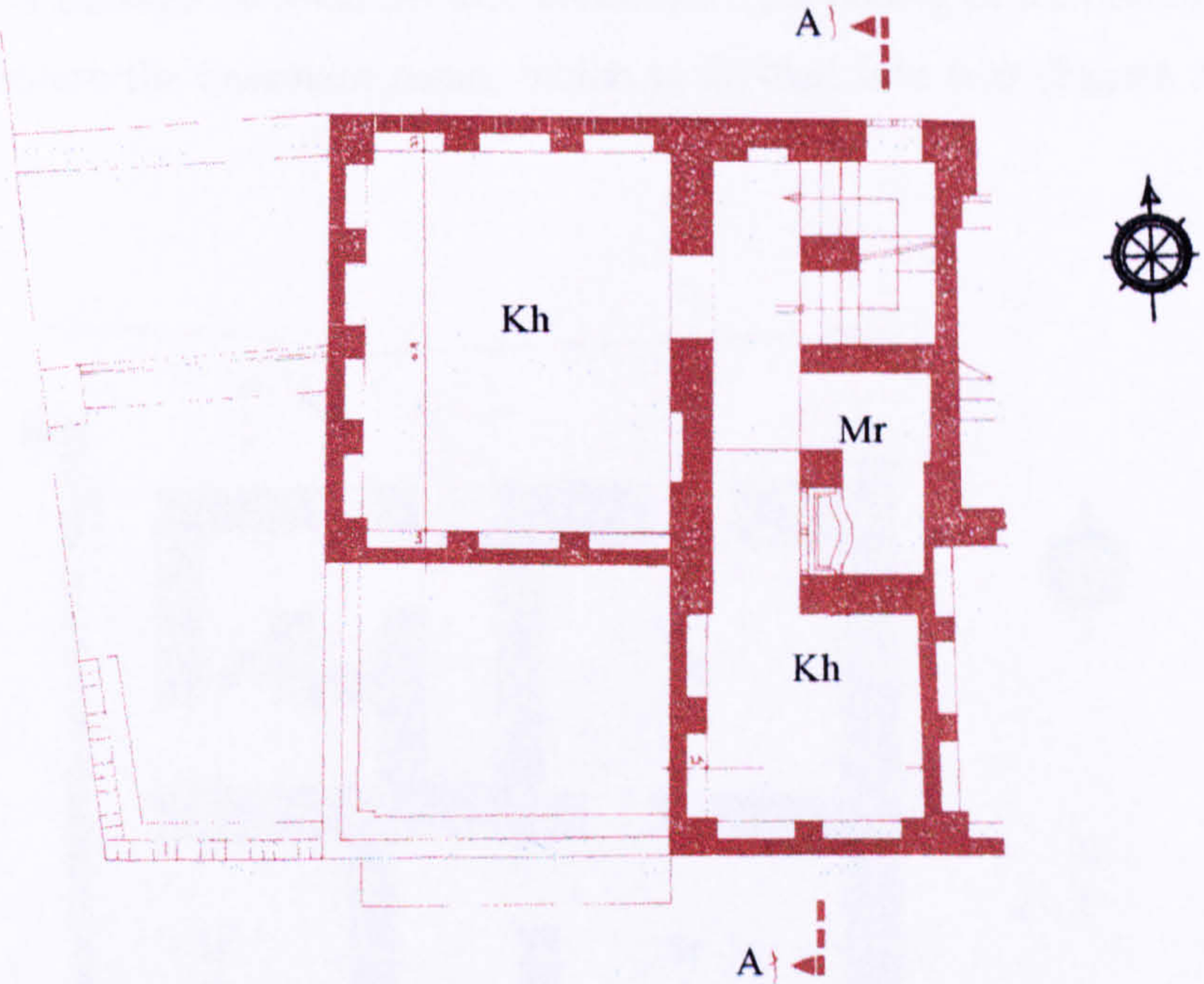


Figure A.15: Fourth floor, Omar Al Shorahi, House (c)

Kh *Kharijah* (Terrace)
Mr *Markab* (Kitchen)

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 55

Description of the interior design, House (d)

The Basement:

The building is reached by four steps from ground level, designed to be approached from both sides of the main entrance. The basement can be reached from outside the building using the passage between the four buildings. This raising of the building is probably to ventilate the basement room, which is divided into two (Figure A.16 and A.17)

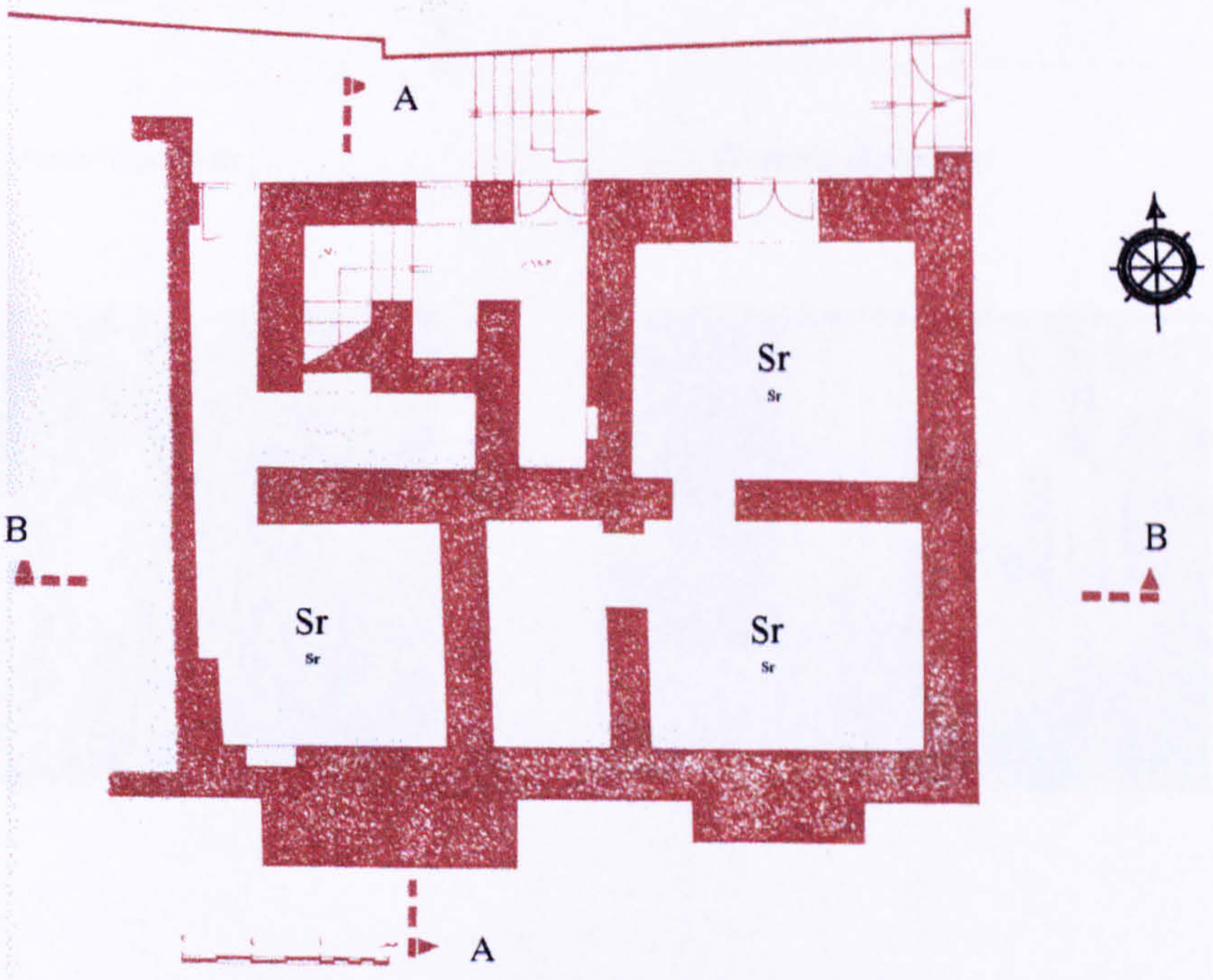
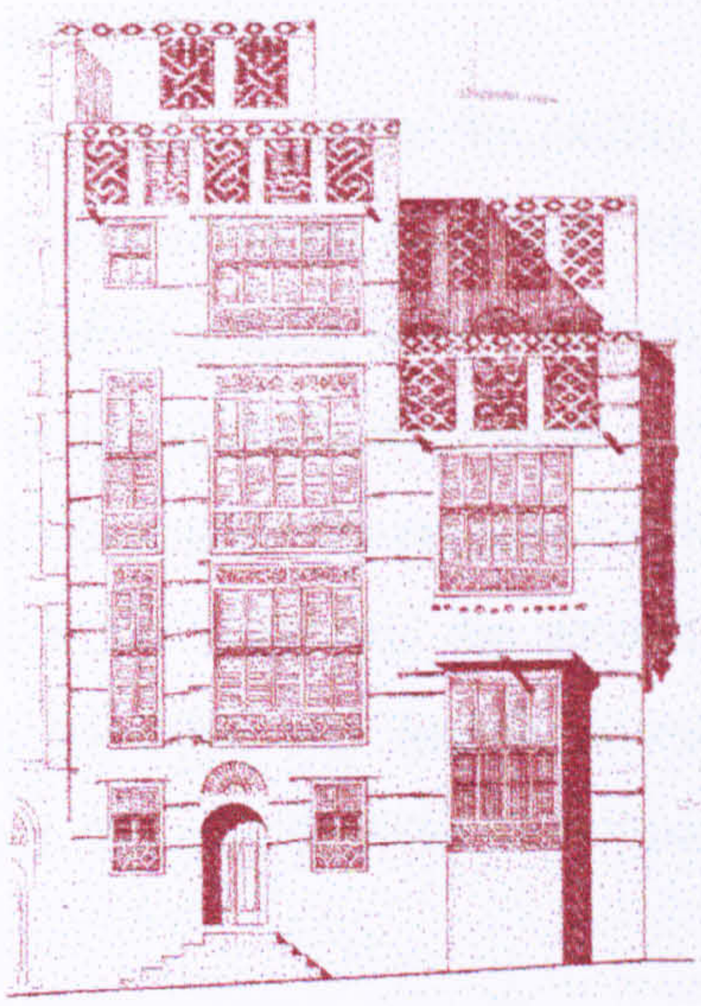


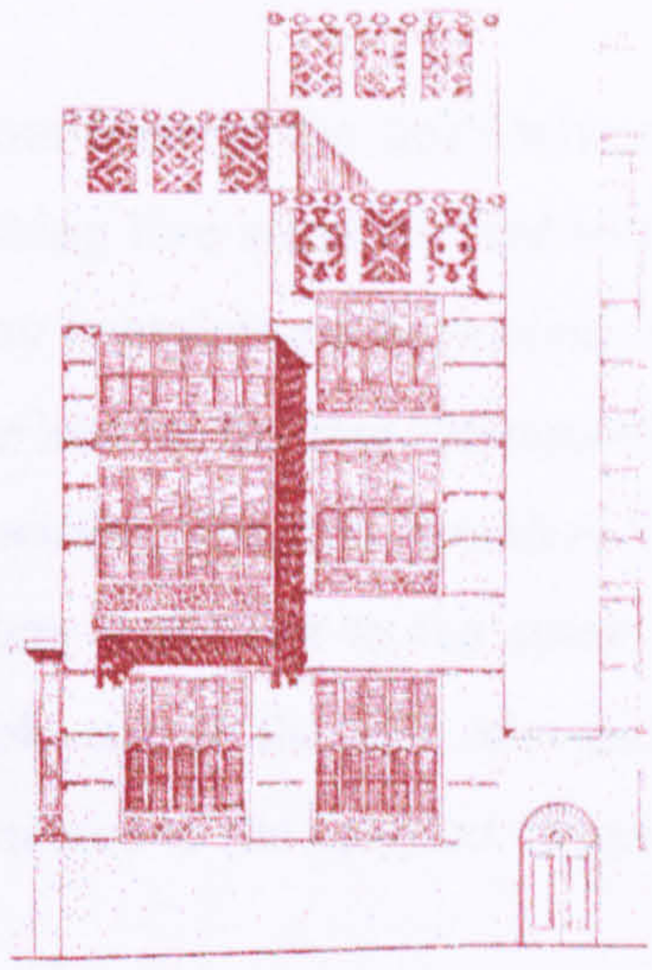
Figure A.16: The basement, Omar Al Shorahi, House (d)

Sr Storage space

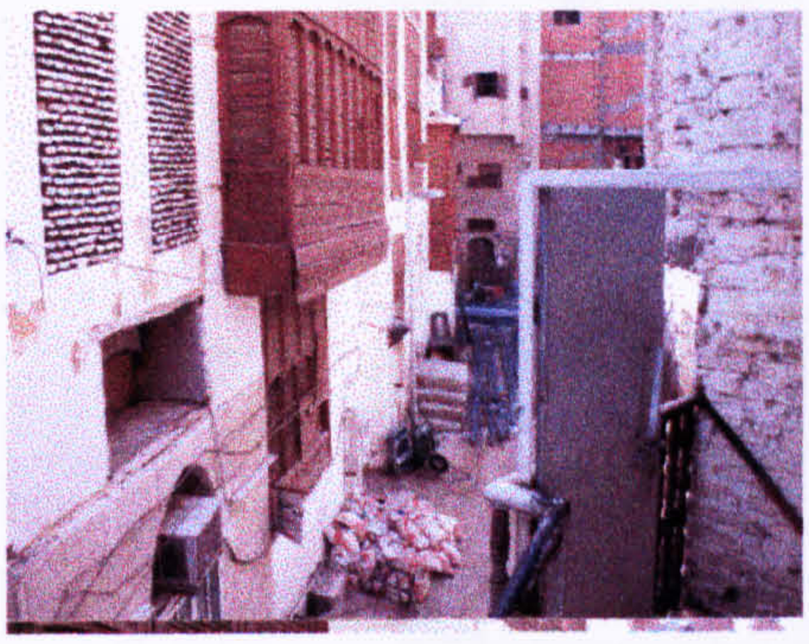
Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 45

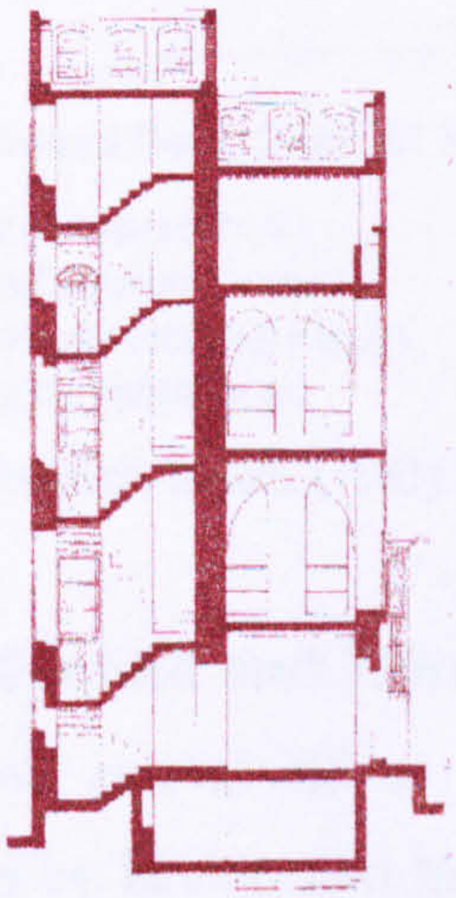


North elevation



Western elevation





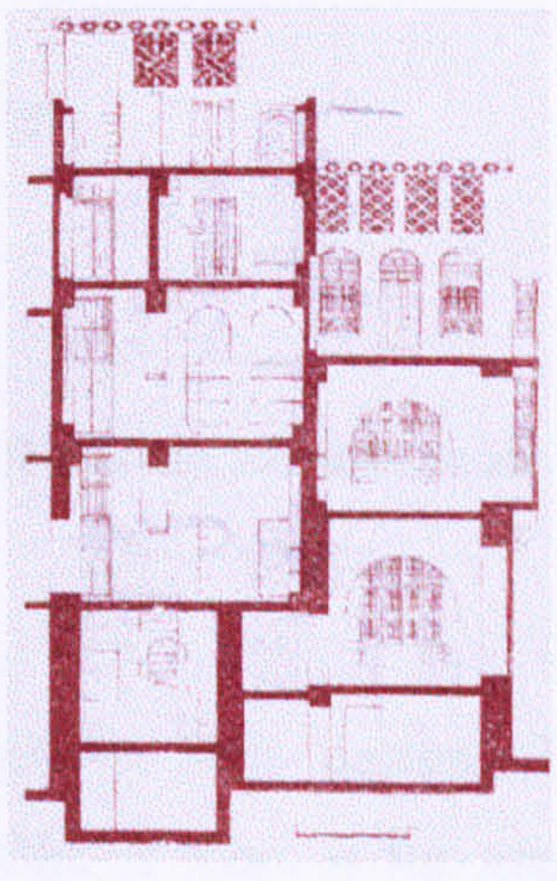


Figure A.17: Elevations and Sections, Omar Al Shorahi, House (d)
Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. Pp. 48-49

The Ground Floor:

The main entrance leads to the *Dehliz* and from there to the stairs where we find a *bayt alama* joined to the stair hall. After climbing five steps we find to the right of the stair landing a door, which leads to a lobby containing a *bayt alma*. From there to the *Maq'ad*, which in this house is characterised by the free movement of air and good light because of the presence of four *Rowshan*. The first *Rowshan* looks out to passage b at the front and the second *Rowshan* looks out to the street at the rear elevation, the third and fourth *Rowshan* look out of the side elevation towards enclosure a. We also find the *Makhlawan* connected to the *Maq'ad*. (Figure A.18)

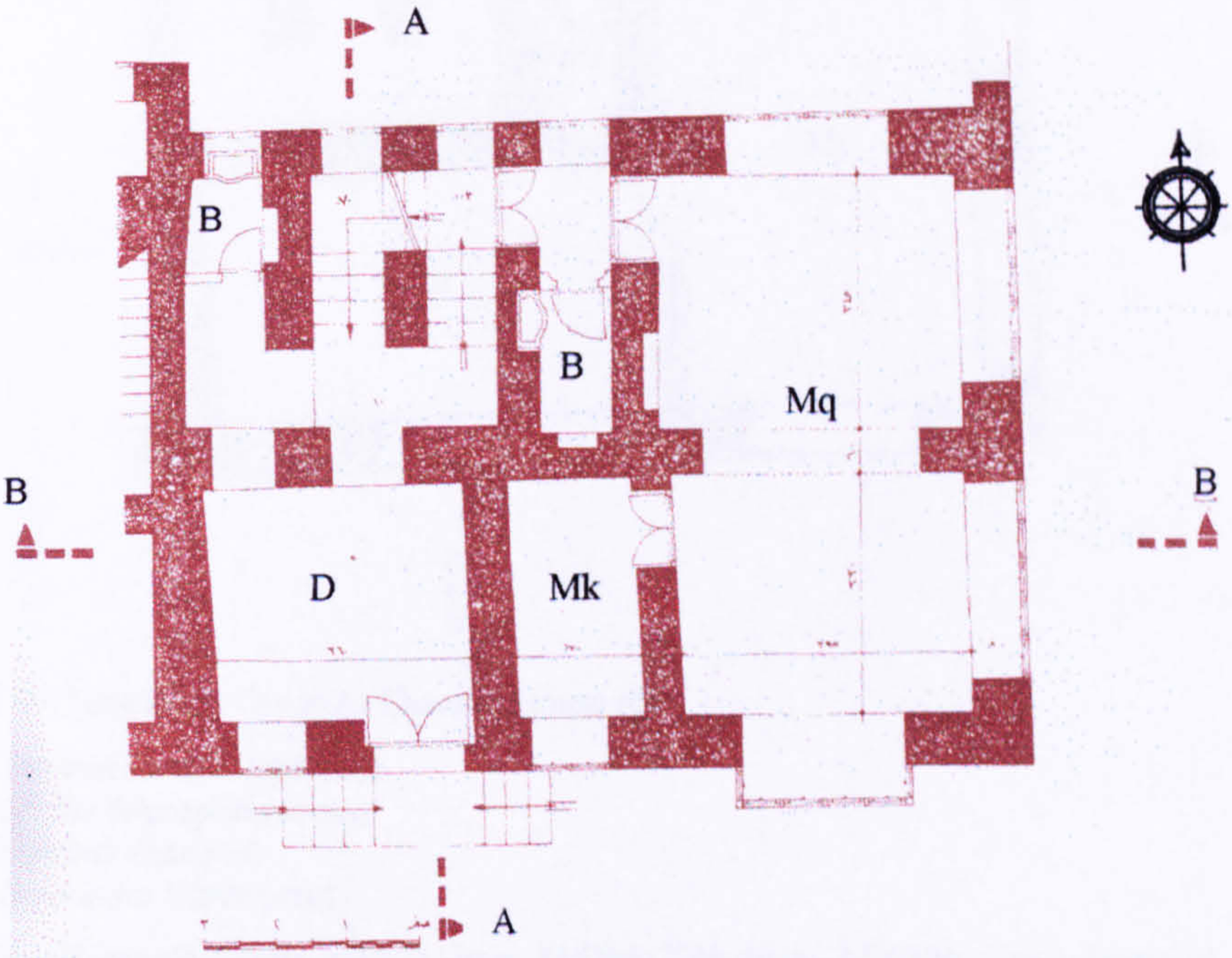


Figure A.18: Ground floor, Omar Al Shorahi, House (d)

D *Dheliz* (entrance hall)
Mq *Maq'ad* (sitting room)
Mk *Makhlawan* (resting place)
B *Bayt alma* (bathroom)

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 44

The First, Second and Third Floors:

The first and second floors are replicated in their design. These floors are characterised by having two large rooms. One of them is for general use such as receiving guests, "*Majlis*". The family members use the second room privately

"*Suffah*". The *Majlis* have a lobby with a toilet and from there to the *Suffah*, which is separated from the *Majlis* by a door in the middle of the wall. The second floor is characterised by having *Muakhkhar* located over the *Suffah* and *Majlis* as well as *bayt alma* and small *Markab*. This small *Markab* was used for quick meals, for example breakfast and later meals. (Figure A.19)

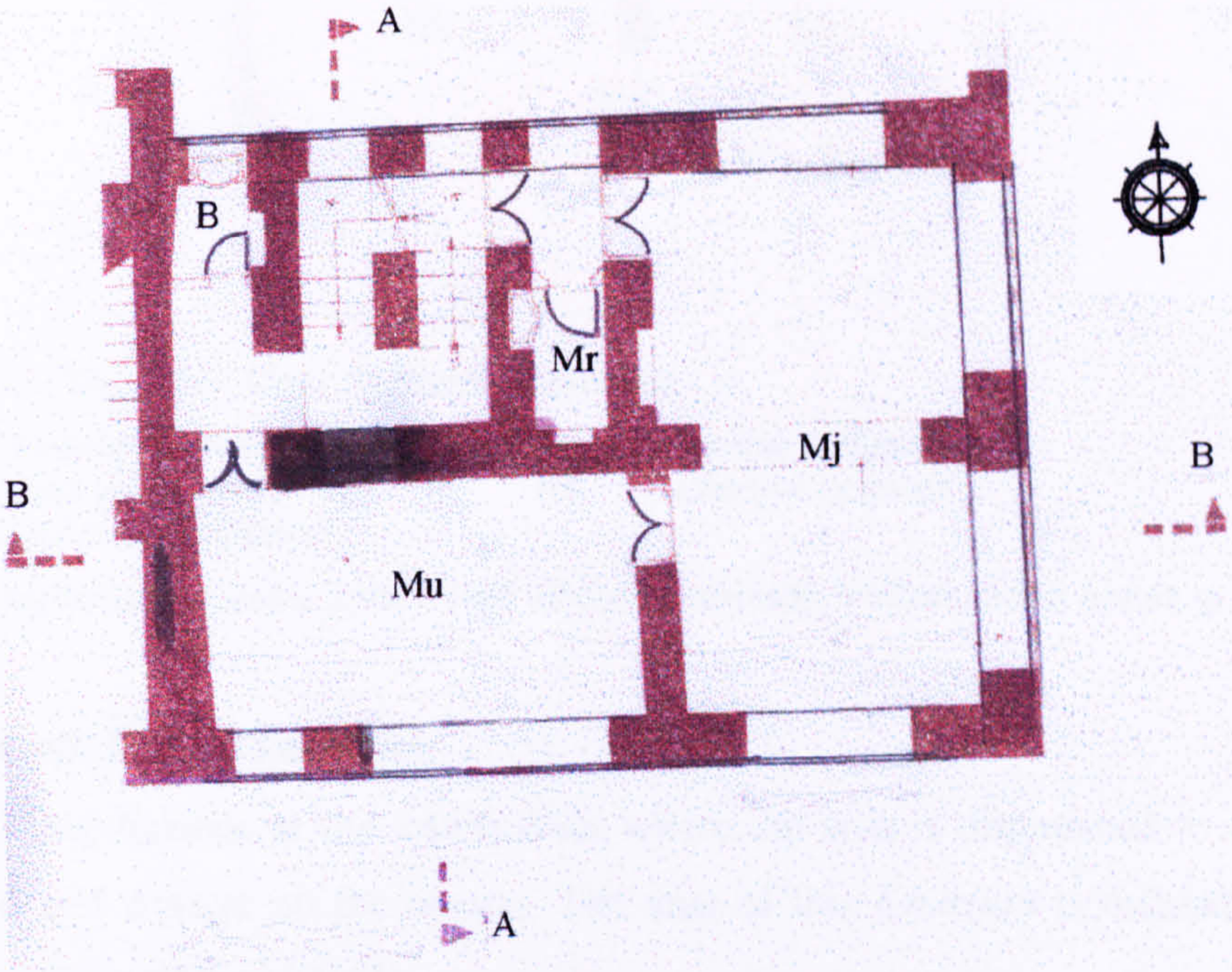


Figure A.19: First floor, Omar Al Shorahi, House (d)

Mu *Muakhkhar* (living room)
Mj *Majlis* (Reception room)
Mr *Markab* (kitchen)
B *Bayt alma* (Bathroom)

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 44

The third floor differs from the first and second floors by its *Kharijah*, which equals the area of the *Majlis*, and the *Rowshan*, which are extended from below in this *Kharijah*. Two windows are added on the right and left sides of the *Mabit* door and covered by louvred wooden shutters to give eye viewing between the two spaces when the door is closed. The *Markab* were located between the stairs and the *Mabit*. *Bayt alma* was close to the living room "*Muakhkhar*" (Figure A.20).

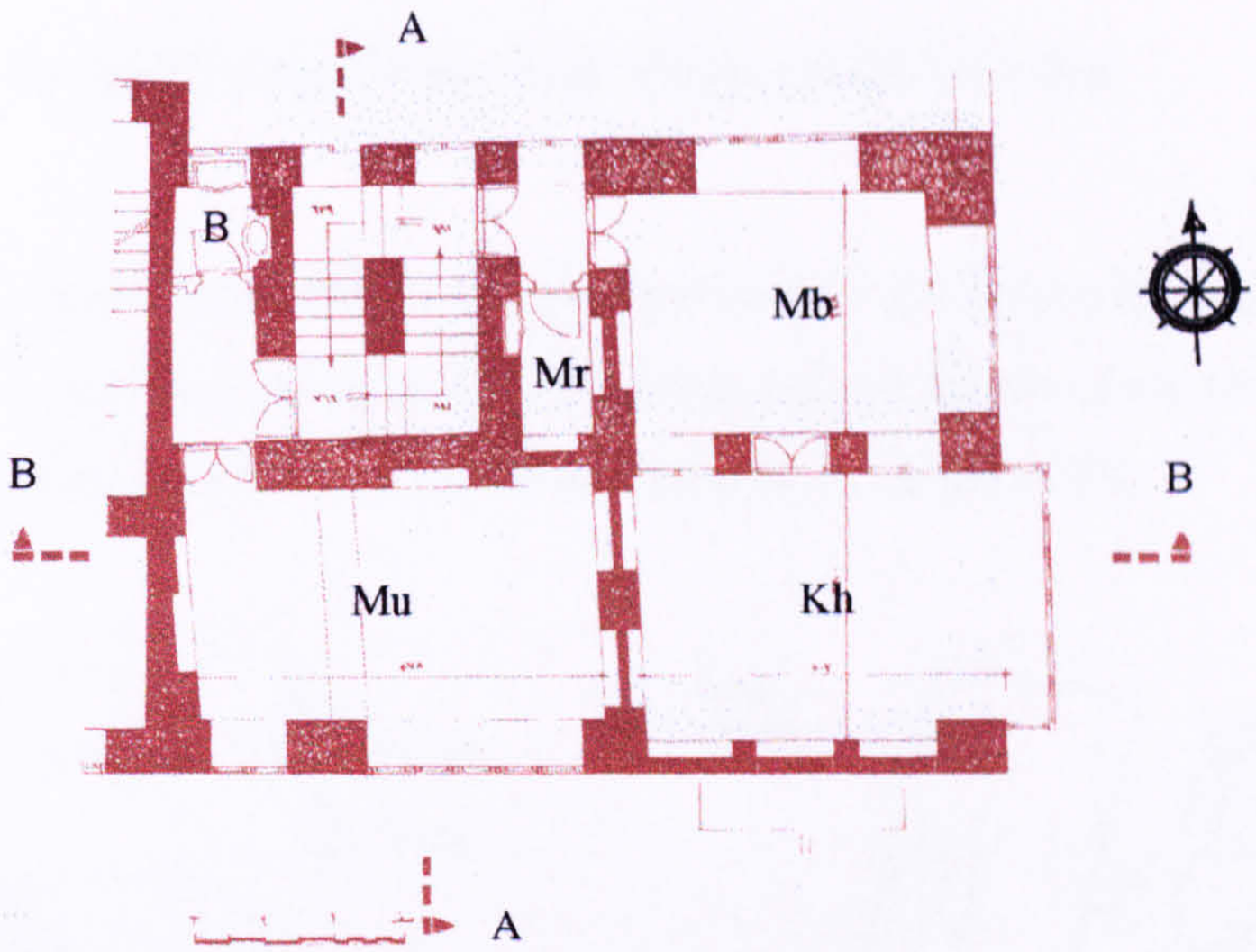


Figure A.20: Third floor, Omar Al Shorahi, House (d)

Mu	*Muakhkhar* (living room)	Mr	*Markab* (Kitchen)
Mb	*Mabit* (night room)	Kh	*Kharijah* (terrace)
B	*Bayt alma* (Bathroom)		

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 46

The Fourth Floor (Terrace):

The building finishes at the fourth floor where the area is diminished to only one *Kharijah* and storage on the terrace. The area of this *Kharijah* is estimated to be 3.74m x 6.21m. (Figure A.21)

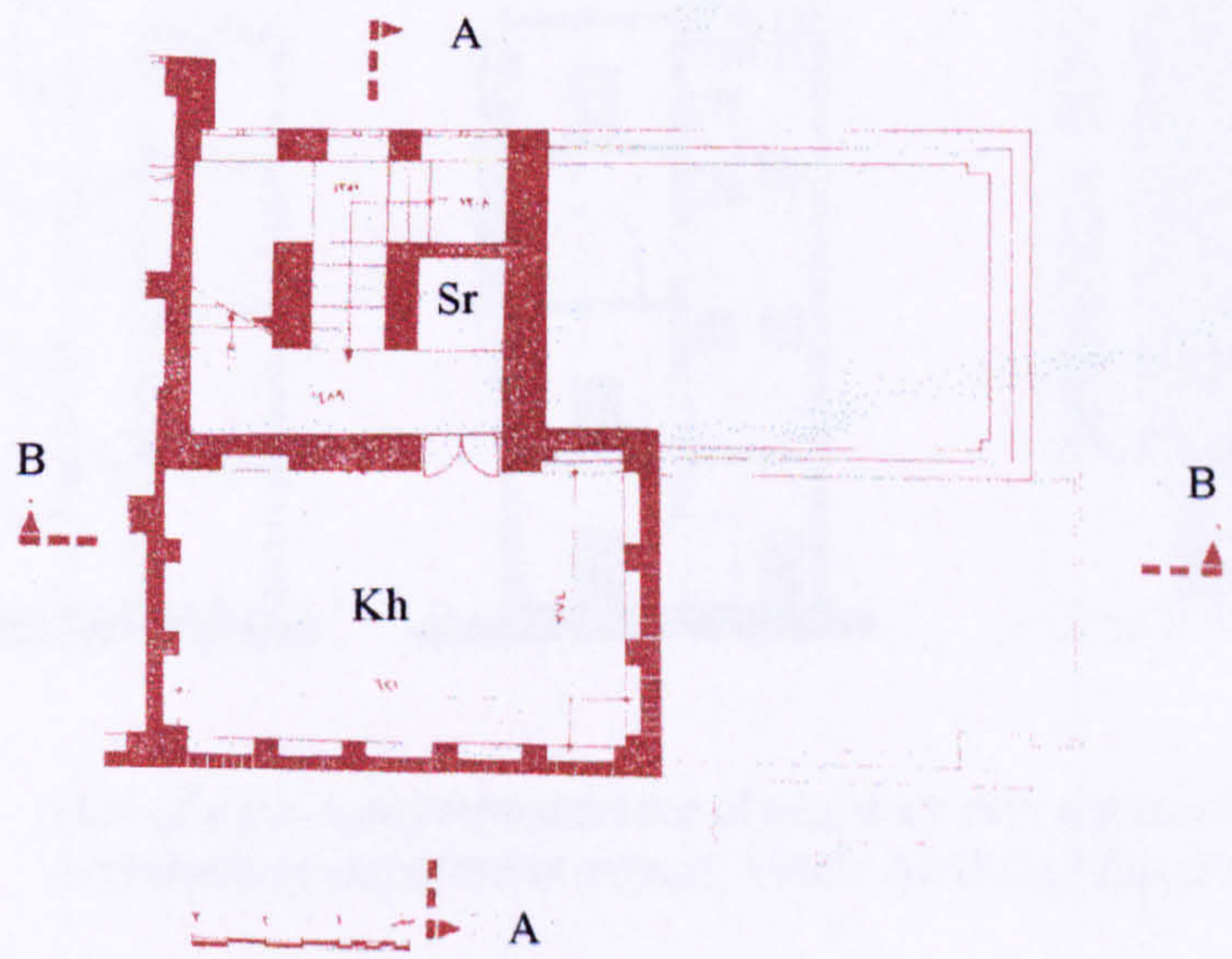


Figure A.21: Fourth floor, Omar Al Shorahi, House (d)

Kh *Kharijah* (terrace) Sr Storage

Source: Hajj Research Centre, (1983) Umm Al Qura University, Makkah, Saudi Arabia. p. 47

5.2.1.2 Case Study Five: Aal Momenah House

The Site:

This house is situated east of the Holy Mosque as well as close to it. The main façade of this house was opens to Al Masaa (the eastern façade of the Holy Mosque). This area is known as Al Qushashia Street. (Figure A.22 and A.23)

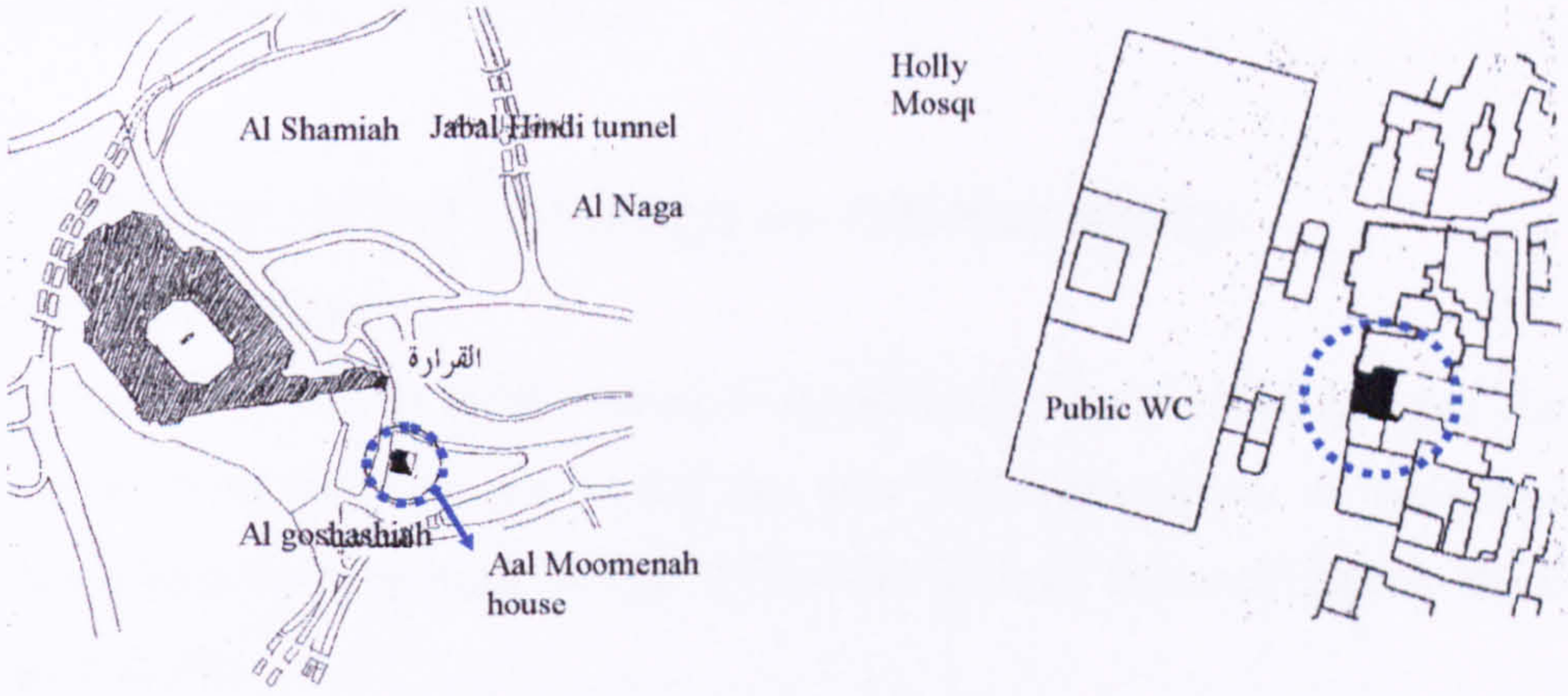


Figure A.22: The locations of case study two: Aal Momenah house
Source: Author drawing, based on Architecture department report, Umm Al Qura University, 1998

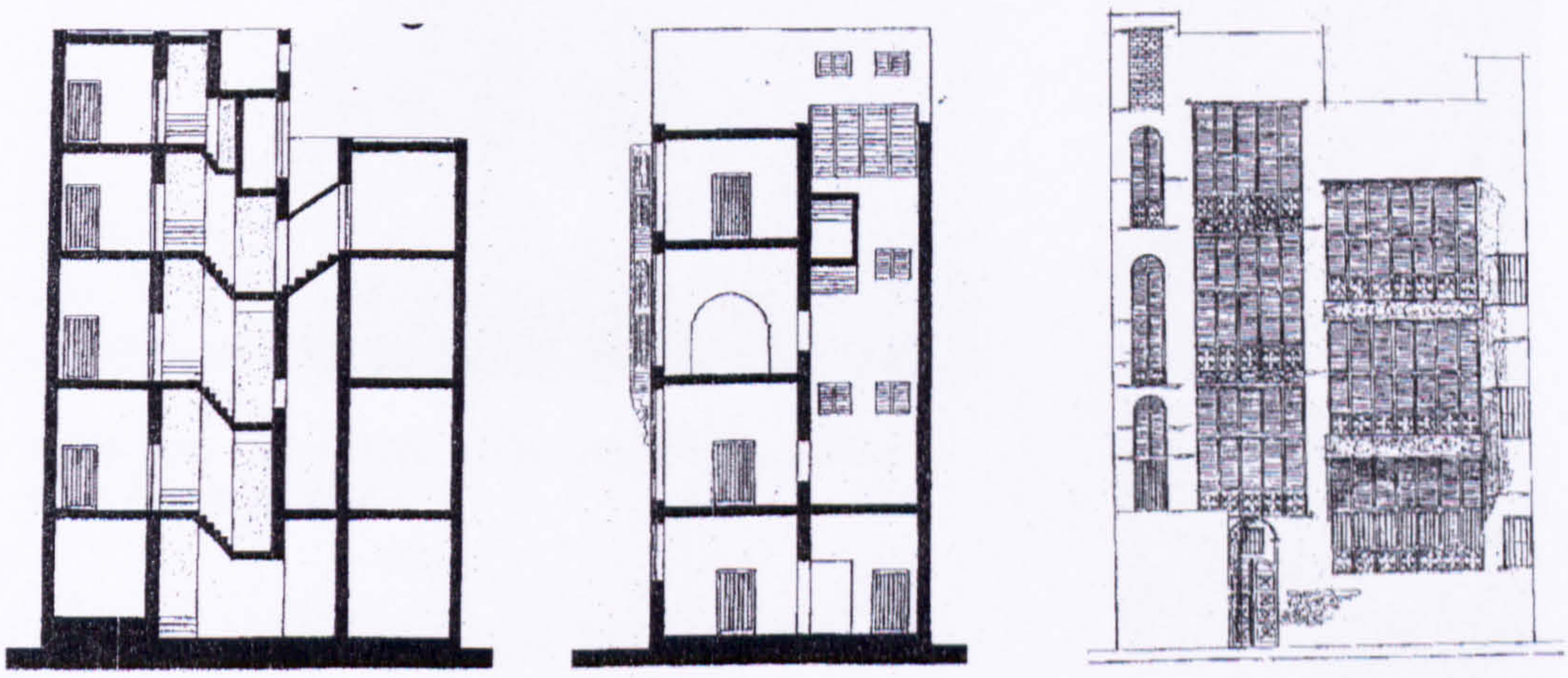


Figure A.23: View of sections and main elevation of case study two: Aal Momenah house
Source: Architecture department report, Umm Al Qura University, 1998

The plan arrangement:

This house was built in a small area and the internal spaces were very simple. All openings provided in this house are on the main façade (southern façade) while the eastern, western and northern façades were connected to other buildings. This house was also characterised by the presence of a skylight, which was faced by the main stairs. This skylight was made to compensate for opening some windows to help in moving air into the internal spaces.

Description of the buildings as interior design

The Ground Floor:

A wooden gate that is hand crafted with geometric shapes characterises the main entrance of the building. Its arched top end also characterises it. We also find a square with an arch opening on top of the door worked in iron to lighten the *Dehliz*. (Figure A.24)

Square with arch opening on top of the door worked in iron to lighten the *Dehliz*

Details of wooden gate that is hand crafted with geometric shapes

Figure A.24: Main gate, Aal Momenah house

The main entrance leads to the *Dehliz* and to the right of it to the *Maq'ad*, which is characterised by a large opening all along the front wall, which is covered by *Rowshan* and faces the main elevation. The *Maq'ad* is connected to *Makhlawan*, which may be used for different purposes, including guest sleeping and rest. The *Dehliz* also leads to a small hall connected to the main stairs. The small hall leads right to the *Bayt alma* on the right and to the left to a multipurpose room and a small space used as a store. On this floor it can be observed that openings are few. This is because the building is connected to other buildings on three sides, i.e. the openings are concentrated in the main elevation. (Figure A.25)

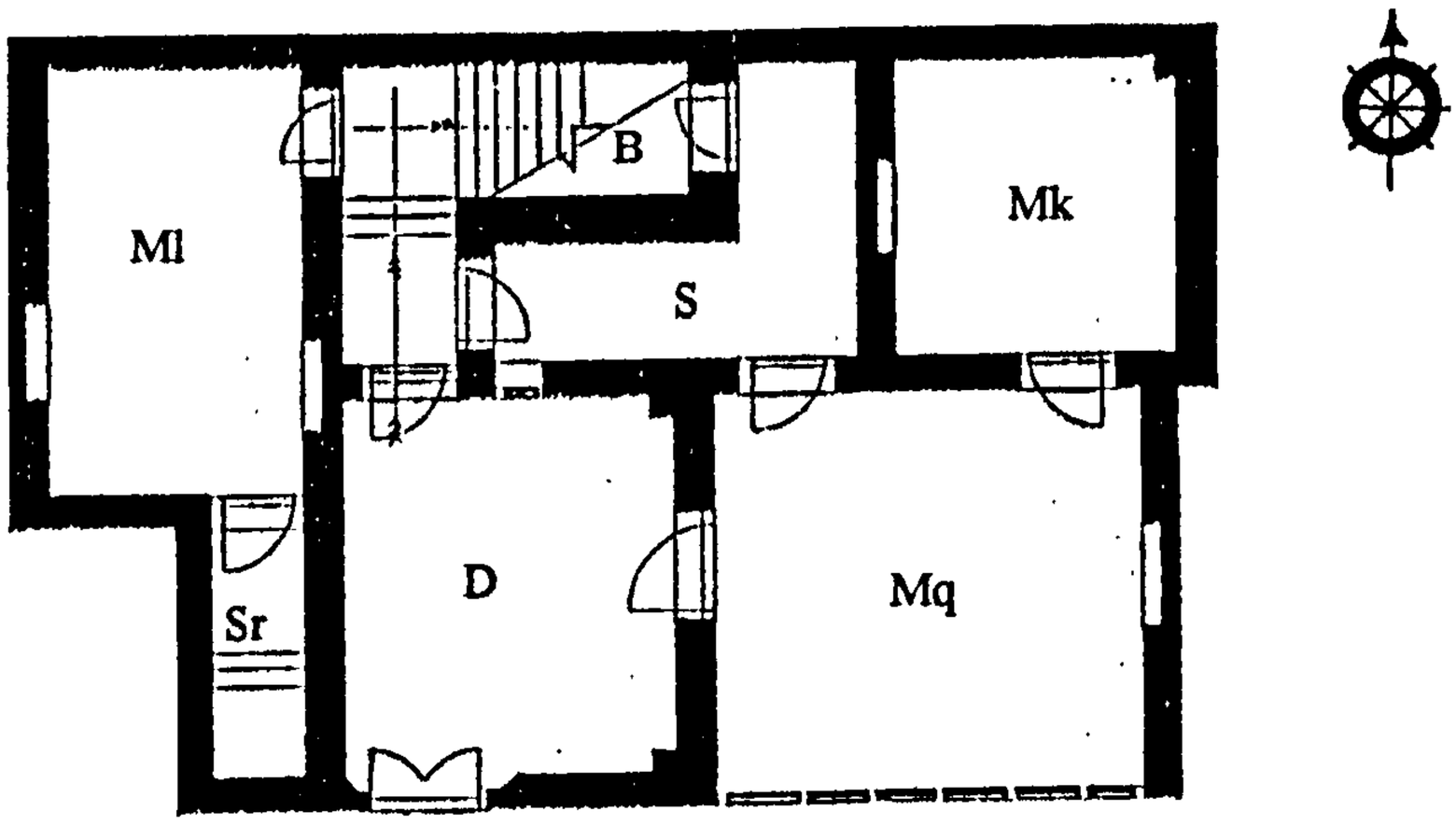


Figure A.25: Ground floor, Aal Momenah house

D *Dehliz* (entrance hall)
Mq *Maq'ad* (sitting room)
Ml Multipurpose room
Mk *Makhlawan* (resting place)
S *Seeb* (small hall)
B *Bayt alma* (Bathroom)
Sr Storage

Source: Umm Al Qura University, Architecture department report, 1998

The First, Second and Third Floors:

The same design is repeated on the middle floor of the house. The building is characterised by the presence of a skylight, which is faced by the main stairs window and another room, such as *Suffah*. As mentioned before, the building is attached to other buildings and the skylight was made to compensate for not having windows on those sides. The first floor is composed of *Suffa*, *Majlis*, *Mukhkhar*, small *Markab* and *bayt alma*. This floor is characterised by three openings along the main elevation. *Rowshan* or louvered wooden shutters cover these openings.

The stairs are also characterised by the Makkah window, which faces the skylight (Figure A.26). The window, which facing the skylight helps in moving air into the *Majlis*. A door from the main stairs separates *bayt alma* and the *Markab* as well as *Muakhkhar* was connected to the small *Markab* by a door. (Figure A.27)

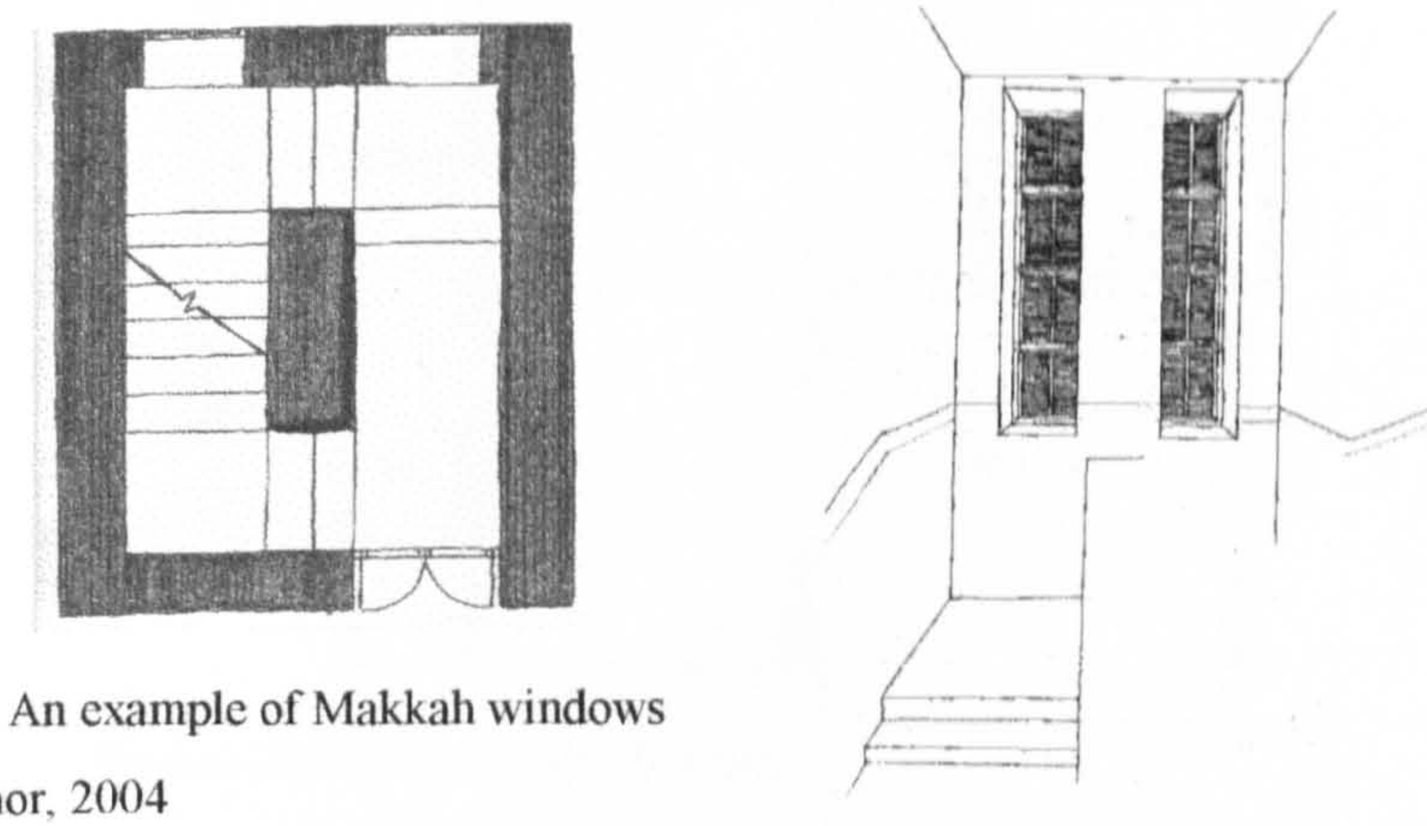


Figure A.26: An example of Makkah windows

Source: Author, 2004

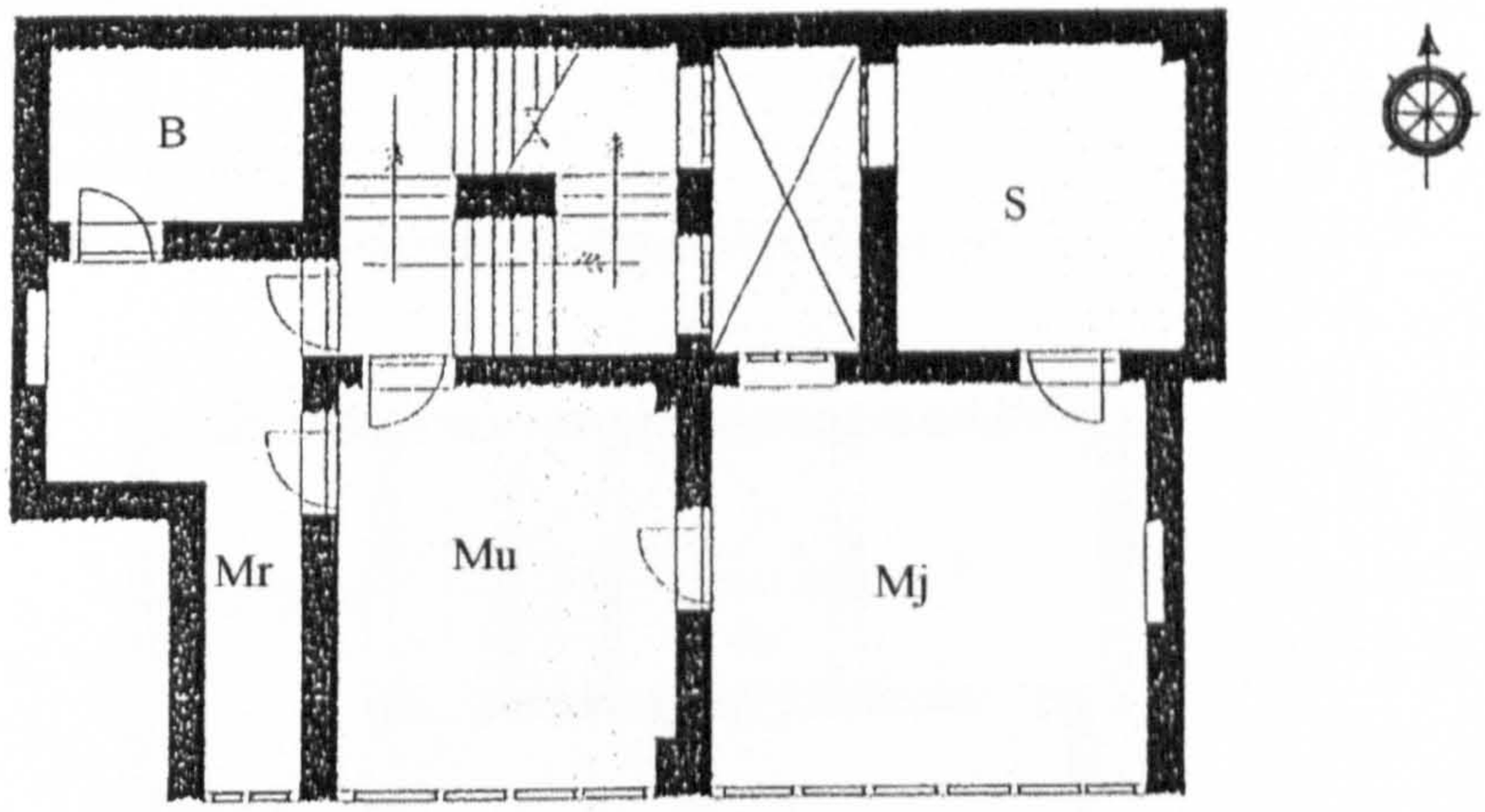


Figure A.27: First floor, Aal Momenah house

Mj *Majlis* (reception room)
Mu *Muakhkhar* (living room)
S *Suffah* (ante-room)
Mr *Markab* (kitchen)
B *Bayt alma* (bathroom)

Source: Umm Al Qura University, Architecture department report, 1998

In the second floor the *Majlis* space is joined to the *Muakhkhar* to become a big space used for meetings of relatives. We find a limited space connection between the two spaces because of limited building material. As mentioned before, the three sides of the house were connected to other buildings so the *Suffah* was open to the skylight by a small window as well as the space in front of the *Bayt alma* which

was used as a small *Markab* connected to the main façade. The third floor was similar in design to the second floor, but they added two storage places next to the skylight, which became smaller than on the second floor. (Figure A.28 and A.29)

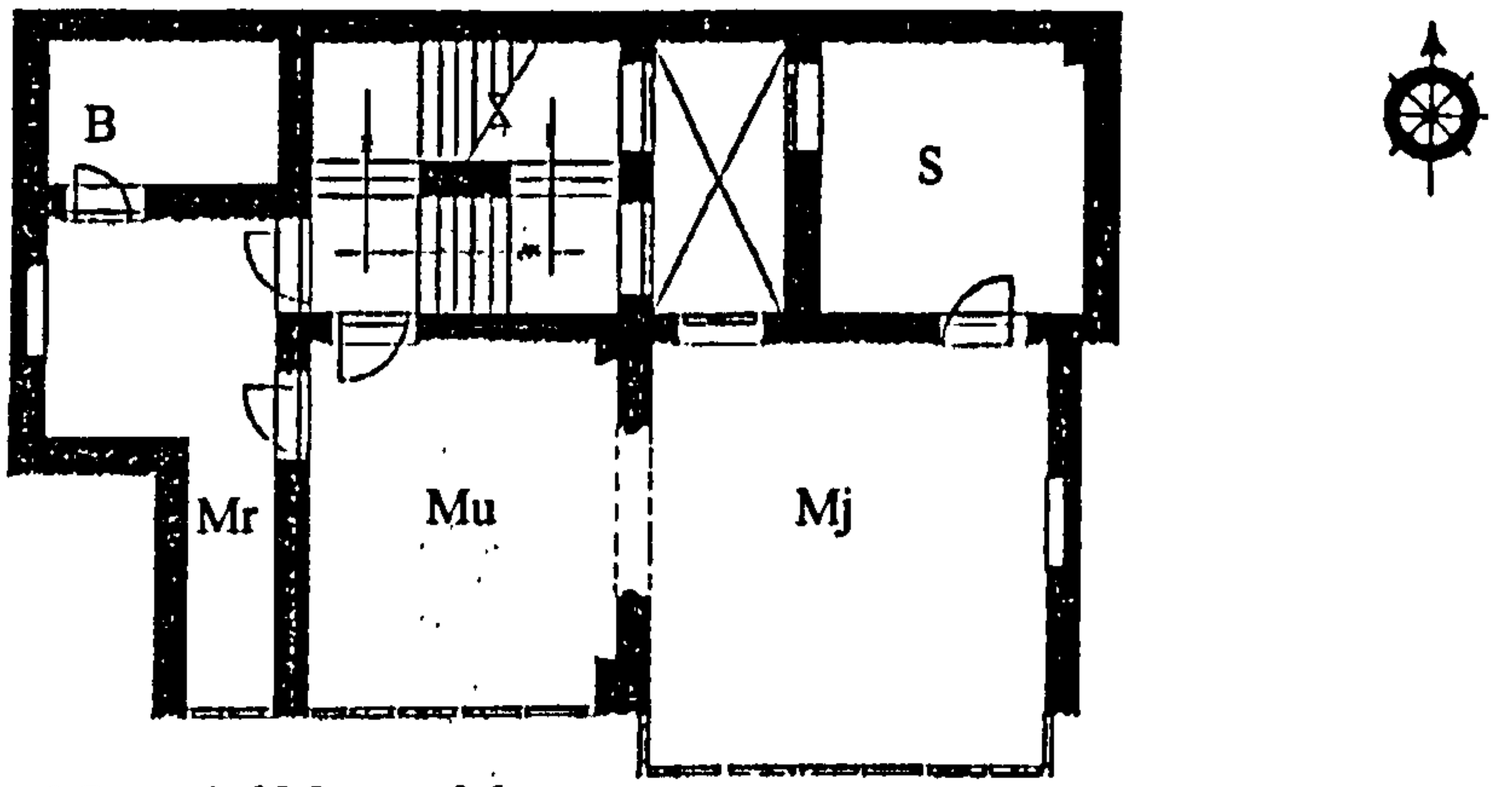


Figure A.28: Second floor, Aal Momenah house

Mj *Majlis* (reception room)
Mu *Mauakhkhar* (small room)
S *Suffa* (ante-room)
Mr *Marmab* (kitchen)
B *Bayt alma* (bathroom)

Source: Umm Al Qura University, Architecture department report, 1998

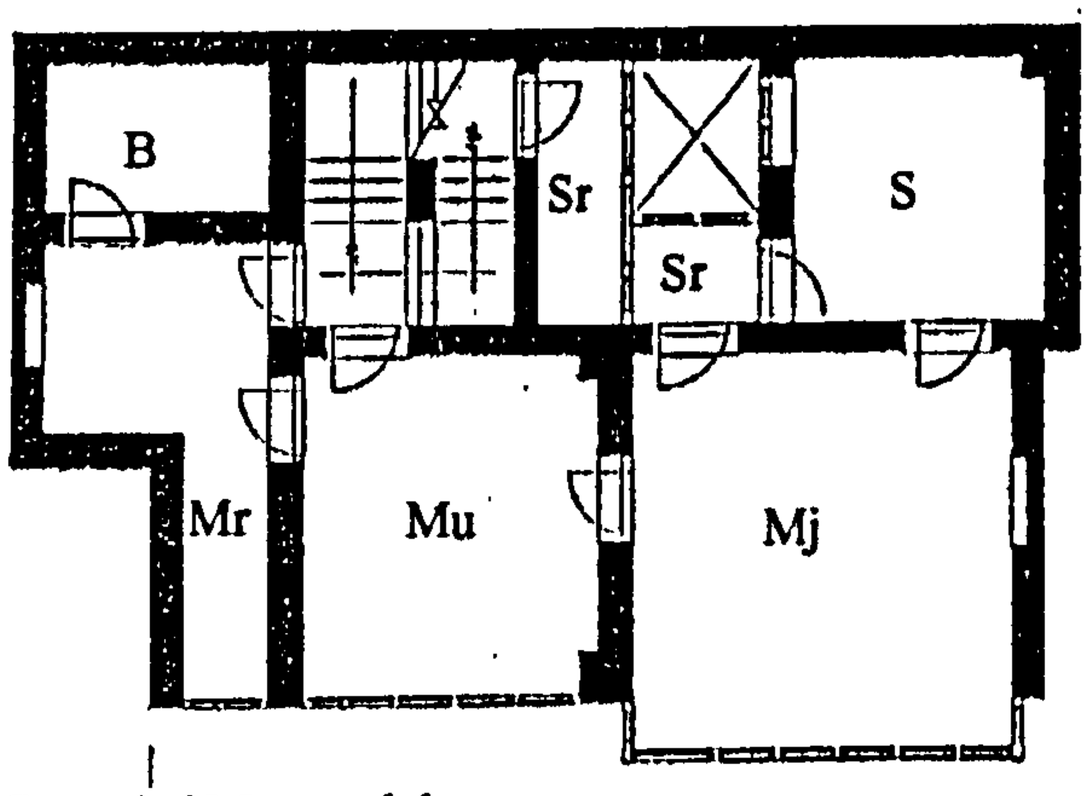


Figure A.29: Third floor, Aal Momenah house

Mj Majli (reception room)
Ml Multipurpose room
S *Suffah* (ante-room)
Sr Storage
B *Bayt alma* (Bathroom)

Source: Umm Al Qura University, Architecture department report, 1998

The Fourth Floor (Terrace):

This floor is characterised by the presence of *Kharijah* and it is the one most used by the family, especially women. The *Kharijah* is adjacent to the *Mabit* (sleeping room) and it has a store for the *Kharijah* furniture. The main stairs lead to a small *Kharijah,* facing the skylight and characterised by having *Shawabeer*. (Figure A.30)

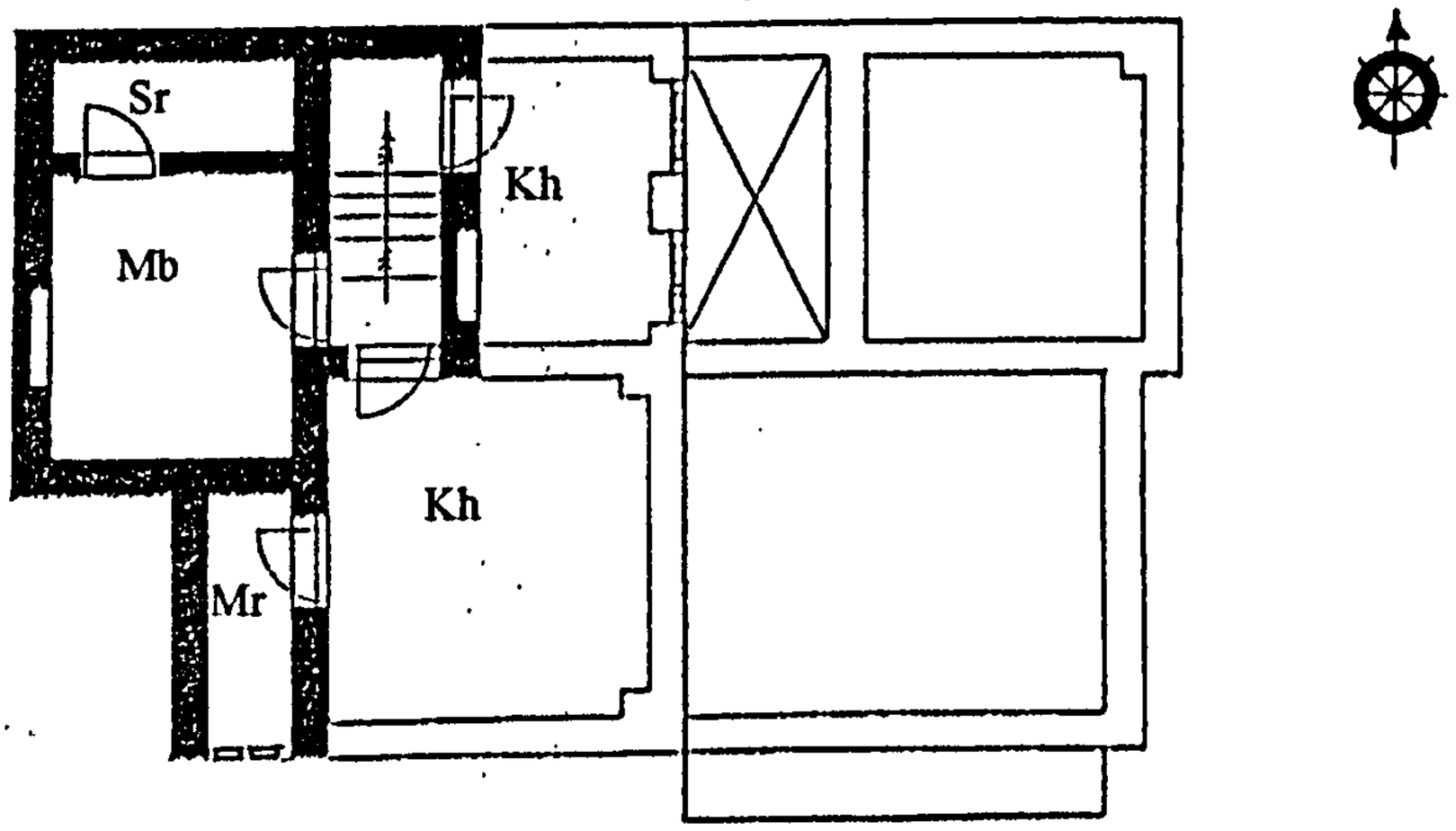


Figure A.30: Fourth floor (terrace), Aal Momenah house

Mb *Mabit* (night room)
Kh *Kharijah* (terrace)
Sr Storage
Mr *Markab* (kitchen)

Source: Umm Al Qura University, Architecture department report, 1998

Case Study Six: Al Qamah House (a and b)

The Site:

The house is situated on one of Makkah mountains west of the Holy Mosque, known as Hindy Mountain. The house is situated in Al Hufra lane. The house is named Al Qamah House after the family that built it just before World War One and it is approximately 500 meters from the Holy Mosque. In addition, due to its proximity to the Holy Mosque, it shares its characteristic features with other historic buildings in that district. Al Hufra lane is also characteristically a narrow roadway similar to those typical to Islamic city, which zigzags, narrows, and widens according to need and function and to give maximum protection against the weather for the locals. (Figure A.31 and A.32)

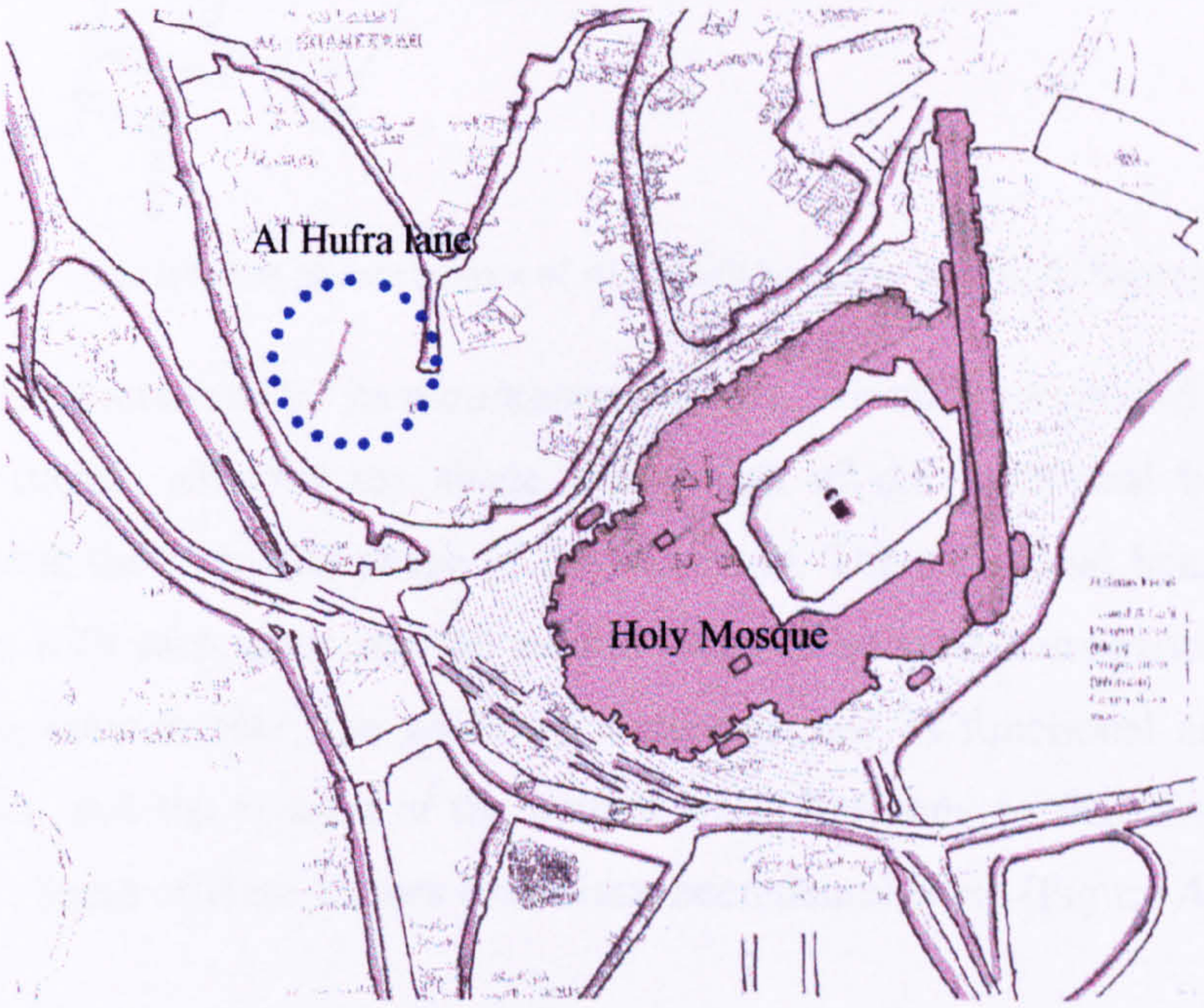


Figure A.31: The site of Al Hufra lane, Hindi mountain
Source: Author drawing, based on Farsi, Z.

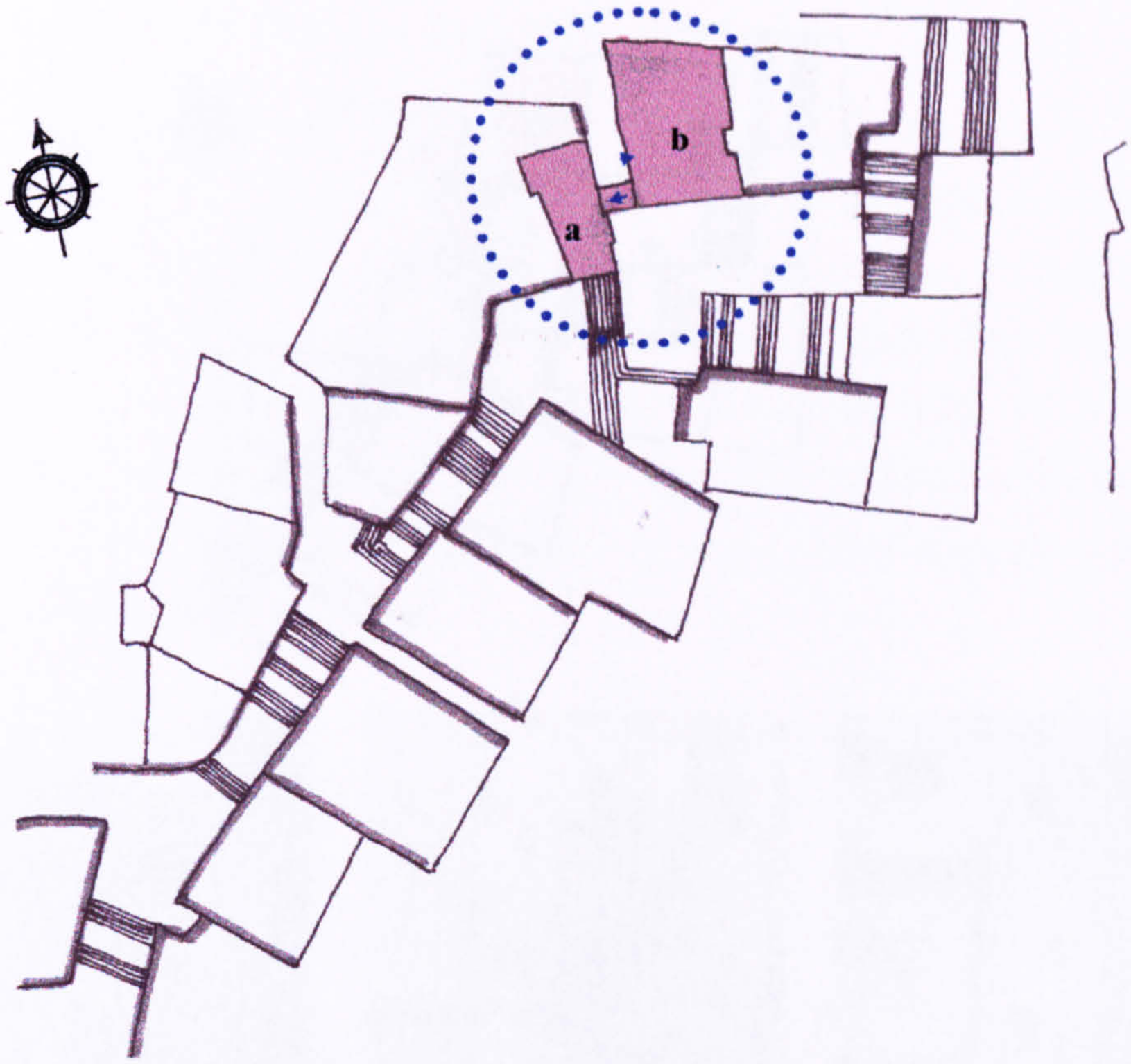


Figure A.32: The location of case studies of Al Qamah houses (a and b), Al Hufra lane

The site is characterised by its mountainous nature, which is rough and steep. This nature, of course, affected the shape and design of the traditional houses. The buildings took the form and shape of the mountain. The traditional houses worked in harmony with each other and the natural siting to become homogenous with the surrounding environment; the windows were designed as functional and clear of exaggeration, and the façades of the houses are in harmony so that they look like one project. Some of these houses have since been demolished. (Figure A.33)

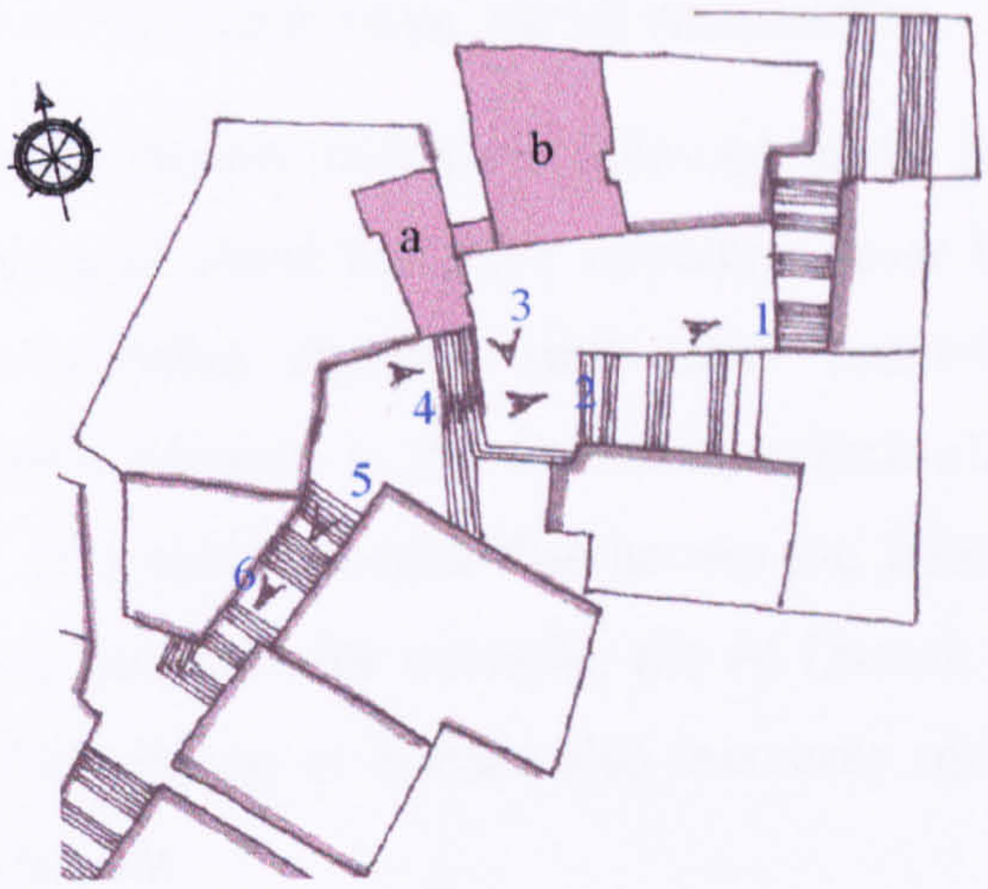


Photo 1

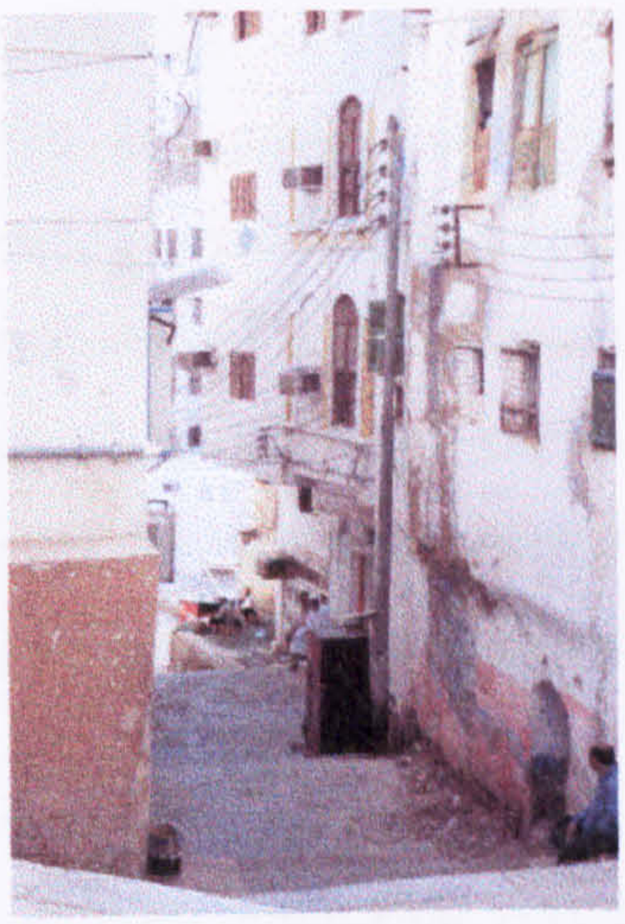


Photo 2

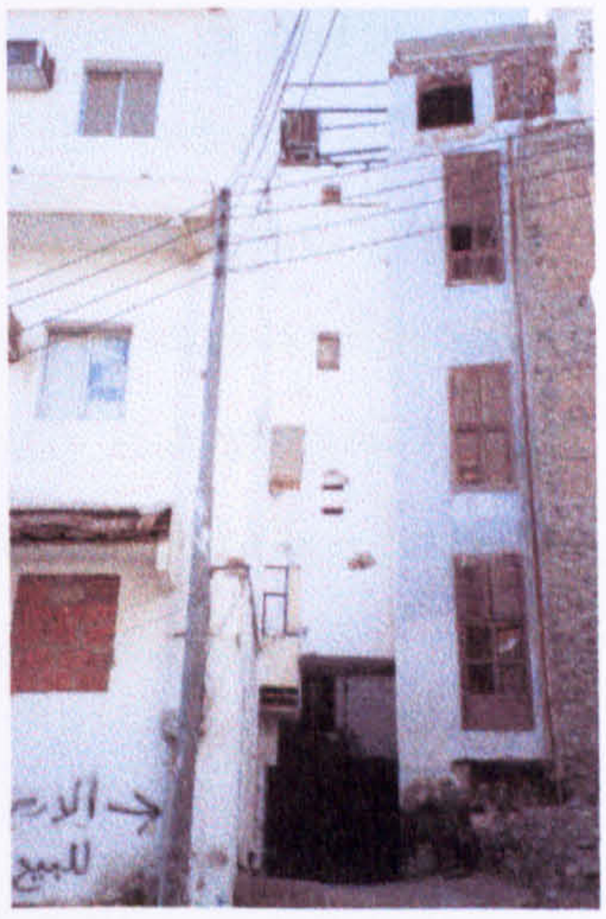


Photo 3

Photo 4

Photo 5

Photo 6

Figure A.33: Photographs showing Al Hufra lane, Hindi mountain

The architectural of Al Hufra lane, Hindi mountain

It is observed that basic Islamic codes are followed in the layout of the houses so that despite them being adjoined that door openings never face others directly. In the case of windows being opposite each other (unavoidable in such close proximity) the solution adopted is the *Rowshan*, which allowed for a view out without being seen. It is also observed that houses are joined to provide as much shade and in some instances, as for example, the Al Qamah house the interiors are joined up as well. The linking of houses also increases socialization between the individuals in those houses.

Similarly, the street is also characteristic of the old Islamic style in that it is an added end street (cul-de-sac). This arrangement allowed for the ordering of space from inside to outside, from private to semi-private to public. The building's façade is richly decorated with local architectural elements and features, such as *Rowshan* or *Mashrabyyah* and *Shawabeer*. These buildings are not only rich externally but also show the treatment is followed through their internal design and their organic adaptation to the nature of the mountainside to form one single environment.

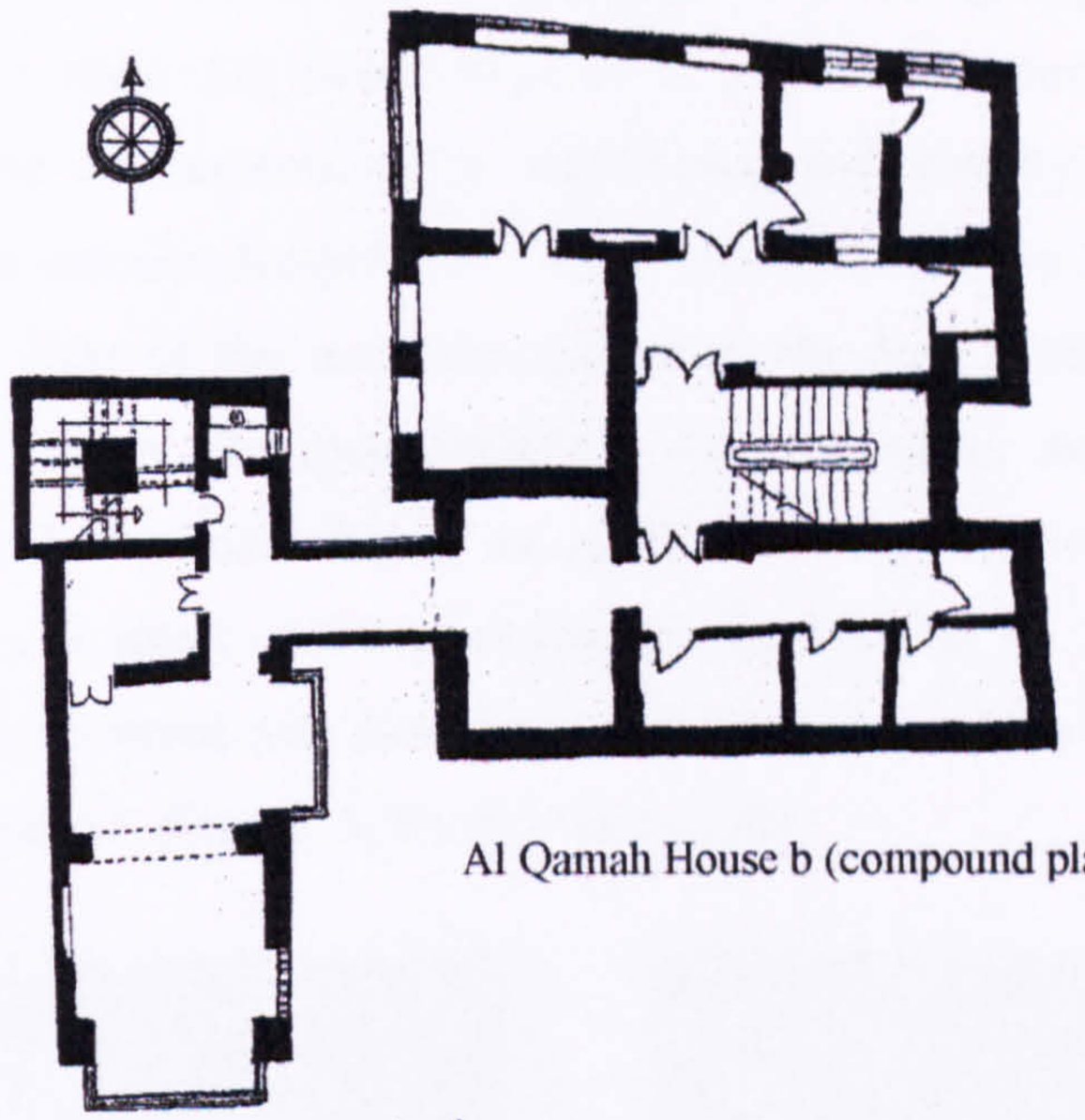
The plan arrangement:

As Makkah is characterised by its high mountains, people adapted themselves and their thinking to make use of climatic and natural circumstances, such as mountain slopes to be utilized in building basements to be used for storage, and levelling of the buildings floors and hence construction of five or six loading floors, which consider this factor in the design. The design also considers the separation of public and private zones.

This house is composed of two houses with five floors, connected with the adjacent building by a Three Stories Bridge (Figure A.34).[1] Most of the elements of the ground floor are repeated in the other floors. Because the house is situated in a mountainous area the topography was used and the design tried to benefit from this nature. This is clear from the base in levelling, which was used as a basement. This

[1] The two houses were two types, House (a) was simple plan house and House (b) was compound plan house, which will discuss house (b) with case studies of compound plan house.

basement is considered as a storage unit and was used to store luggage, goods and was also used for sitting or sleeping on windy or too hot days.



Al Qamah House b (compound plan house)

Al Qamah House a (compound plan house)

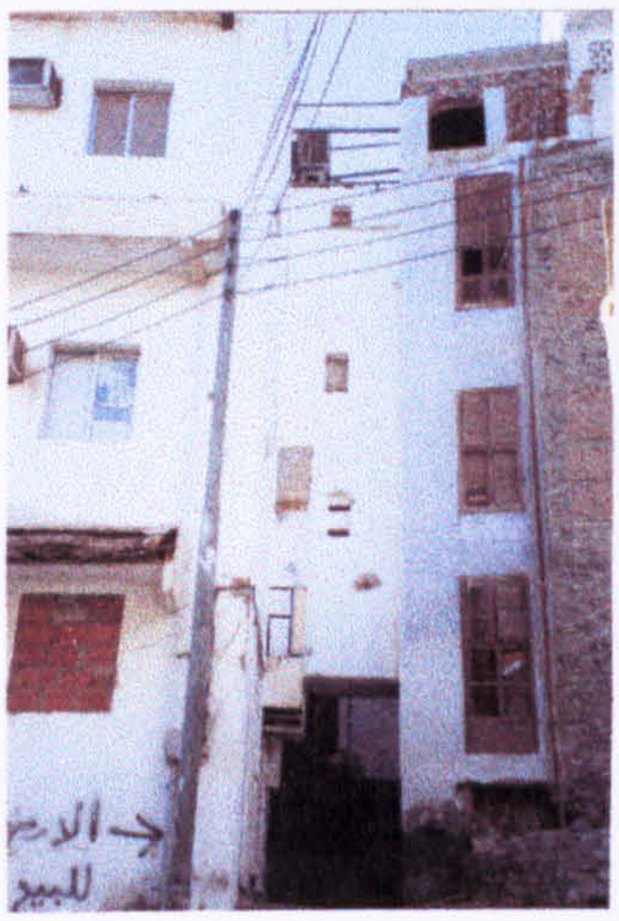


Figure A.34: Composed of two houses with five floors connected with the adjacent building by three Stories Bridge

Description of the Interior Design, House (a)

The Ground Floor:

The interior design is characteristic of this type of building, especially the main entrance that has a stone step as one large block and an arch carried by decorative half columns. The arrangement gives importance and identity to the entrance. (Figure A.35) The entrance leads to the *Dehliz* and to its left, the *Maq'ad*. The stair is located to the right of the main entrance with the *bayt alma* beside the stair towards the main façade. The space under the stair is used for storage. It has large window openings in the main façade as well as another window opening in the sidewall towards the street, which characterise the *Maq'ad* on the ground floor. These openings are covered with *Rowshan* covers, which produce a large amount of light and air movement. (Figure A.36, A.37and A.38)

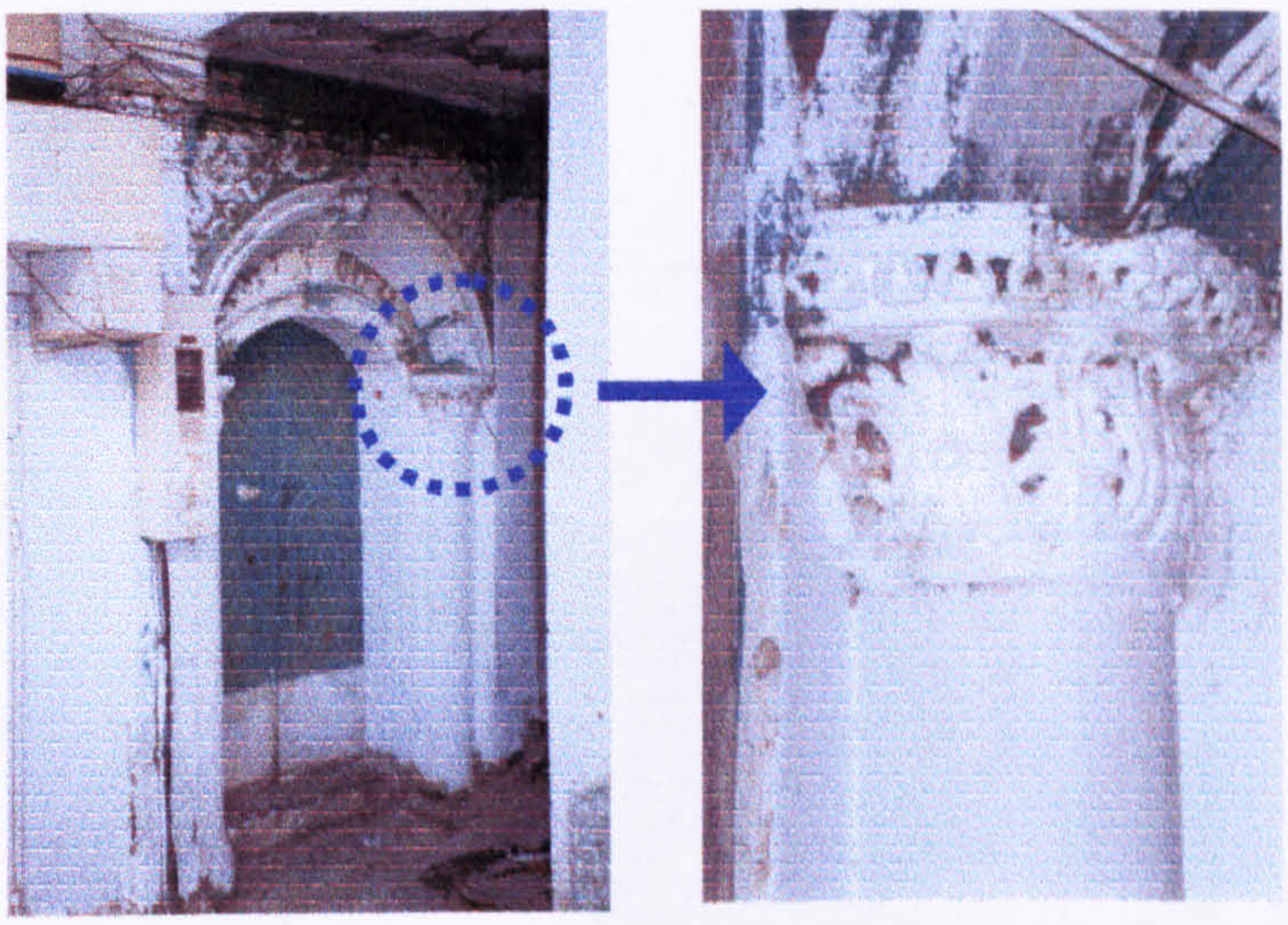


Figure A.35: Main entrance, Al Qamah house

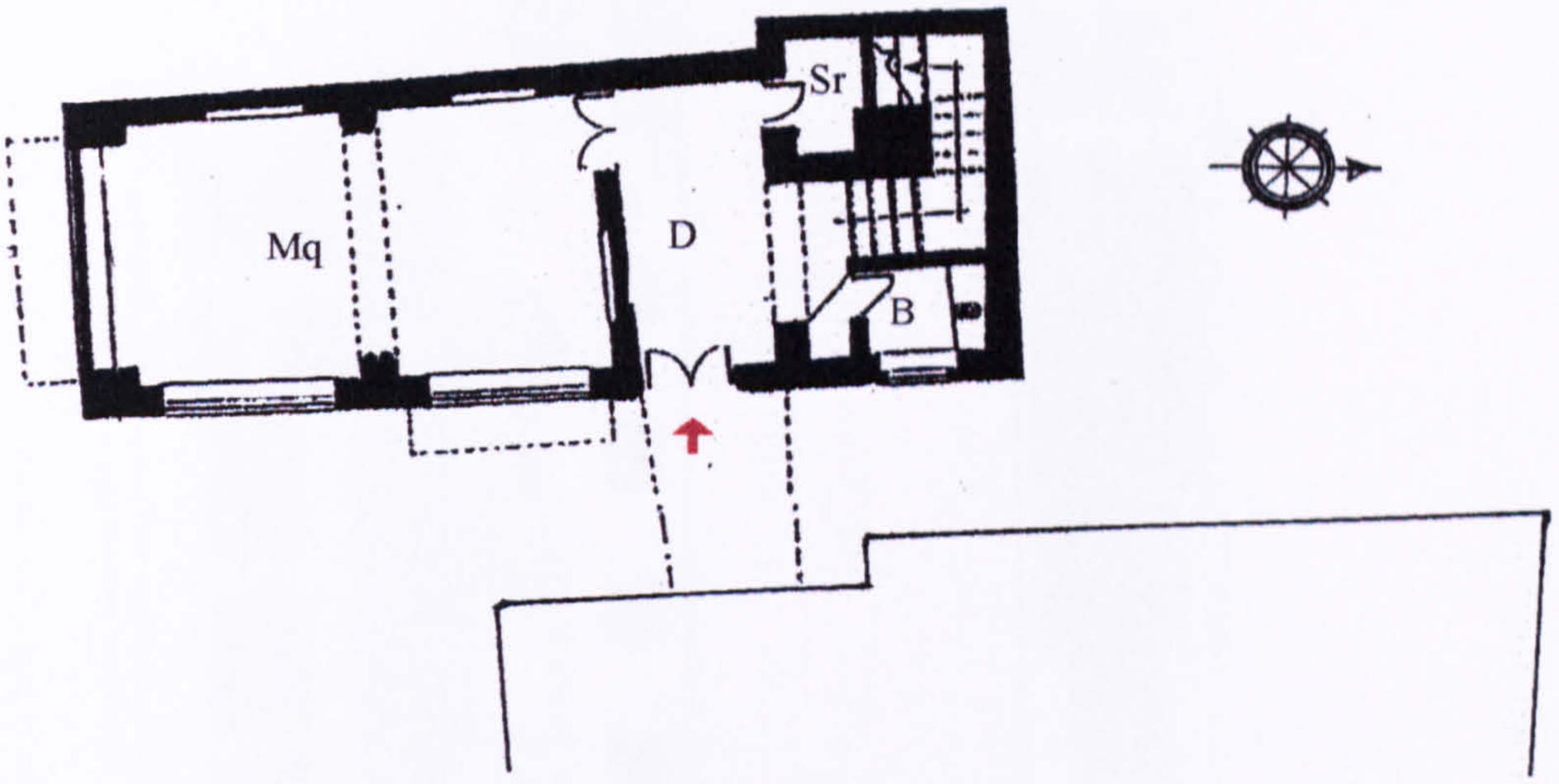


Figure A.36: Ground floor, Al Qamah house (a)

D *Deliz* (entrance hall)
Mq *Maq'ad* (sitting room)
B *bayt alma* (bathroom)
Sr Storage

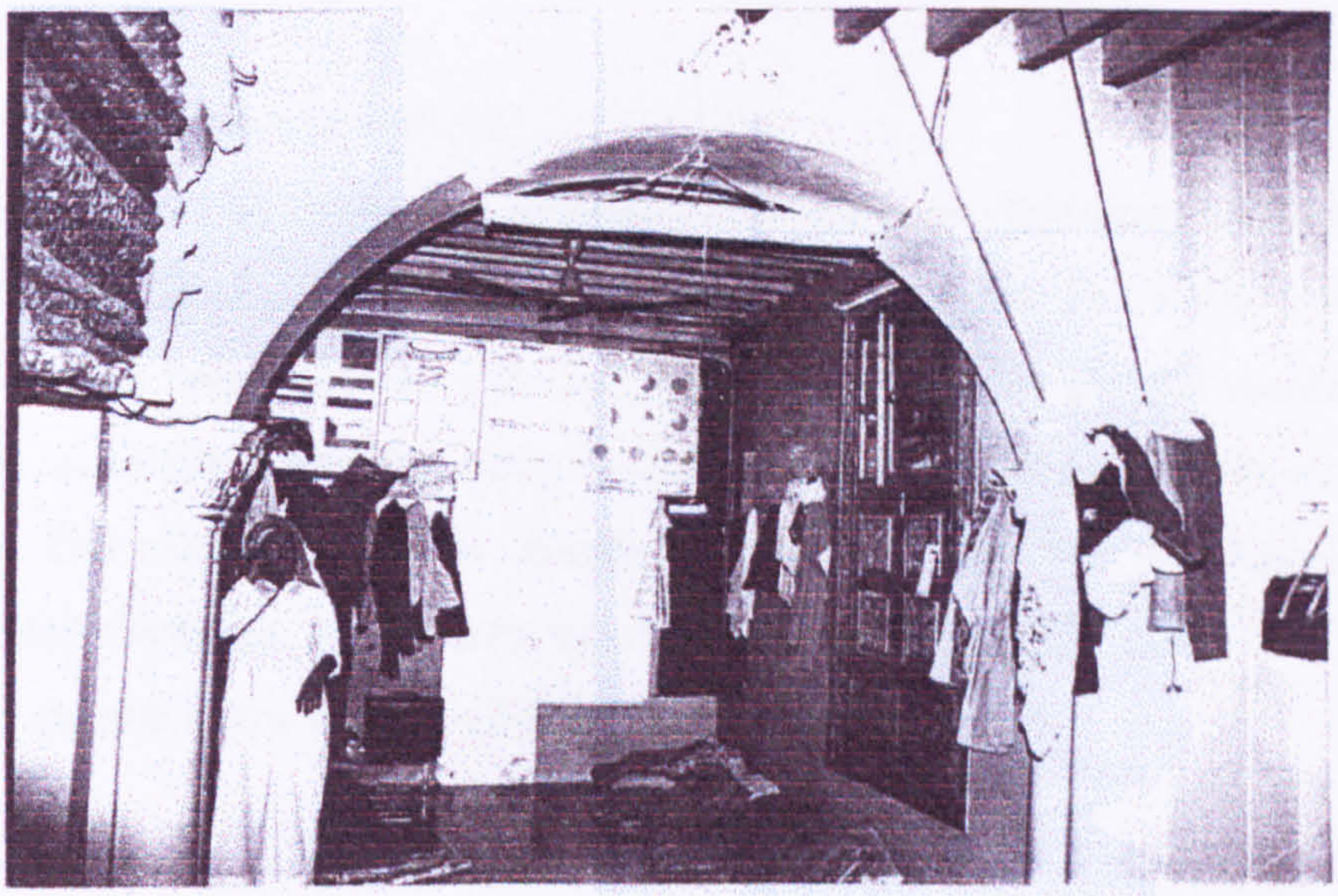
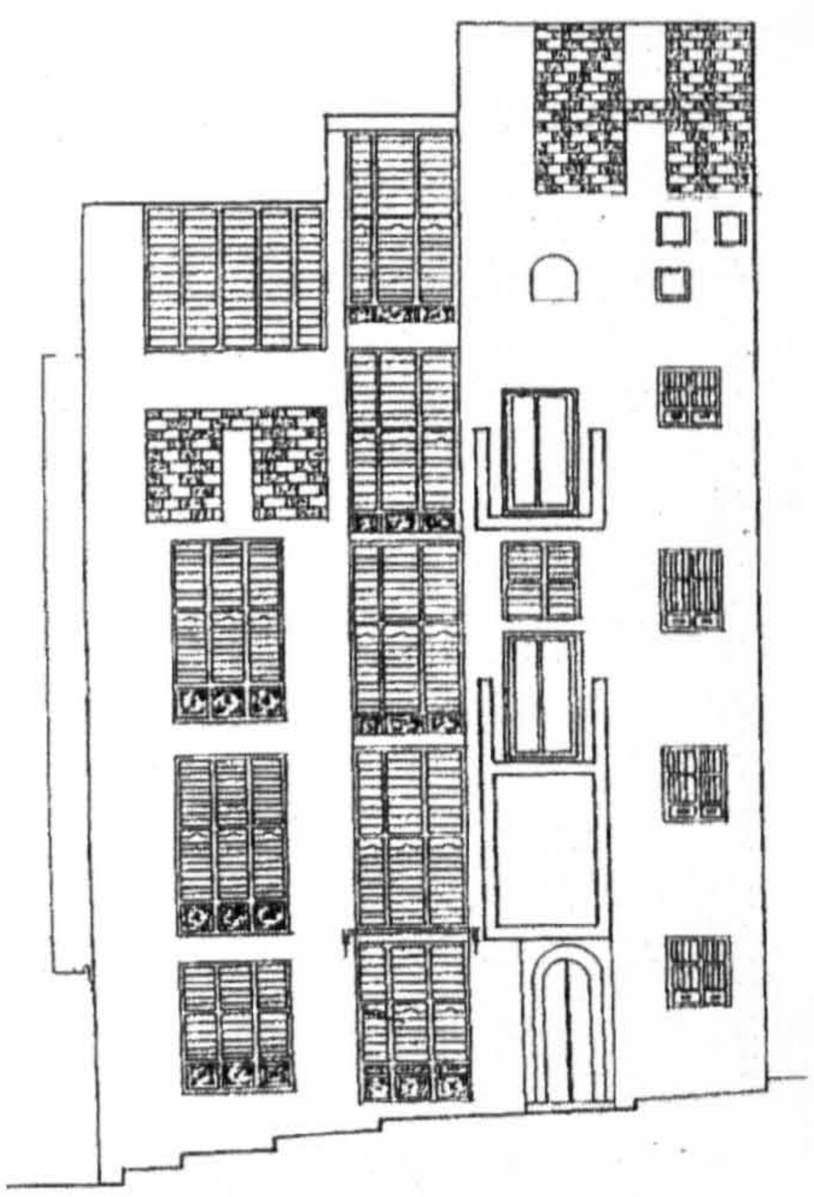
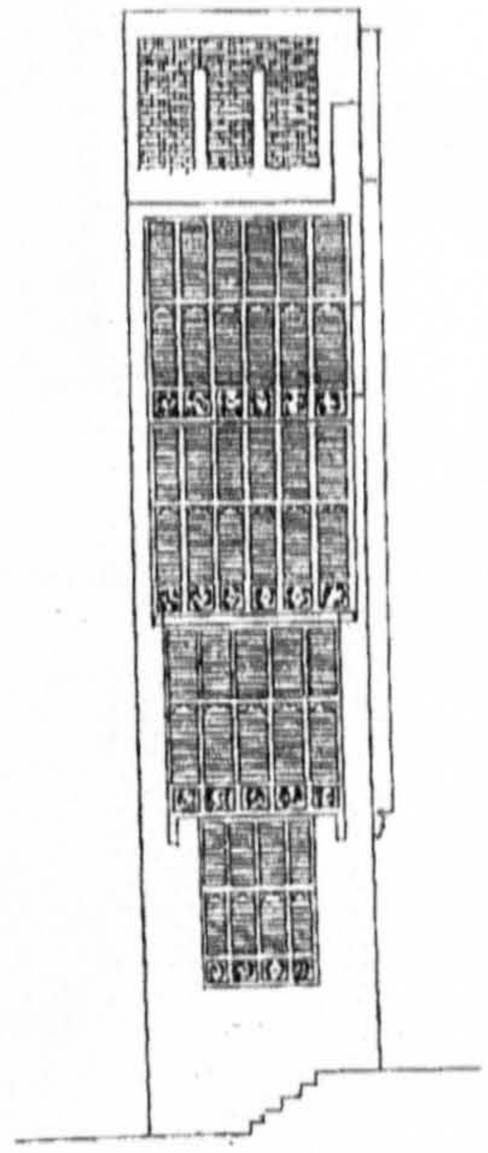


Figure A.37: *Maq'ad* (sitting room), Al Qamah house (a)



Main elevation (Eastern elevation)



Southern elevation

Figure A.38: Elevations, Al Qamah house (a)
Source: Author and Others, 1992

The First and Second Floors:

The first and second floors are considered as separate flats each with their own entrance, hall, *bayt alma*, *Makhlawan* and a large room, the *Majlis* where the residents of the house receive male and female guests or for general meetings. The *Majlis* is a single space but semi-divided with an archway supported by half columns. The reason for this is structural: traditional building materials can only span limited distances, so the only way that the residents could make a large space was with an arch in the middle. (Figure A.39, A.40 and A.41)

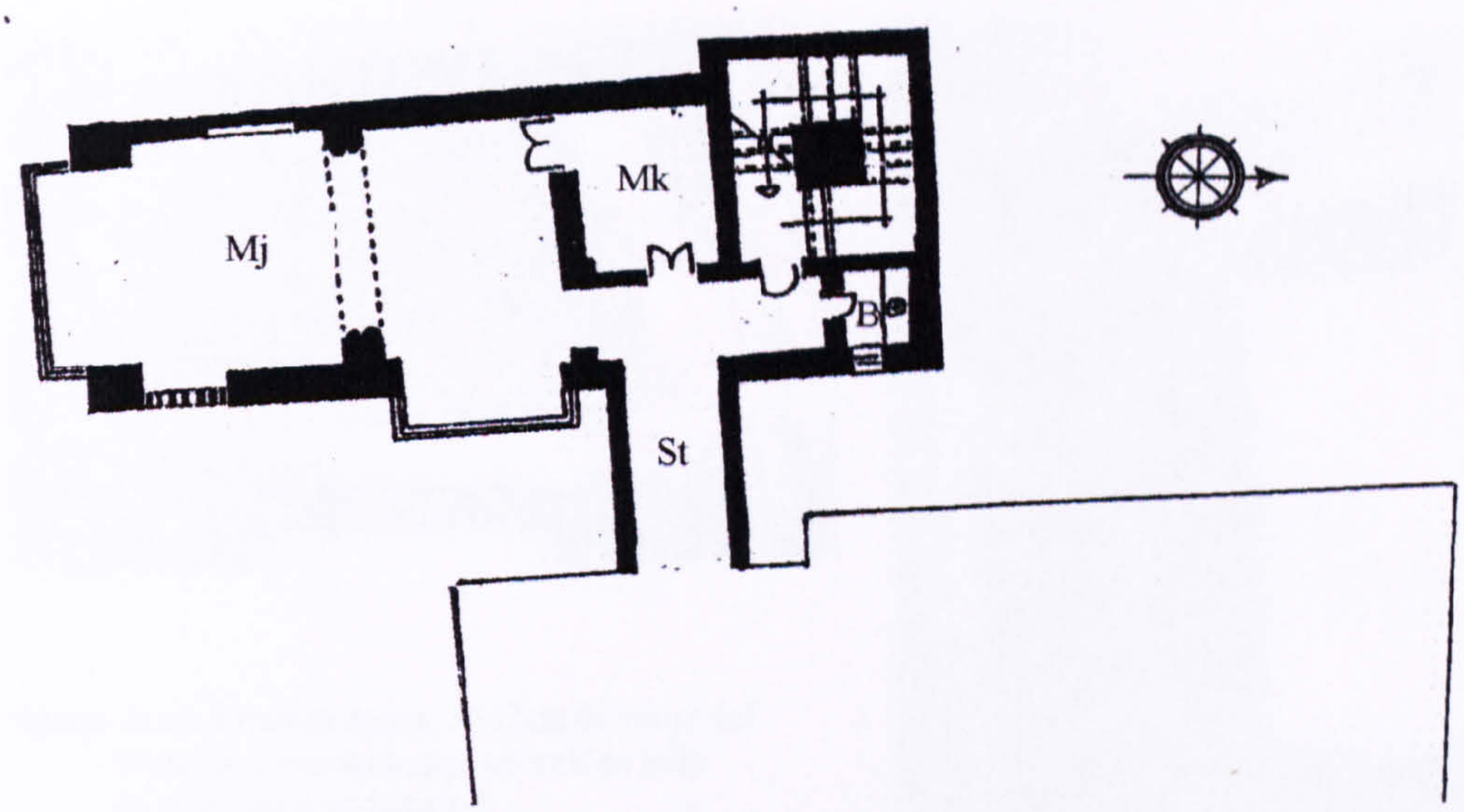


Figure A.39: First and second floors, Al Qamah house (a)

Mj *Majlis* (reception room)
Mk *Makhlawan* (resting place)
St *Sabaat* (arcade)
B *bayt alma* (bathroom)

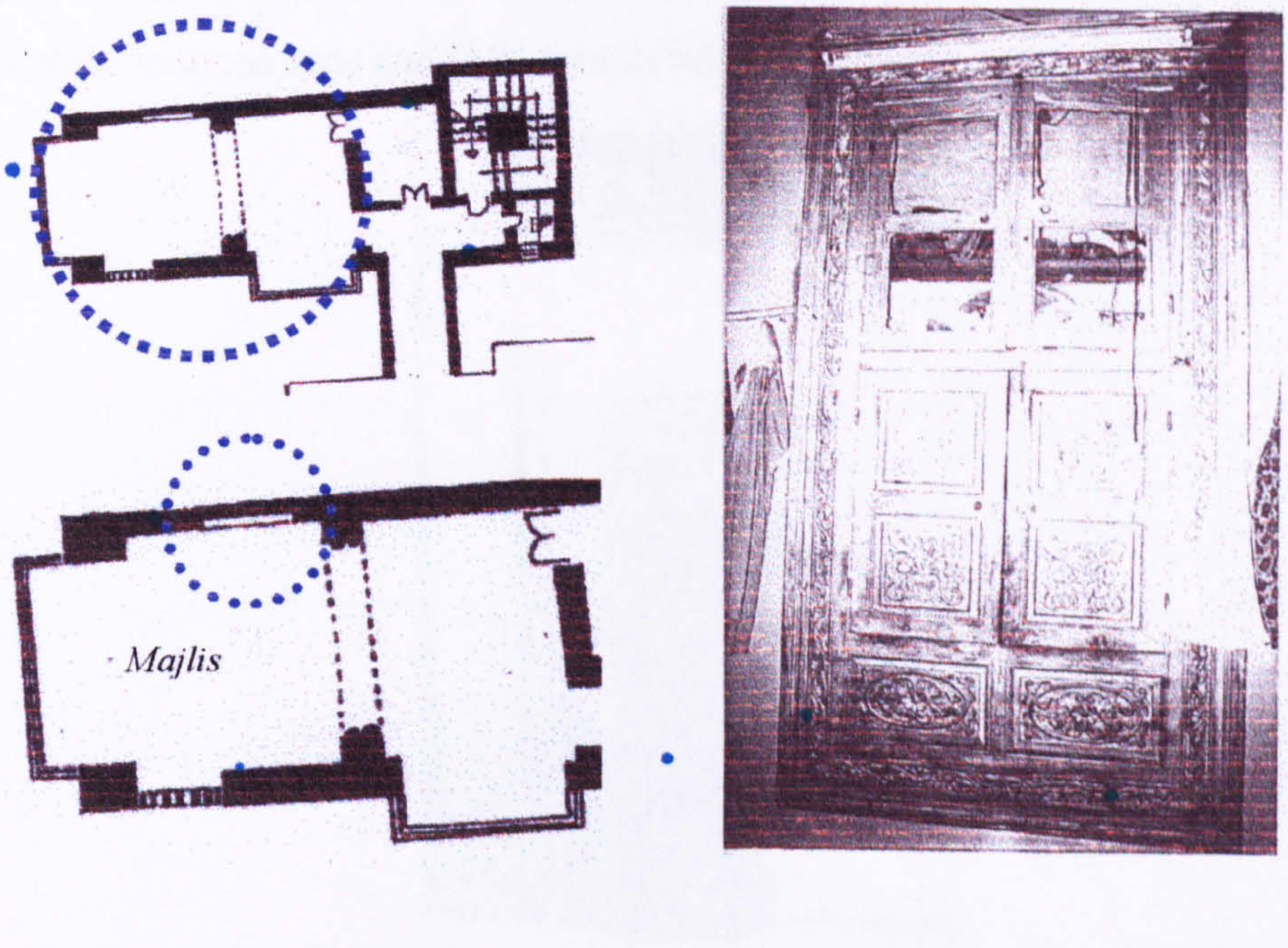


Figure A.40: Wardrobes, *Majlis* (reception) Al Qamah house (a)

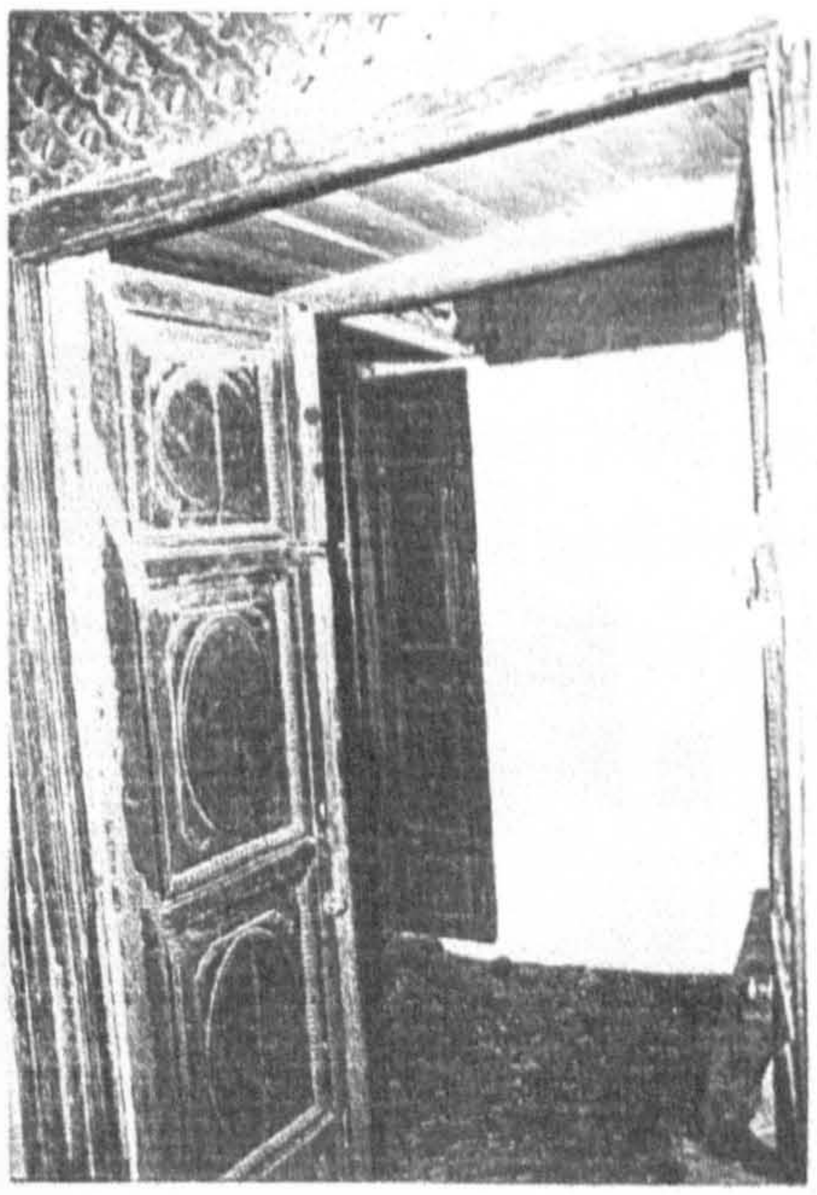


Figure A.41: Internal doors, Al Qamah house (a)
Wooden ornamentation as well as help
of movement ventilation.

The Three Stories Bridge also connects the first and second floors with the adjacent building. This connects the two buildings across the lane because the residences are all part of the same family. In addition it is possible to use the first or second floor flat for the married sons and their families (Figure A.42).

Figure A.42: *Sabaat* (arcade), Al Qamah house (a)
Now the *Sabaat* is closed and usedas kitchen for poor family

The Third Floor:

This space is composed of a *bayt alma* facing the stairs. This gives privacy to the occupiers of the house while the waterman called *Sugga* is climbing the stairs to fill the water tank in the *bayt almaa.* All the family members can use this *bayt alma.* The entrance leads through the hall to a room, *Mabit*, which is a small living area occupying half the floor. The *Mabit*, links to the *Kharijah* which is used by the house holders as a living, dining, and sleeping area during the summer night as well as during the pilgrimage season when renting other floors to pilgrims. (Figure A.43 and A.44)

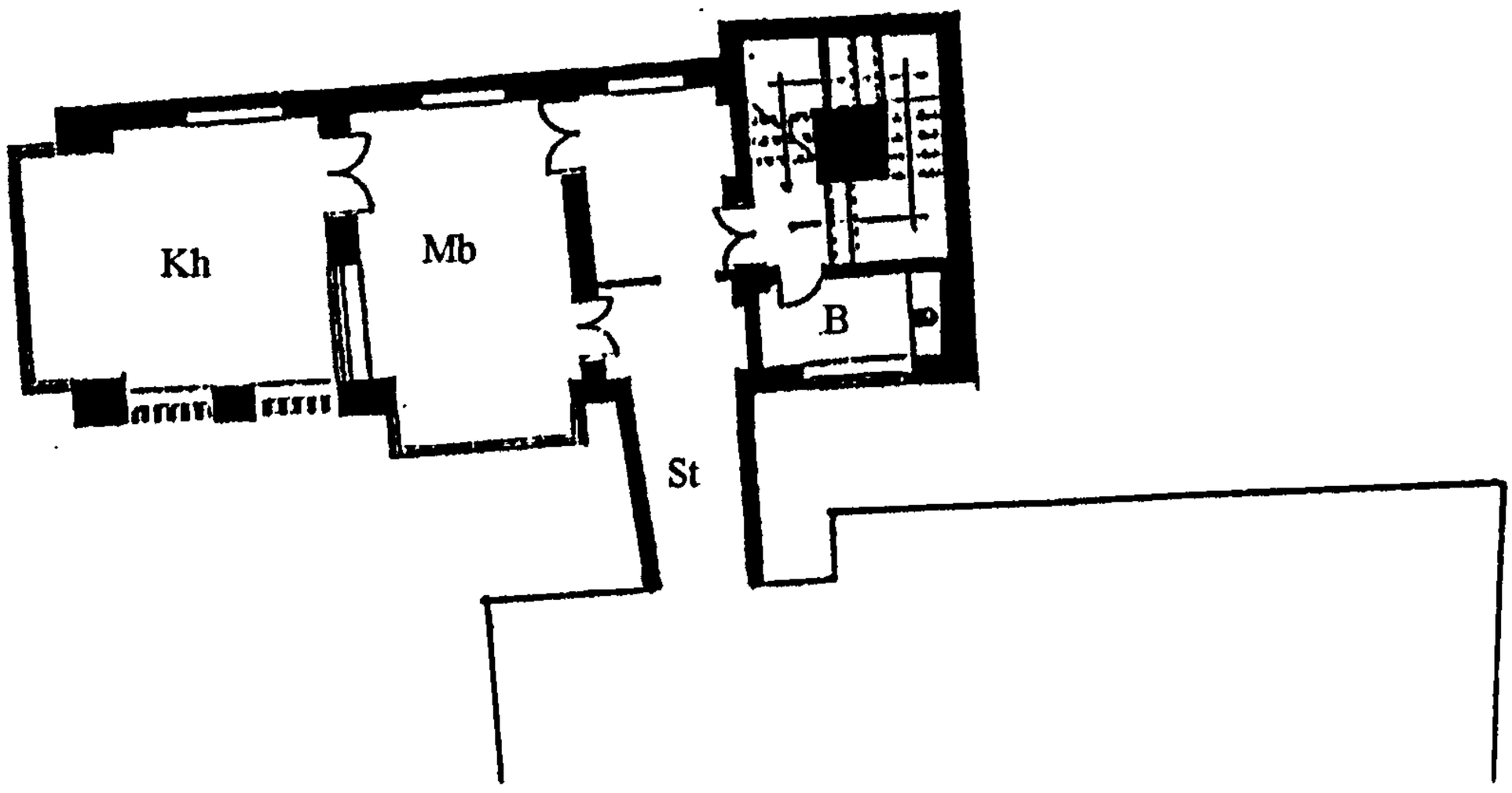
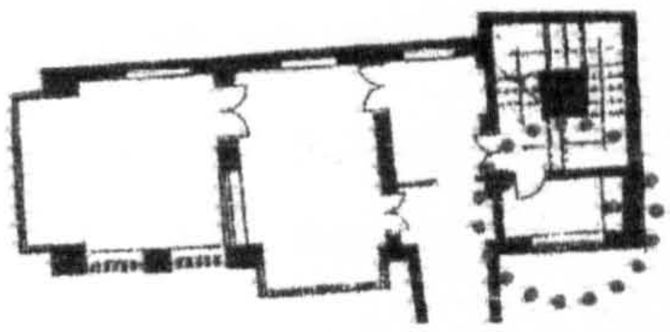
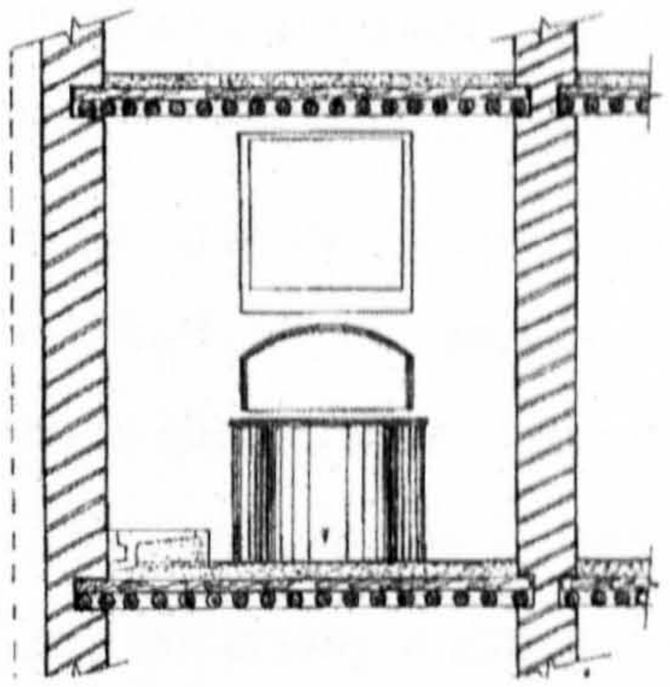
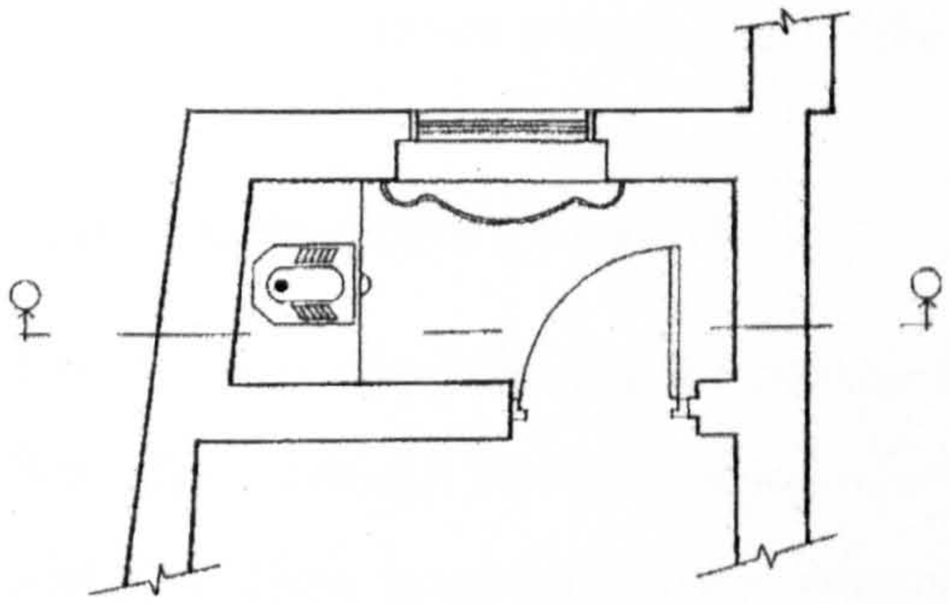


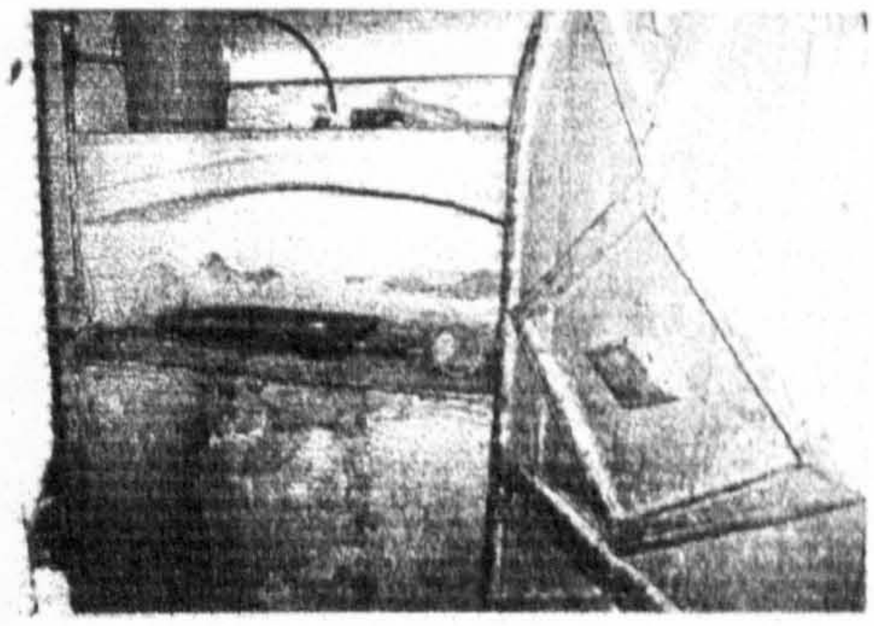
Figure A.43: Third floor, Al Qamah house

St *Sabaat* (arcade)
Mb *Maeett* (night room)
Kh *kharijah* (terrace)
B *bayt alma* (bathroom)









Details of *Bayt alma* (Bathroom)

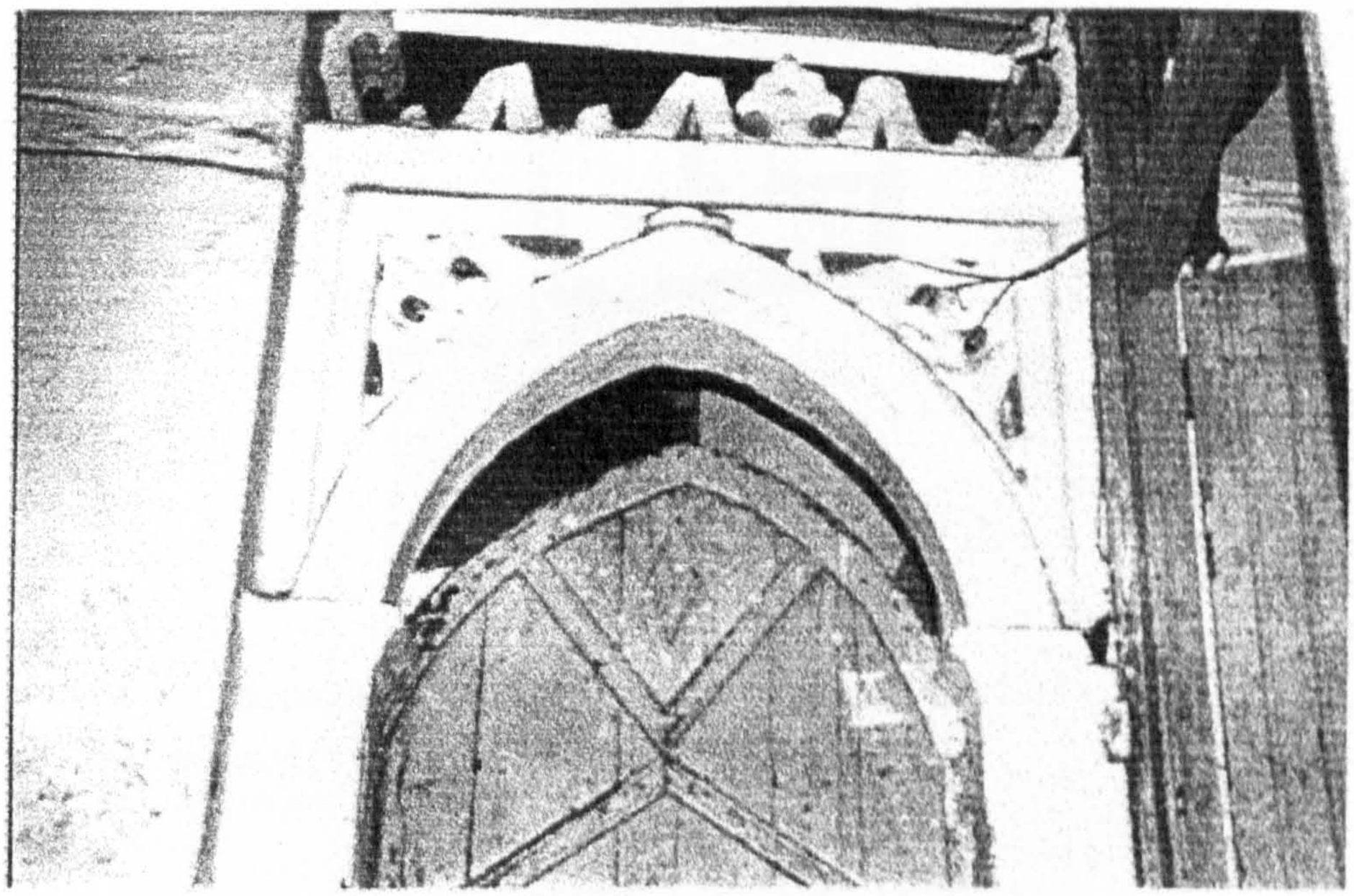


Figure A.44: Gypsum decoration of *Bayt alma* door (water closet)

The *Kharijah* is the centre of the women's domain within the home interior and fulfils their need for unique private space with a link to the outside. As mentioned previously, the *Kharijah* has high walls, which may be up to two meters in some houses. These walls were built in brick with large openings, called *Shawabeer*, acting as a mesh for ventilation. Women in the *kharijah* could therefore enjoy the sunshine, which is an important prerequisite for good health. Apart from the direct visual contact with the sky and the enjoyment of a cool climate in privacy, the *kharijah* also was used for the family socializing, and for drying washing on clothes lines as well as for storage. In this case the *Kharijah* is characterised by the presence of *Shawabeer* on the eastern side of the house and *Rowshan* on the southern side

The Fourth Floor (Terrace):

This floor is characterised by having *Kharijah* overlooking of the *Kharijah* of the third floor through *Shawabeer* and from the eastern side is covered by *Rowshan*. On this floor there is also a *Murkab* (kitchen) plus a store for food or furniture. (Figure A.45 and A.46)

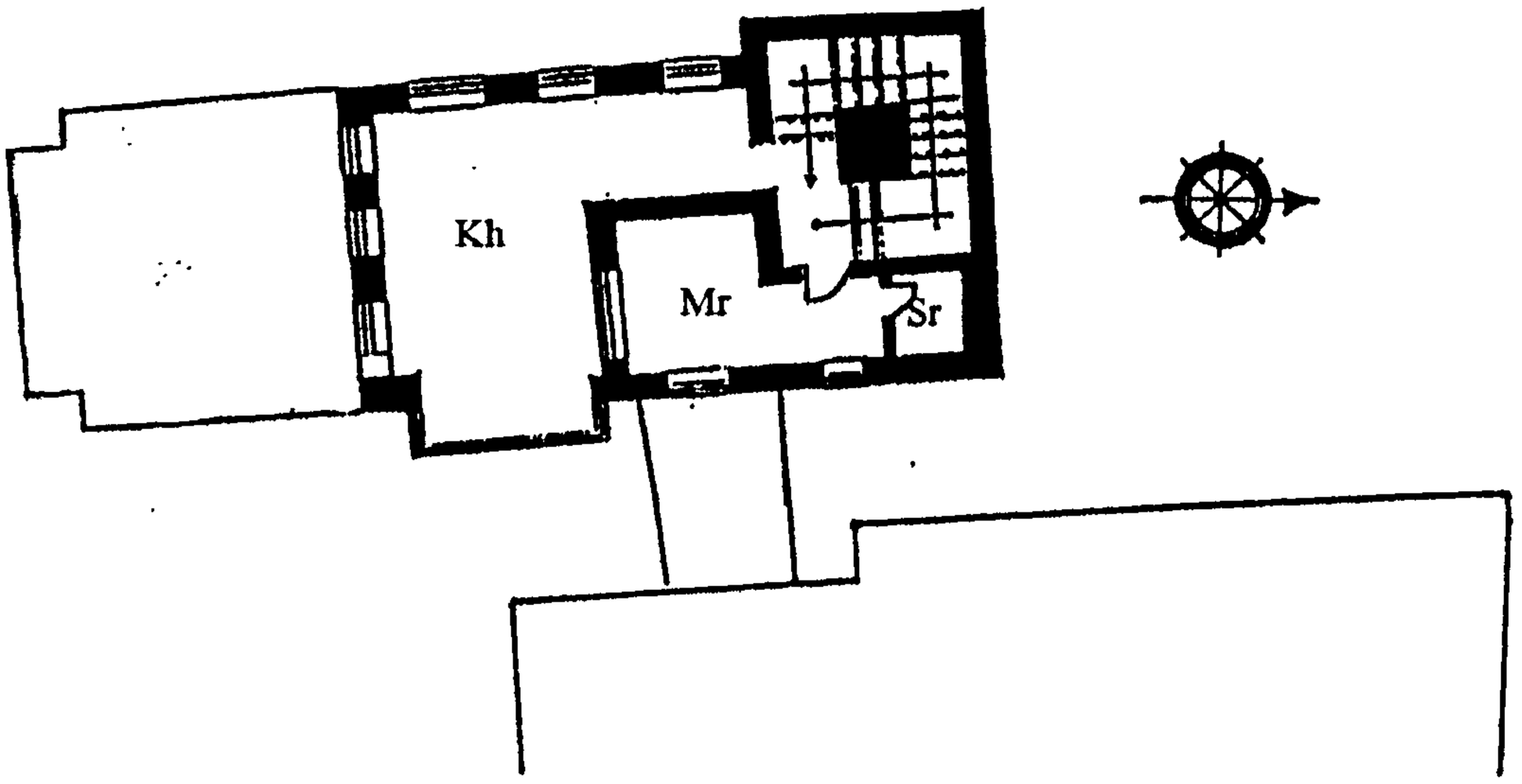


Figure A.45: Fourth floor (terrace), Al Qamah house (a)

Mr *Markab* (kitchen)
Kh *kharijah* (terrace)
Sr Storage

Figure A.46: *Kharijah* (terrace), Al Qamah house (a)

Compound Plan House

Case Study Seven: Al Qamah House (b)[2]

The Ground Floor:

The main entrance is raised from the street by stairs of three steps. (Figure A.47) An arch of gypsum, which gives it beauty and some shadows, also treats the main entrance. We also find on top of the door of the main entrance a half circle opening worked in iron. This opening helps sunrays to enter the *Dehliz* (entrance hall) as well as helping in air movement. (Figure A.48 and A.49)

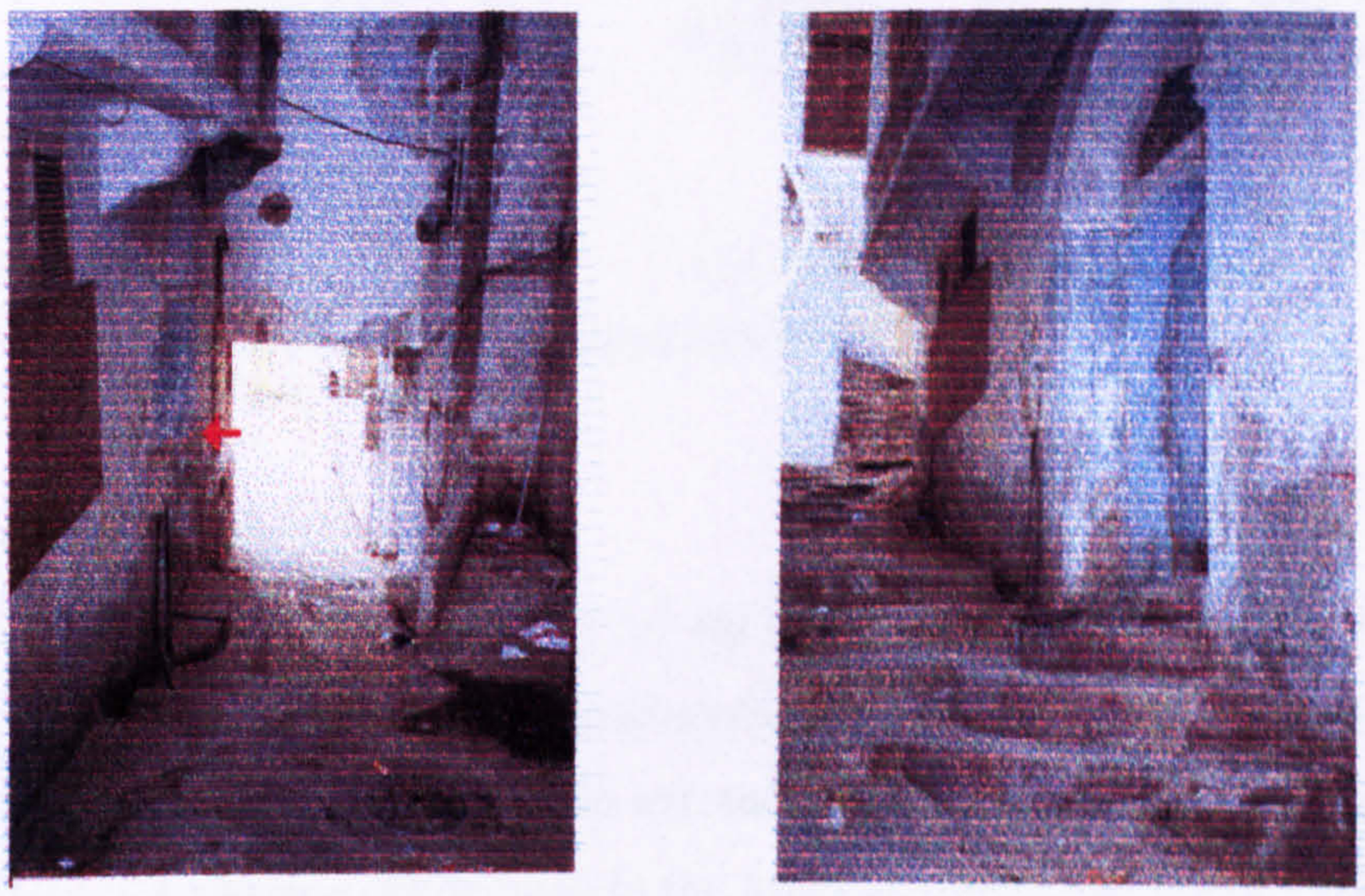


Figure A.47: The main entrance of case study three: Al Qamah house (b)

[2] For information of the site and the plan arrangement see section 5.1.2.3

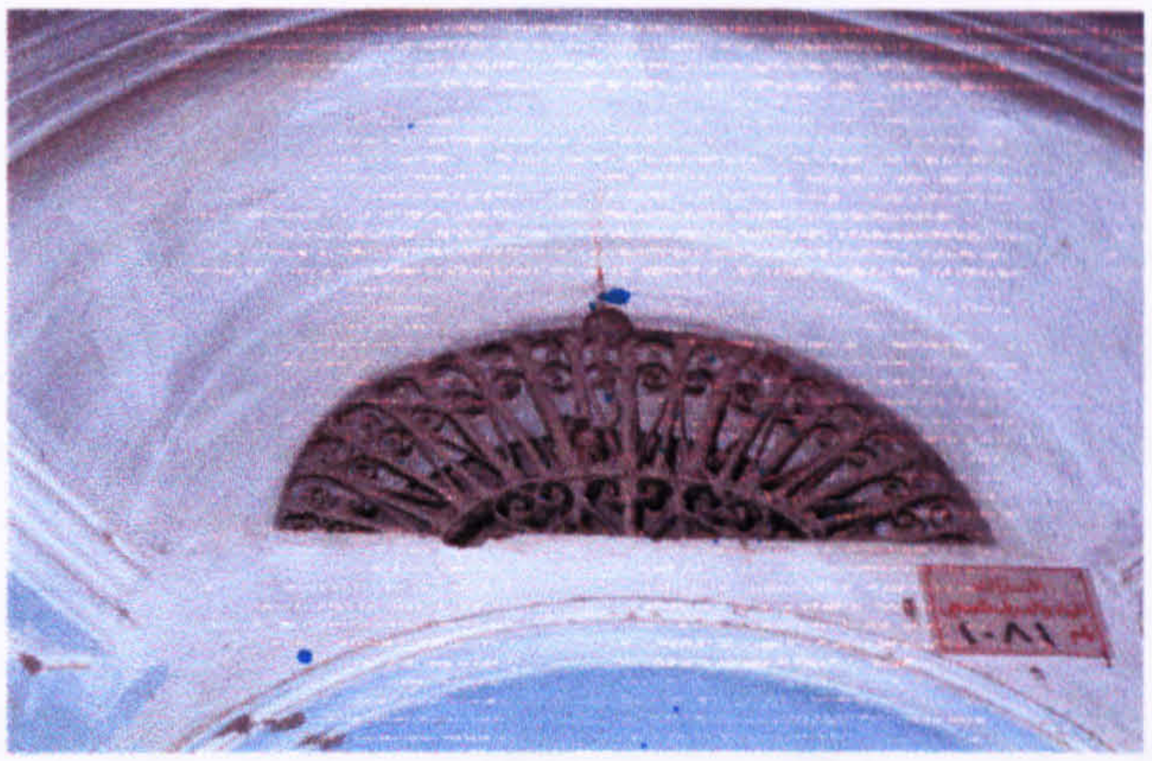
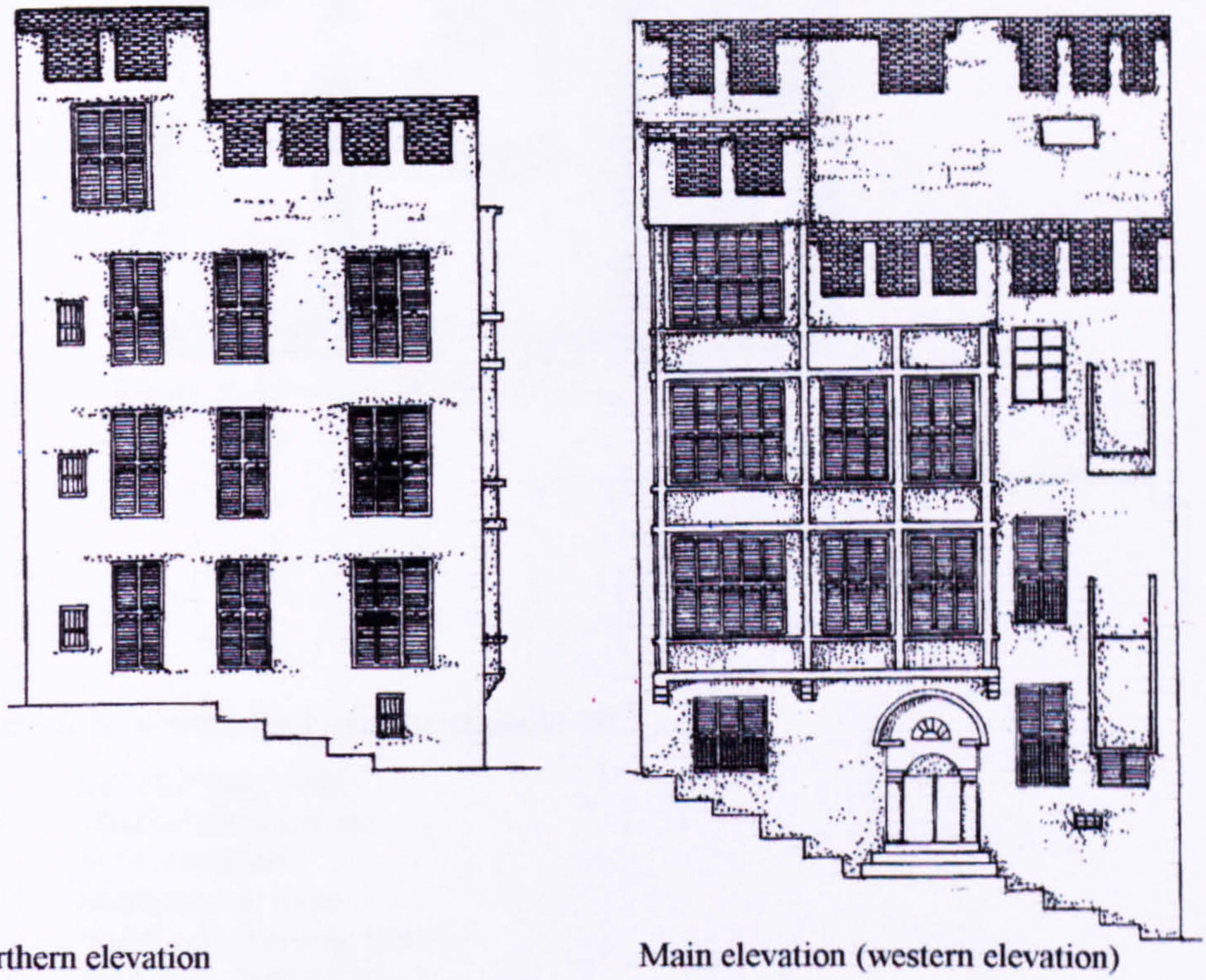


Figure A.48: An arch opening on top of the main door worked in iron to lighten the *Dehliz*



Northern elevation Main elevation (western elevation)

Figure A.49: Main and side elevations, Al Qamah house (b)
Source: Author and Others, 1992

The Ground floor:

The ground floor contains two *Maq'ad* separated by *Dehliz*. The right *Maq'ad* is near the main *Dehliz* (entrance hall) and connected by a rear multipurpose room and *bayt alma*. A three steps face the main entrance. From there to the main stairs and to the left there is a passage called *Seeb* in the Makkah traditional house. The *Seeb* is a small lobby between interior spaces and it is a method of horizontal communication

for each floor. It is also similar to the *Dehliz* in its treatment and revetment. The passage ends to the right by the *bayt alma* and to the left at a window opening to the *Dehliz* that helps in lighting the *Seeb* from *Dehliz*. The *Seeb* leads to the other *Maq'ad*, which ends with the *Makhlawan*. This *Maq'ad* is connected to the *Dehliz* by a large screened opening to help in air movement in the internal space. (Figure A.50)

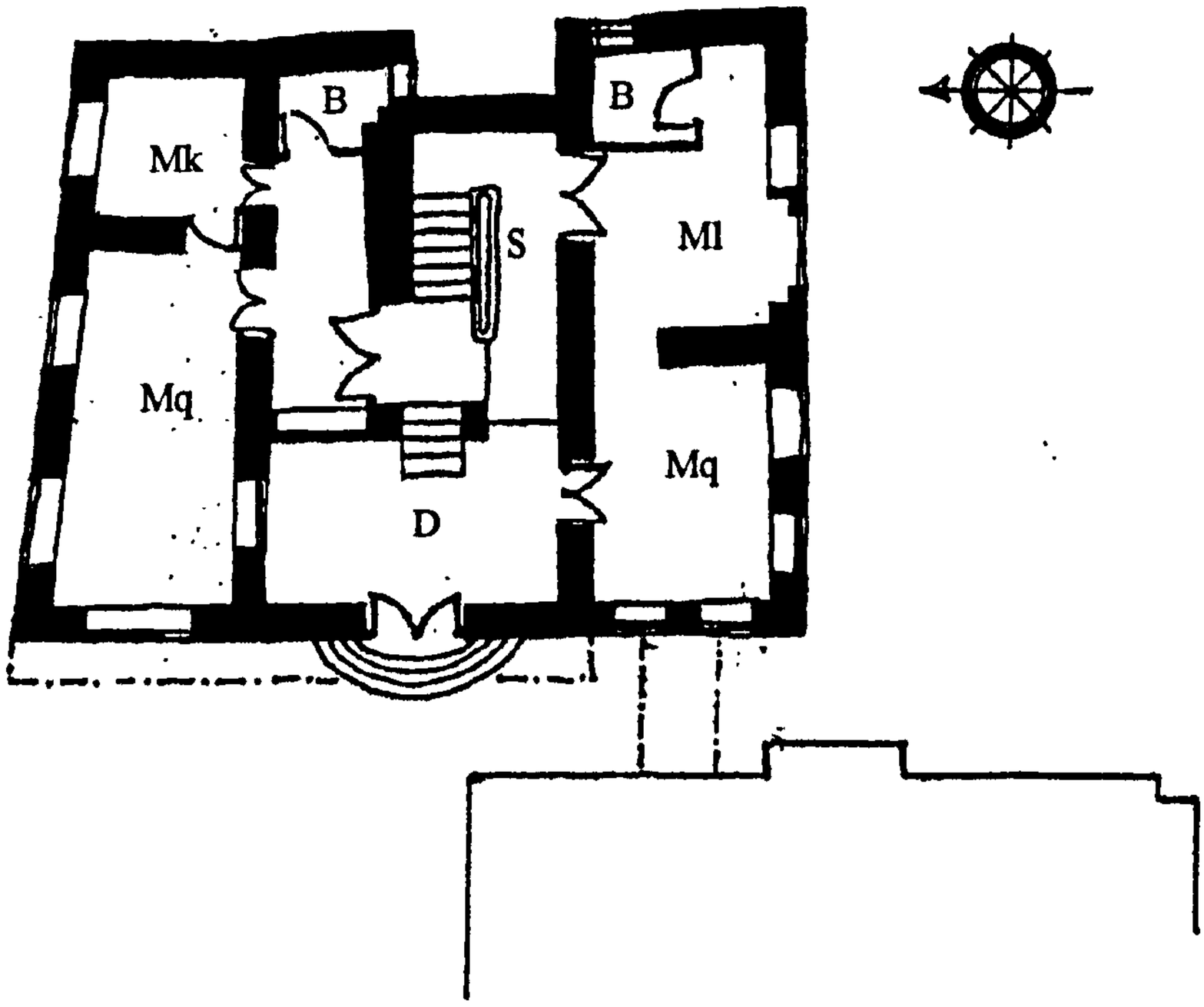


Figure A.50: Ground floor, Al Qamah house (b)

D *Deliz* (entrance hall)
Mq *Maq'ad* (sitting room)
S *Seeb* (small hall)
Ml Multipurpose room
Mk *Makhlawan* (resting place)
B *Bayt alma* (bathroom)

Source: Author and Others, 1992

The First and Second Floors:

The first and second floors contain the same designs with little change in room door openings. These floors also contain two flats, each which have a main door from the stairs. The first flat on the right of the stairs contains the *Majlis* and it is the large space on the first floor. The *Majlis* looks onto the main street by *Rowshan* and the *Muakhkhar* also faces the main street. We find the *Suffah* next to the *Majlis* at the

back as well as *Markab*. Before entering the *Majlis* and the closer space, a *Seeb* ends to the right of *Bayt alma*. The other flat that is located to the left of the stairs is more private than the first flat and contains a multi-purpose room near the *Markab* and a store for food or seeds as well as *Makhlawan* and *Bayt alma*, while the spaces are connected by a long *Seeb*. (Figure A.51)

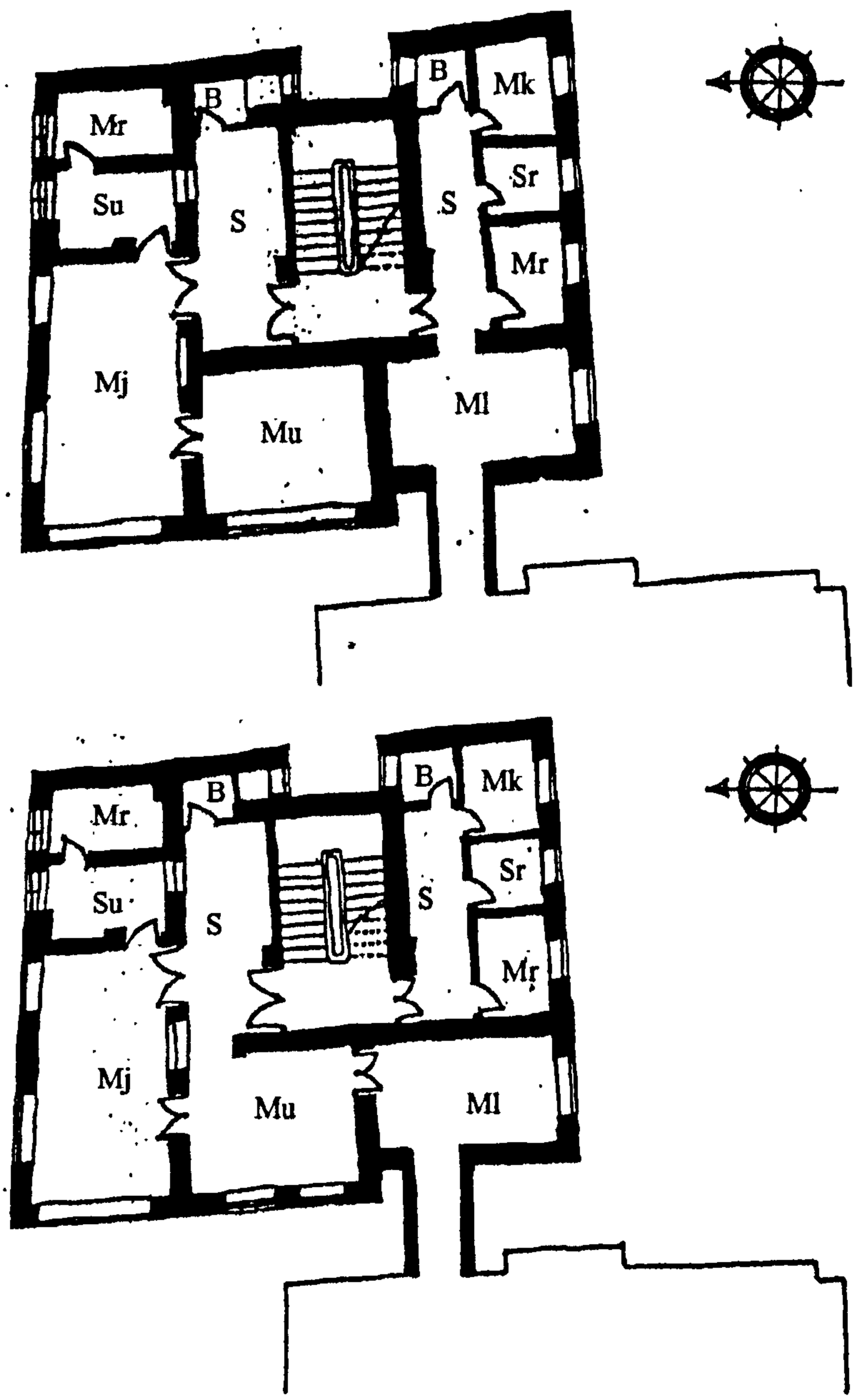


Figure A.51: First and second floors, Al Qamah house (b)

Mj	*Majlis* (reception room)	Ml	Multi-purpose
M	*Makhlawan* (resting place)	Su	*Suffah* (ante-room)
Mu	*Muakhkhar* (living room)	Mr	*Markab* (kitchen)
S	*Seeb* (small hall)	Sr	Storage
B	*Bayt alma* (bathroom)		

The Third and Fourth Floors:

The upper floors are usually the most private for family members. Women spend their day hours here and practise their activities. Their *Kharijah* characterises these floors; these are good open spaces for the family members to spend the evening hours in the fresh air.

The first *Kharijah* characterises the third floor and next to it a large space used by family members as living space on summer nights. The *Mabit* was located next to the *Kharijah* and from it to the *Markab*, which was next to the store. *Seeb* ending at the bayt alam connects these spaces. We also observe on the left of the stairs the storage area next to the multipurpose room. However, the fourth floor is smaller than the lower floors because the third floor *Kharijah* was cut off, so it contained a space left of the stairs and a store and the large *Markab*. The second flat right of the stairs contains *Kharijah* and *Mabit*. (Figure A.52)

The Fifth Floor (Terrace):

As in the case of most Makkah traditional houses, space reduces as we go up because of the presence of *Kharijah* without building above them. The area of the roof equals half the area of the house contained by the main stairs. It is also observed that there are many *Shawabeer* that decorate the frontage and serve the function of the roof. (Figure A.53)

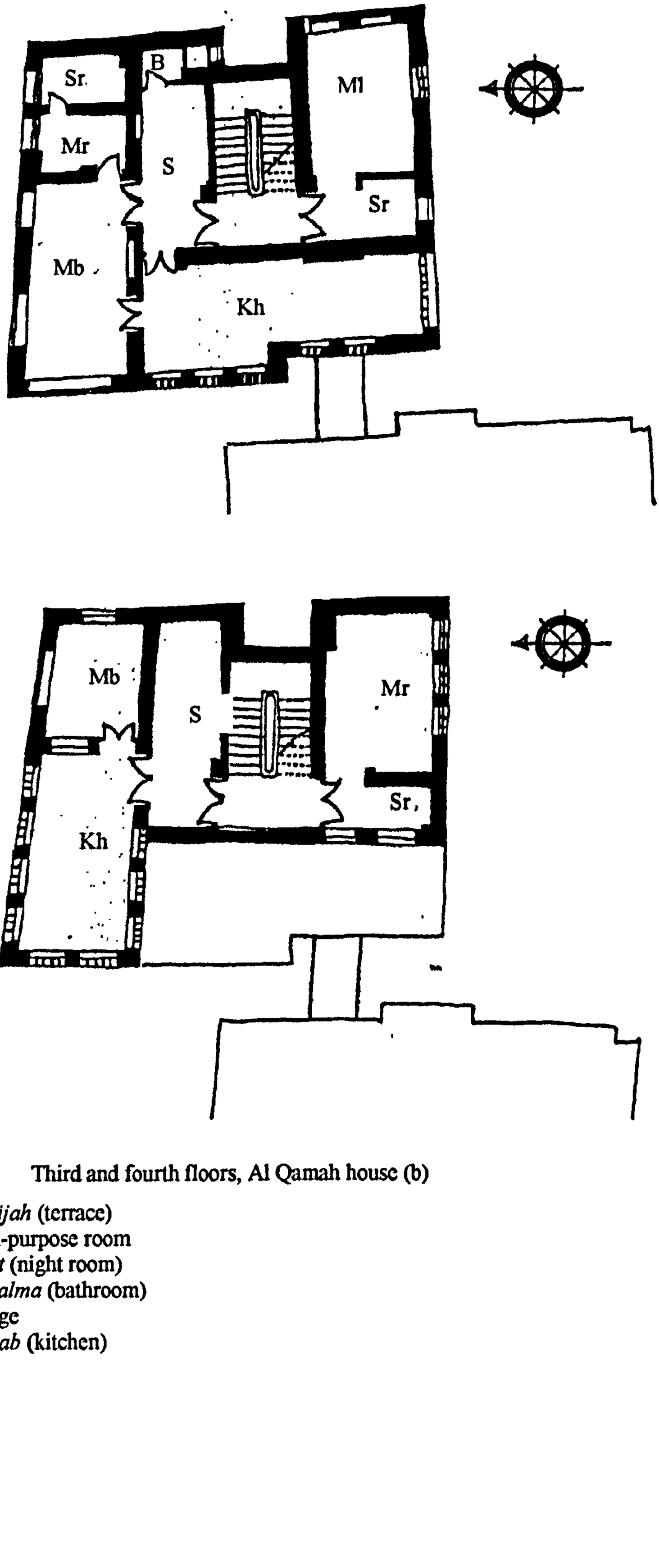


Figure A.52: Third and fourth floors, Al Qamah house (b)

Kh *Kharijah* (terrace)
Ml Multi-purpose room
Mb *Mabit* (night room)
B *Bayt alma* (bathroom)
Sr Storage
Mr *Markab* (kitchen)

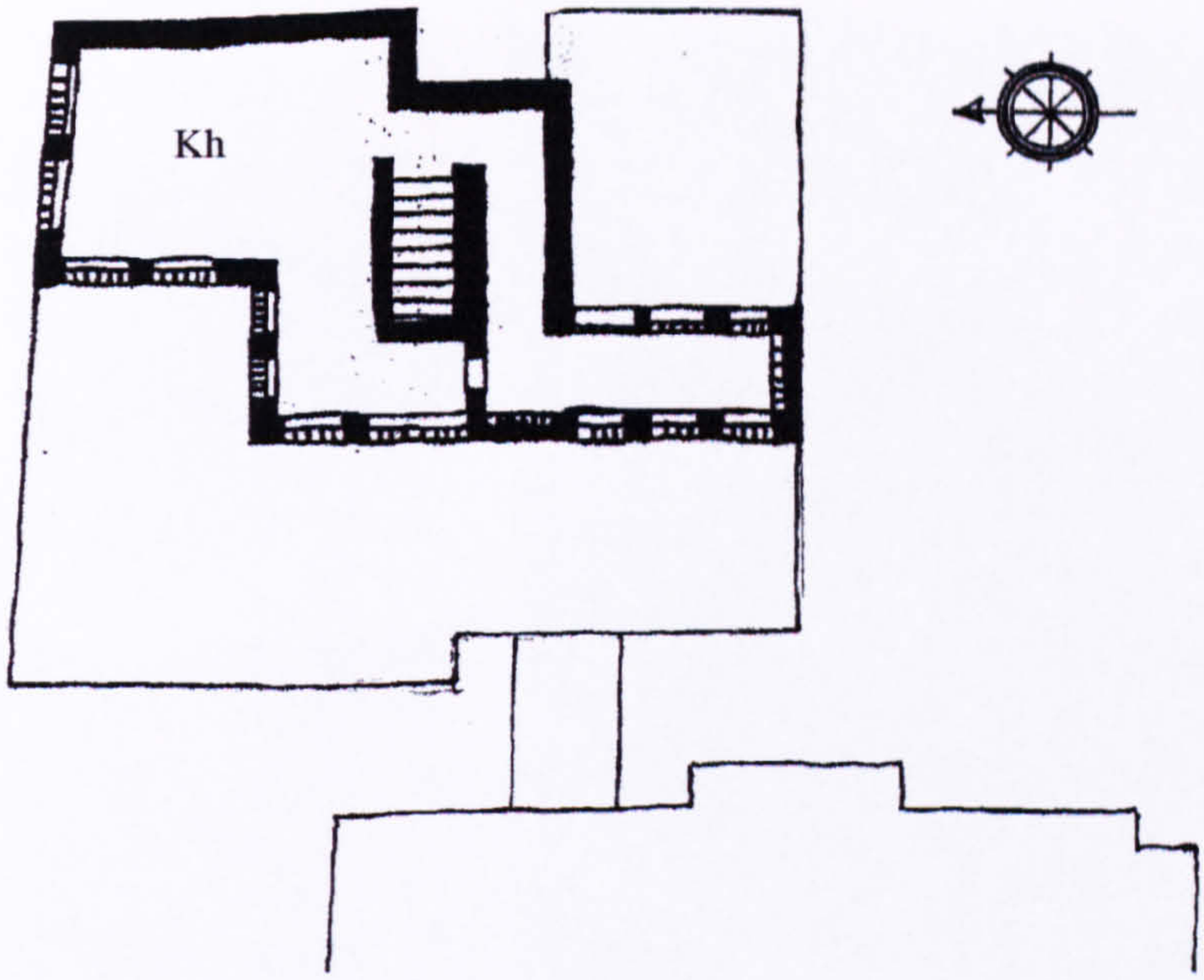


Figure A.53: Fifth floor, Al Qamah house (b)

Kh *Kharijah* (Terrace)

Complex Plan House

5.2.1.1 Case Study Eight: Aal Momenah House

The site:

This house is close to the Holy Mosque, which situated to the east of it. The main façade of the house faced the Holy Mosque. This area is known as Al Qushashia Street (Figure A.54 and A.55)

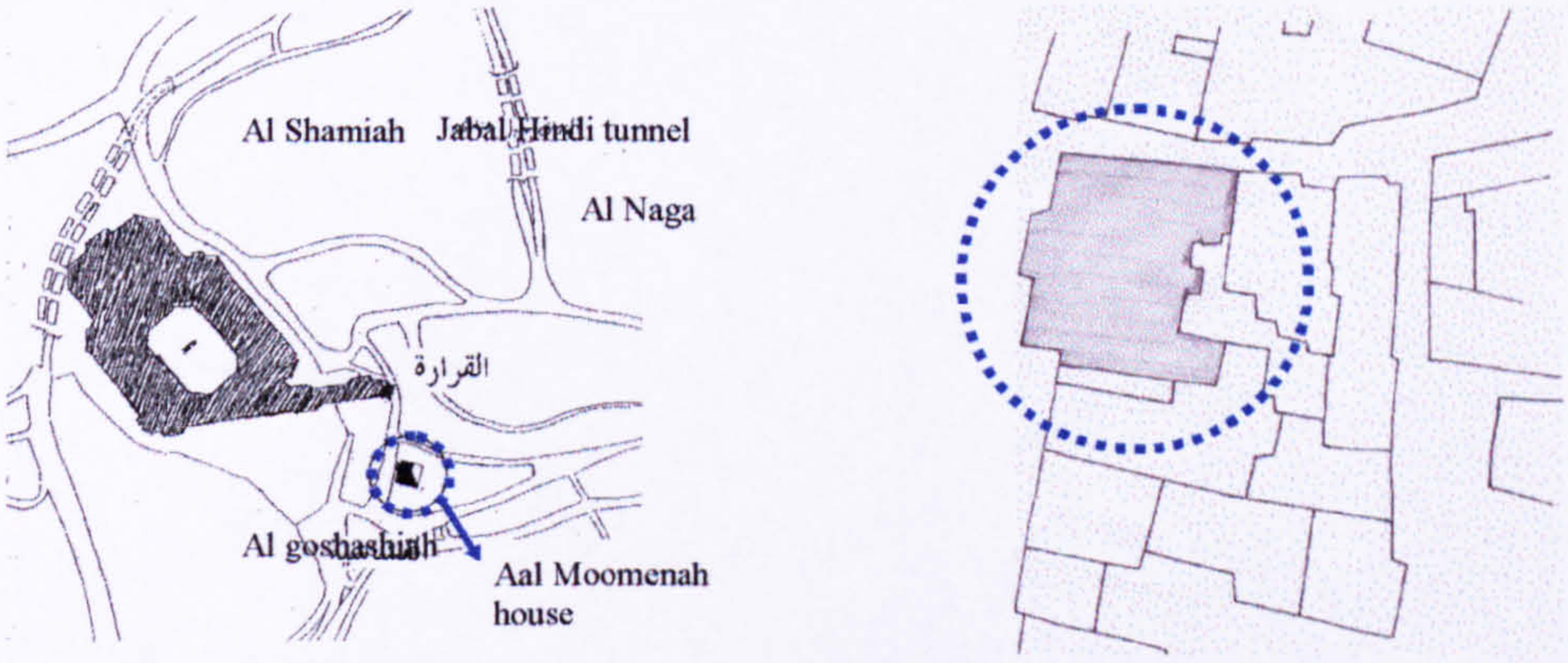


Figure A.54: The location of case study eight: Aal Momenah house
Source: Author drawing, based on Architecture department report, Umm Al Qura University, 1998

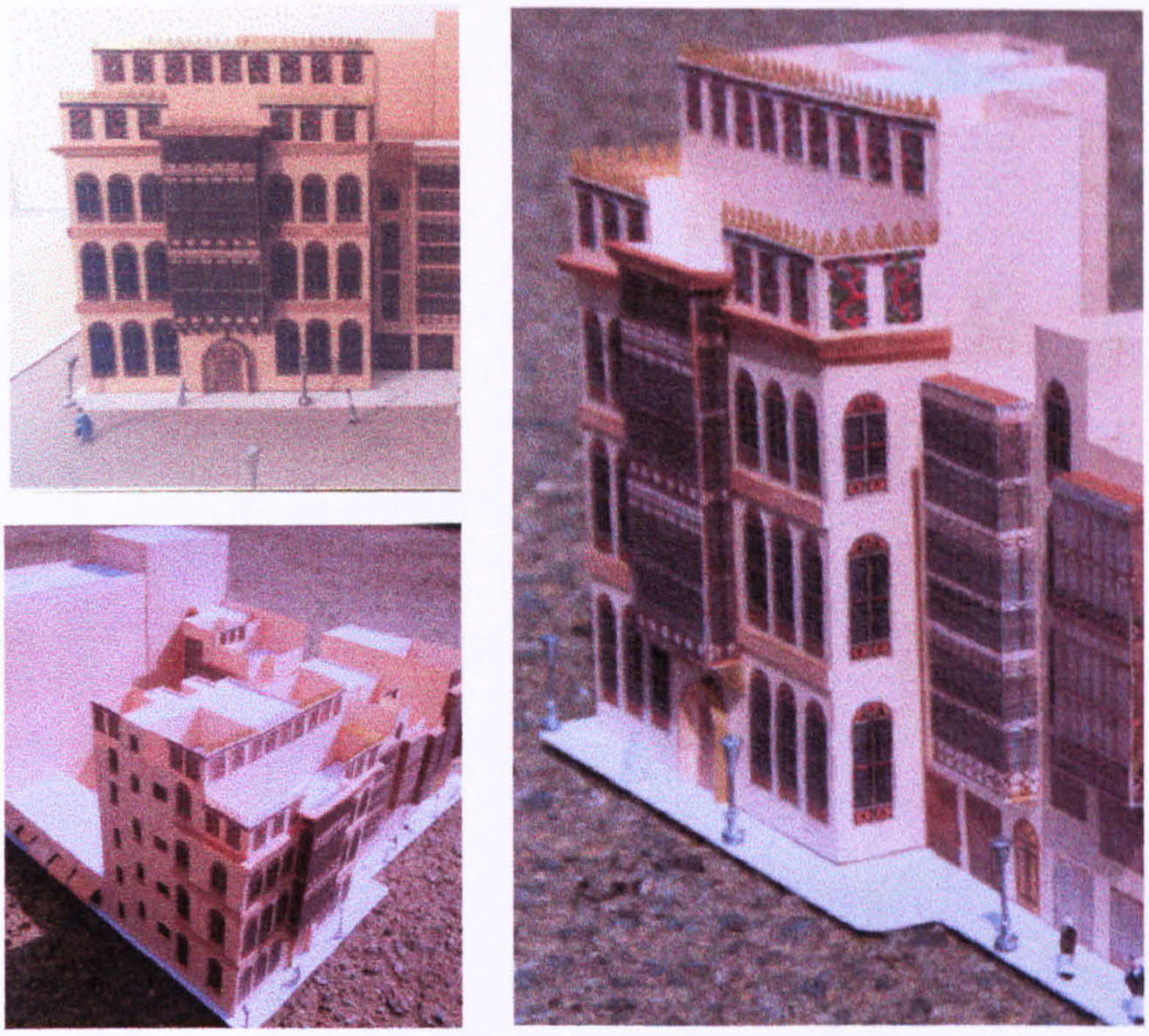
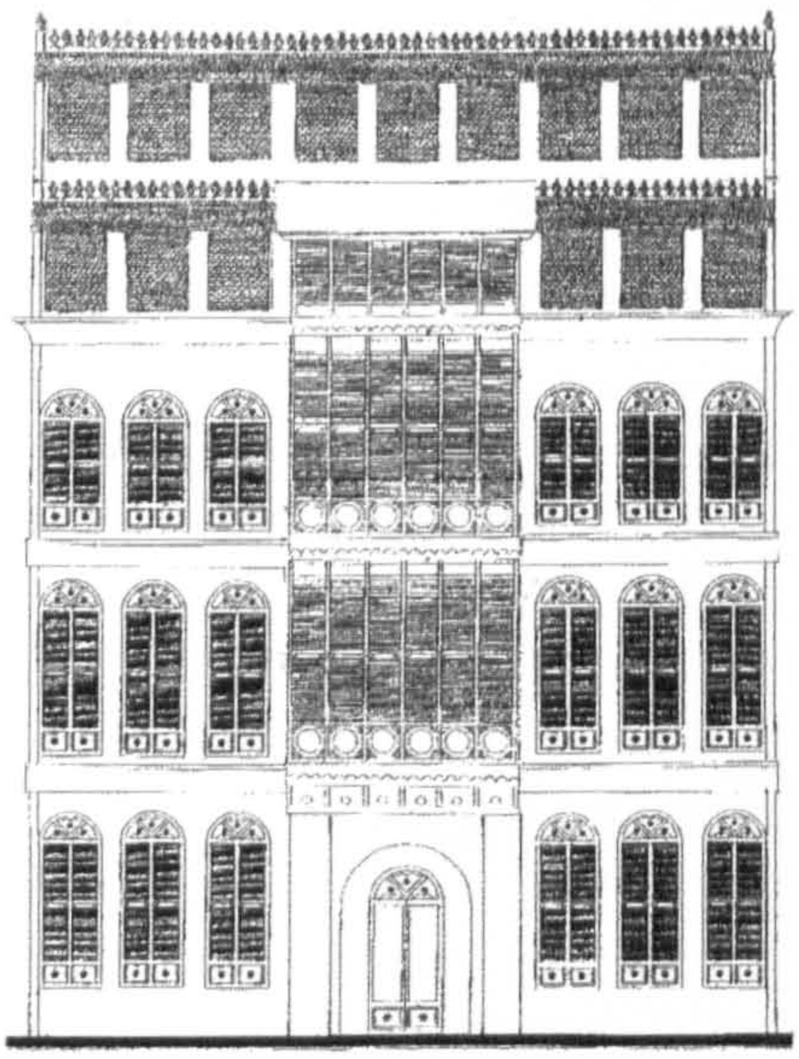
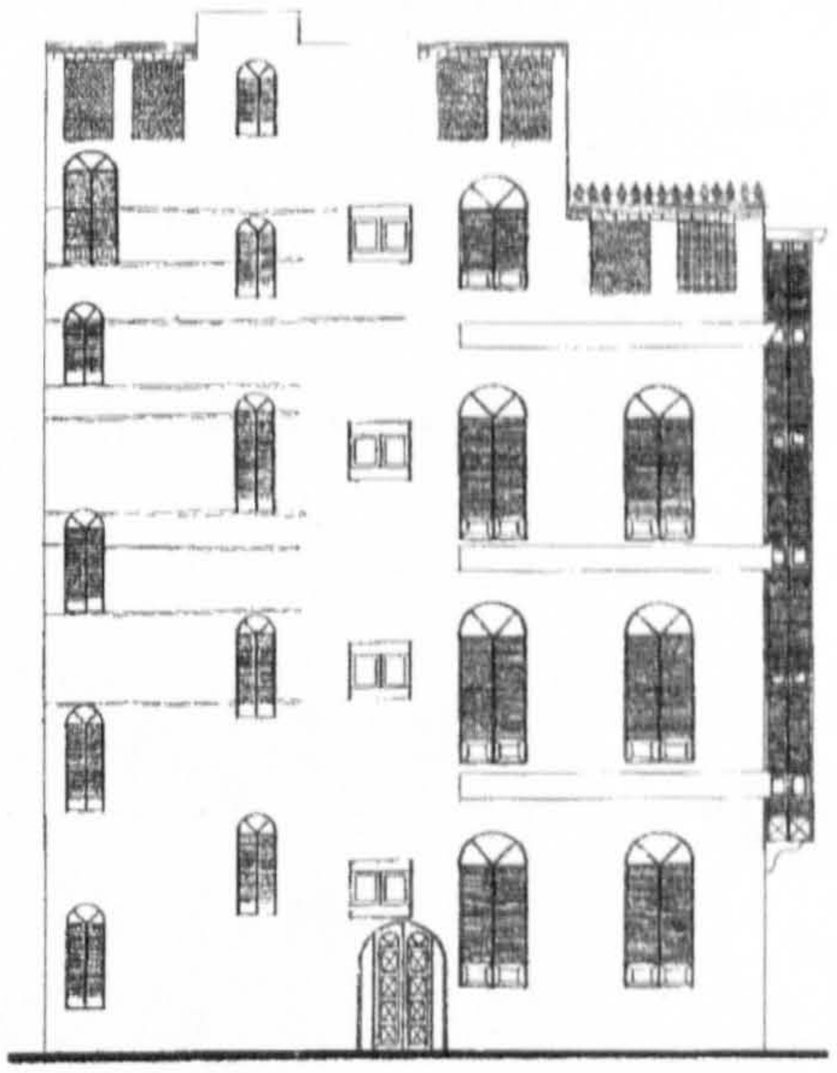


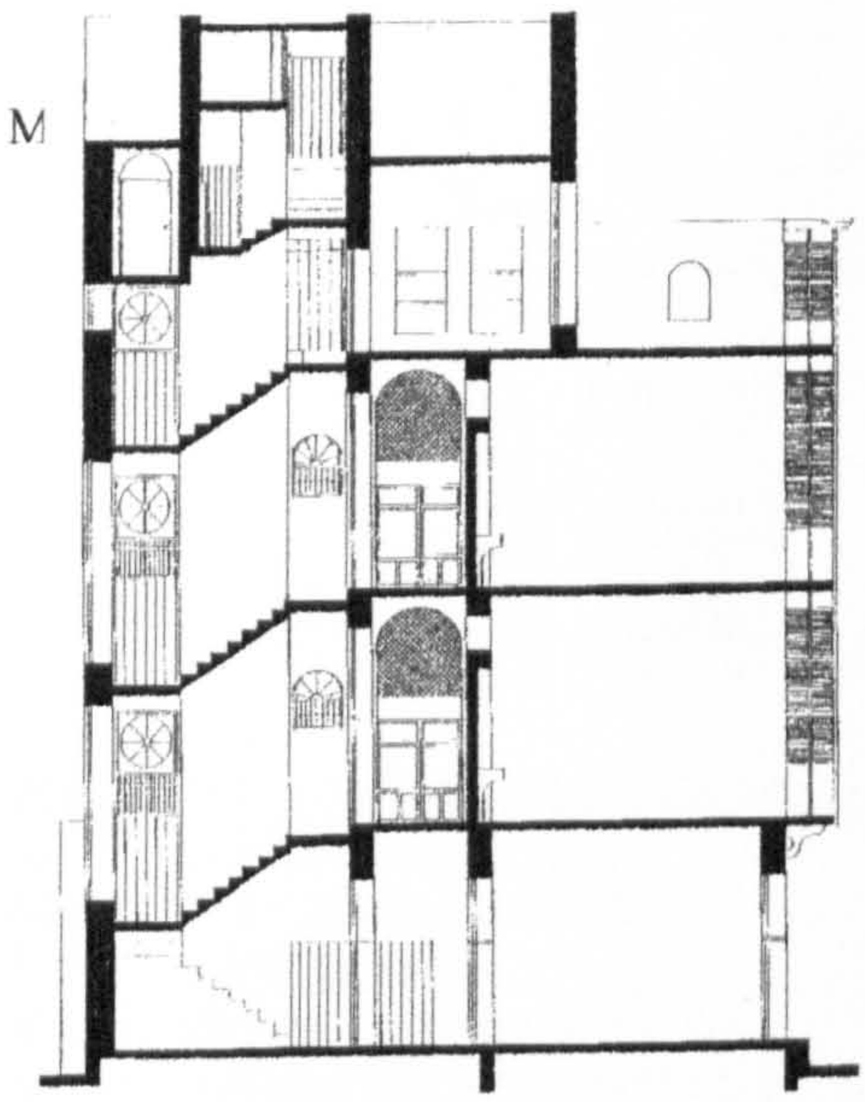
Figure A.55: View of Aal Momenah house (Model)
Source: Architecture department, Umm Al Qura University, 1998

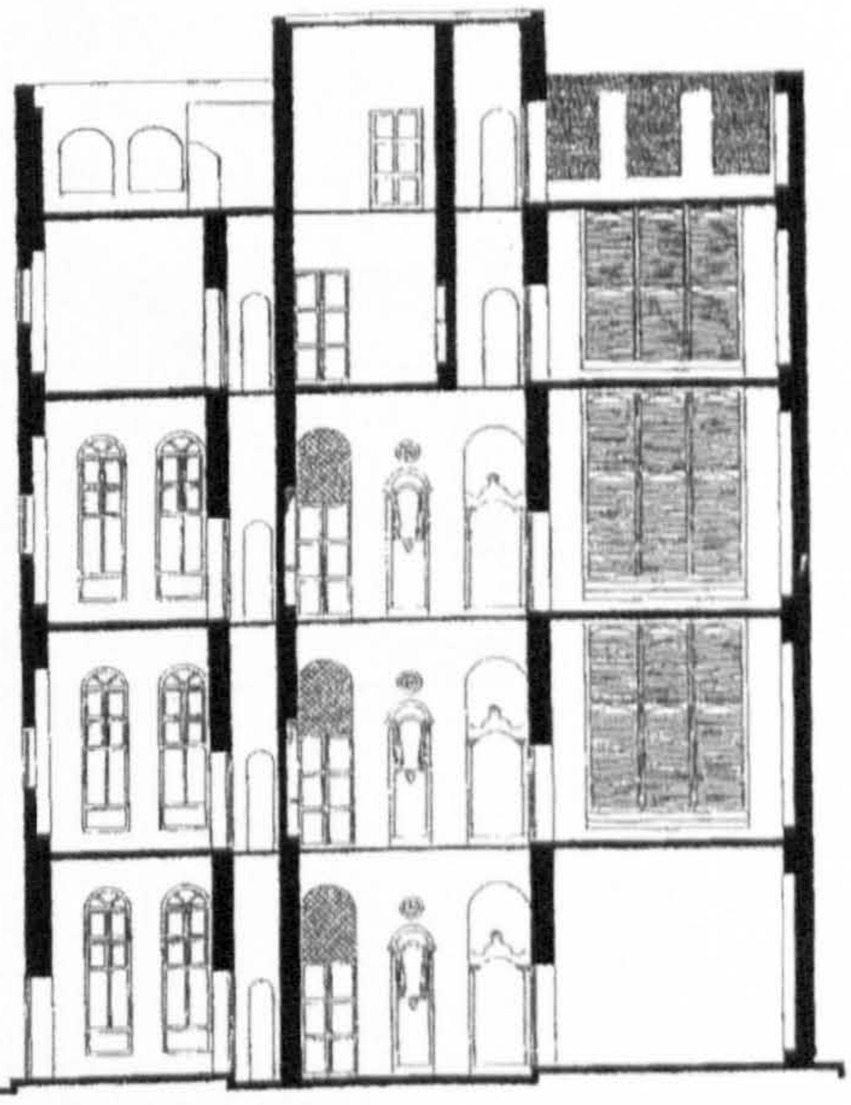
The plan arrangement:

This building was built on a large area and consists of five floors. The internal design was divided into two zones and each zone had its own entrance. The main entrance was situated on the main façade (southern façade) and was mainly used by males. The other entrance was situated on the western side and led to the female zone as well as being mainly used by family females and female guests (Figure A.56).









Section A.A

Section B.B

Figure A.56: Elevations and sections, Aal Momenah house
Source: Architecture department report, Umm Al Qura University, 1998 Description of the interior design

The Ground Floor:

The ground floor was parted to provide two zones and each zone had own entrance. The main entrance was treated by arched gypsum, which gives it beauty and some shadows. The main entrance was used by males and led to the *Dehliz* and from it to

the right to the *Maq'ad*. The *Maq'ad* faced the main street with a large opening covered by *Rowshan*. The *Dehliz* also led to the *Seeb* and from it to the main stairs and *Bayt alma*. The *Bayt alma was* situated between the main stairs and the *Maq'ad* and mainly used by males. The *Seeb* also led to the left to the other zone (female zone). There was a door on the main stairs leading to large area, which was demolished (Figure A.57 and A.58).

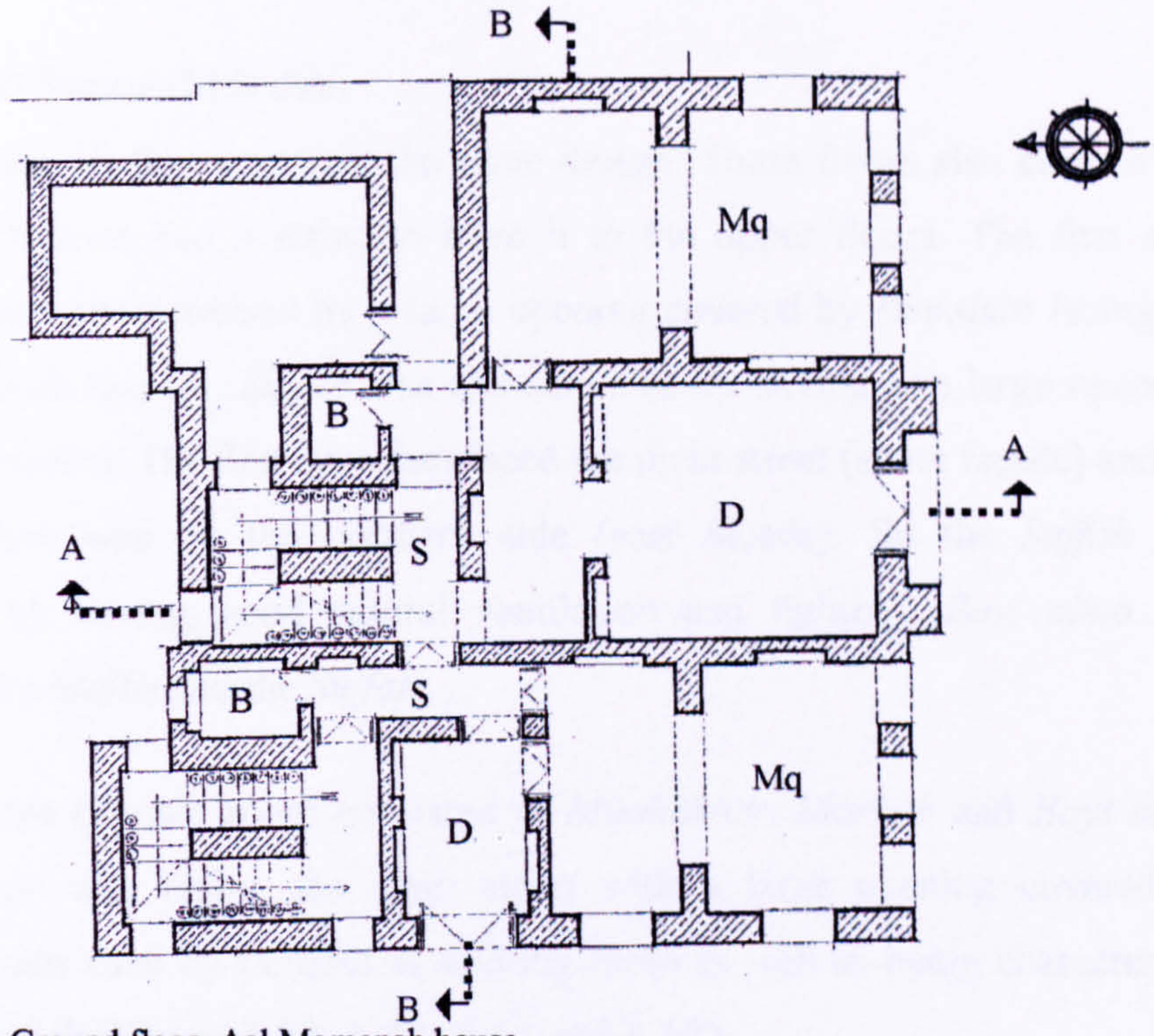
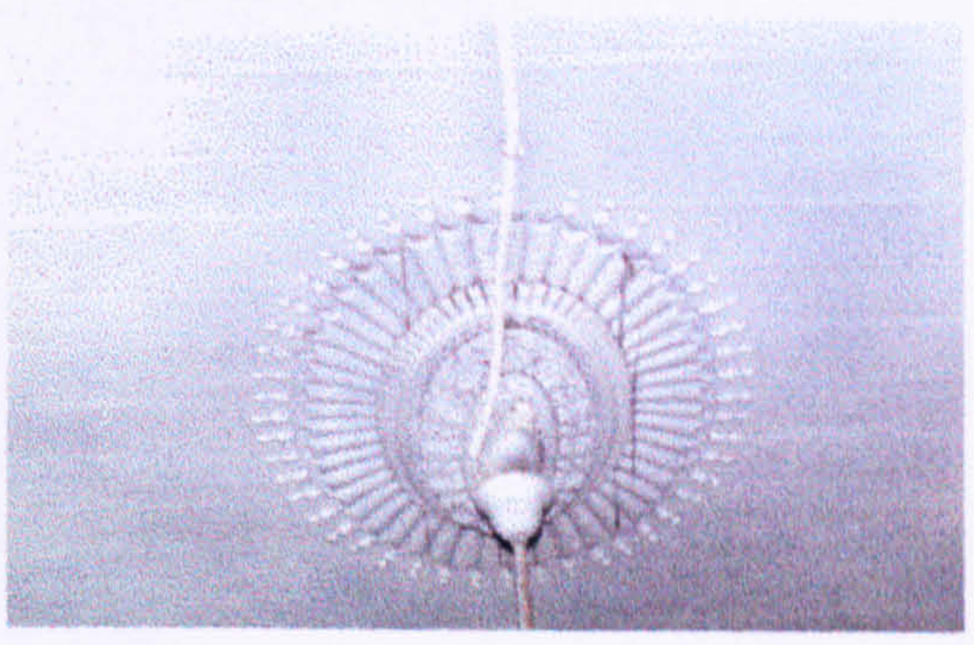


Figure A.57: Ground floor, Aal Momenah house
D *Dehliz* (entrance hall)
Mq *Maq'ad* (sitting room)
S *Seeb* (passage)
B *Bayt alma* (bathroom)
Source: Architecture department report, Umm Al Qura University, 1998

Dehliz ceiling, Family entrance hall.



Maq;ad ceiling

Figure A.58: Ceiling of *Maq'ad* and *Dehliz*, Ground floor, Aal Momenah house
Source: Architecture department report, Umm Al Qura University, 1998

The other entrance was situated on the western side. Female family members and female guests mainly used this entrance. This entrance leads to the other *Dehliz*, which was smaller than the main *Dehliz*. From the *Dehliz* was, to the right, the *Maq'ad* which also faced the main street with large an opening covered by *Rowshan*. From the *Dehliz* it led to the *Seeb* to the left, to *Bayt alma* and the other stairs. These stairs and *Bayt alma* were mainly used by females.

The First and Second Floors:

The first and second floors contain the same design. These floors also contain two zones and each zone had a staircase from it to the upper floors. The first zone contained *Majlis*, characterised by a large opening covered by *Rowshan* facing the main street (south façade). *Suffah* was characterised by having two large openings covered by *Rowshan*. The first *Rowshan* faced the main street (south façade) and the second *Rowshan* was on the northern side (east façade). So the *Suffah* was characterised by having good natural ventilation and lighting. *Bayt alma* was situated near the *Majlis* and the *Suffah*.

The second zone (female zone) consisted of *Muakhkhar*, *Markab* and *Bayt alma*. The *Muakhkhar* was facing the main street with a large opening covered by *Rowshan* and was used by females as a living room as well as being characterised by facing the south (Figure A.59, A.60, A.61 and A.62)

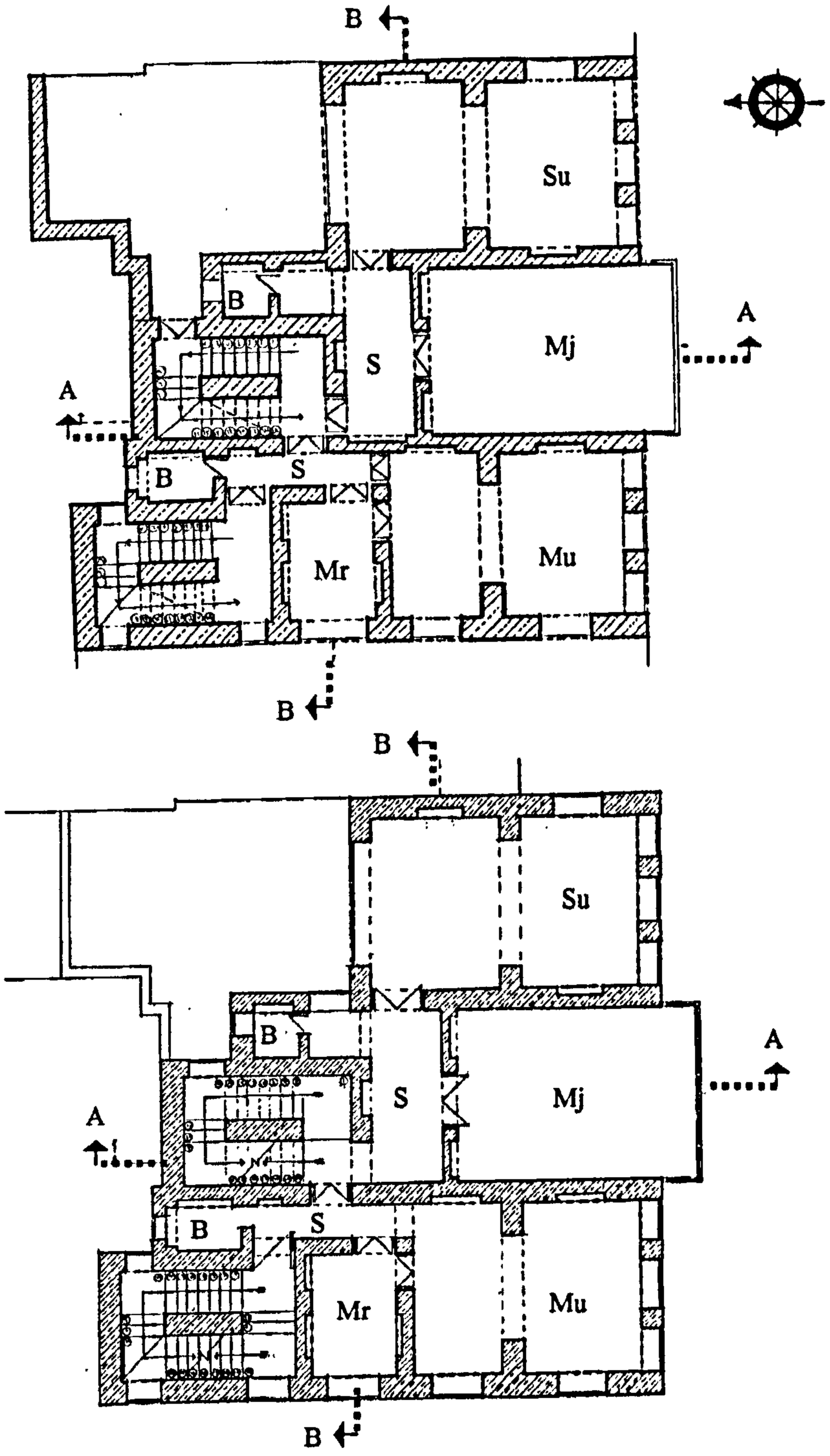
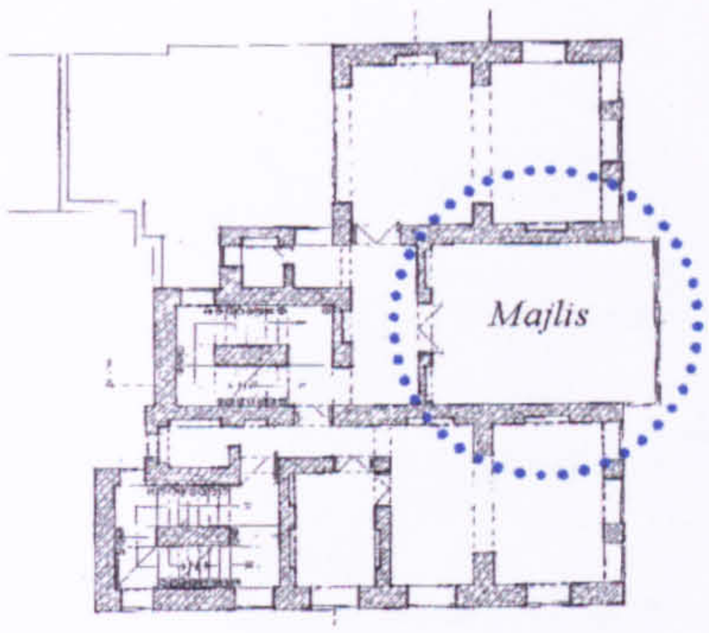


Figure A.59: First and second floors, Aal Momenah house

Mj *Majlis* (reception)
Su *Suffah* (ante-room)
Mu *Muakhkhar* (living room)
Mr *Markab* (kitchen)
S *Seeb* (passage)
Bayt alma (Bathroom)

Source: Architecture department report, Umm Al Qura University, 1998



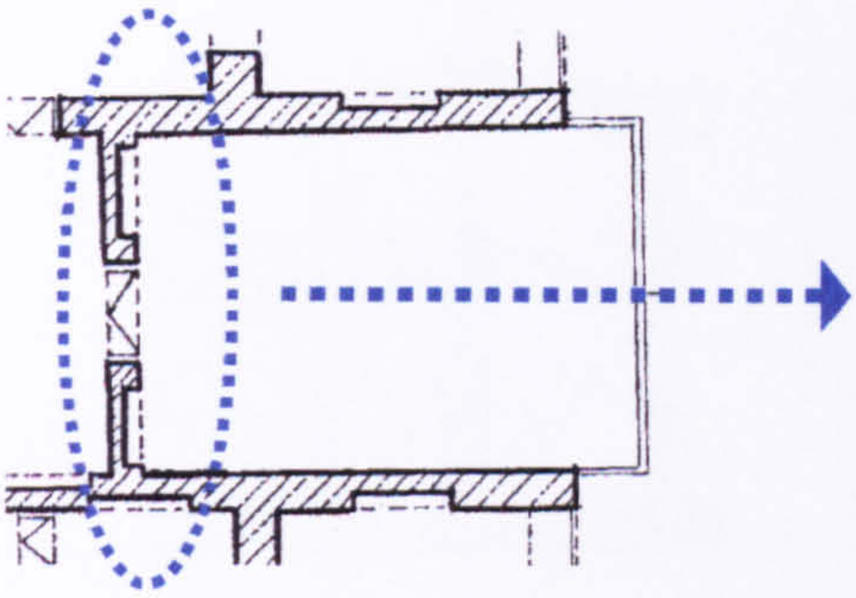


Figure A.60: Ceiling and wall decoration, First and second floors
Source: Architecture department report, Umm Al Qura University, 1998

Figure A.61: Gypsum ornaments upon the room and toilet doors
Source: Architecture department report, Umm Al Qura University, 1998

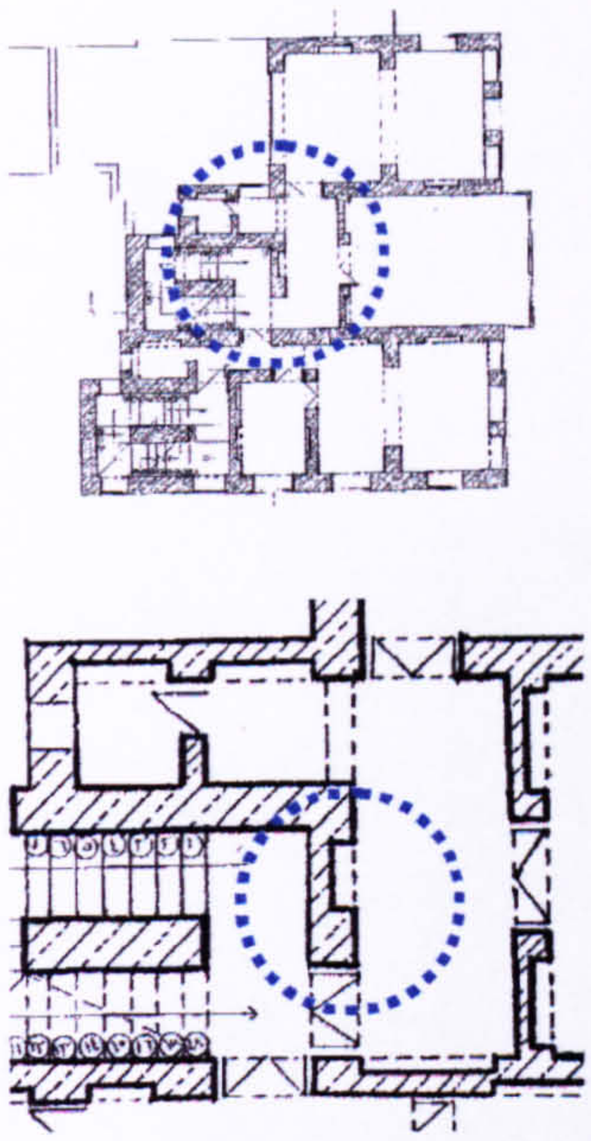


Figure A.62: *Hanafiah* (hydrant), outside the Toilet
Source: Architecture department report, Umm Al Qura University, 1998

The Third Floor:

The third floor was usually the most private for female members and where women spend their daytime hours and practise their activaties. This floor was characterised by having three *Kharijah* facing the south (main street). The main *Rowshan* which cover the *Majlis* openings on the ground, first and second floors was continued to the third floor and covered the opening of the *Kharijah*. Many *Shawabeer* that decorates the main façade and serve the function of the roof characterised the other *Kharijah*.

Each part on this floor consists of *Mabit*, *Markab*, *Kharijah* and of *Bayt alma* which were used by family members. We observe the two stairs on the third floor were cut off from the northern side and used as storage (Figure A.63).

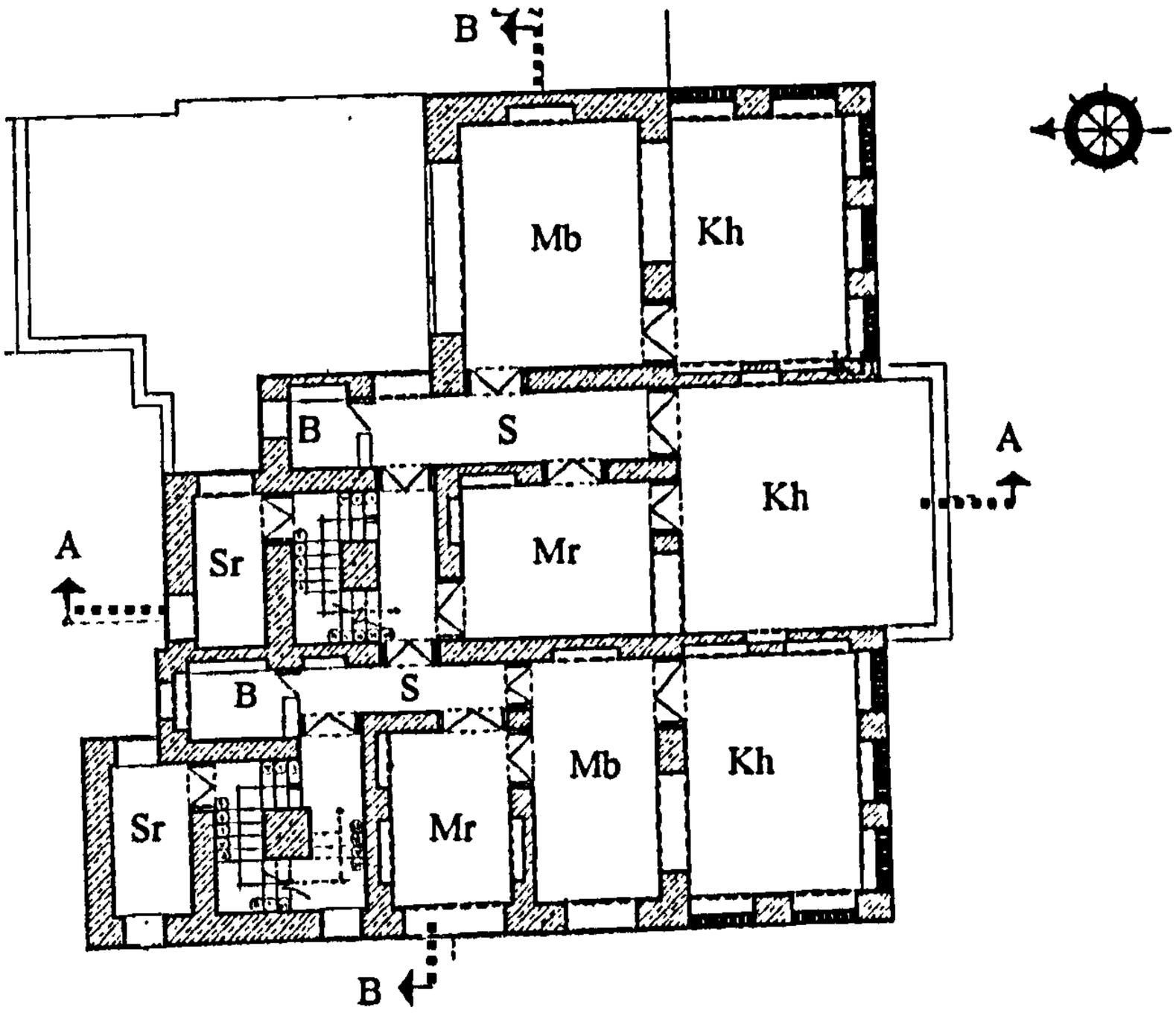


Figure A.63: Third floor, Aal Momenah house

Kh *Kharijah* (terrace)
Mb *Mabit* (night room)
Mr *Markab* (kitchen)
S *Seeb* (passage)
B *Bayt alma* (bathroom)
Sr Storage

Source: Architecture department report, Umm Al Qura University, 1998

The Fourth Floor:

The fourth floor was smaller than the lower floors because the third floor *Kharijrh* was cut off. This floor was divided into two zones and each zone had its own stairs. This floor also consists of many *Kharijah* and two *Markab*. The *Shawabeer* decorated the main façade as well as other sides and serves the function of the roof. (Figure A.64)

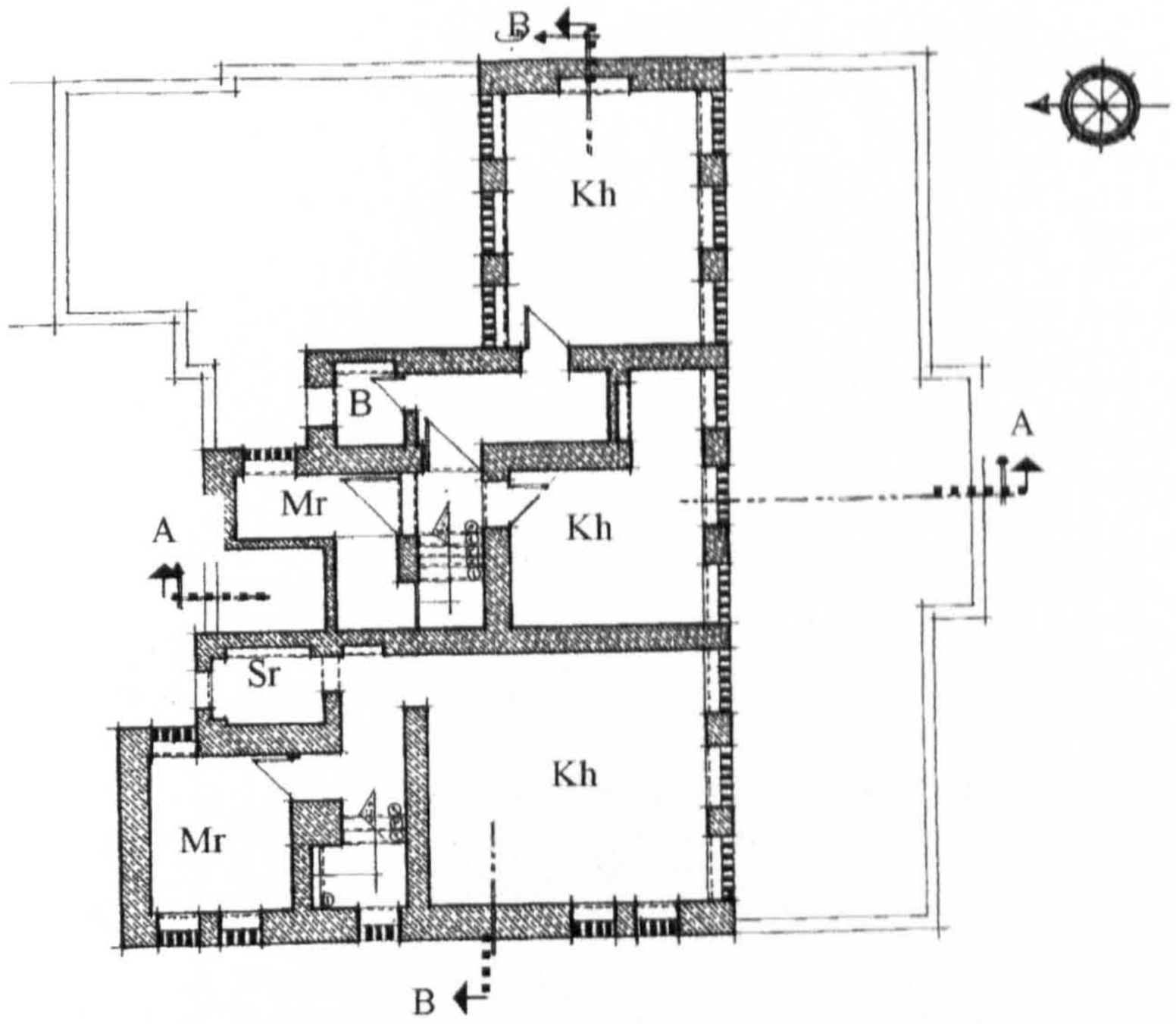


Figure A.64: Fourth floor, Aal Momenah house

Kh *Kharijah* (terrace)
Mr *Markab* (kitchen)
B *Bayt alma* (bathroom)
Sr Storage

Source: Architecture department report, Umm Al Qura University, 1998

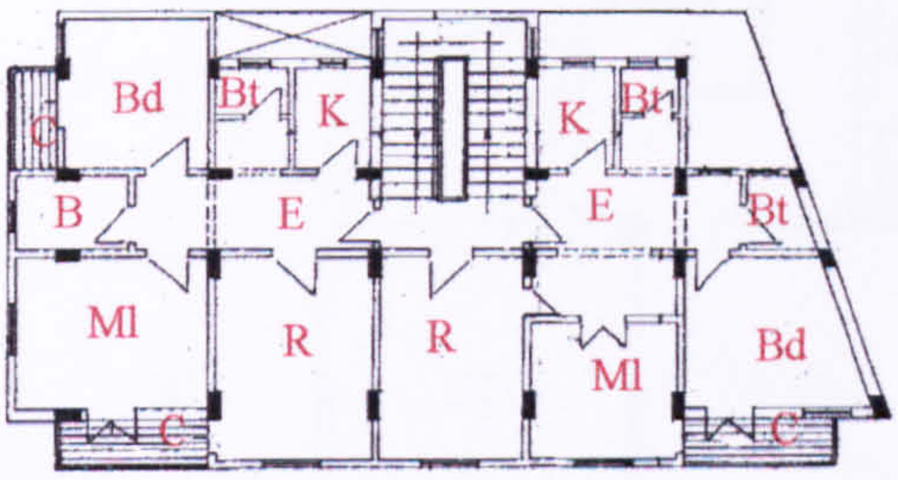
Appendix B

CASE STUDIES OF MAKKAH CONTEMPORARY HOUSES

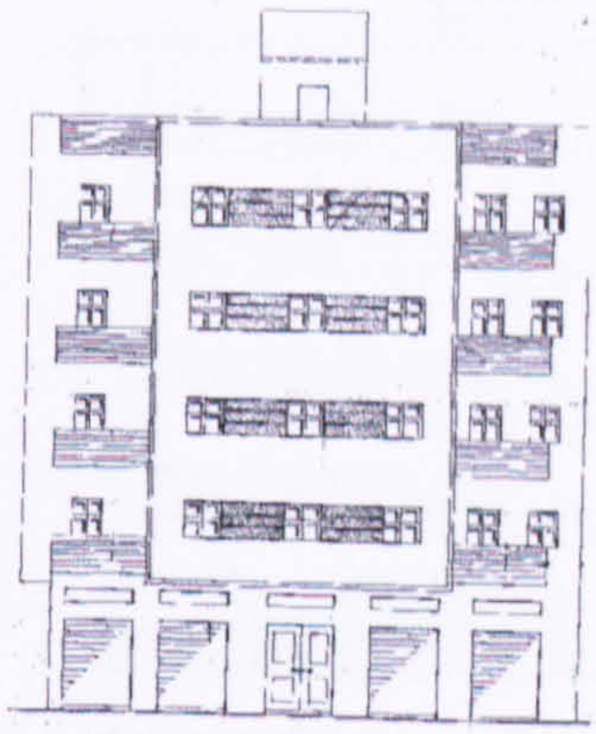
As discussed in chapter 6, six case studies of Makkah modern house. Thirty-one case studies also collected give a more general idea about Makkah modern houses. These houses were built during recent years.

House 7				Date built	1974
Owner names	Al Gabashi		Location	Makkah, Al Hendawiah	
House Type	Apartment	No. of floors	4	No. of flats per floor	2

Plan and Elevation



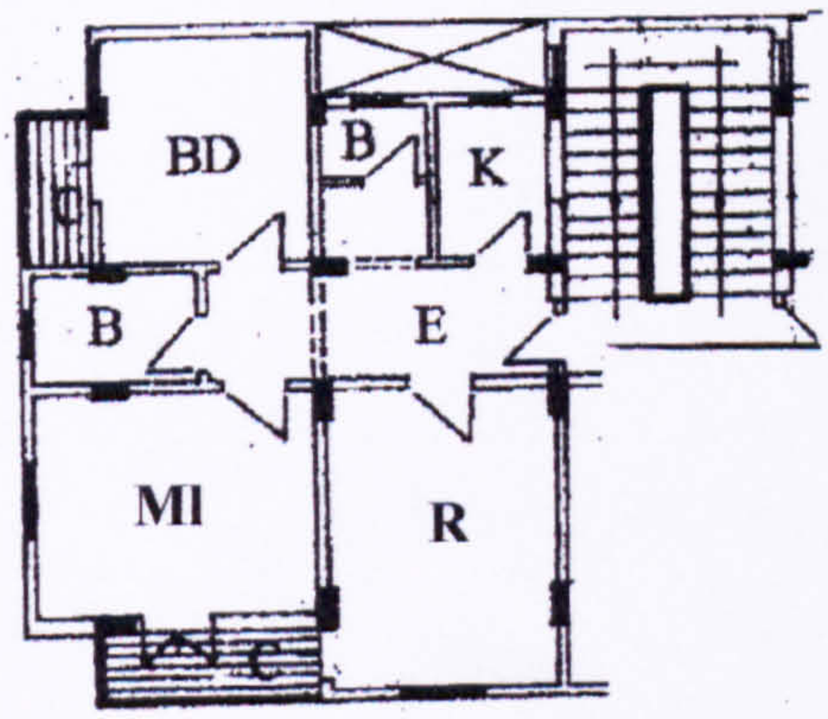
Typical floor



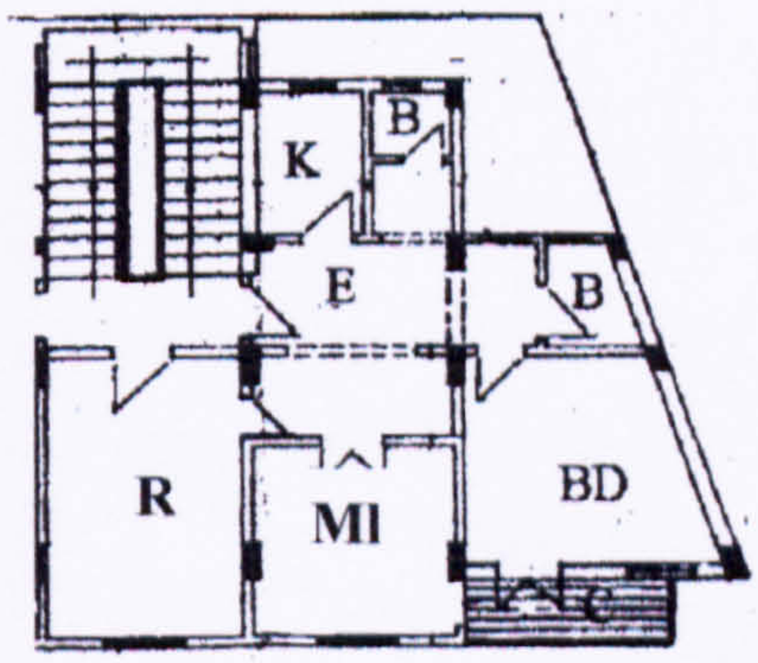
Main elevation

E entrance hall
Ml multi-purpose room
K kitchen
C balcony
R reception
BD bedroom
B bathroom

Flat No. 1, (Three rooms)



Flat No. 2, (Three rooms)

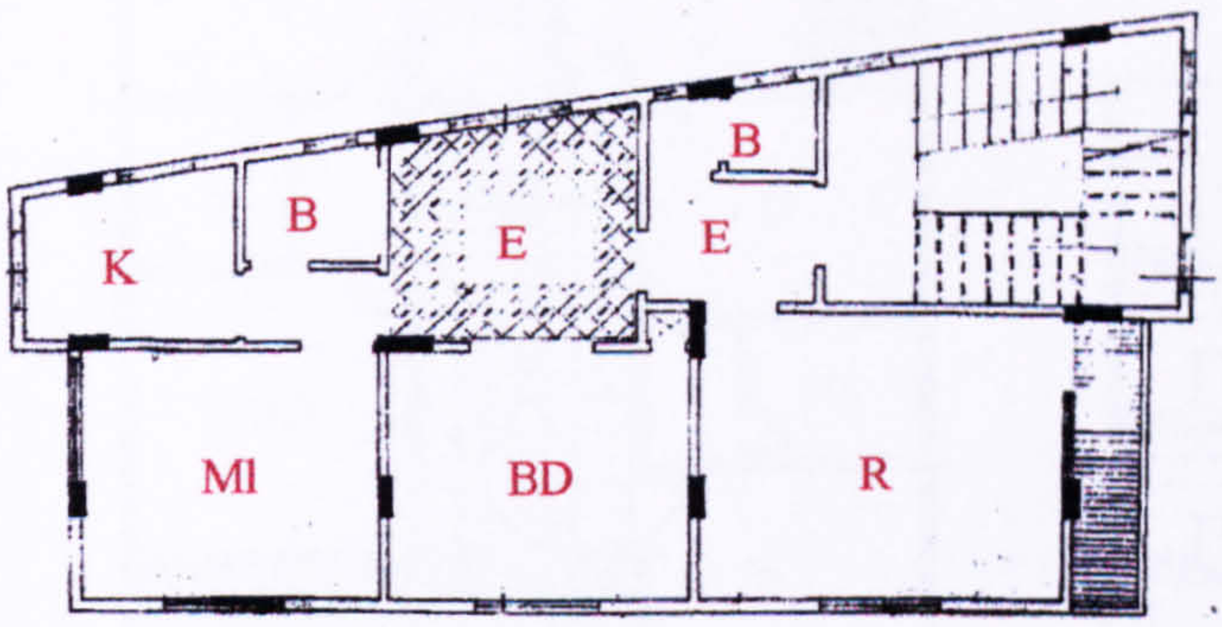


House 8		Date built	1974

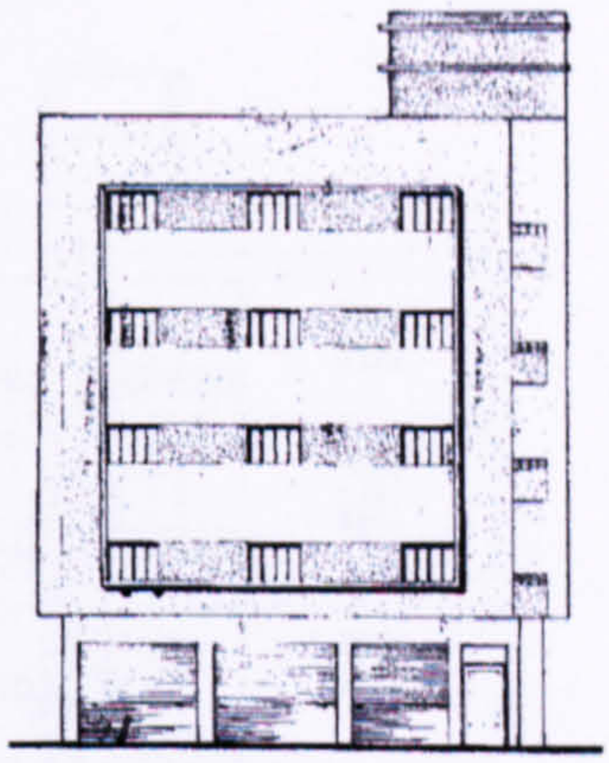
Owner names	Abdullah Zain Al Deen	Location	Makkah, Al Zahra

House Type	Apartment	No. of floors	4	No. of flats per floor	1

Plan and Elevation



Typical floor

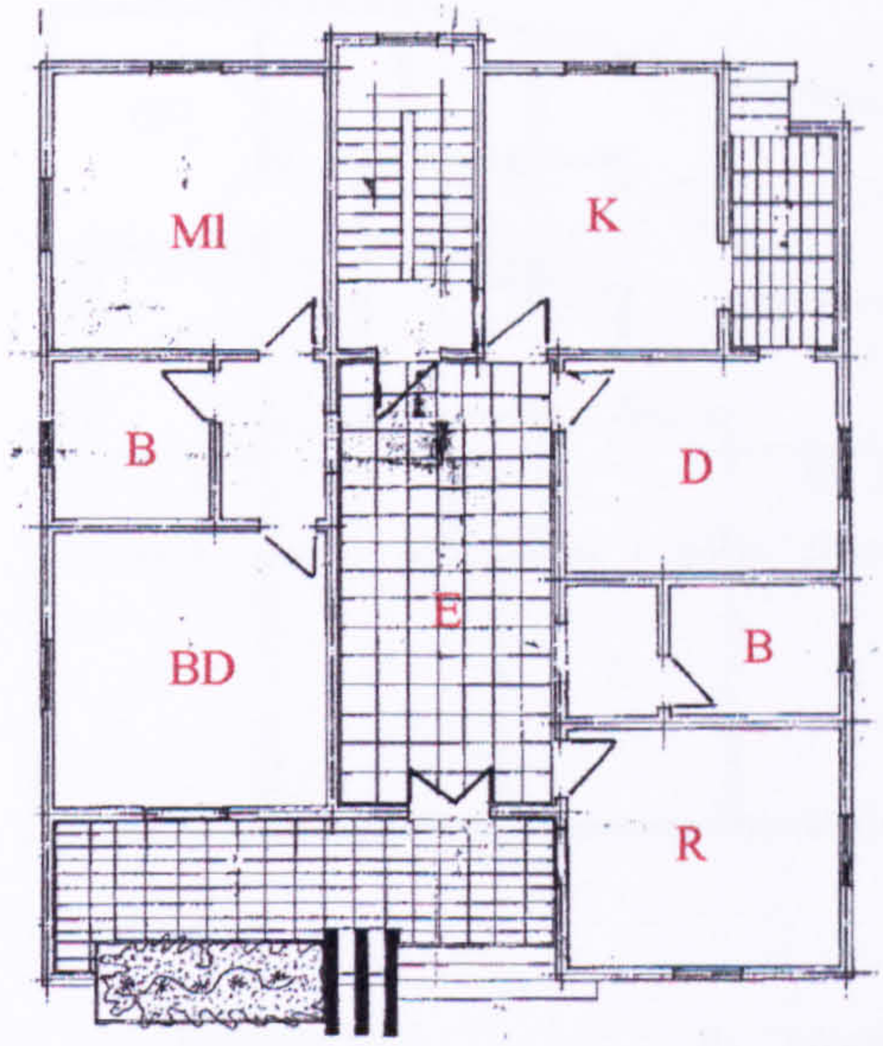


Main elevation

E	entrance hall	R	reception
BD	bedroom	Ml	multi-purpose room
K	kitchen	C	balcony
B	bathroom		

House 9			Date built	1975
Owner names	Hasan Malhani	Location	Makkah, Al Rosaifah	
House Type	Apartment	No. of floors	Three	No. of flats per floor 1

Plan and Elevation



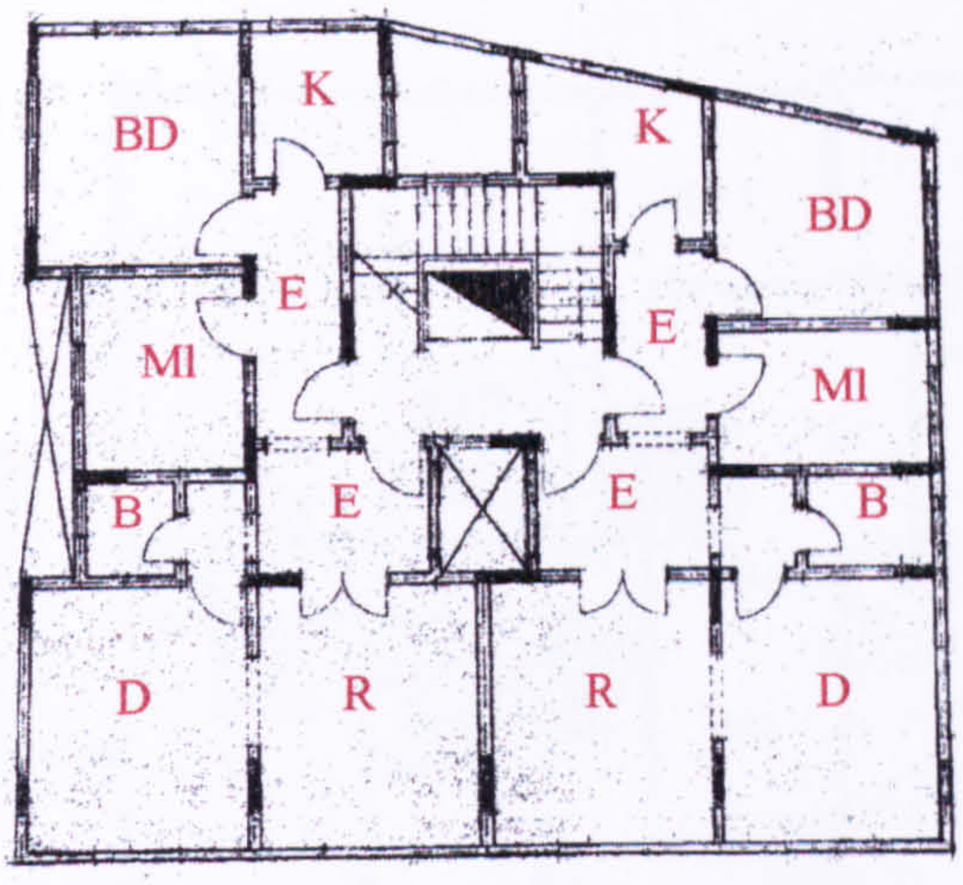
Typical floor

Main elevation

E entrance hall
D dining room
Ml multi-purpose room
R reception
BD bedroom
K kitchen
B bedroom

House **10**			Date built	**1975**
Owner names	Mohammad Dahlawi	Location	Makkah, Al aziziah	
House Type	Apartment	No. of floors	10	No. of flats per floor 2

Plan and Elevation

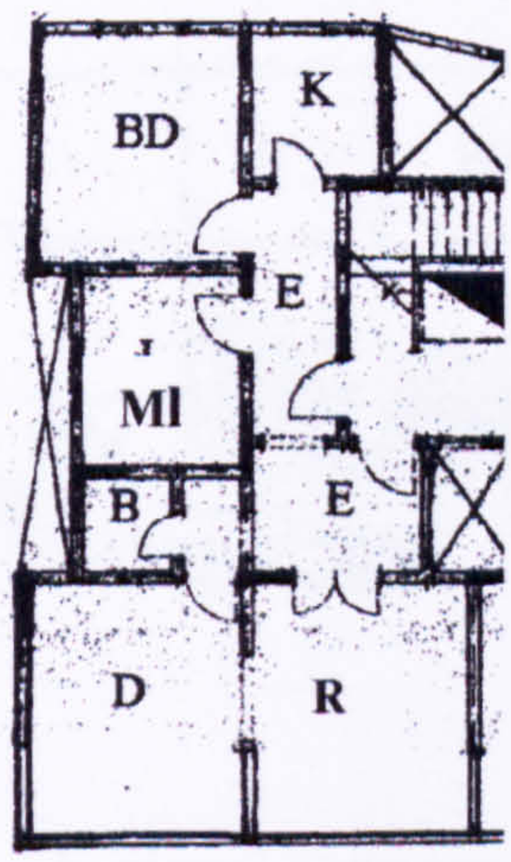


Typical floor

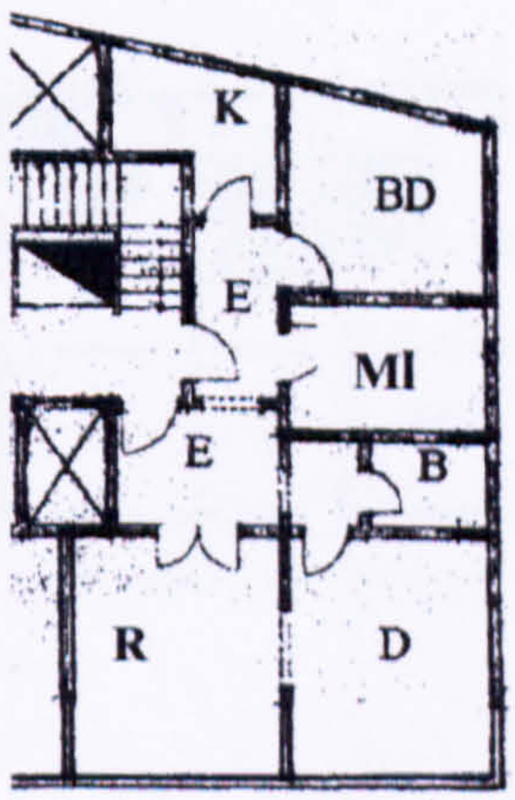
Main elevation

E entrance hall
D dining room
BD bedroom
B bathroom
R reception
Ml multi-purpose room
K kitchen

Flat No. 1, (Four rooms)

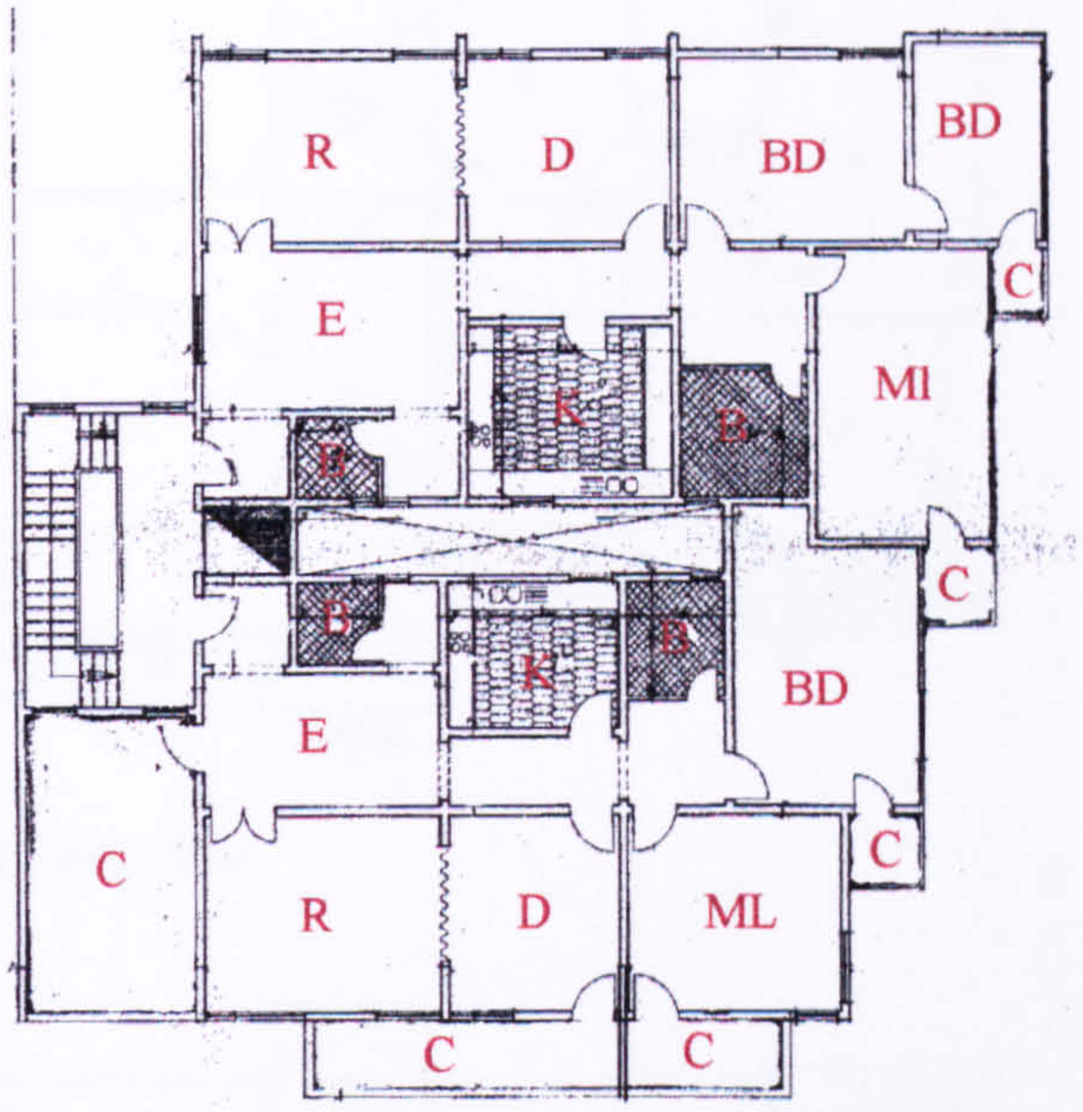


Flat No. 2, (Four rooms)



House 11			Date built	1976
Owner names	Ibrahem Azhar	Location	Makkah, Al rosaifah	
House Type	Apartment	No. of floors	--	No. of flats per floor 2

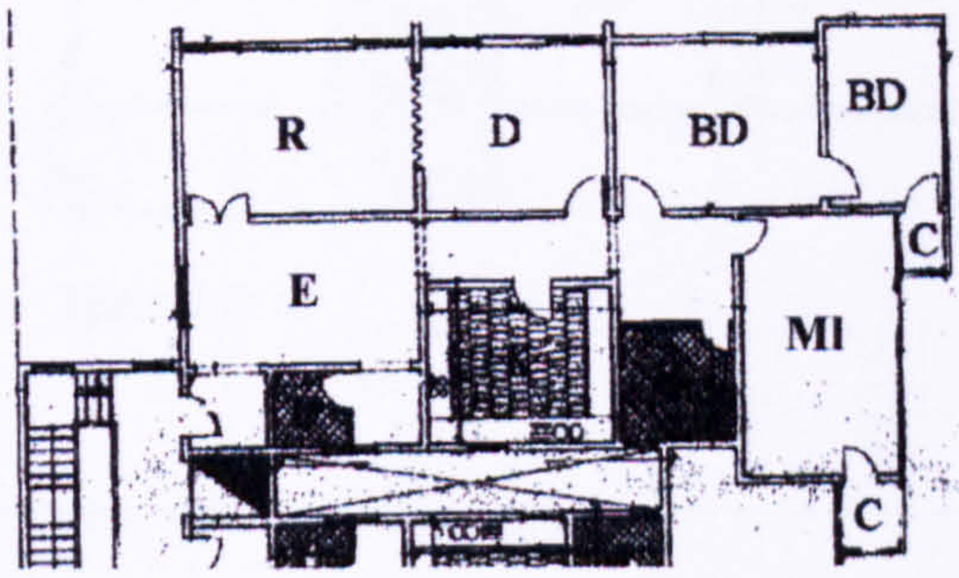
Plan



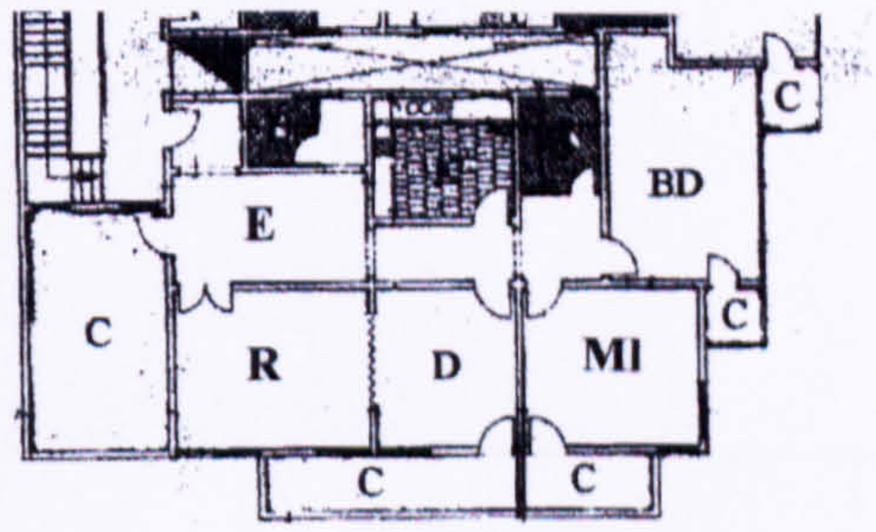
E entrance hall
R reception
D dining room
BD bedroom
MI multi-purpose room
K kitchen
B bathroom
C balcony

Typical floor

Flat No. 1, (Five rooms)

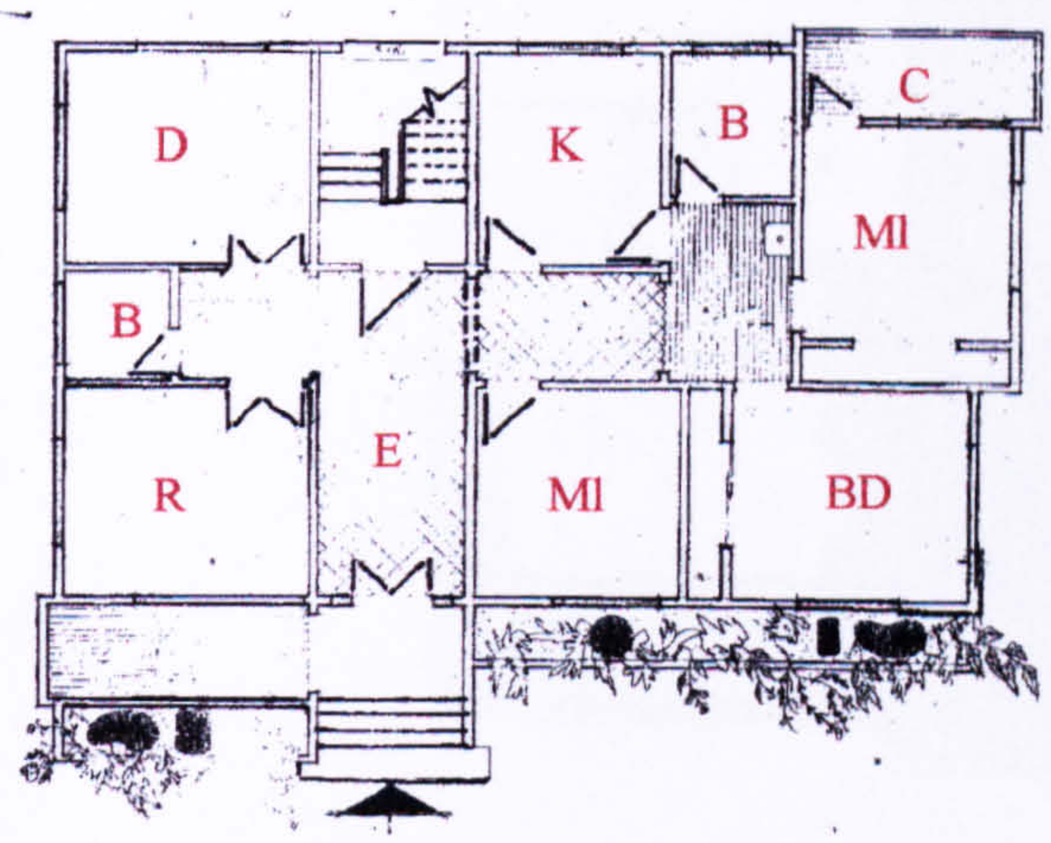


Flat No. 2, (Four rooms)

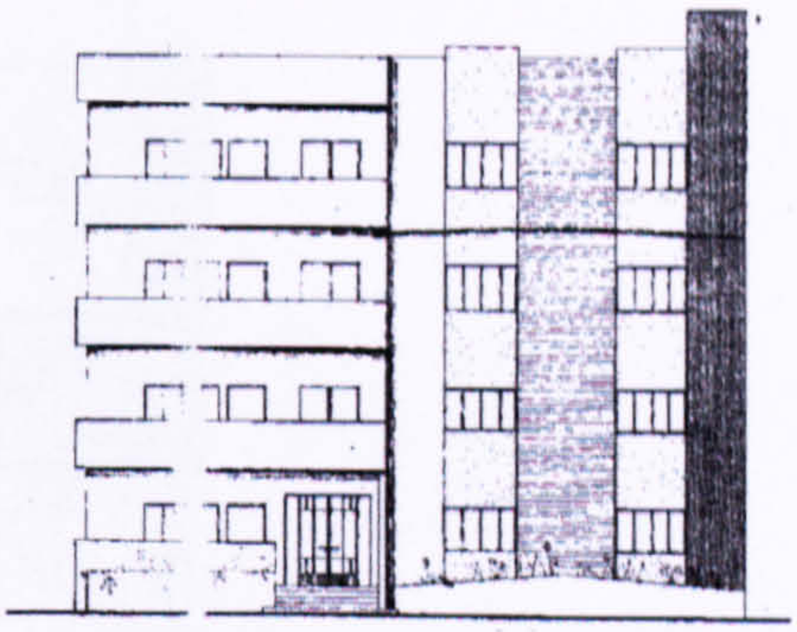


House **12**			Date built	**1976**
Owner names	Faredah shalabi	Location	Makkah, Al nuzha	
House Type	Apartment	No. of floors	4	No. of flats per floor	1

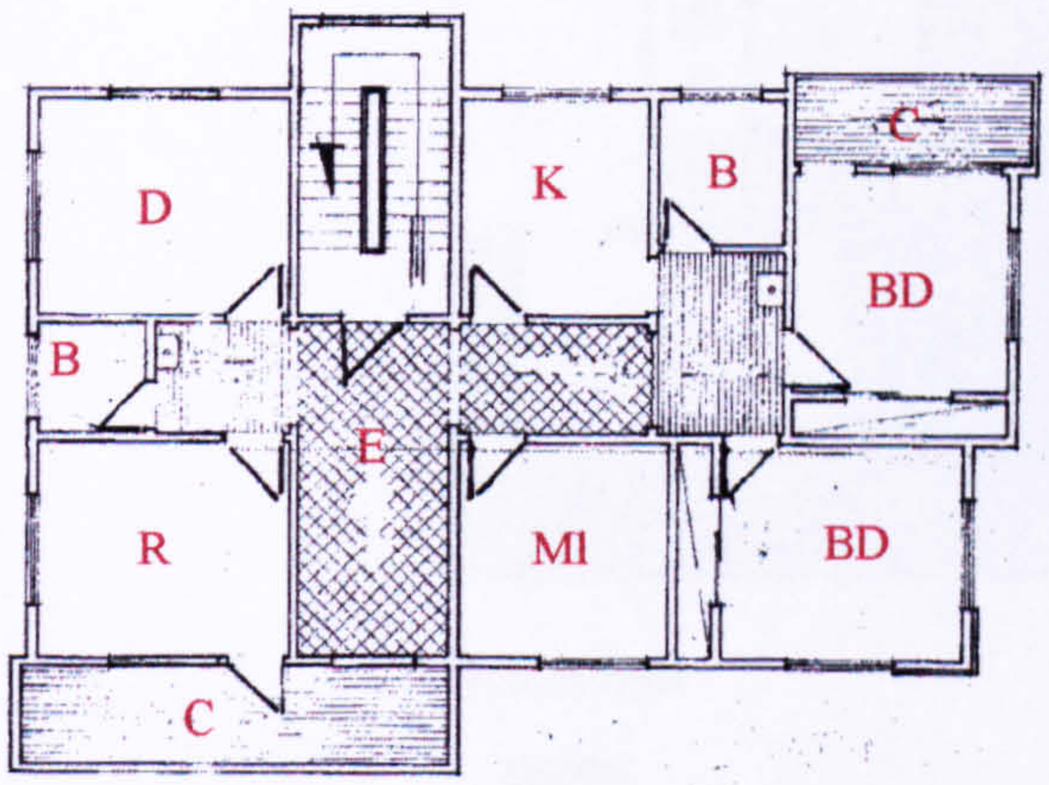
Plan and Elevation



Ground floor



Main elevation

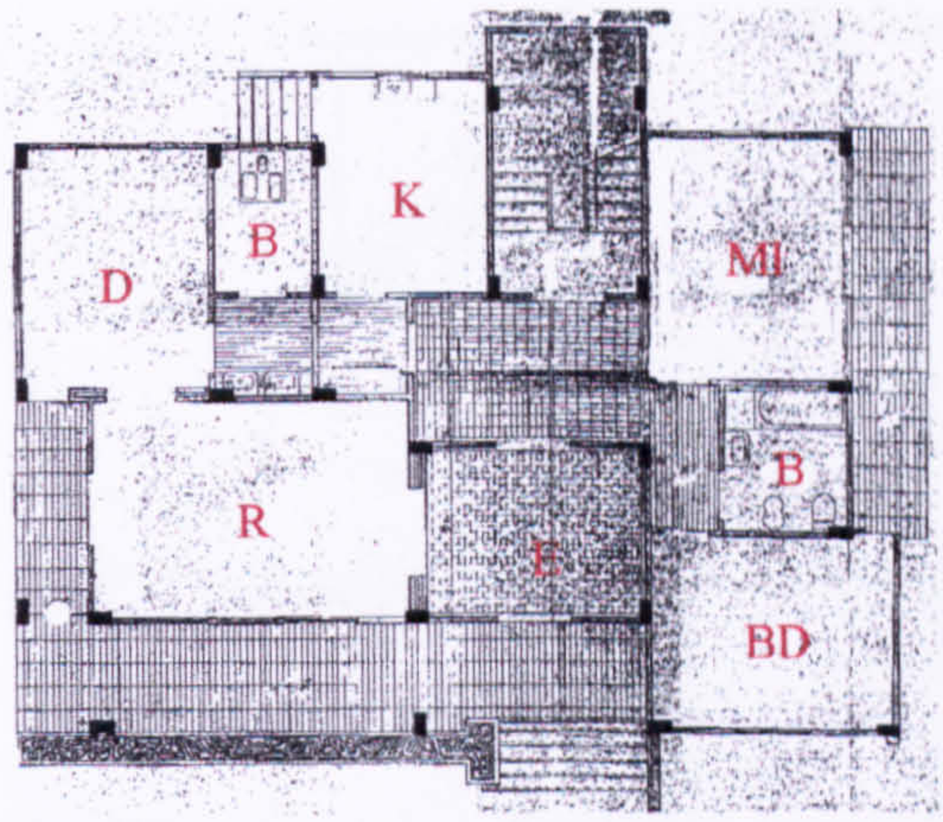


Typical floor

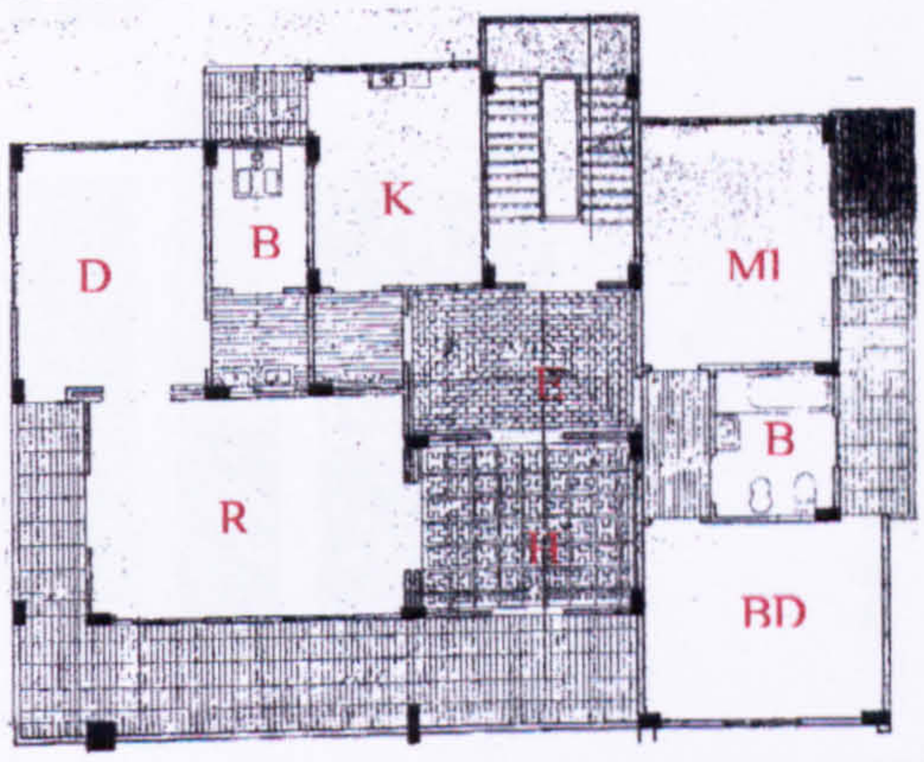
E entrance hall
R reception
D dining room
L living room
BD bedroom
Ml multi-purpose room
K kitchen
B bathroom
C balcony

House **13**		Date built	**1976**
Owner names	Hassan Nemer	Location	Makkah, Al Nuzhah
House Type	Apartment	No. of floors	3
No. of flats per floor	1		

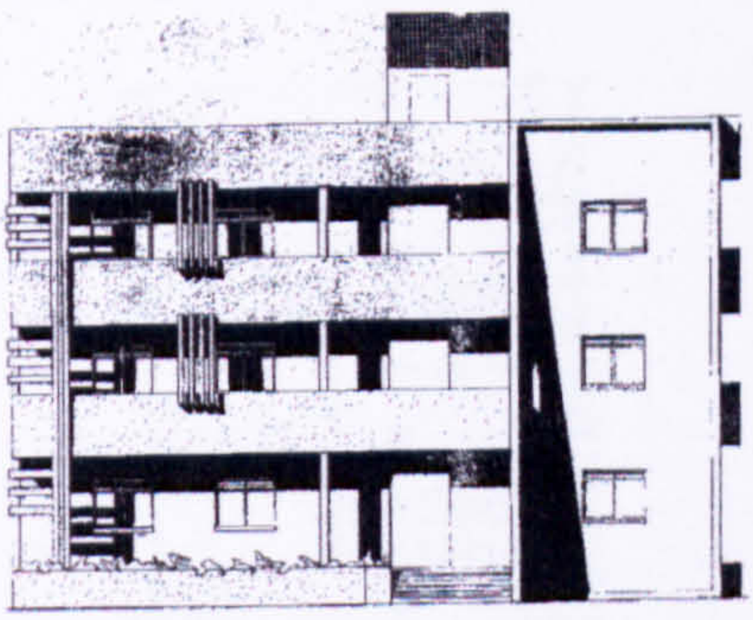
Plan and Elevation



Ground floor



Typical floor

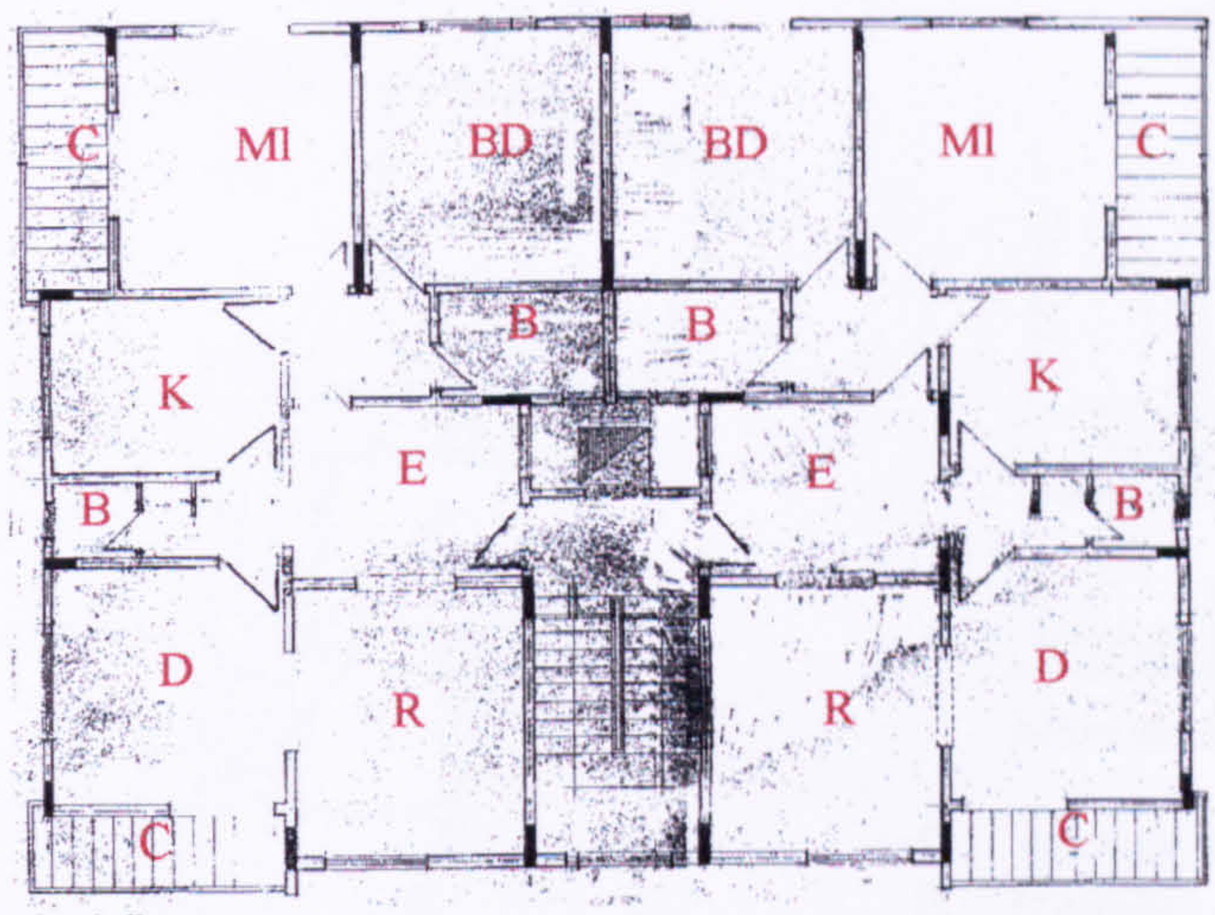


Main elevation

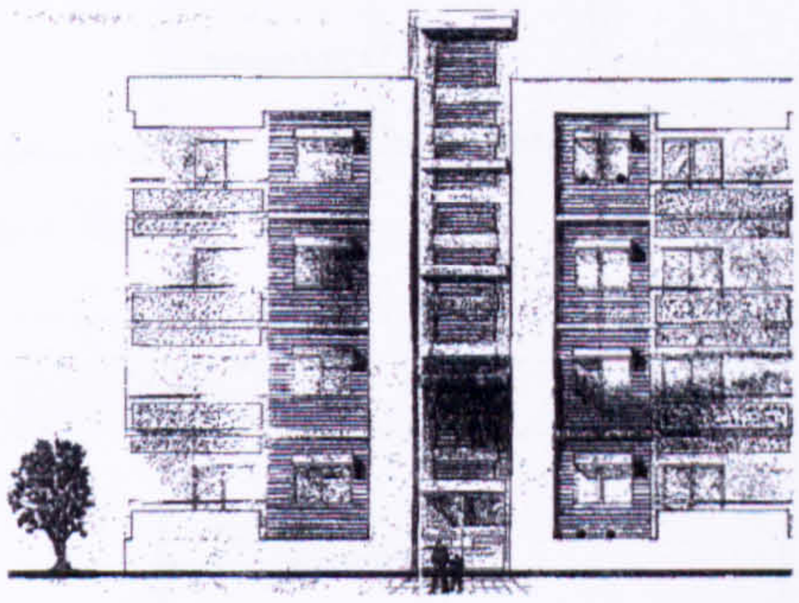
E entrance hall
R reception
D dining room
H hall
BD bedroom
K kitchen

House **14**		Date built	**1976**
Owner names	Sharaf Al Ghaithi	Location	Makkah, Al Rosaifah
House Type	Apartment	No. of floors	4
No. of flats per floor	2		

Plan and Elevation



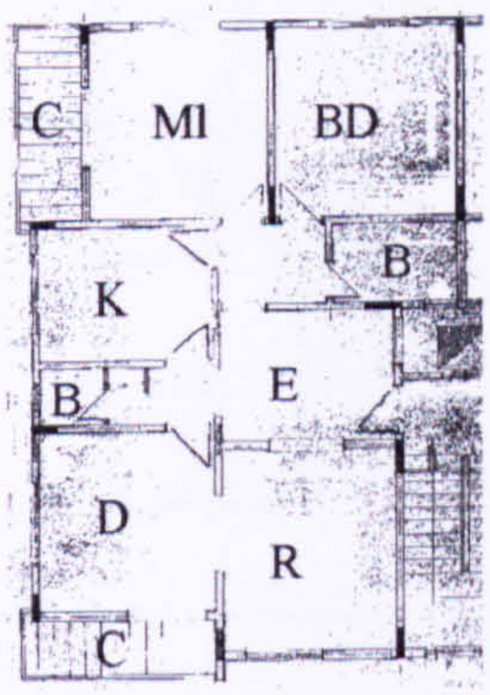
Typical floor



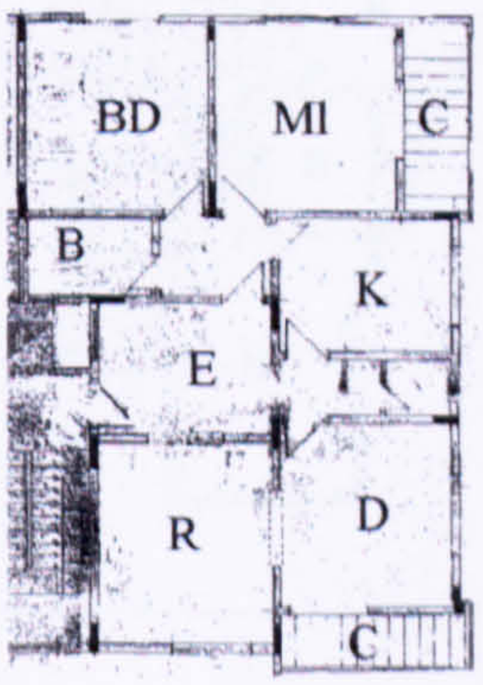
Main elevation

E entrance hall
R reception
D dining room
BD bedroom
Ml multipurpose room
K kitchen
B bathroom

Flat No. 1, (Four rooms)

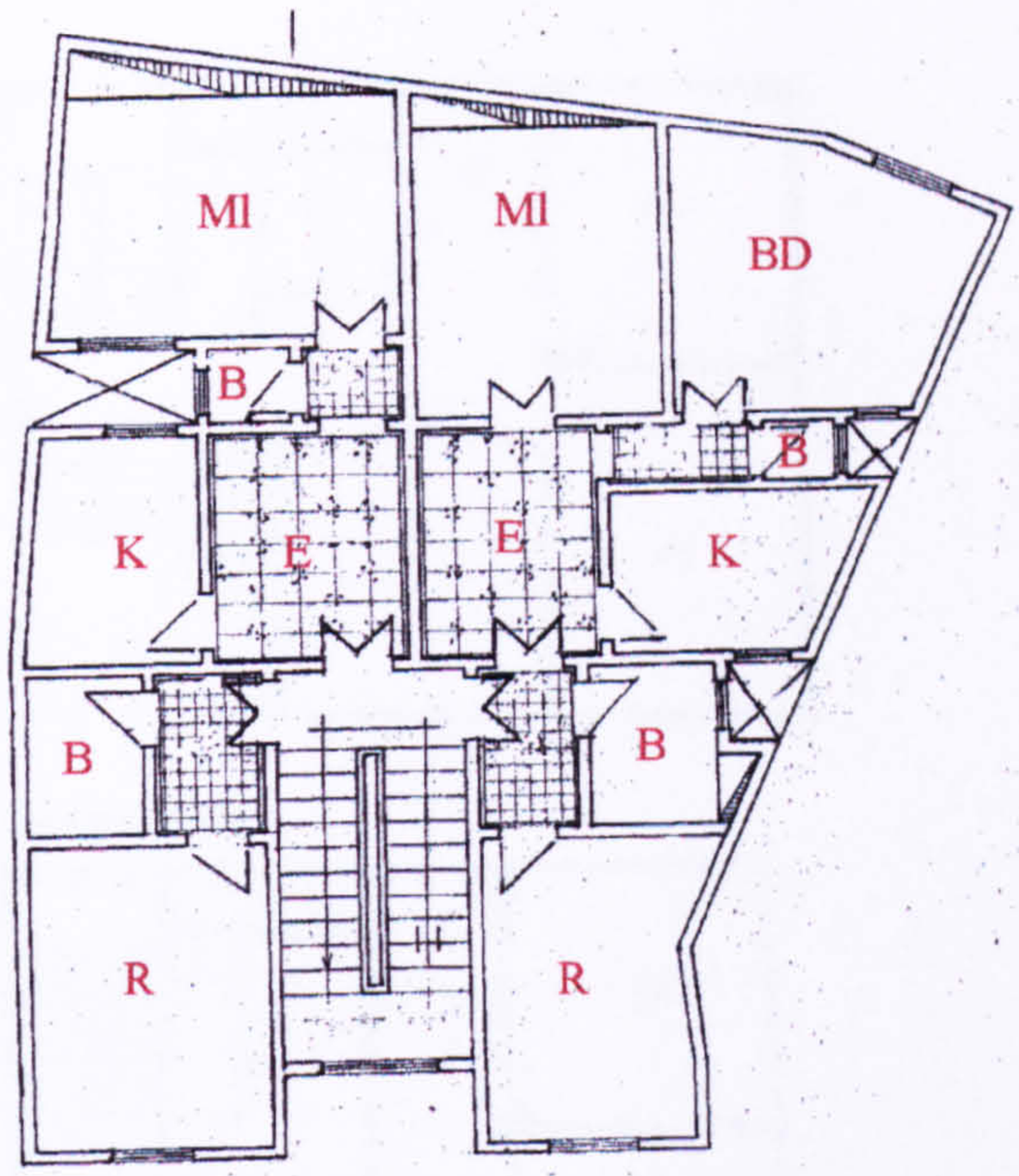


Flat No. 2, (Four rooms)

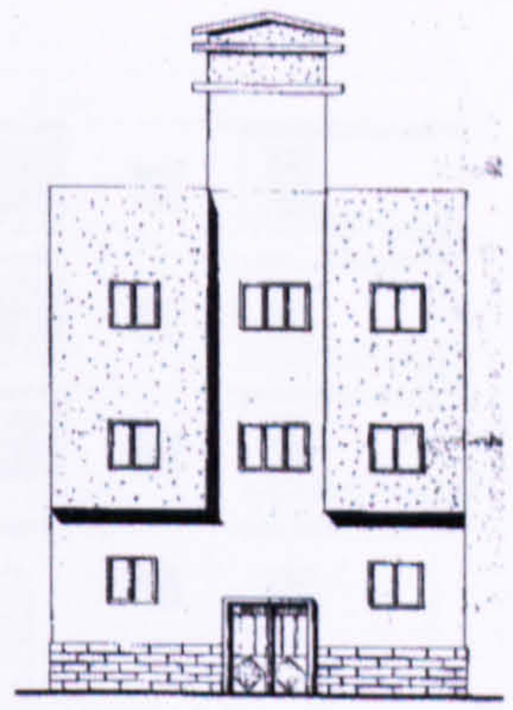


House **15**		Date built	**1977**
Owner names	Ateiah Al Harbi	Location	Makkah, Al Hendawiah
House Type	Apartment	No. of floors	3	No. of flats per floor	2

Plan and Elevation



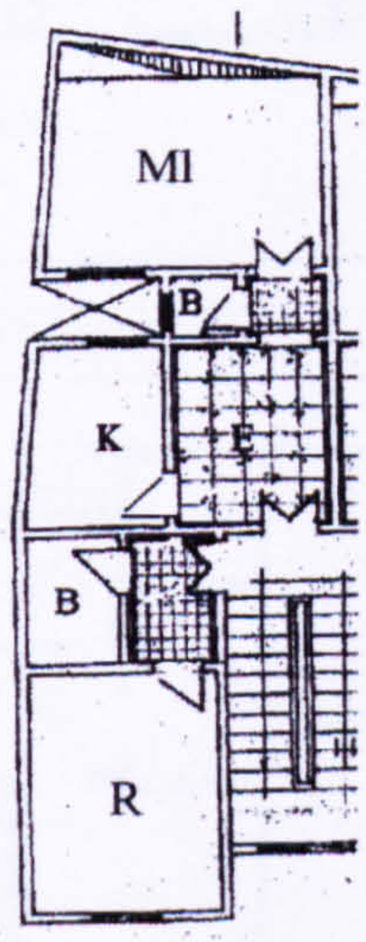
Typical floor



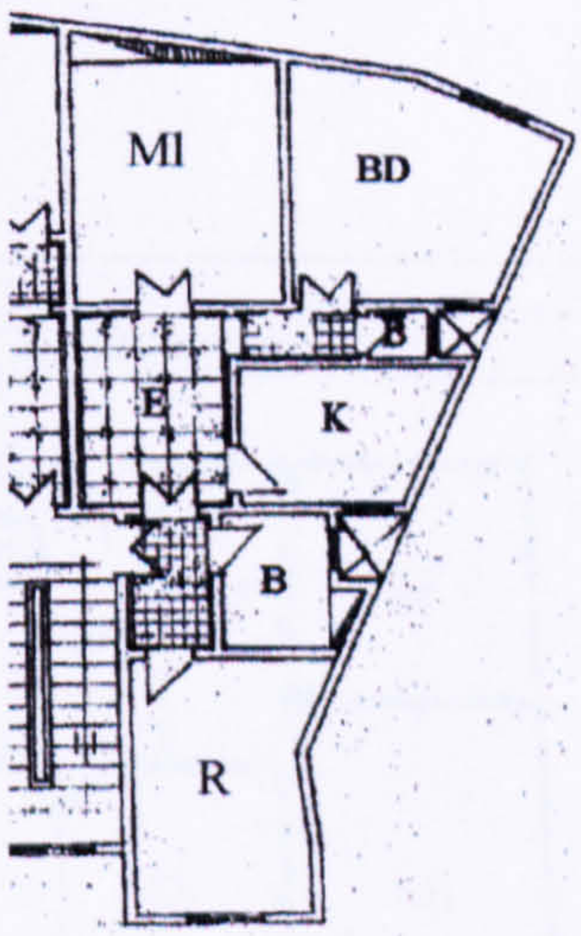
Main elevation

E entrance hall
R reception
Ml multipurpose room
BD bedroom
B bathroom
K kitchen

Flat No. 1, (Two rooms)

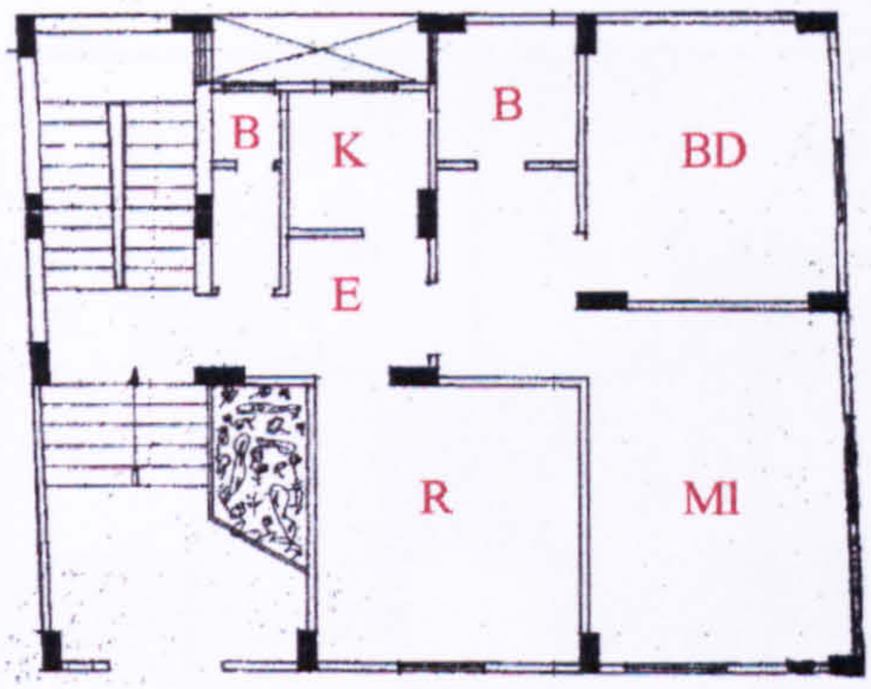


Flat No. 2, (Three rooms)

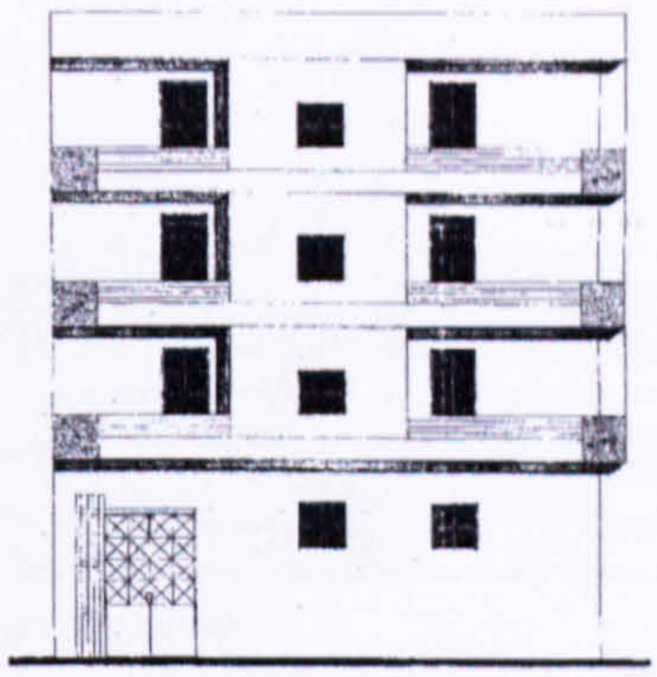


House **16**			Date built	**1977**
Owner names	Abdullah Al Harbi	Location	Makkah, Al Hendawiah	
House Type	Apartment	No. of floors	4	No. of flats per floor 1

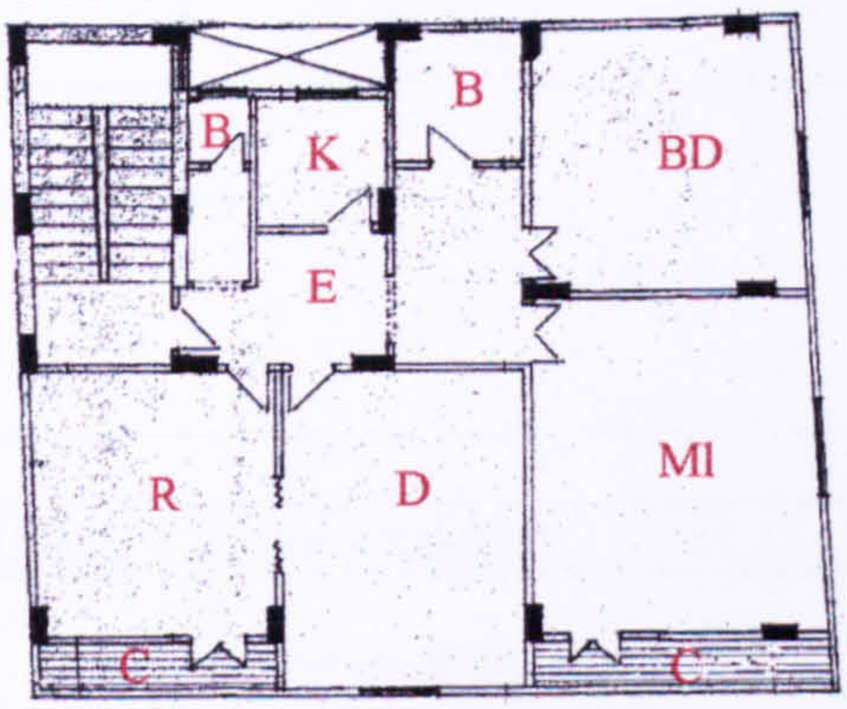
Plan and Elevation



Ground floor



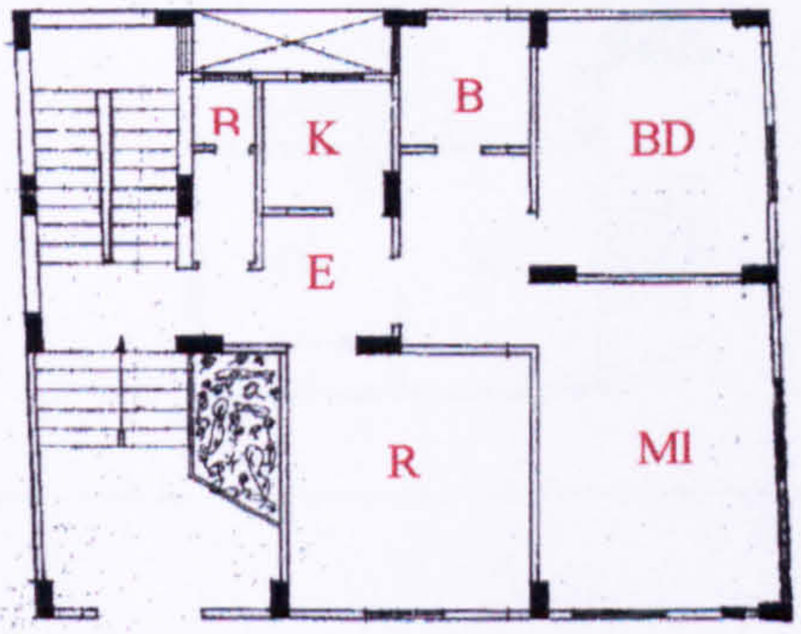
Main elevation



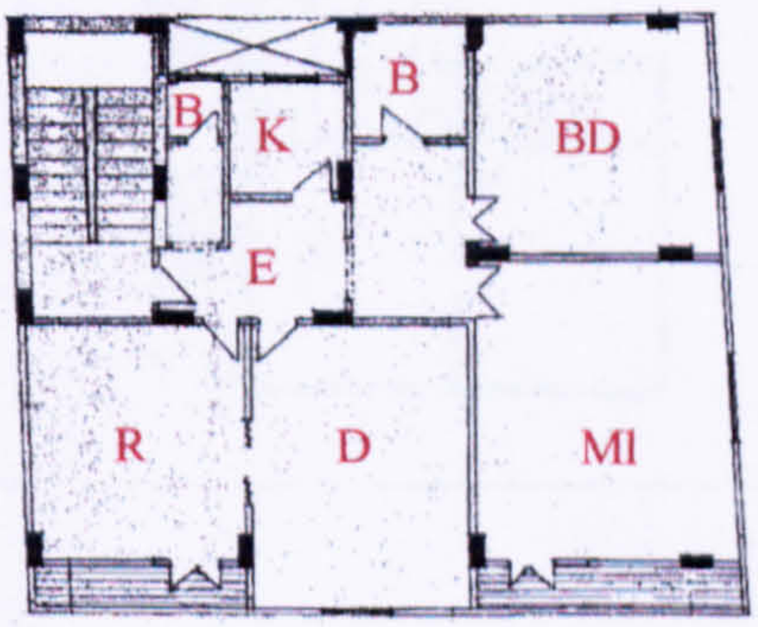
Ground floor

E entrance hall
R reception
D dining room
BD bedroom
Ml multipurpose room
B bathroom
K kitchen
C balcony

Flat No. 1, (Three rooms)

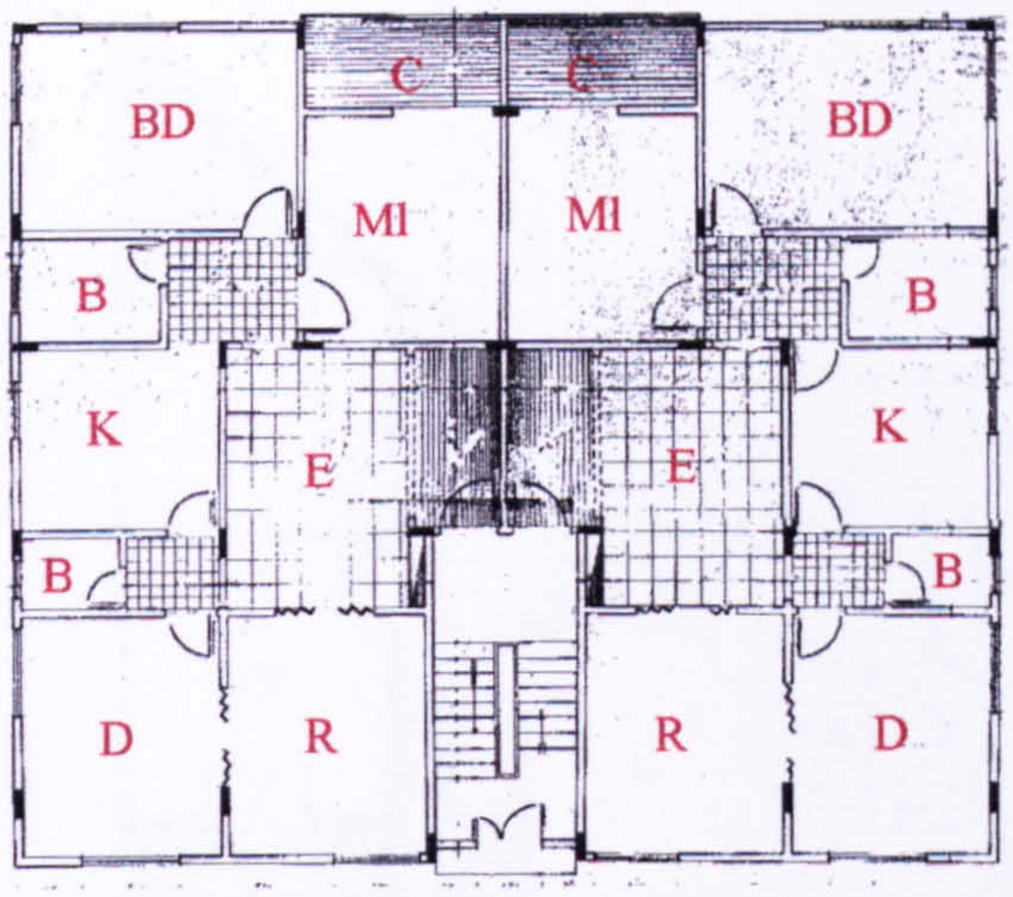


Flat No. 2, (Four rooms)

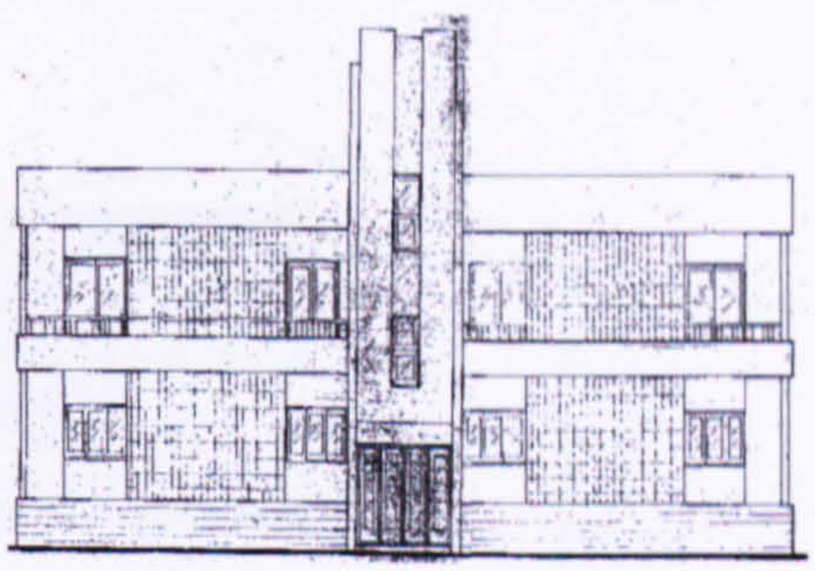


House 17			Date built	1978
Owner names	M. Ba Hakam	Location	Makkah, Al Rosaifa	
House Type	Apartment	No. of floors	2	No. of flats per floor 2

Plan and Elevation



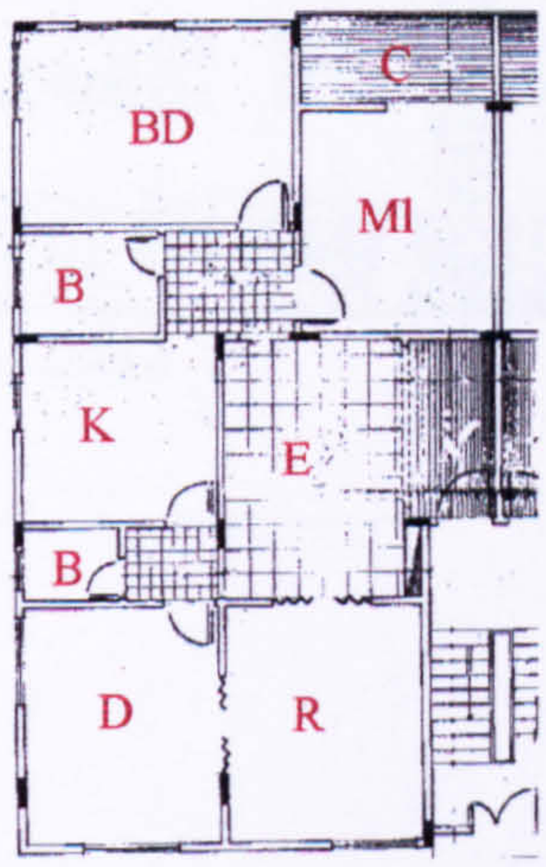
Typical floor



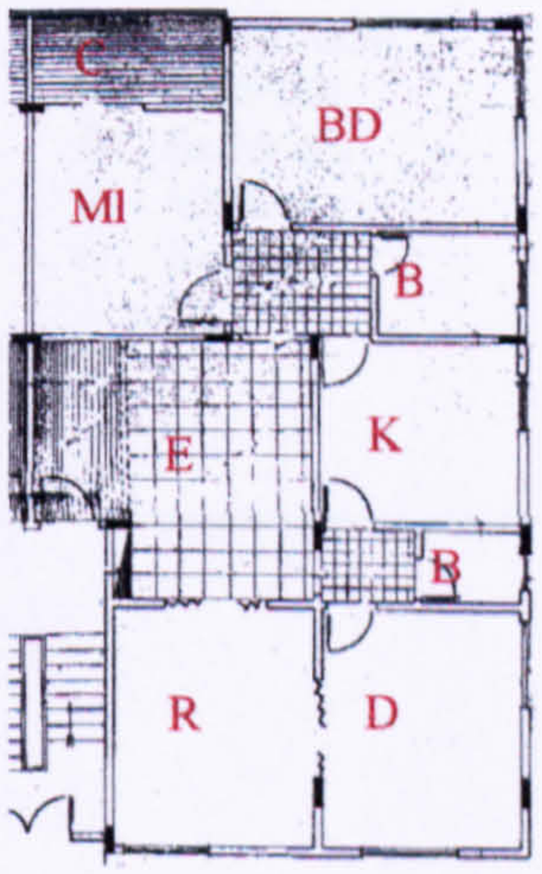
Main elevation

E entrance hall
R reception
D dining room
Ml multipurpose room
BD bedroom
B bathroom
K kitchen
C balcony

Flat No. 1, (Four rooms)



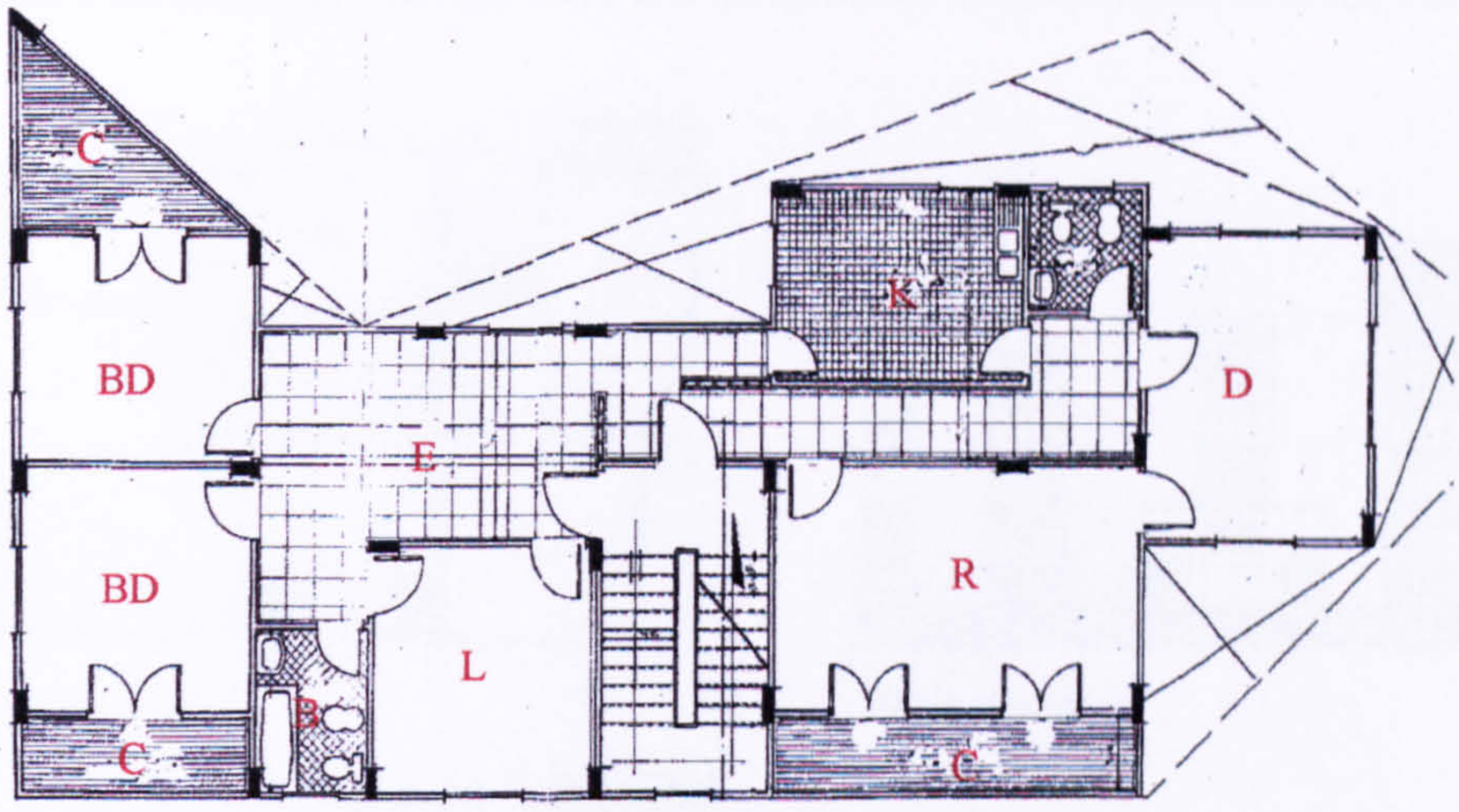
Flat No. 2, (Four rooms)



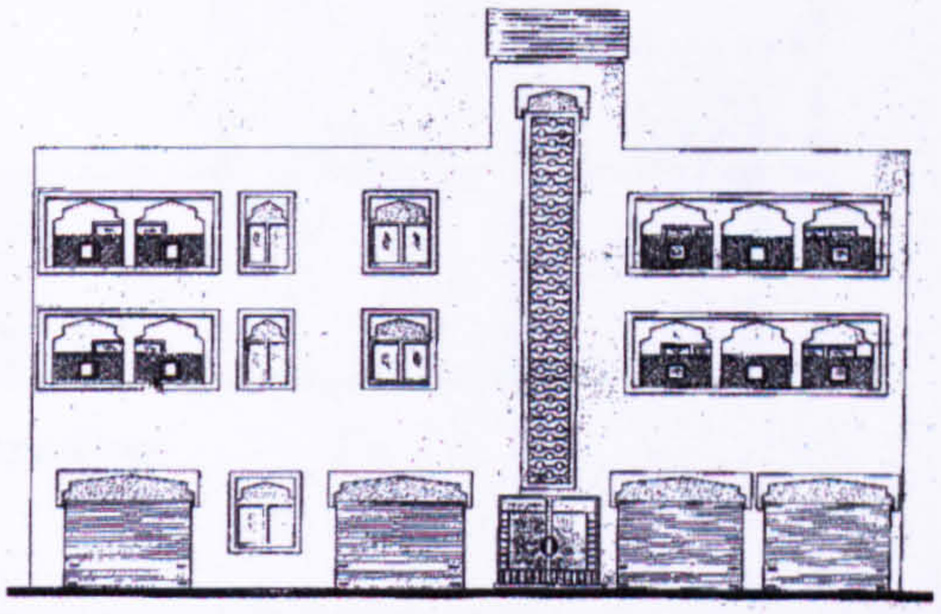
House **18**		Date built	**1978**
Owner names	Ahmed Ba Juafer	Location	Makkah, Al Hendawiah

House Type	Semi detached	No. of floors	2	No. of flats per floor	1

Plan and Elevation



Typical floor



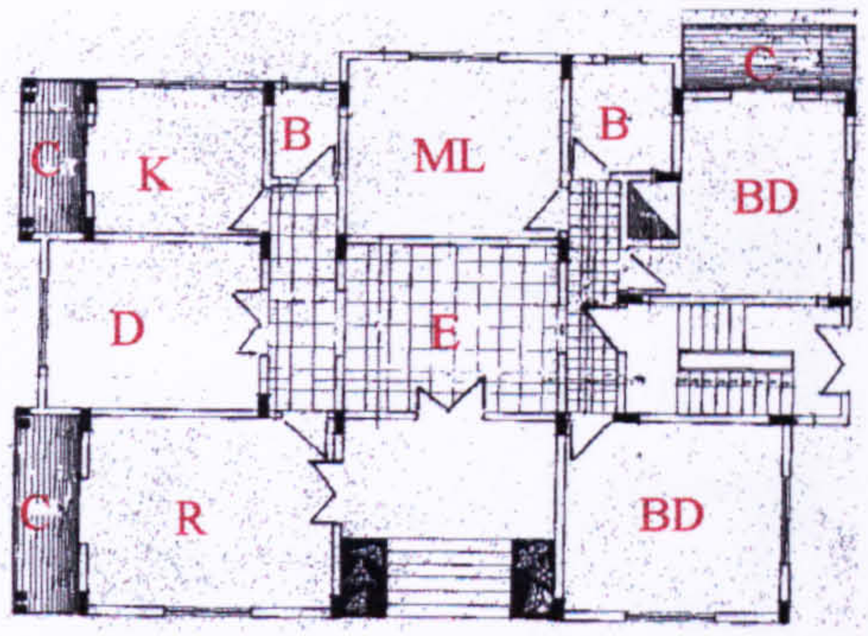
Main elevation

E entrance hall
R reception
L living room
BD bedroom
B bathroom
K kitchen
C balcony

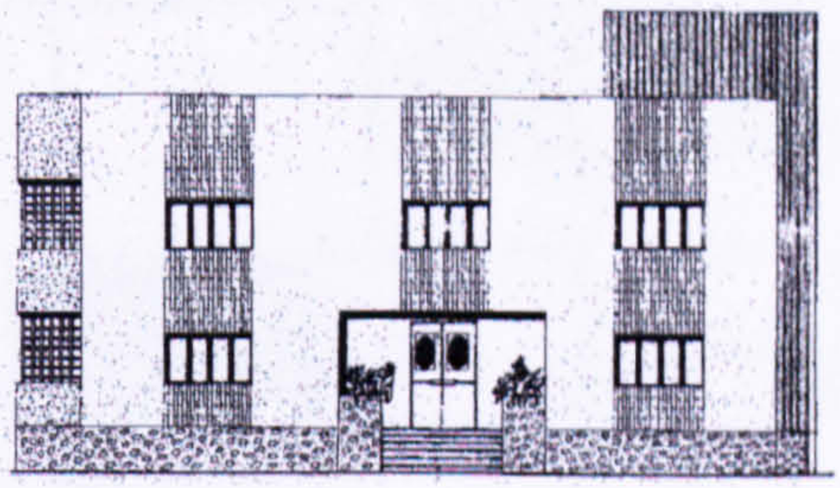
House **19**			Date built	**1978**
Owner names	Ali Ba Salaah	Location	Makkah, Al Rosaifa	

House Type	Semi detached	No. of floors	2	No. of flats per floor	1

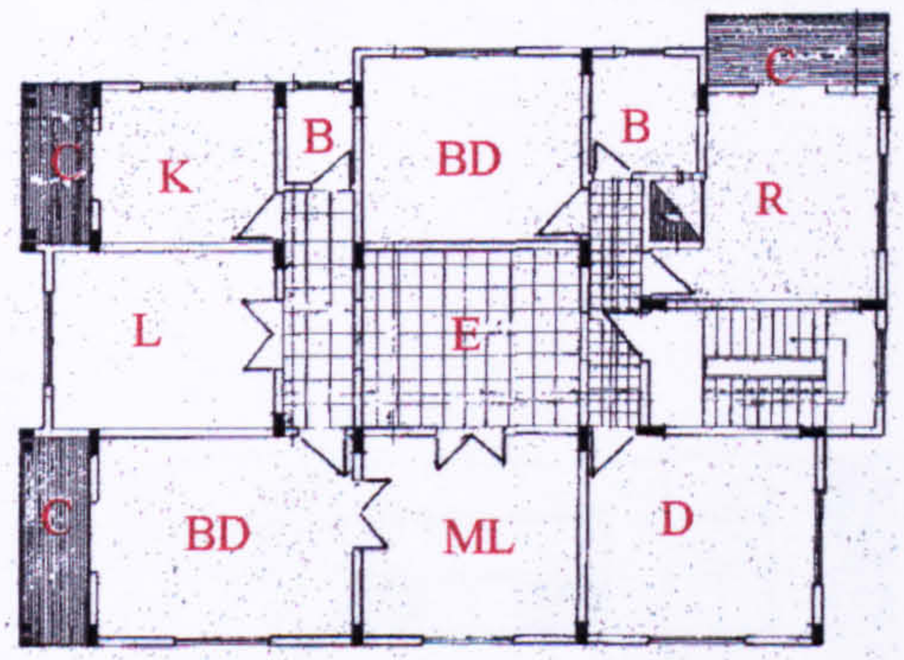
Plan and Elevation



Ground floor



Main elevation



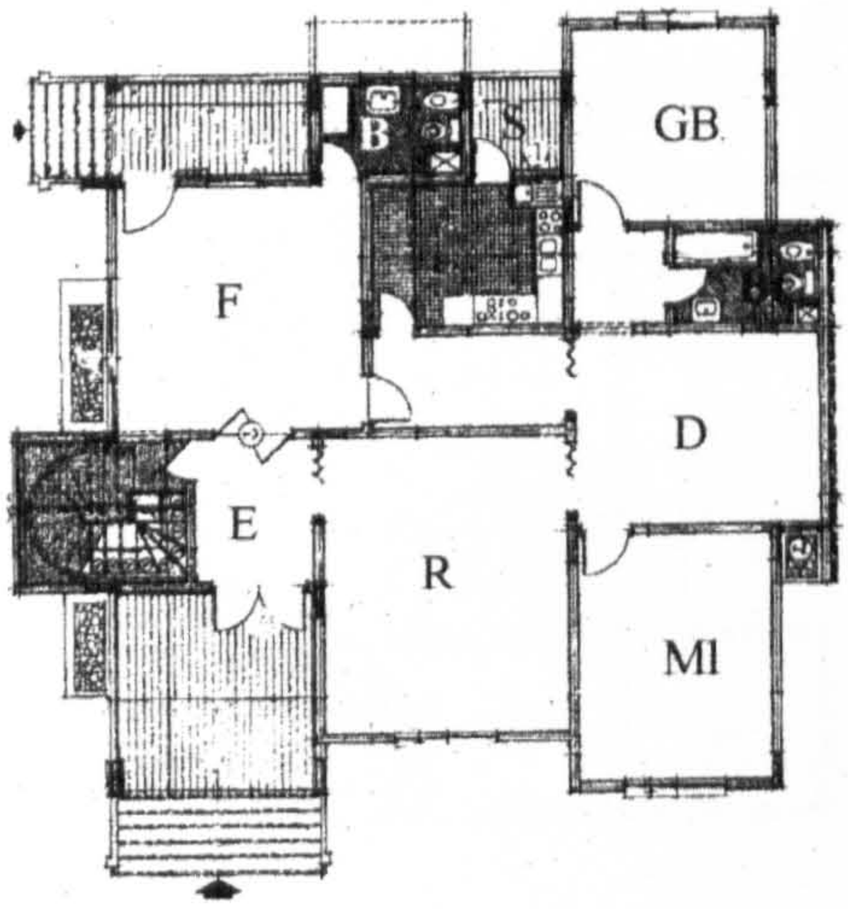
First floor

E entrance hall
R reception
D dining room
L living room
Ml multipurpose room
BD bedroom
B bathroom
K kitchen
C balcony

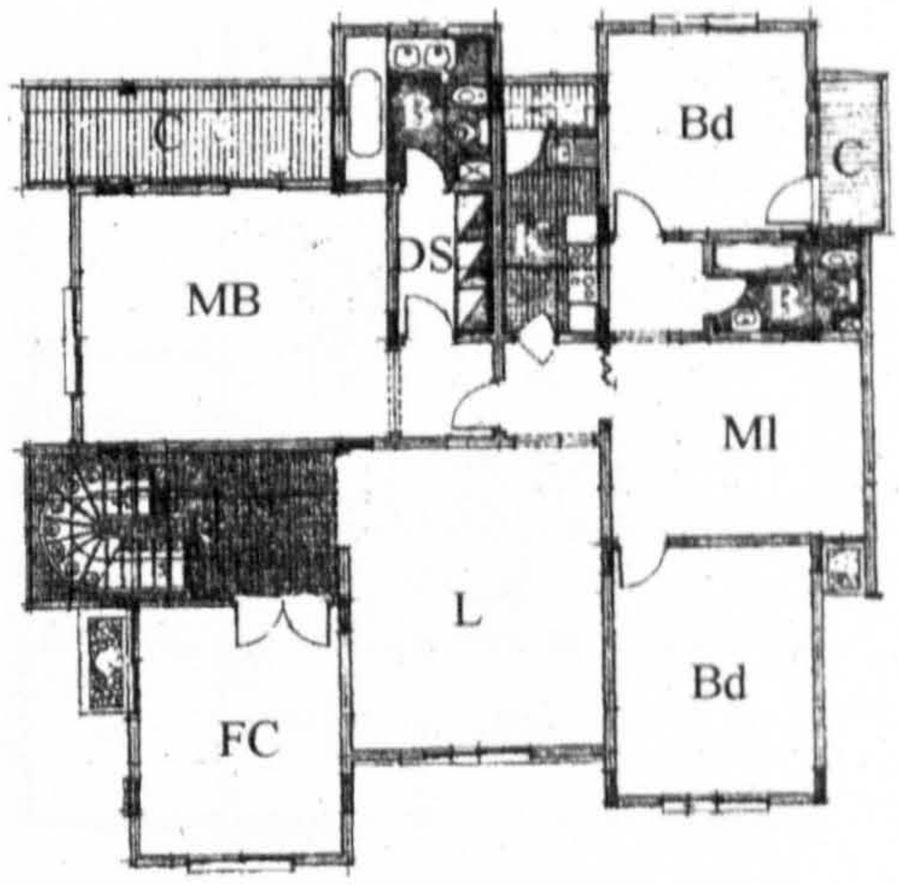
House **20**		Date built	**1979**
Owner names	Al Zaiany	Location	Makkah, Al Rosaifa

House Type	Villa	No. of floors	2	No. of flats per floor	-

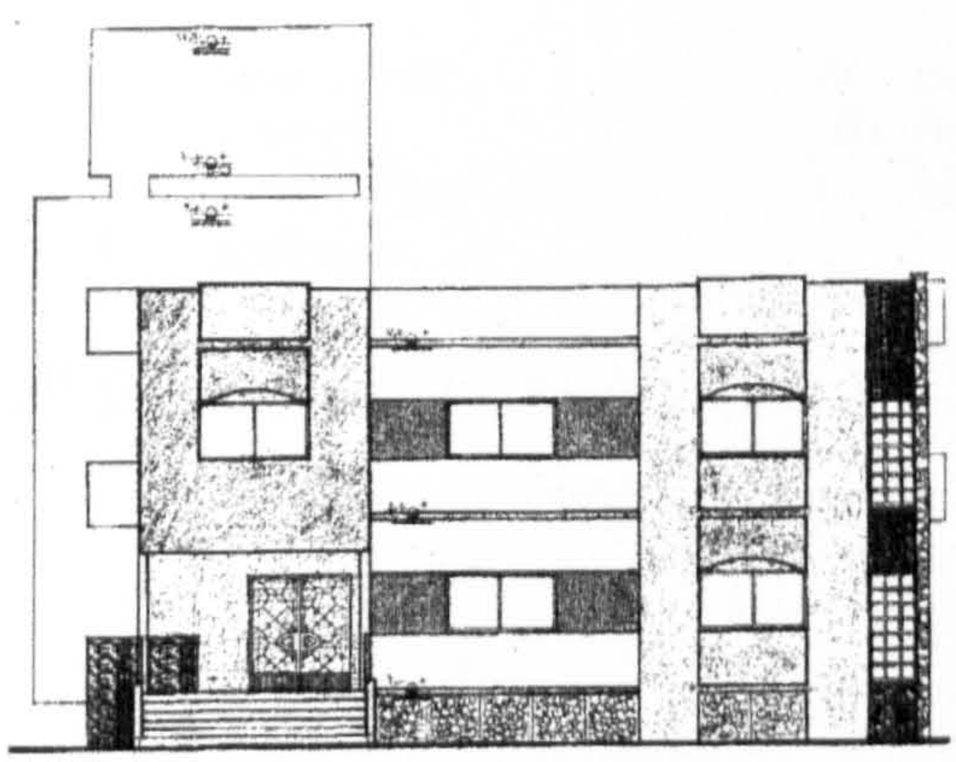
Plan and Elevation



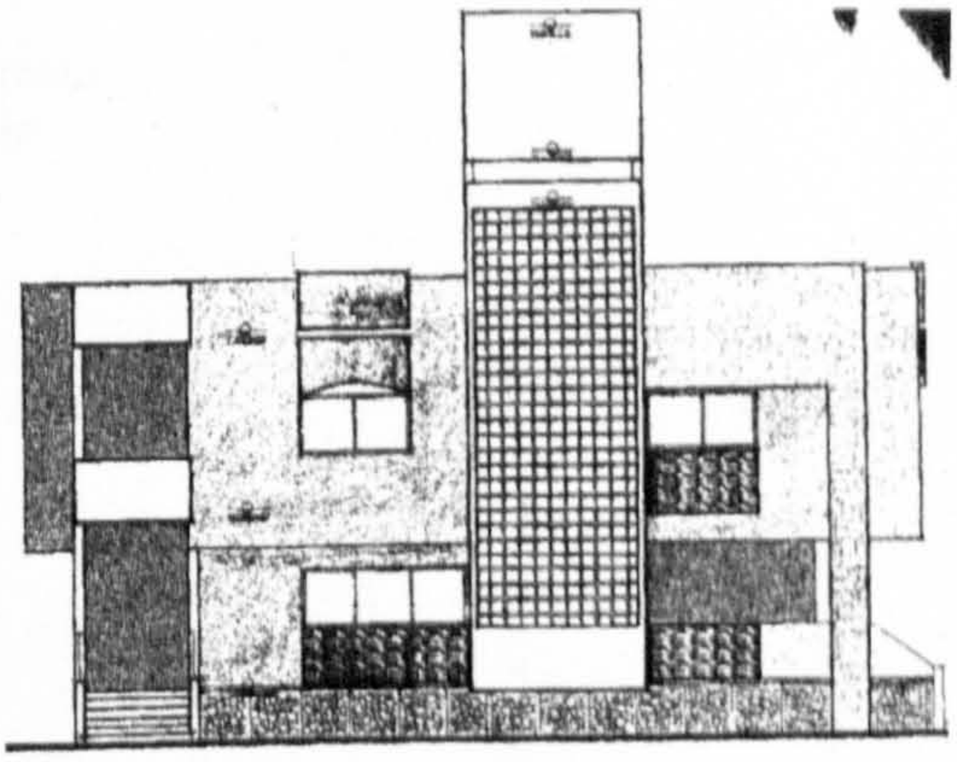
Ground floor



First floor



Main elevation

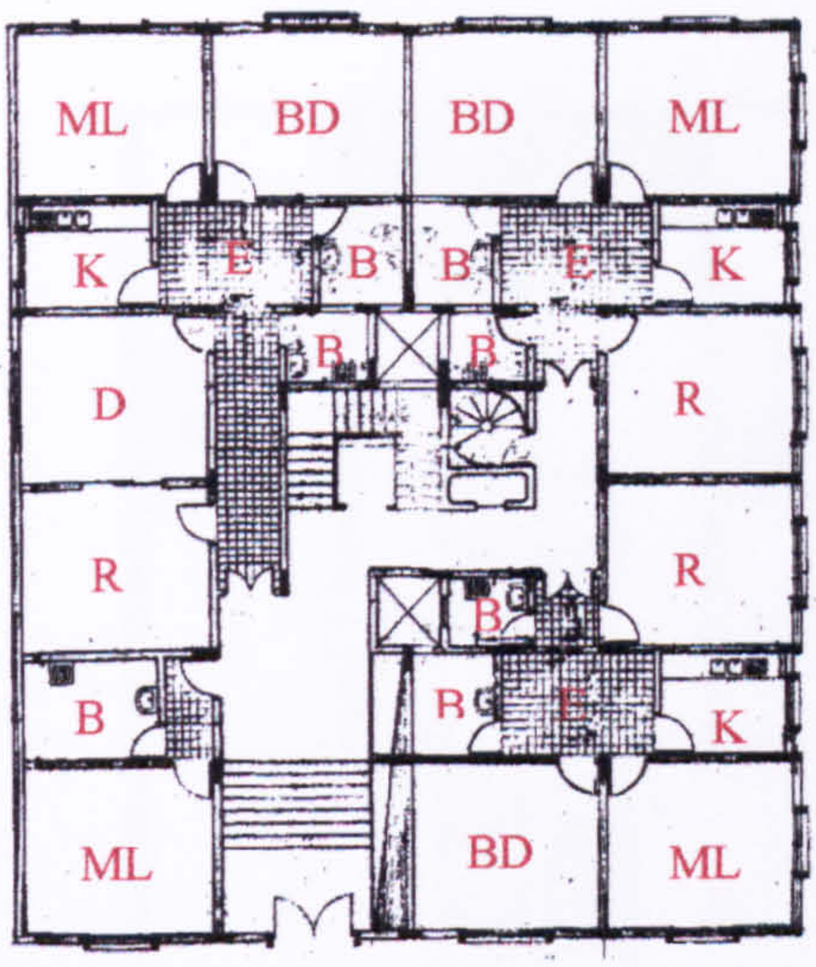


Side elevation

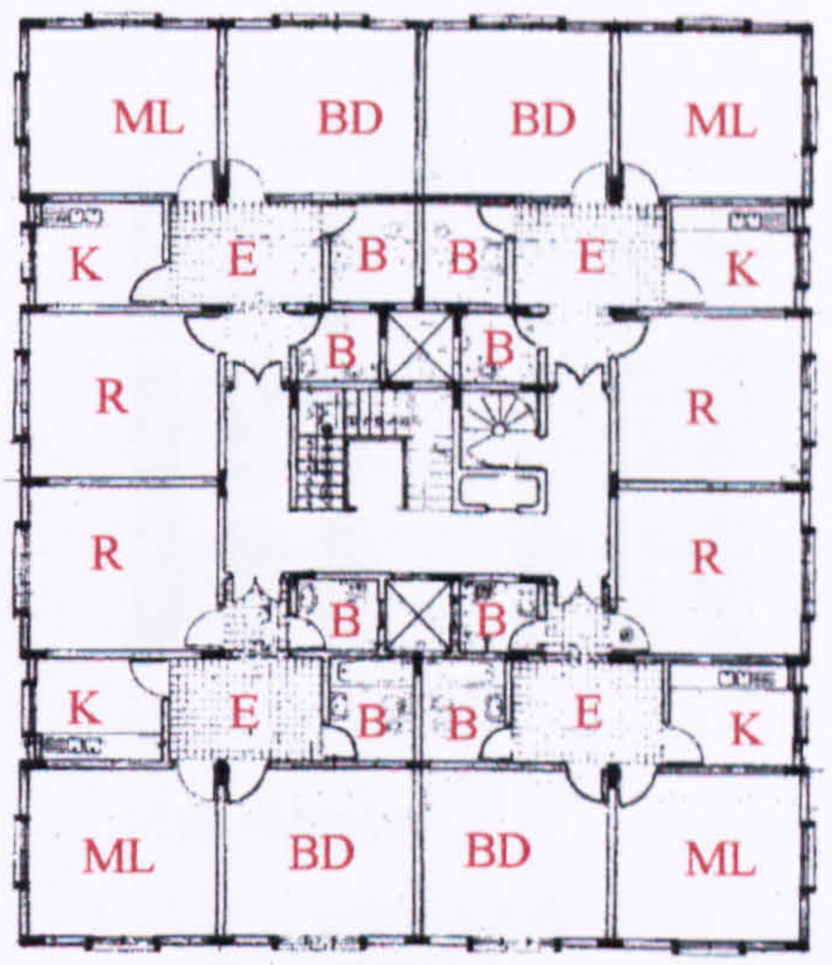
Ml	multipurpose room	E	entrance hall	Bd	bedroom	C	balcony
MB	master Bedroom	D	dining room	L	living room	FC	office
F	female reception	R	male reception	K	kitchen	B	bathroom
DS	dressing room	GB	guests bedroom	S	storage		

House 21			Date built	1980
Owner names	Ibraheem Jumah	Location	Makkah, Al Rosaifa	
House Type	Apartment	No. of floors	4	No. of flats per floor 4

Plan and Elevation



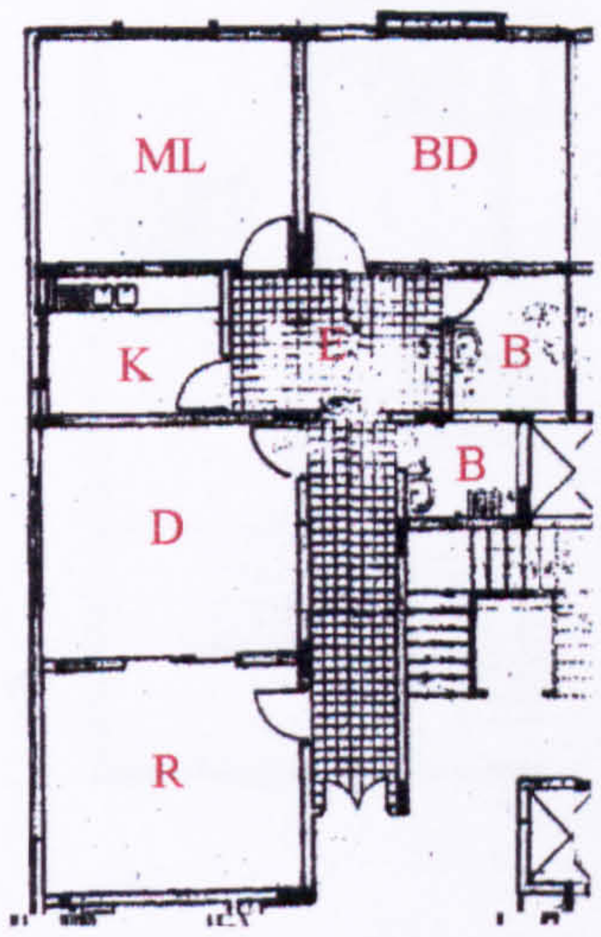
Ground floor



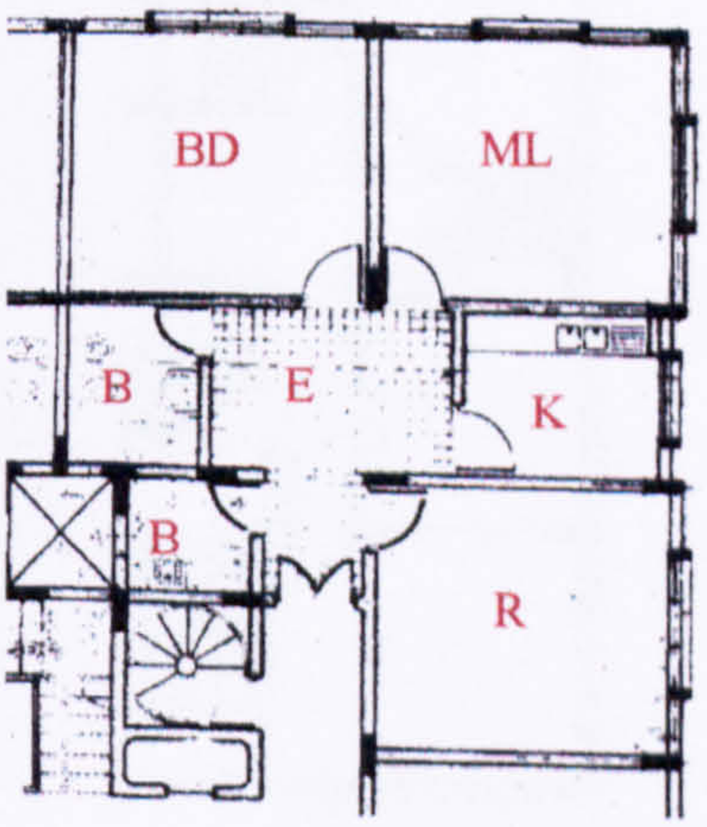
Typical floor

E entrance hall
R reception
Ml multi-purpose room
B bathroom
D dining room
BD bedroom
K kitchen

Flat No. 1, (Four rooms)

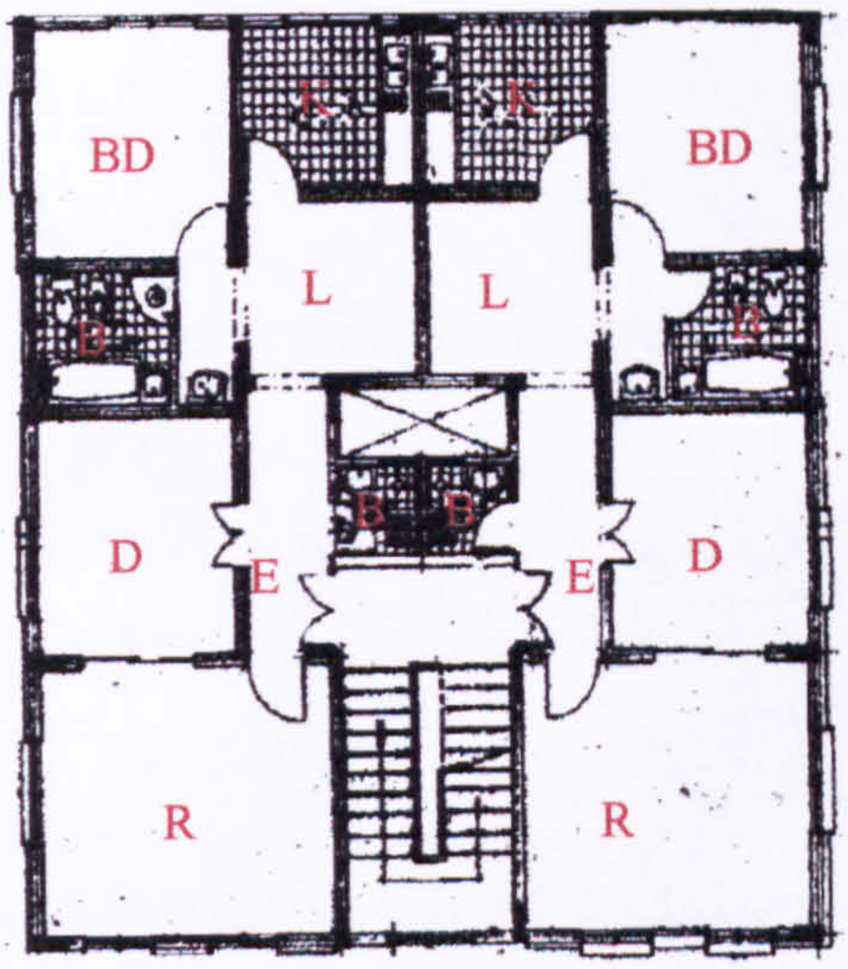


Flat No. 2, (Three rooms)

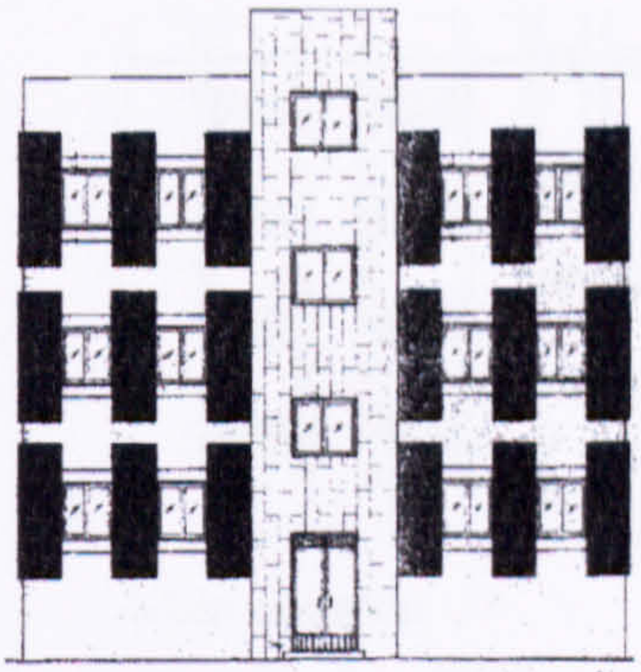


House **22**			Date built	**1980**
Owner names	Al Masri A.	Location	Makkah, Al Aziziah	
House Type	Apartment	No. of floors	3	No. of flats per floor 2

Plan and Elevation



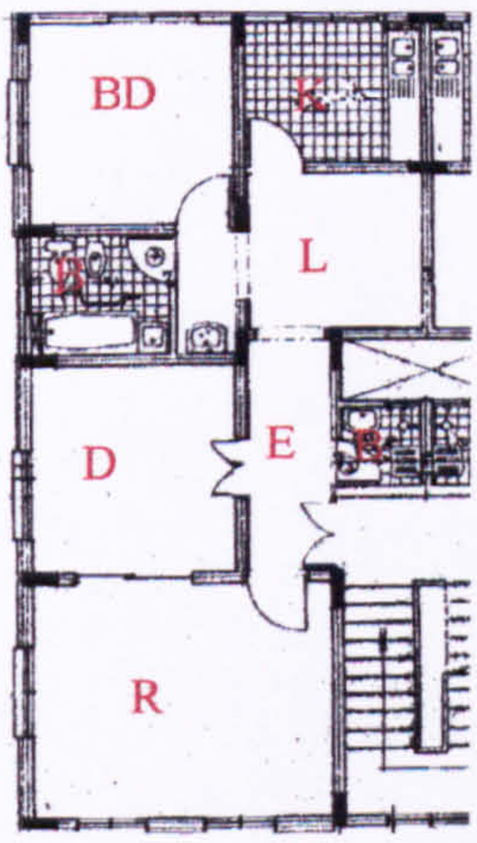
Typical floor



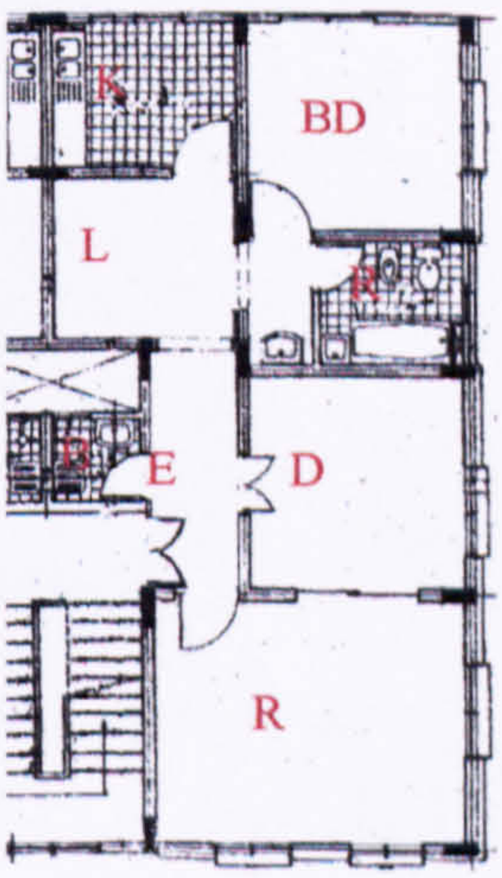
Main elevation

E entrance hall
R reception
D dining room
L living area
BD bedroom
B bathroom
K kitchen

Flat No. 1, (Three rooms)



Flat No. 2, (Three rooms)

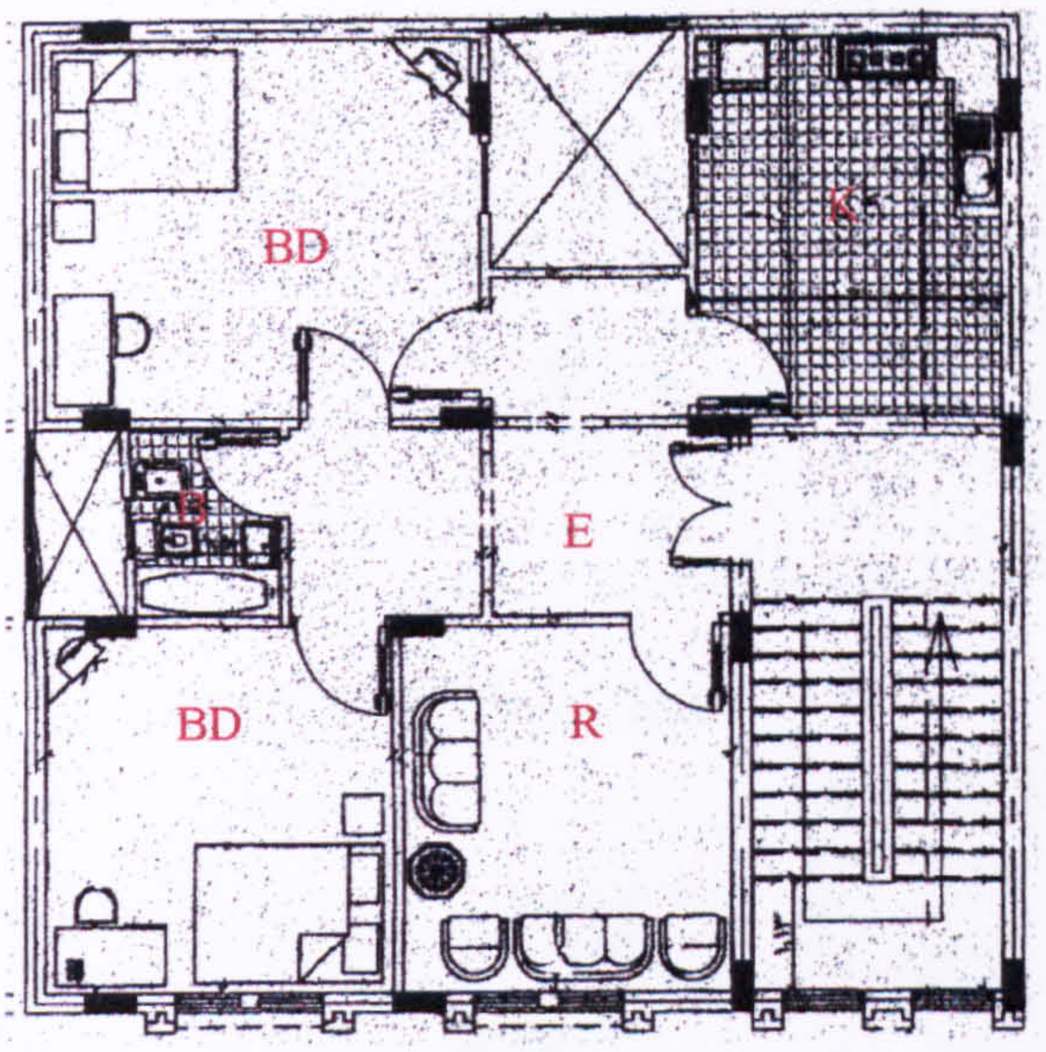


House **23**		Date built	**1981**

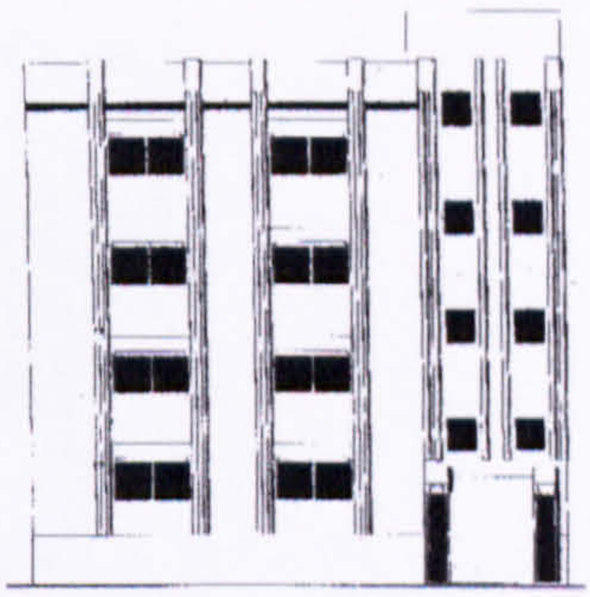
Owner names	Ali Meer	Location	Makkah, Alaziziah

House Type	Apartment	No. of floors	4	No. of flats per floor	1

Plan and Elevation, (Three rooms)



Typical floor

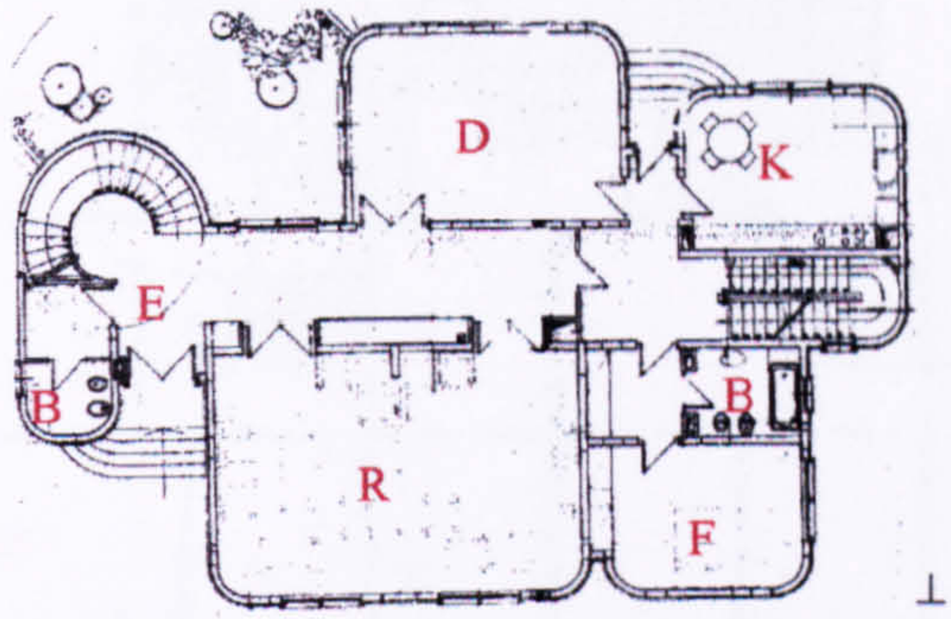


Main elevation

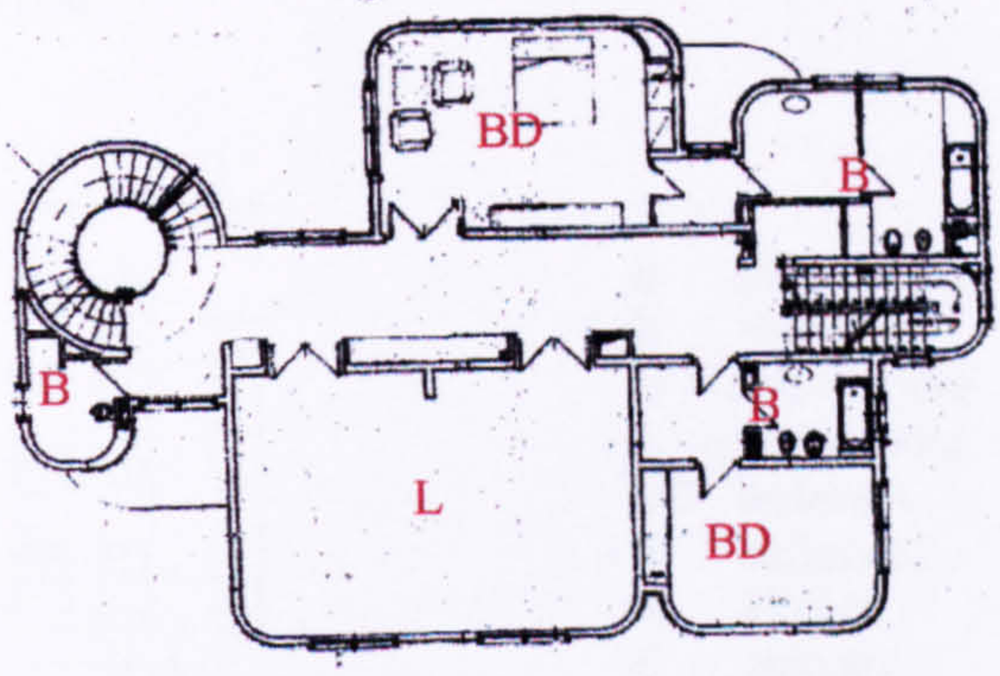
E entrance hall
R reception
BD bedroom
B bathroom
K kitchen

House 24			Date built	1981
Owner names	Al Khaiat	Location	Makkah, Alaziziah	
House Type	Villa	No. of floors	2	No. of flats per floor ---

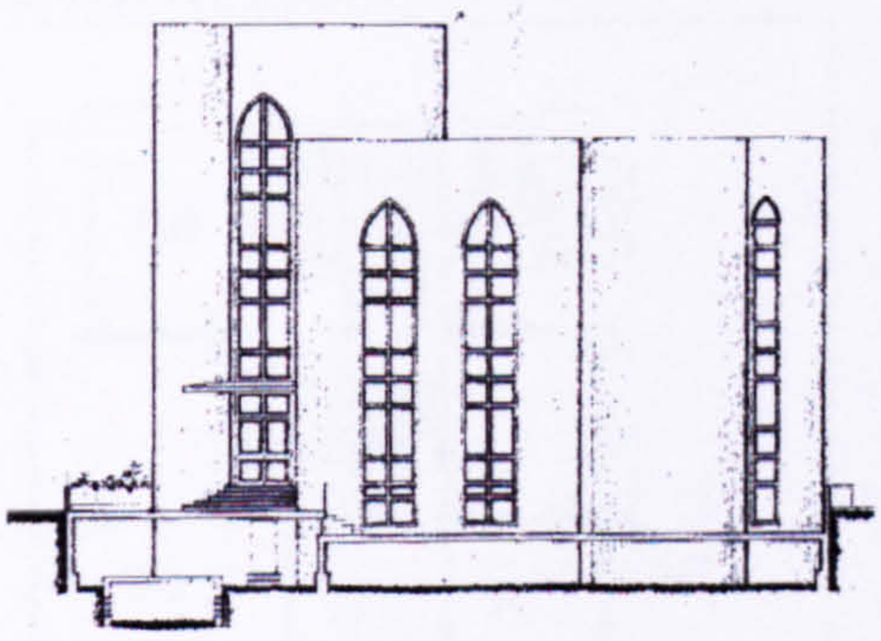
Plan and Elevation



Ground floor



First floor

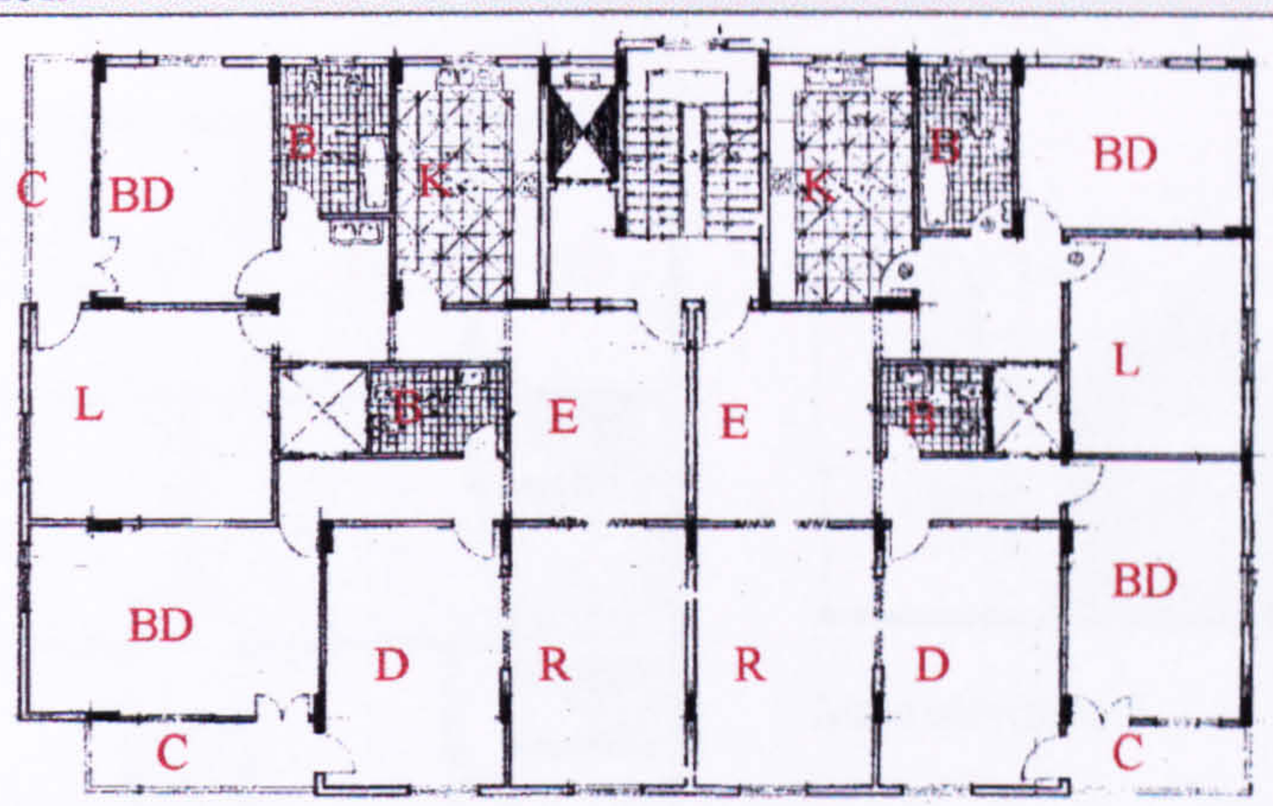


Main elevation

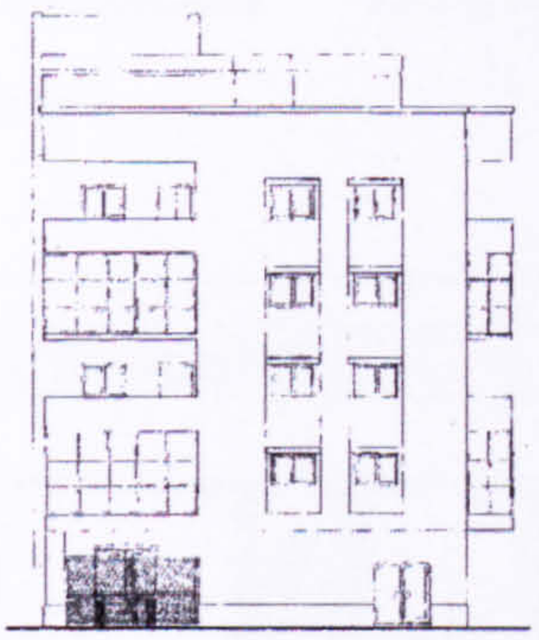
E entrance hall
R male reception
F female reception
D dining room
L living room
BD bedroom
B bathroom
K kitchen

House **25**		Date built	**1982**
Owner names	Ibraheem Al Soat	Location	Makkah, Alaziziah
House Type	Apartment	No. of floors	4
No. of flats per floor	2		

Plan and Elevation



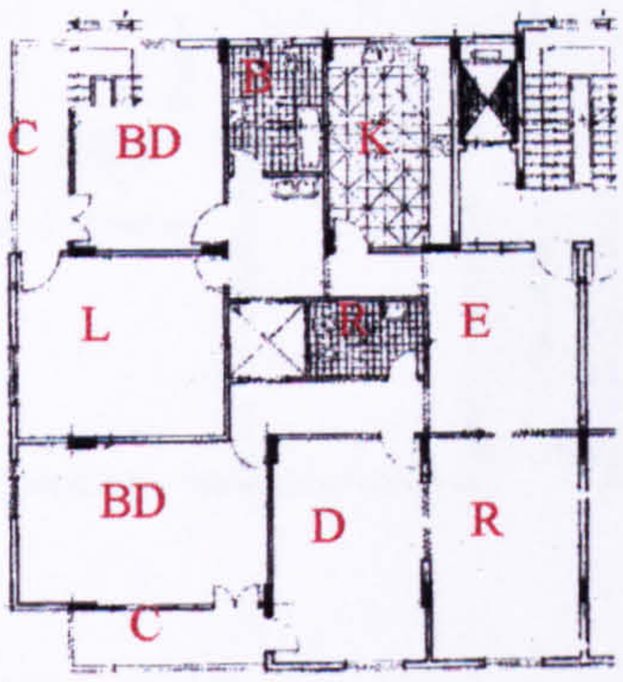
Typical floor



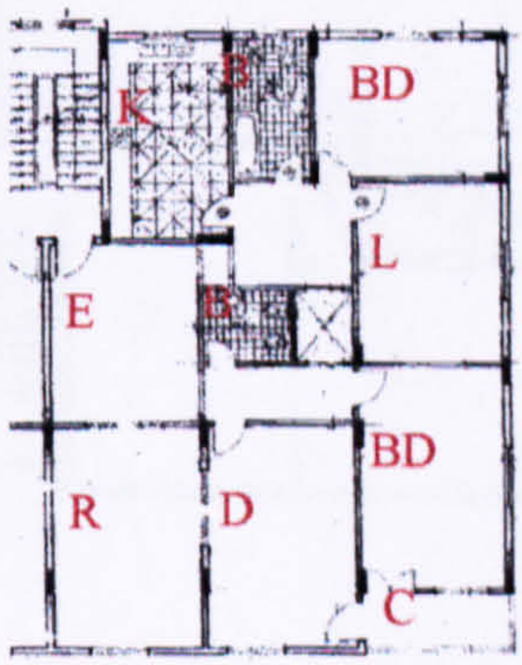
Main elevation

E entrance hall
R reception
D dining room
L living room
BD bedroom
B bathroom
K kitchen
C balcony

Flat No. 1, (Five rooms)

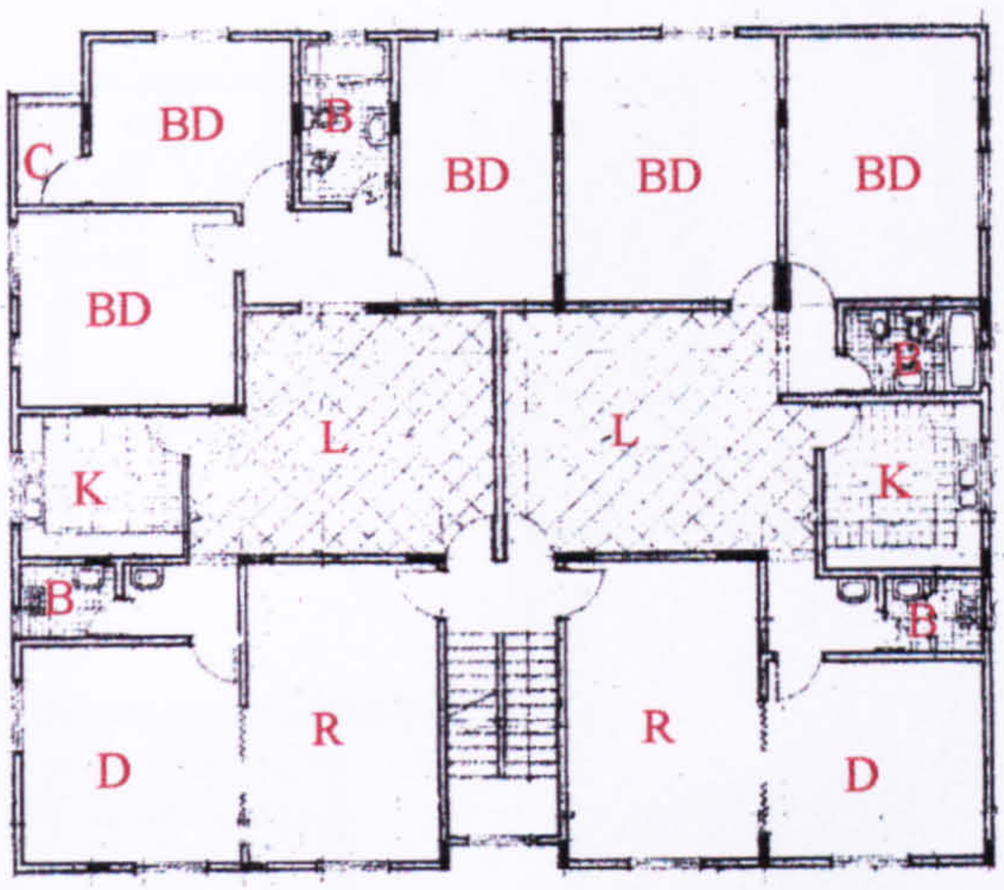


Flat No. 2, (Five rooms)

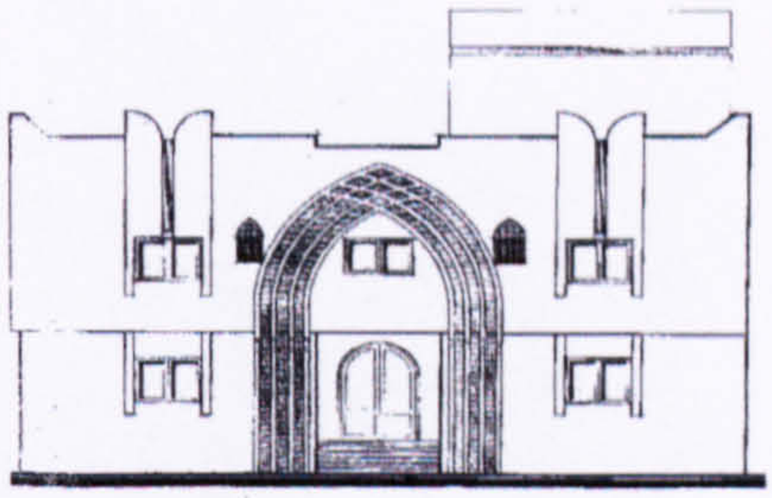


House **26**		Date built	**1984**
Owner names	Mansor Al Turki	Location	Makkah, Alaziziah
House Type	Apartment	No. of floors	2
No. of flats per floor	2		

Plan and Elevation



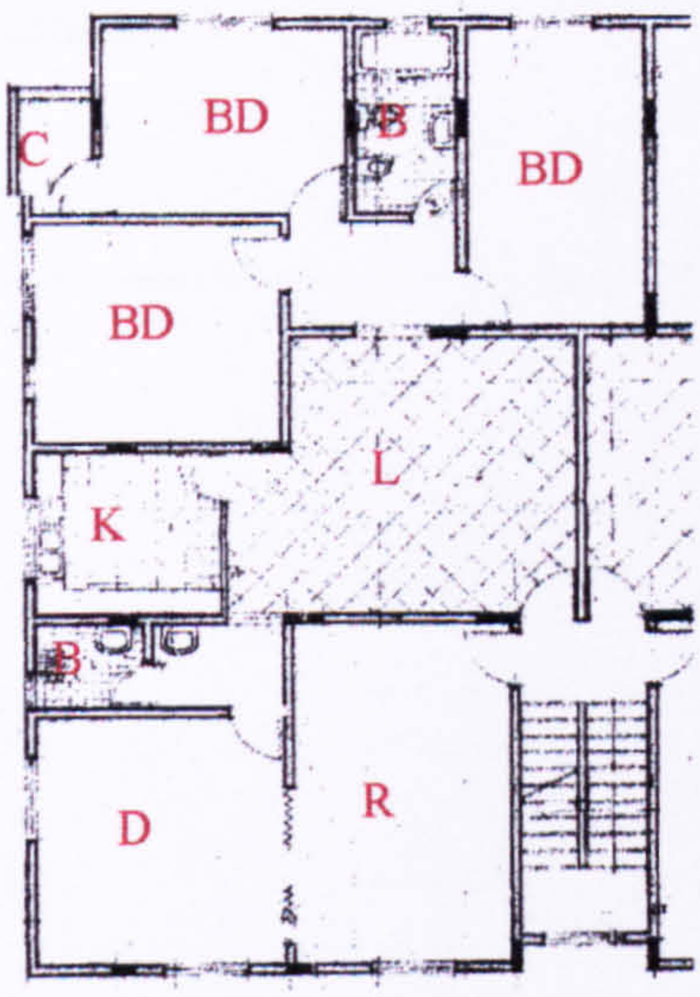
Typical floor



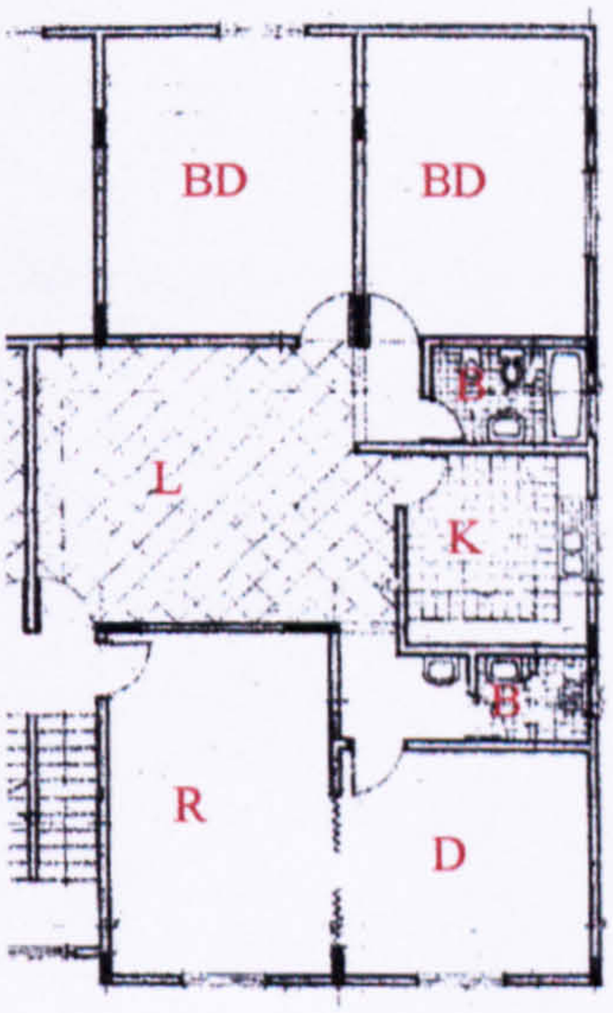
Main elevationm

E entrance hall
R reception
D dining room
B bathroom
L living area
BD bedroom
K kitchen
C balcony

Flat No. 1, (Six rooms)

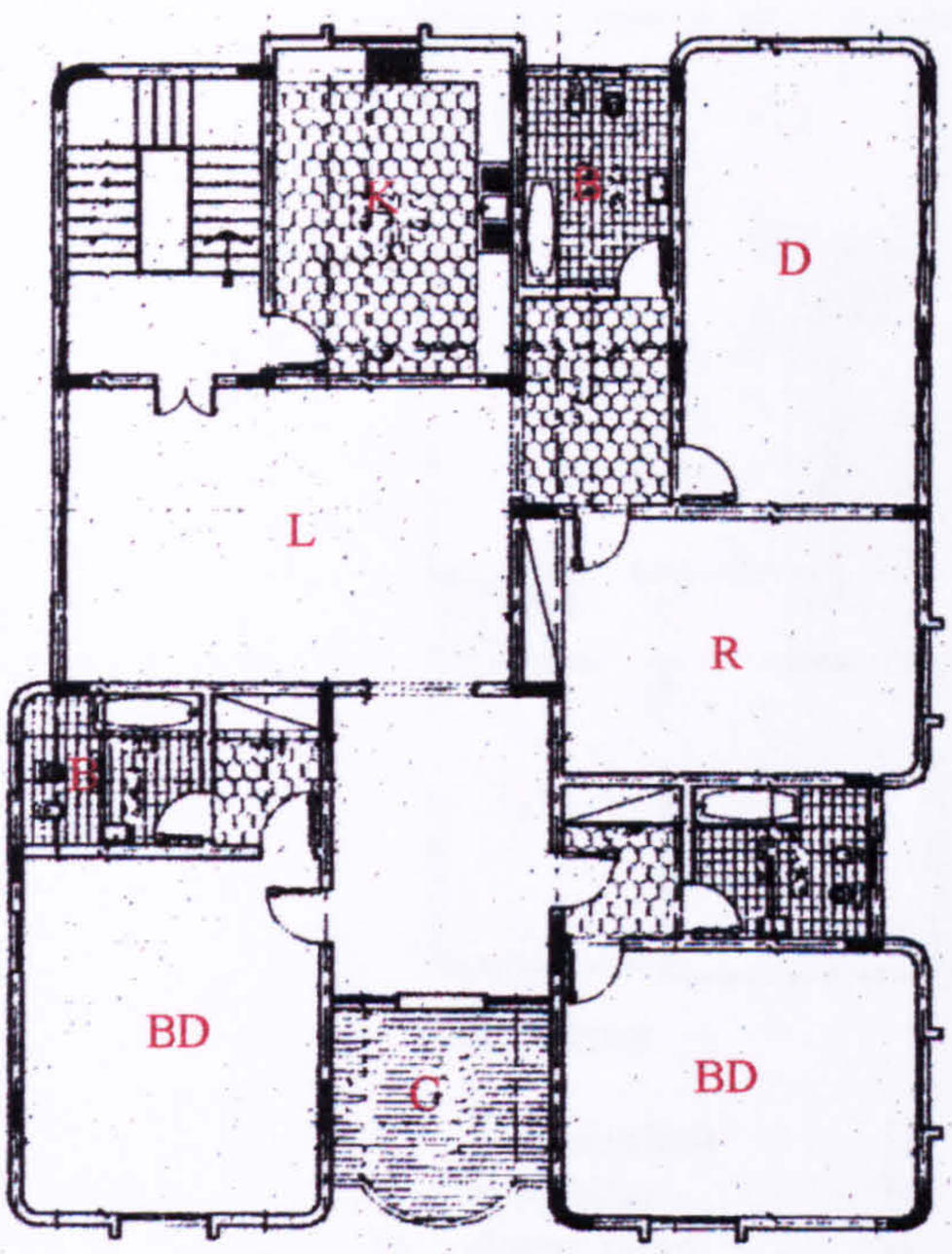


Flat No. 1, (Four rooms)

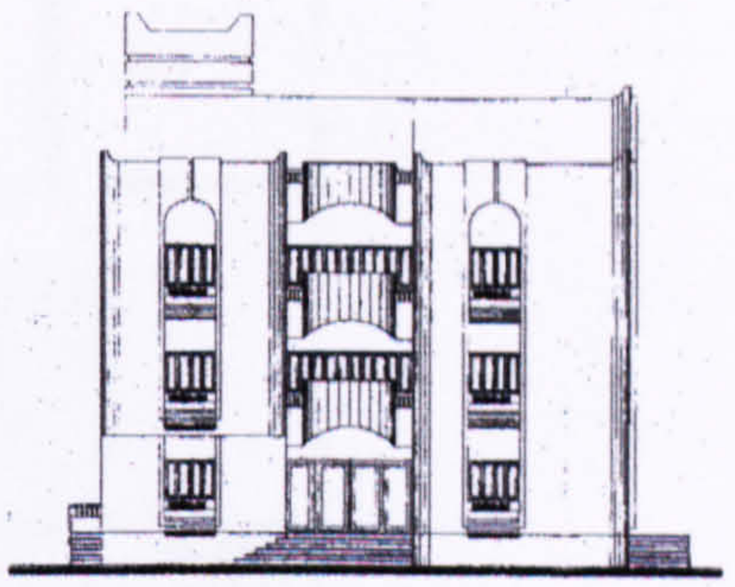


House 27			Date built	1988
Owner names	Isam Mokhles	Location	Makkah, Alaziziah	
House Type	Apartment	No. of floors	3	No. of flats per floor 1

Plan and Elevation



Typical floor

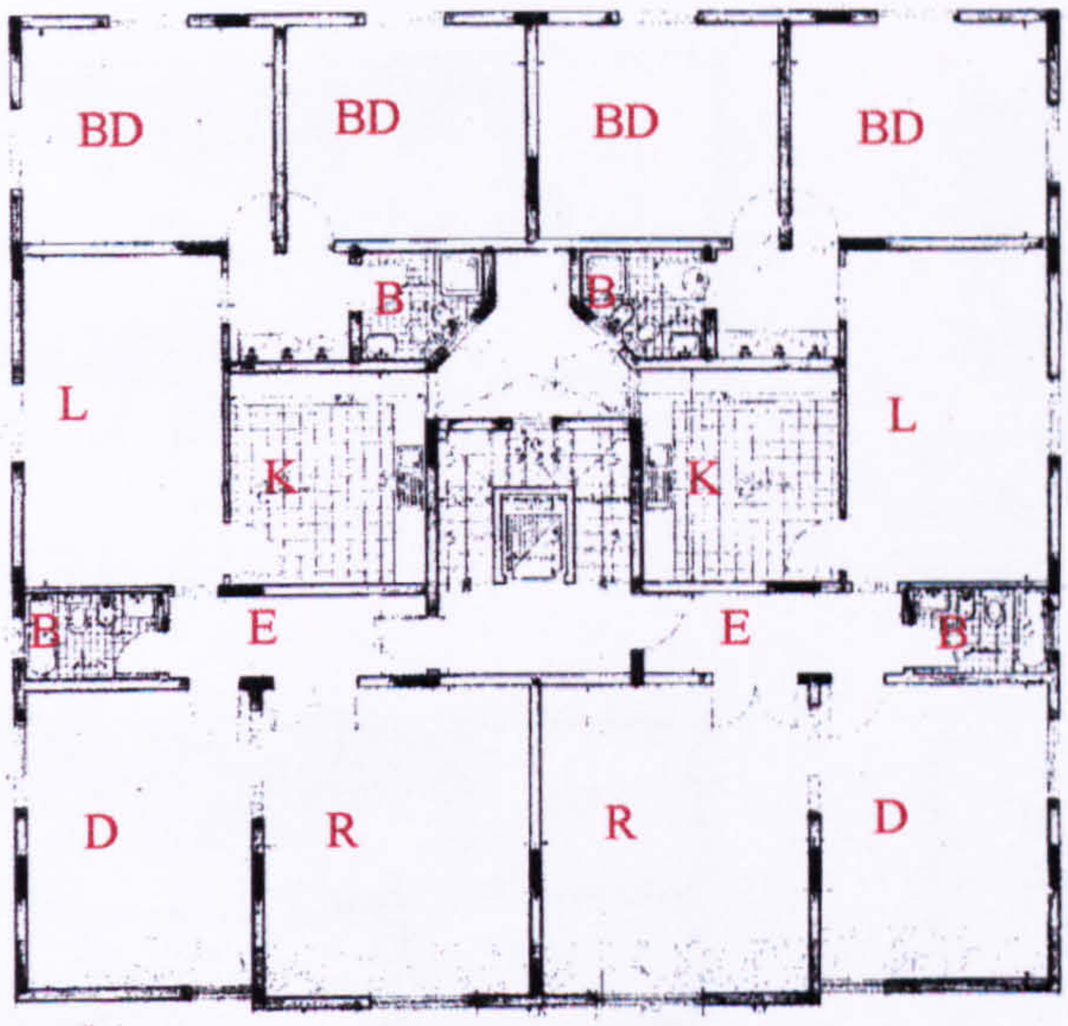


Main elevation

E entrance hall
R reception
D dining room
L living area
BD bedroom
B bathroom
K kitchen
C balcony

House **28**		Date built	**1990**
Owner names	Ibraheem Gazawi	Location	Makkah, Alaziziah
House Type	Apartment	No. of floors	4
No. of flats per floor	2		

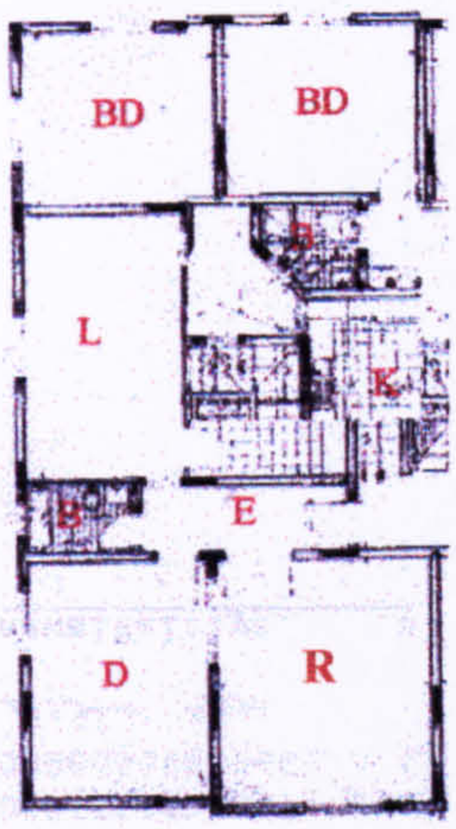
Plan and Elevation



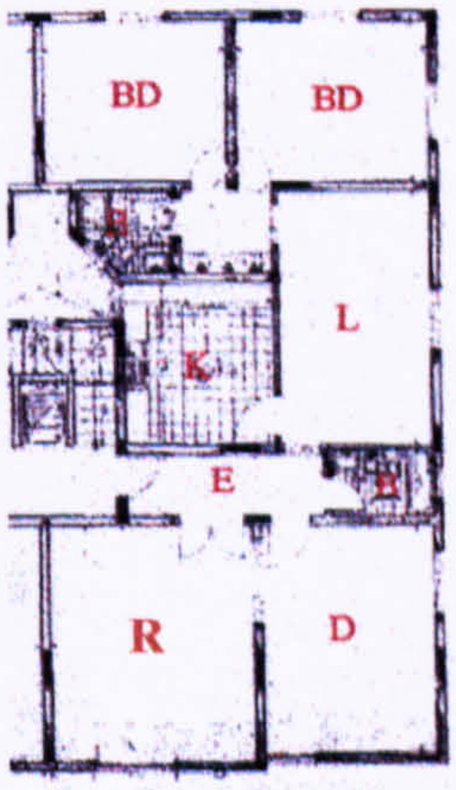
Typical floor

E entrance hall
R reception
D dining room
K kitchen
L living room
bd bedroom
B bathroom

Flat No. 1, (Five rooms)

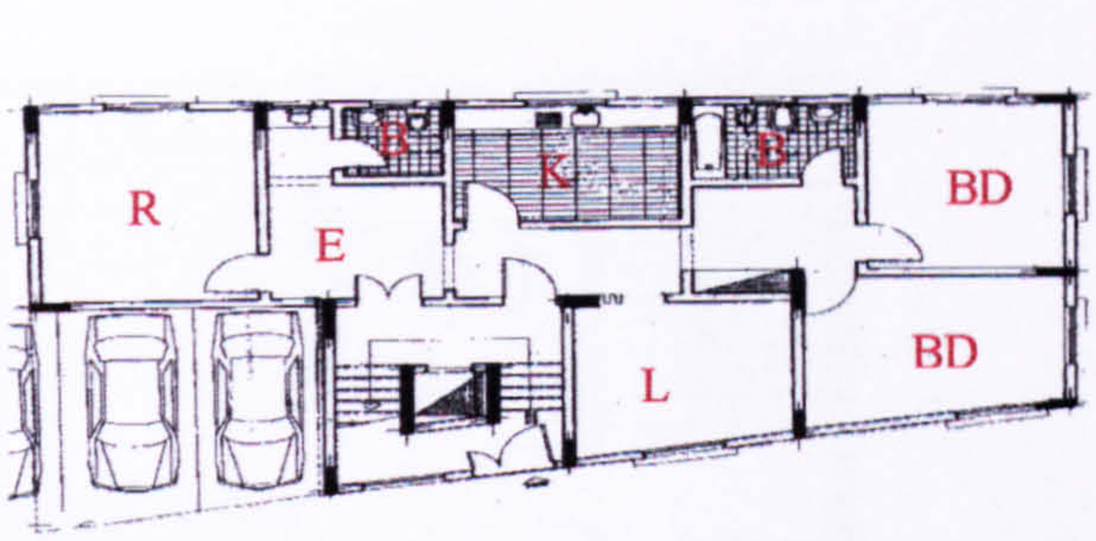


Flat No. 1, (Five rooms)

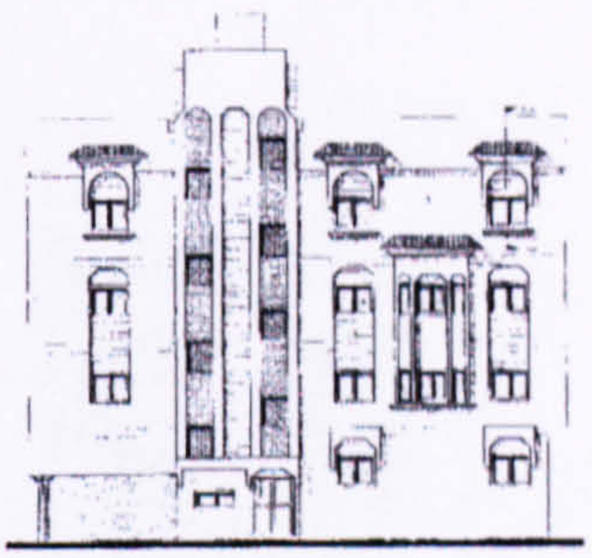


House 29			Date built	1994
Owner names	Al Zahrani, M.	Location	Makkah, Alaziziah	
House Type	Apartment	No. of floors	4	No. of flats per floor 1

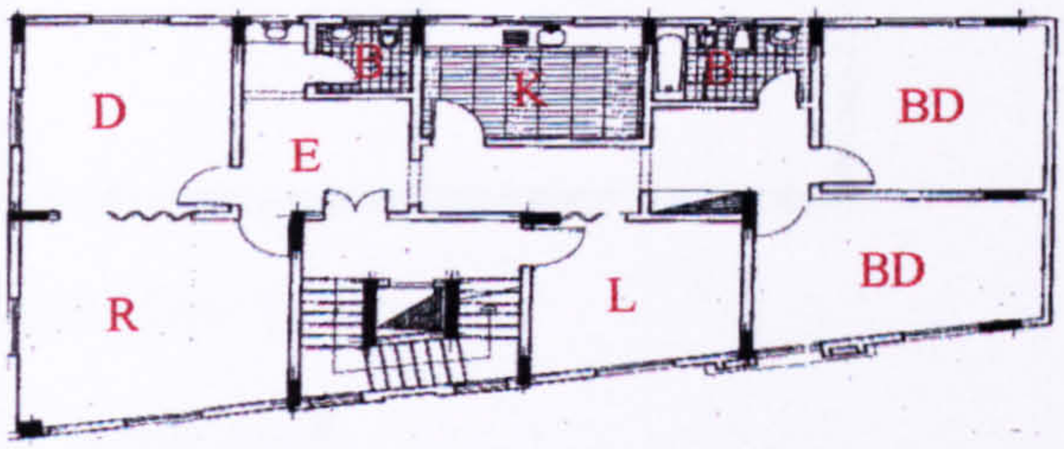
Plan and Elevation



Ground floor (Four rooms)



Main elevation

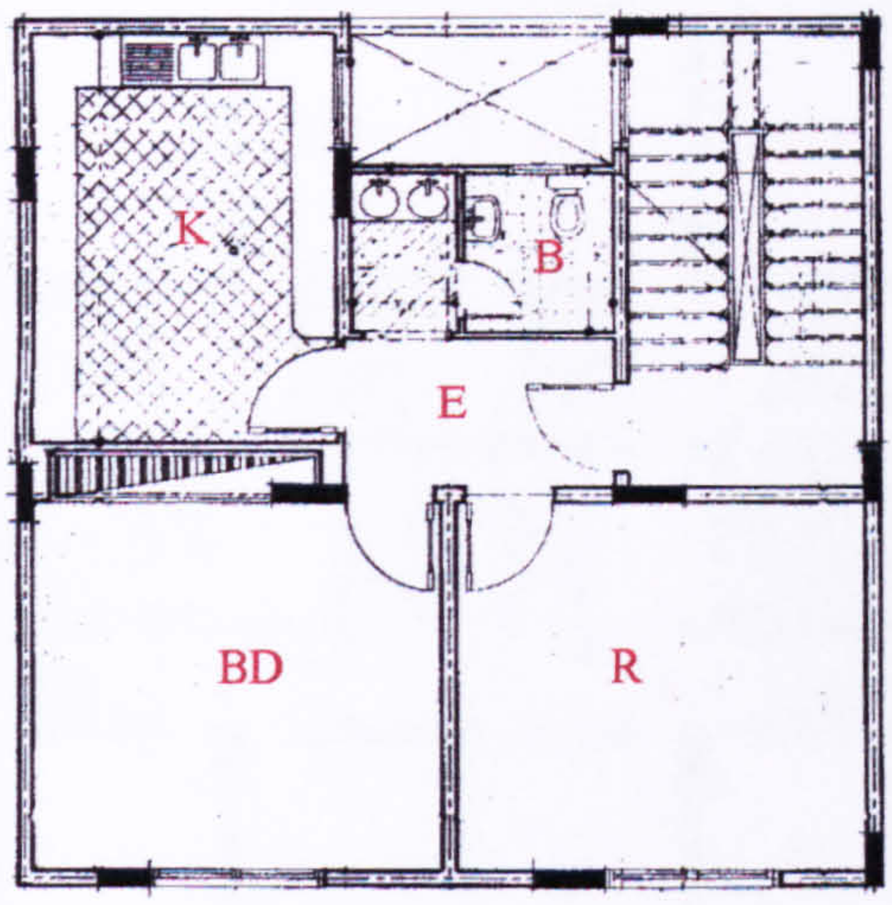


Typical floor (Five rooms)

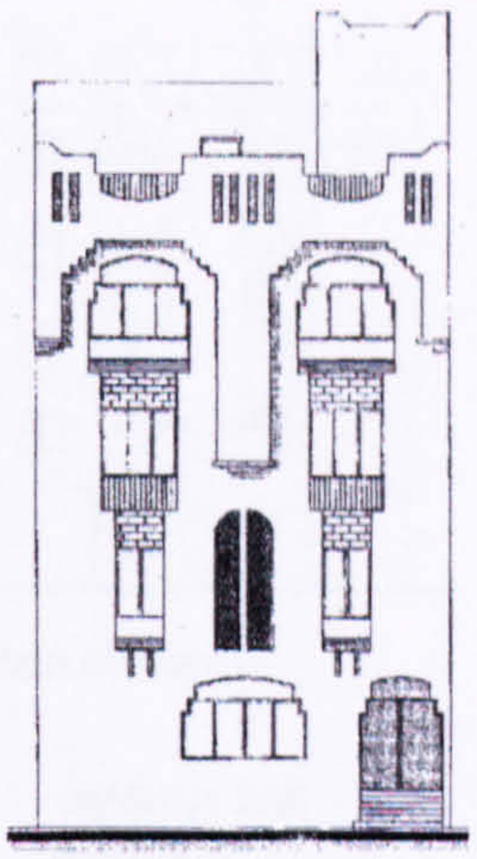
E entrance hall
R reception
D dining room
K kitchen
L living room
BD bedroom
B bathroom

House **30**			Date built	**1995**
Owner names	Al Autaibi, S.	Location	Makkah, Alaziziah	
House Type	Apartment	No. of floors	4	No. of flats per floor	1

Plan and Elevation



Typical floor (Two rooms)

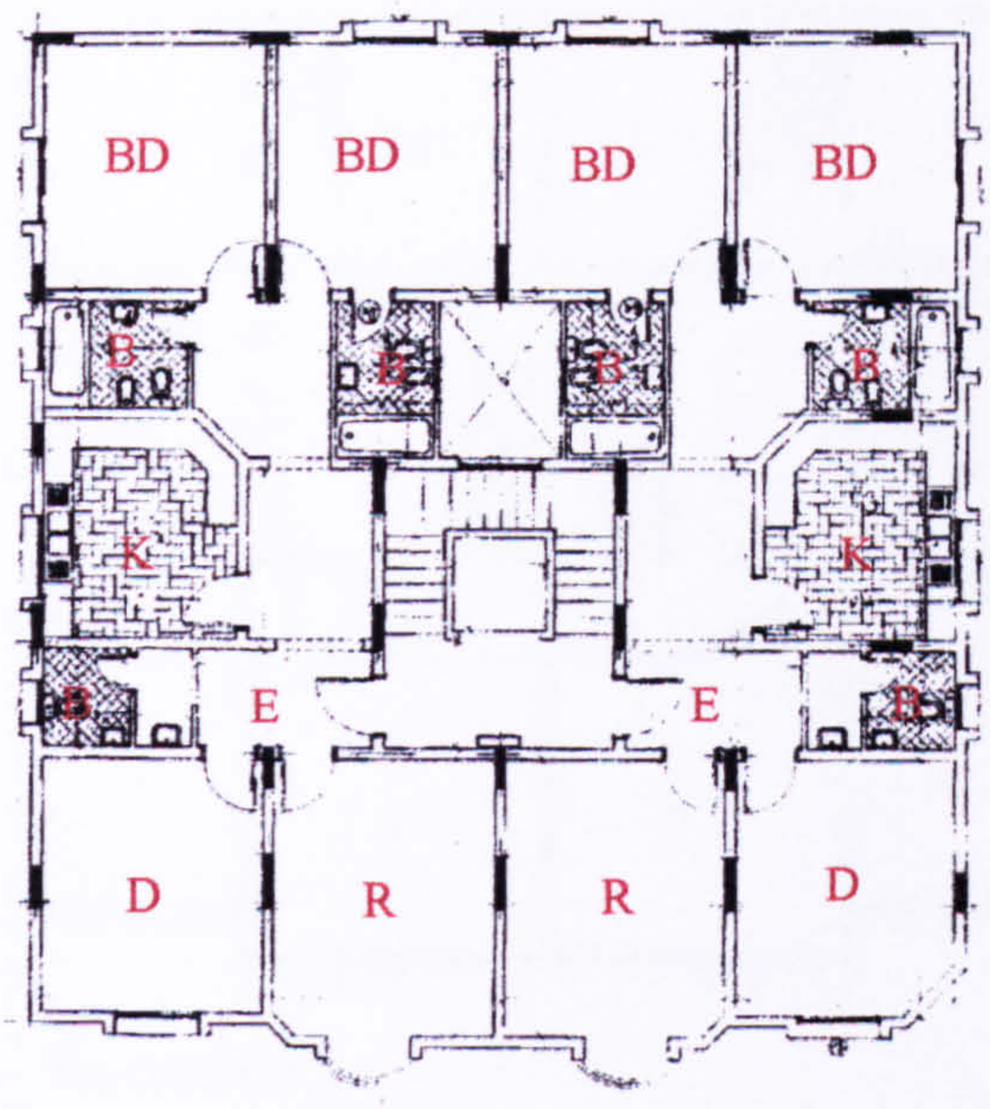


Main elevation

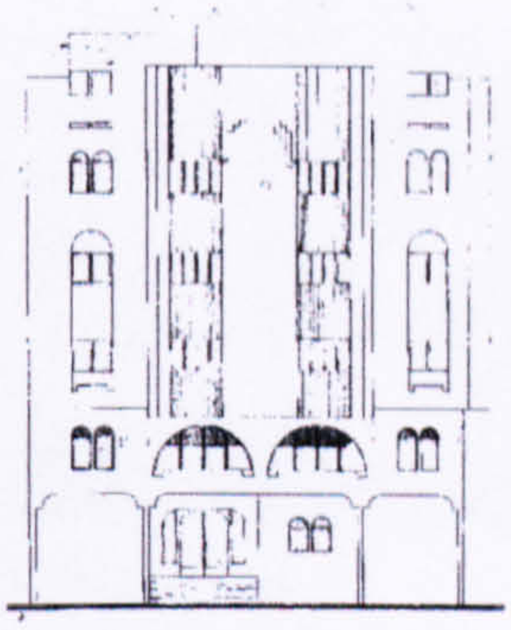
E entrance hall
R reception
BD bedroom
K kitchen
B bathroom

House **31**		Date built	**1998**
Owner names	Mumtaz Habeb	Location	Makkah, Alaziziah
House Type	Apartment	No. of floors	2
No. of flats per floor	5		

Plan and Elevation



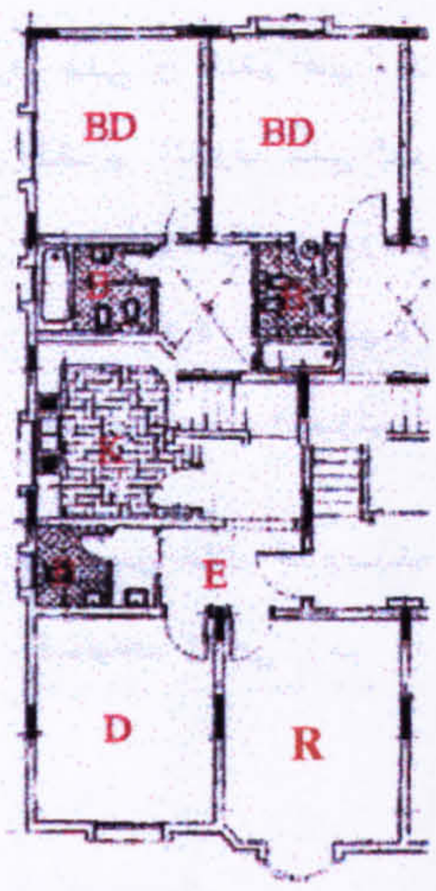
Typical floor



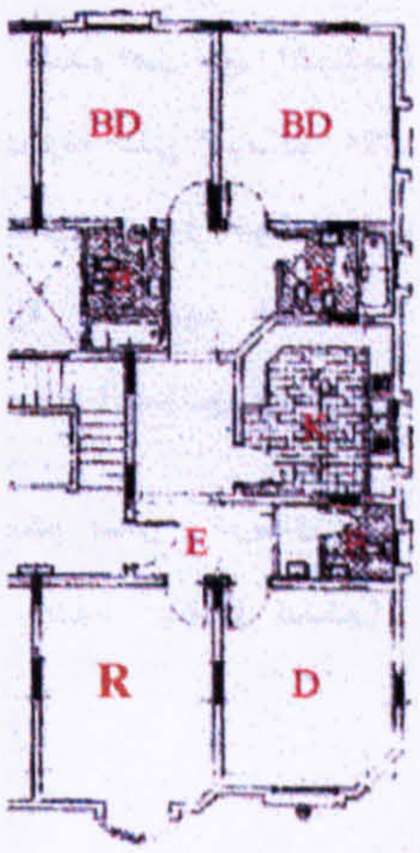
Main elevation

E entrance hall
R reception
D dining room
BD bedroom
B bathroom
K kitchen

Flat No. 1, (Four rooms)

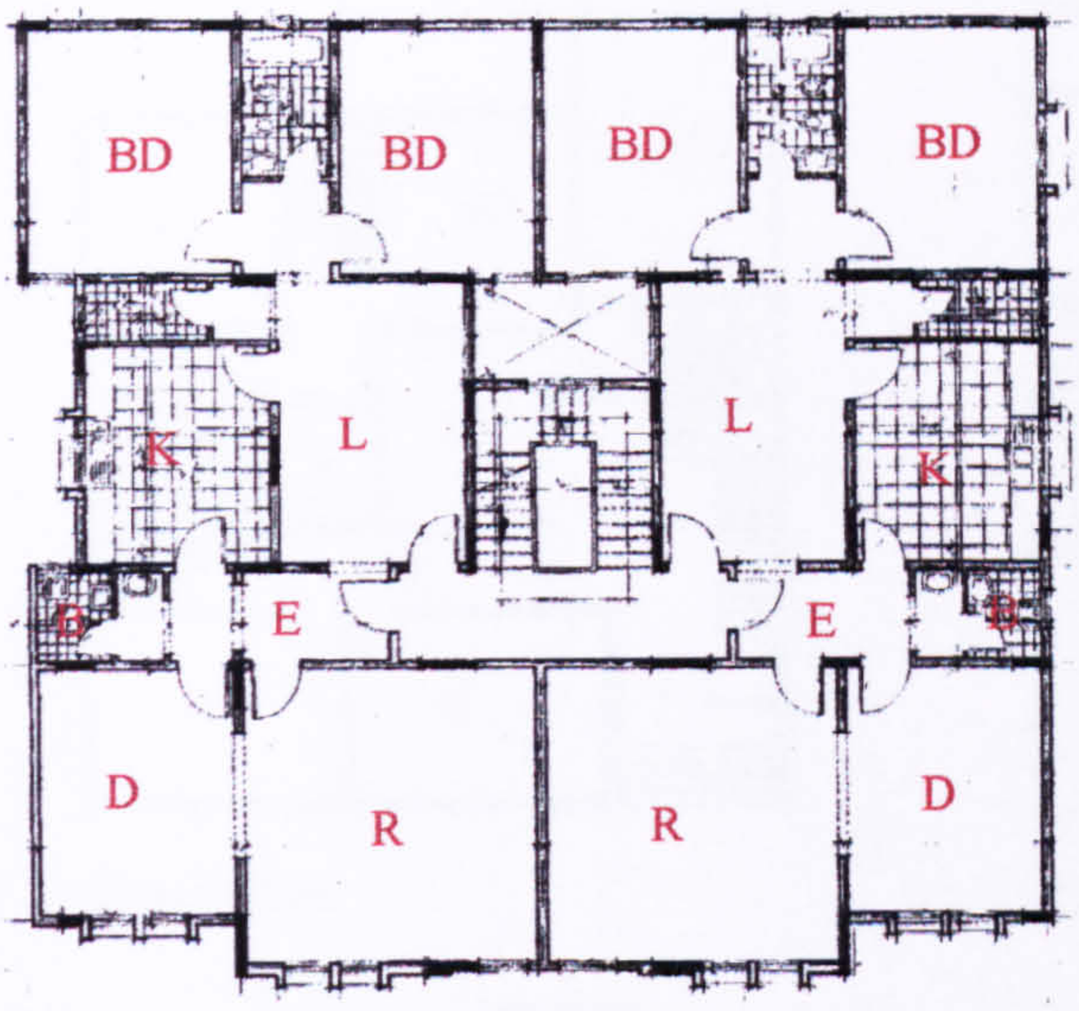


Flat No. 1, (Four rooms)



House 32		Date built	1999
Owner names	Assaf Al Harthi	Location	Makkah, Alaziziah
House Type	Apartment	No. of floors	3
No. of flats per floor	2		

Plan and Elevation

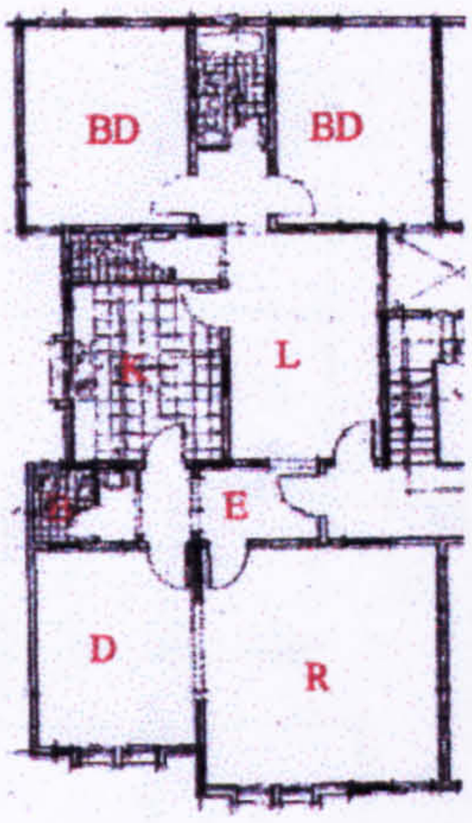


Typical floor

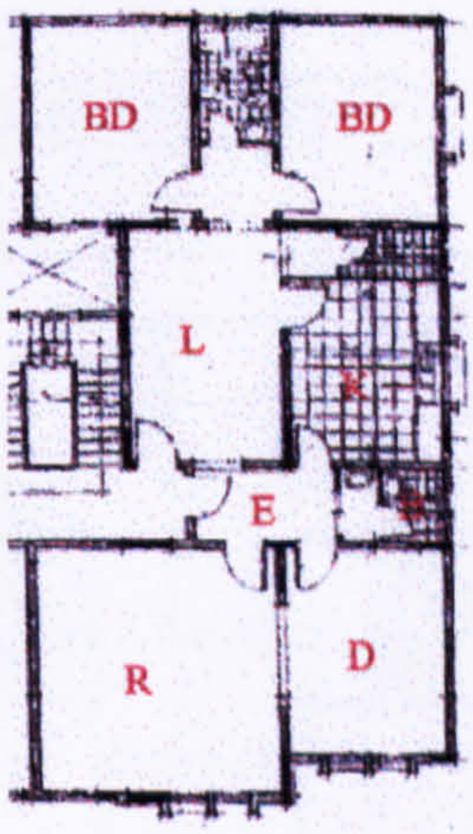
Main elevation

E entrance hall
R reception
D dining room
L living room
BD bedroom
B bathroom
K kitchen

Flat No. 1, (Five rooms)

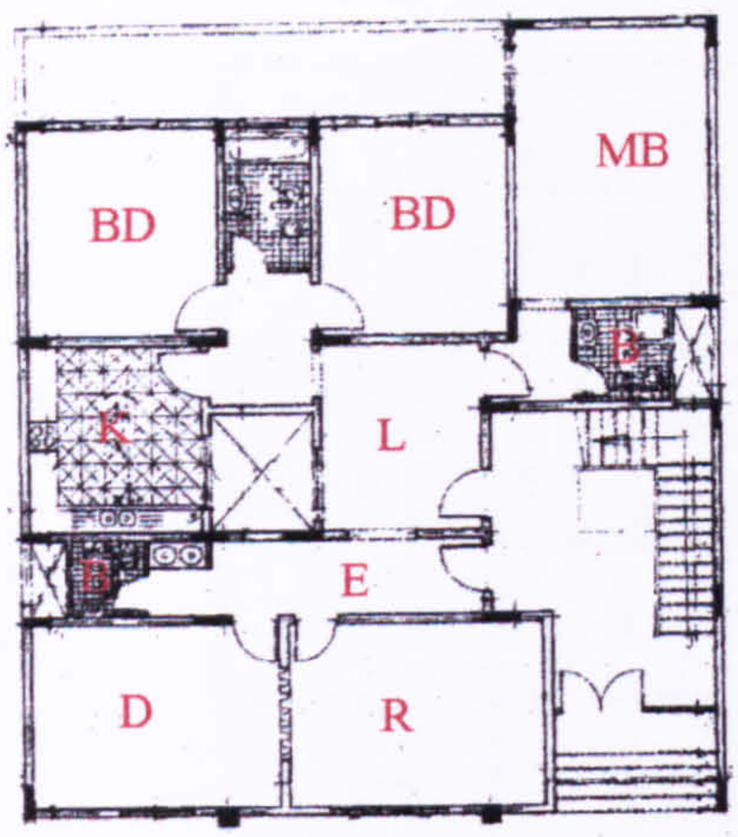


Flat No. 1, (Five rooms)

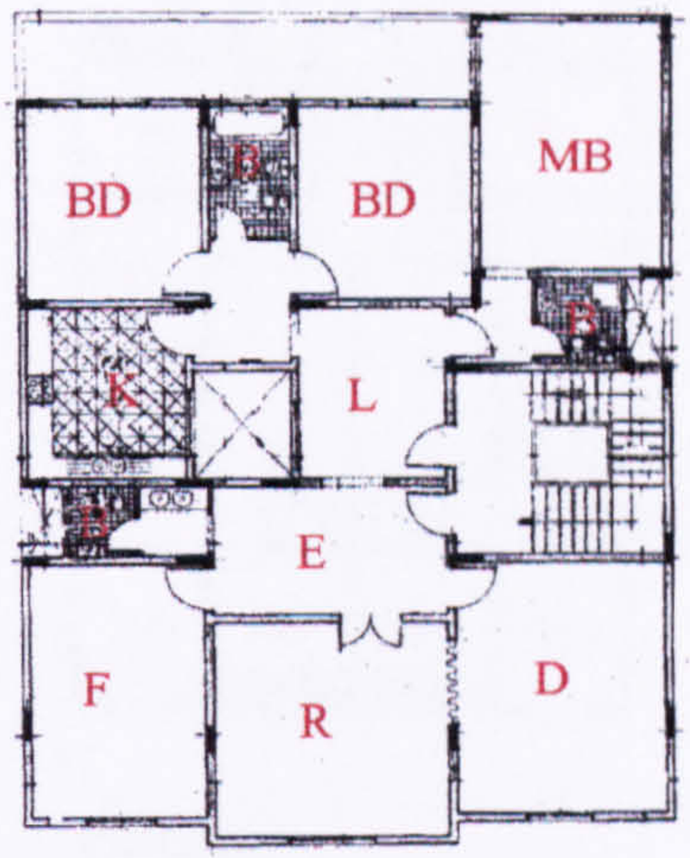


House **33**		Date built	**2000**
Owner names	Al Zahrani, M	Location	Makkah, Alaziziah
House Type	Apartment	No. of floors	4
No. of flats per floor	1		

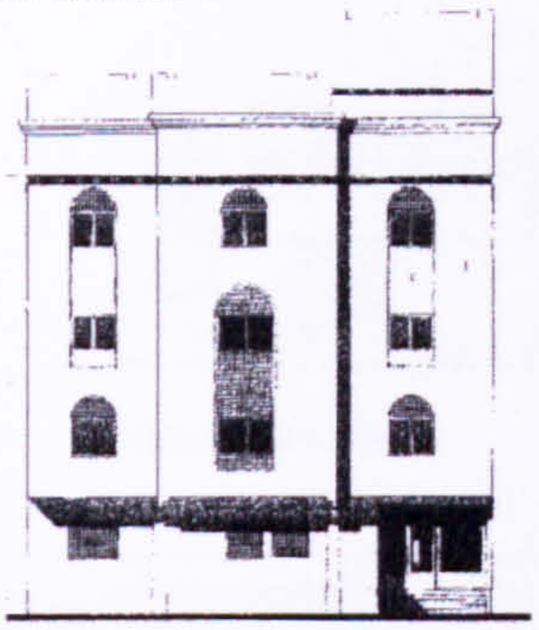
Plan and Elevation



Ground floor



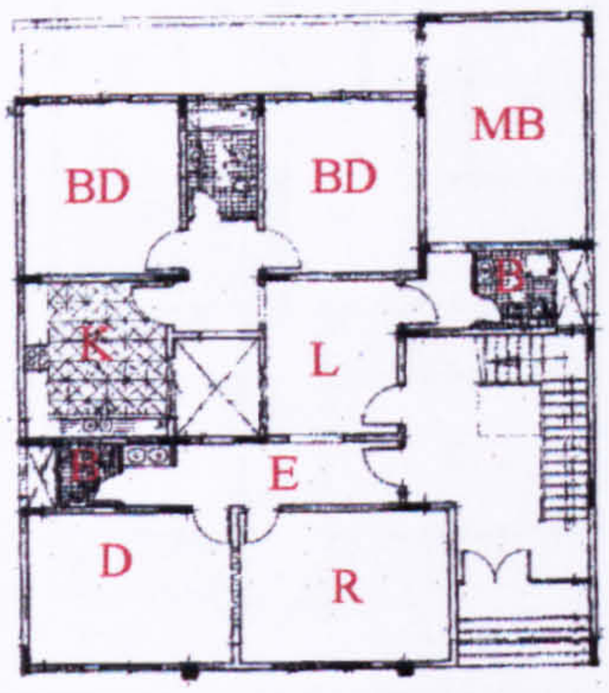
Typical floor



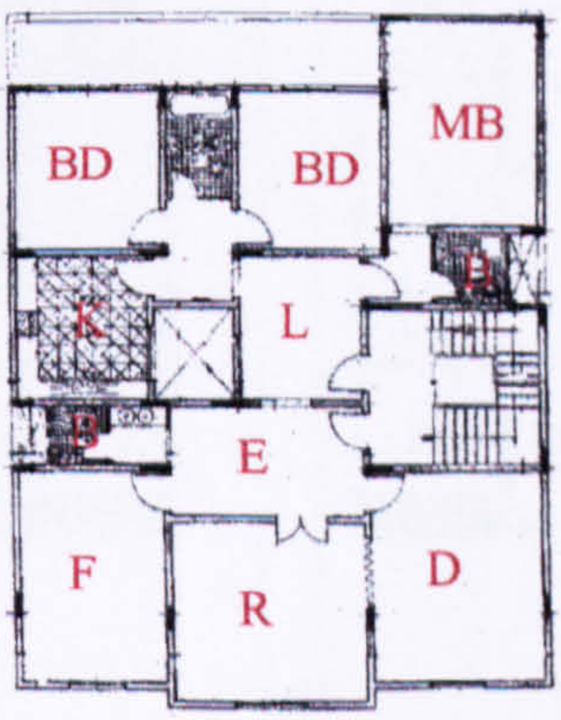
Main elevation

E entrance hall
R reception
MB master bedroom
F female reception
K kitchen
D dining room
L living area
BD bedroom
B bathroom

Flat No. 1, (Five rooms)

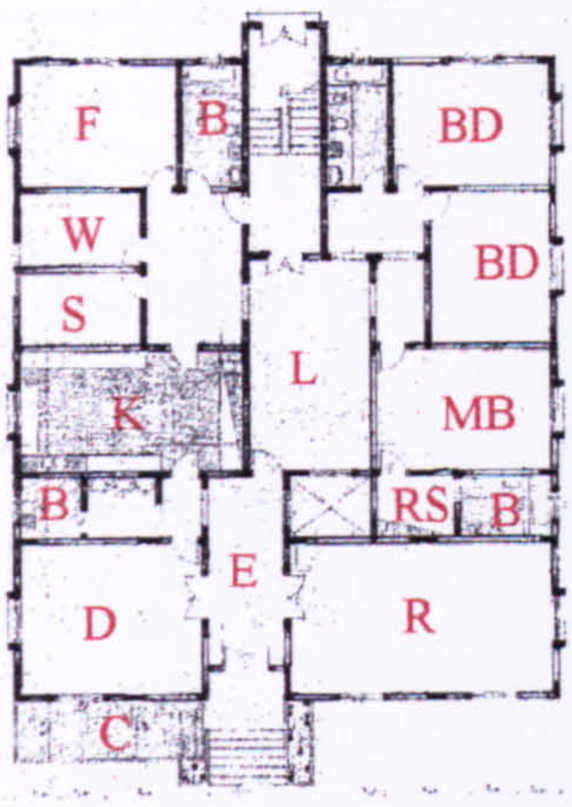


Flat No. 2, (Six rooms)

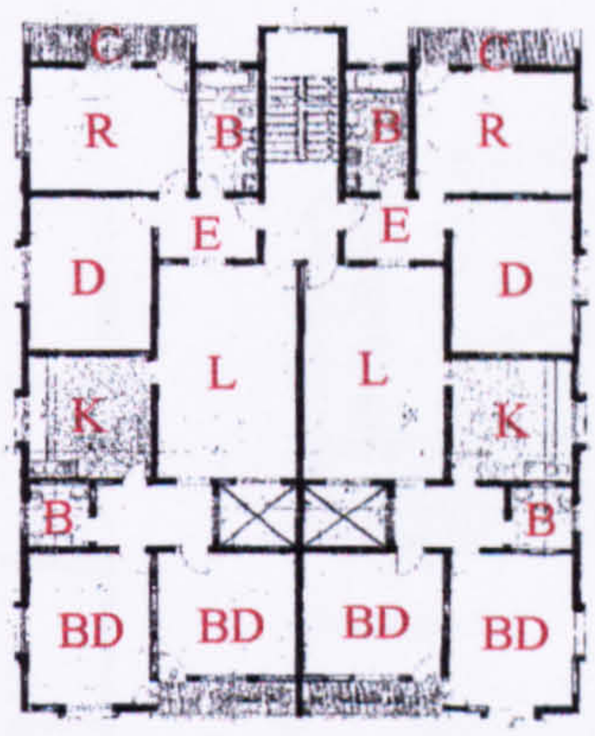


House **34**		Date built	**2001**
Owner names	Madani, A	Location	Makkah, Alaziziah
House Type	Apartment	No. of floors	2
No. of flats per floor	1&2		

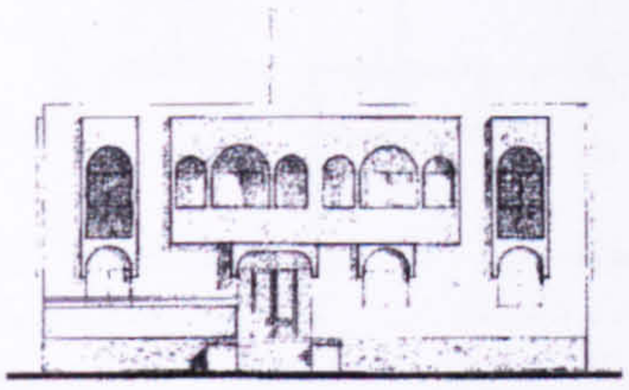
Plan and Elevation



Ground floor



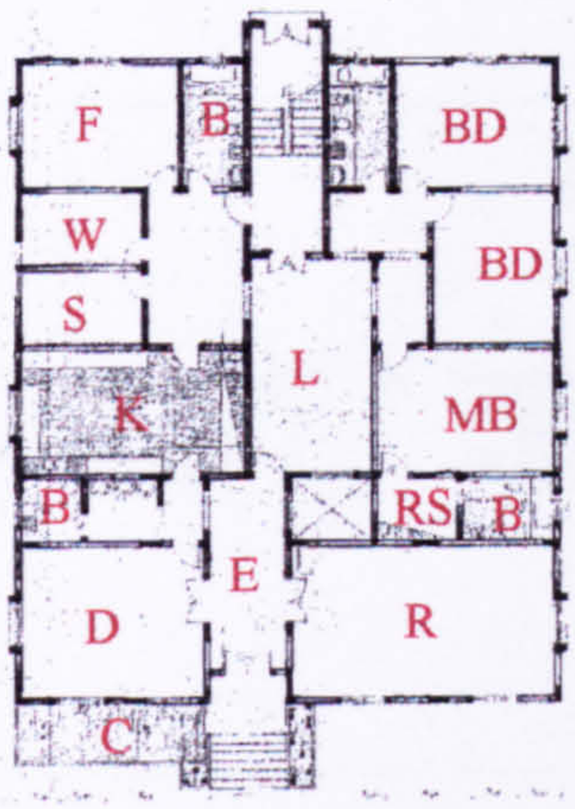
First floor



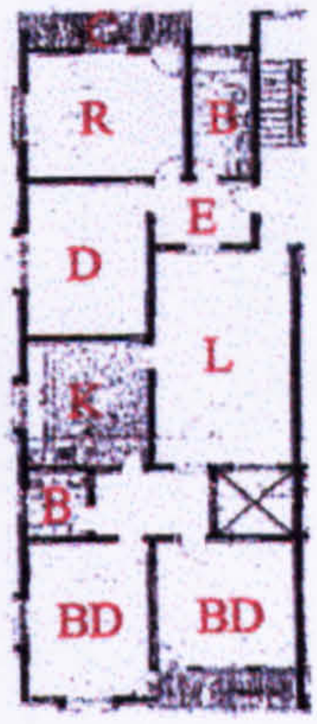
Main elevation

E	entrance hall	R	male reception
F	female reception	L	living area
BD	bedroom	MB	master bedroom
B	bathroom	K	kitchen
D	dining room	RS	dressing room
S	storage	W	washing clothe

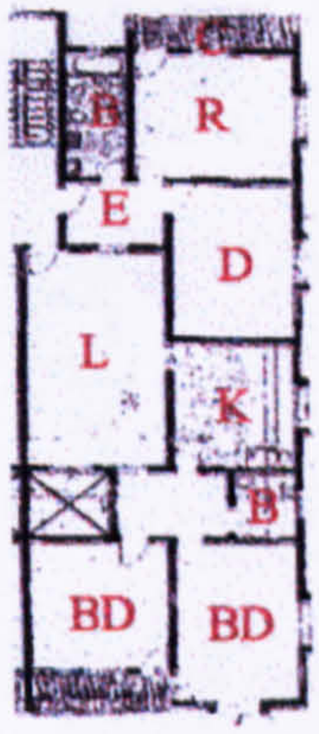
Flat No. 1, (six rooms)



Flat No. 2, (Five rooms)

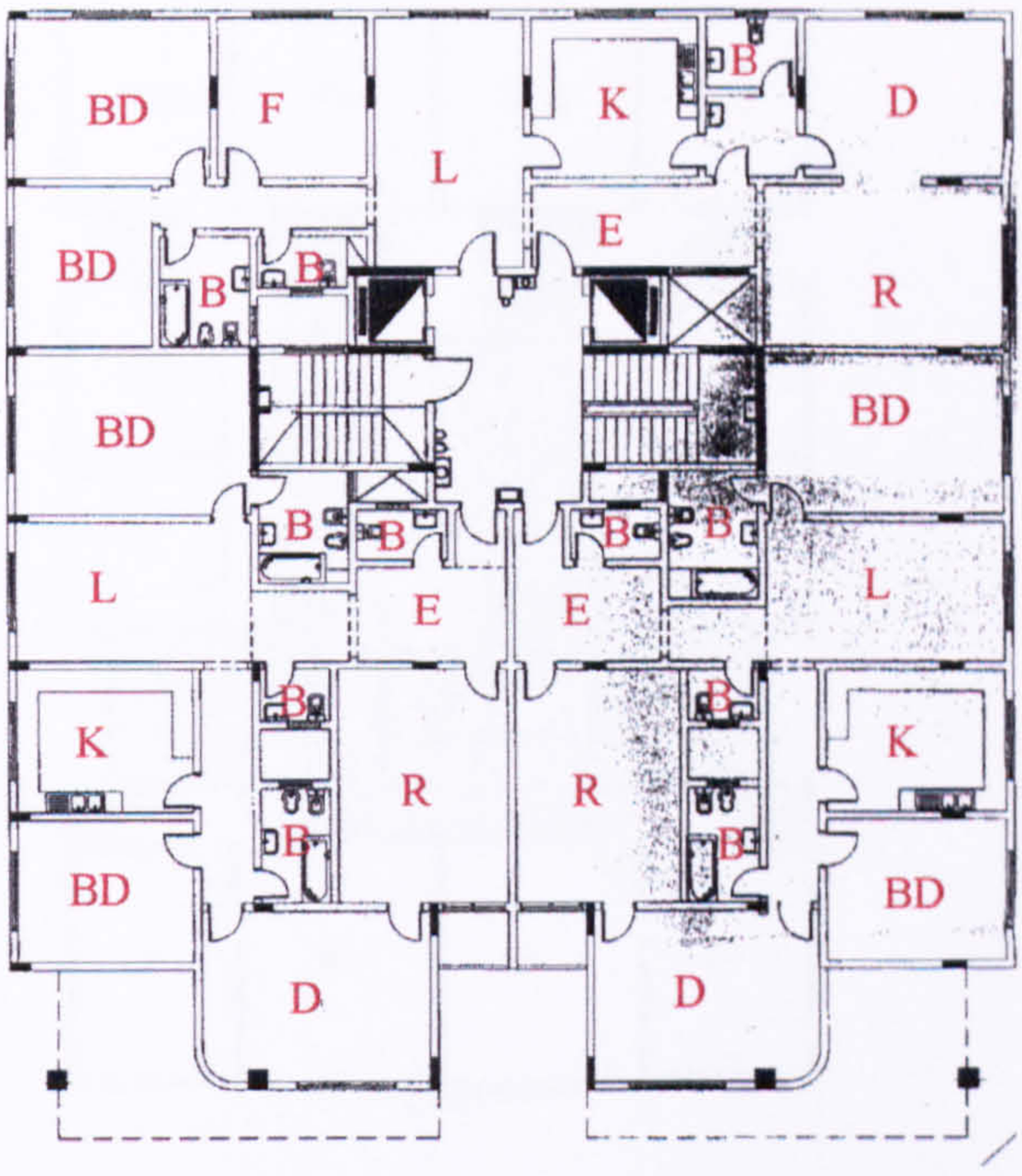


Flat No. 3, (Five rooms)

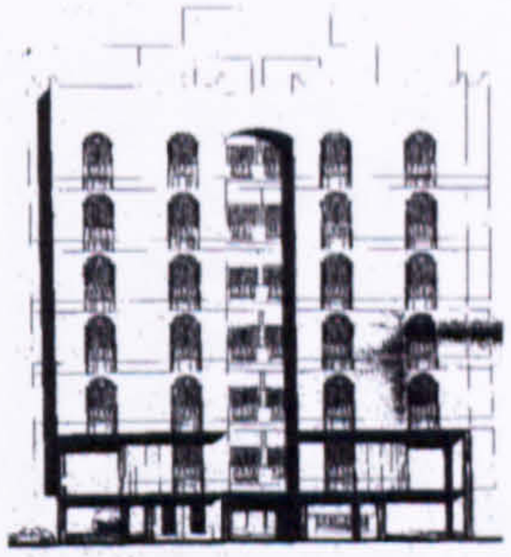


House **35**		Date built	**2002**
Owner names	Bajjori, A	Location	Makkah, Alaziziah
House Type	Apartment	No. of floors	6	No. of flats per floor	3

Plan and Elevation



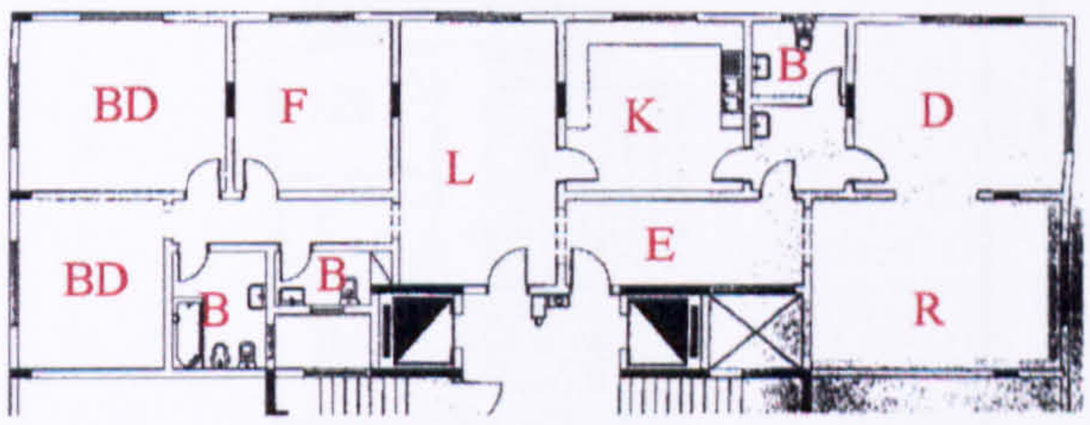
Typical floor



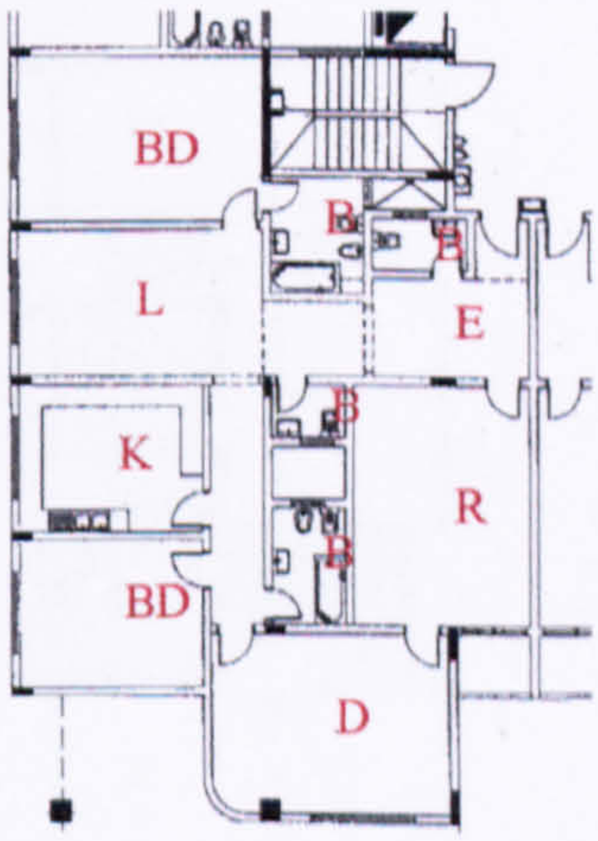
Main elevation

E	entrance hall
R	reception
F	female reception
D	dining room
L	living area
K	kitchen
BD	bedroom
B	bathroom

Flat No. 1, (six rooms)

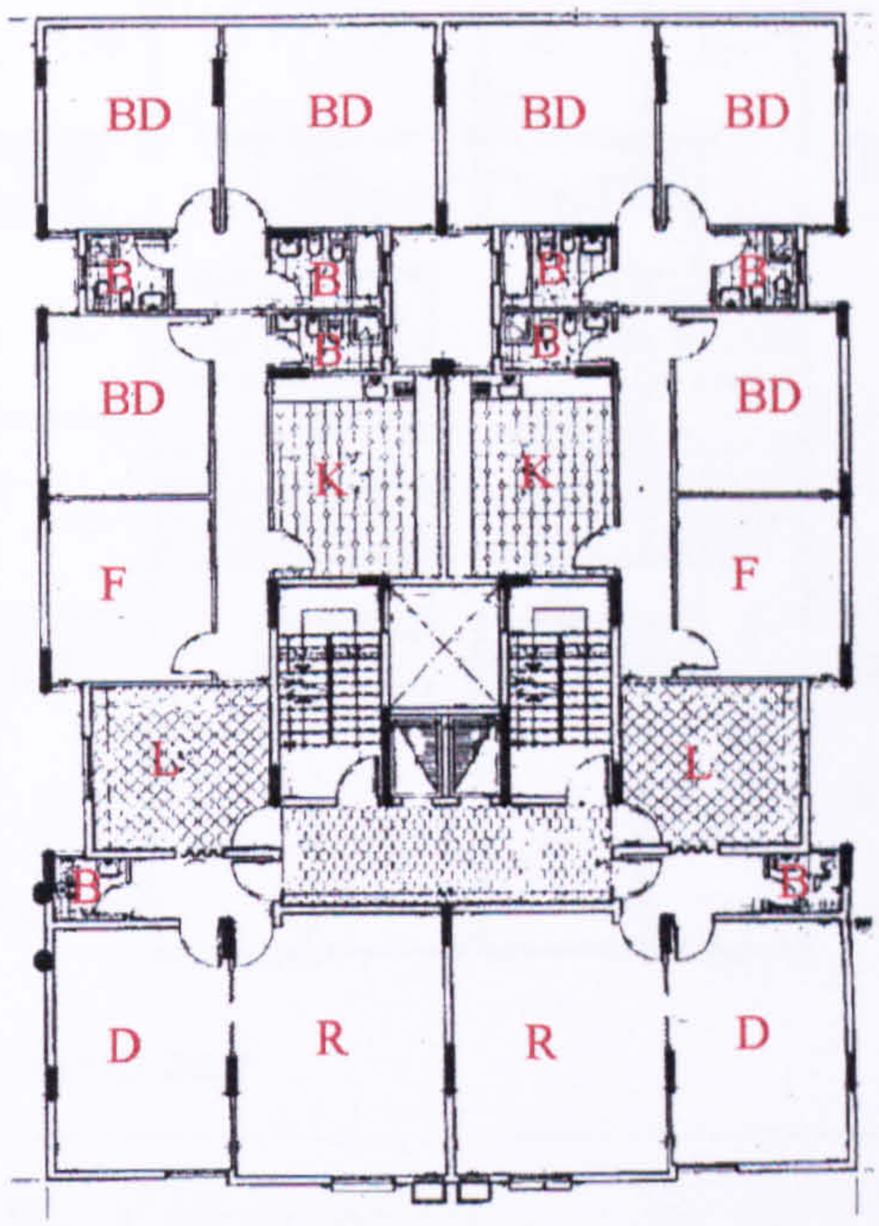


Flat No. 2, (Five rooms)



House **36**				Date built	**2003**
Owner names	Najjar, a		Location	Makkah, Alaziziah	
House Type	Apartment	No. of floors	5	No. of flats per floor	2

Plan and Elevation

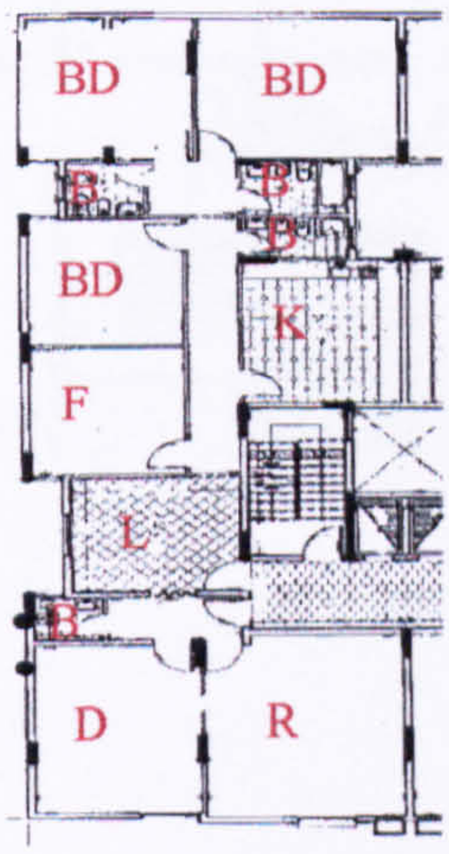


Typical floor

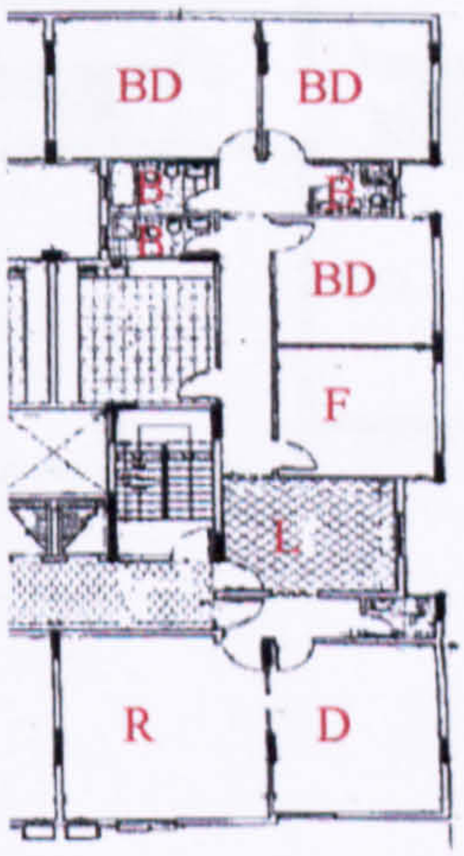
Main elevation

R	reception
F	female reception
D	dining room
L	living area
K	kitchen
BD	bedroom
B	bathroom

Flat No. 1, (six rooms)

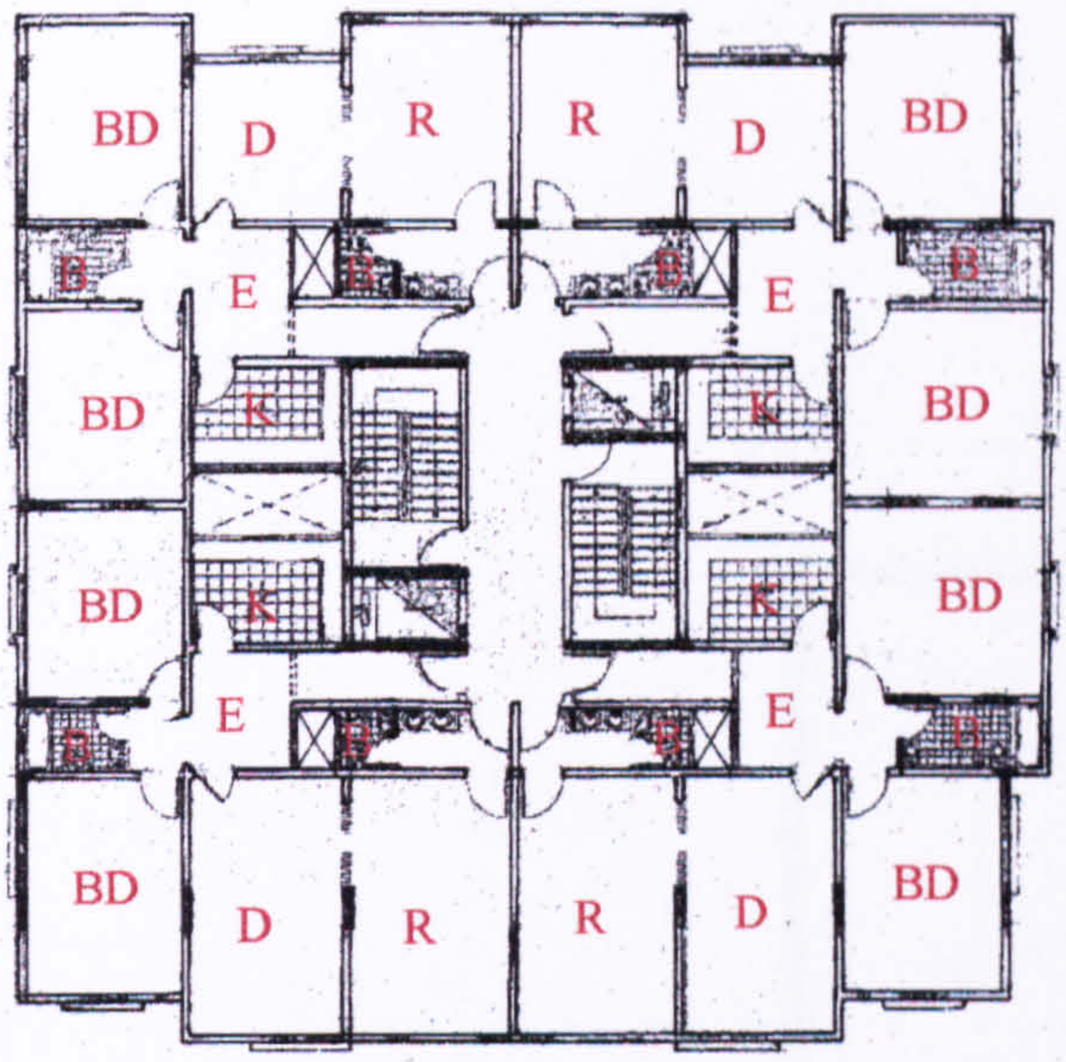


Flat No. 2, (six rooms)

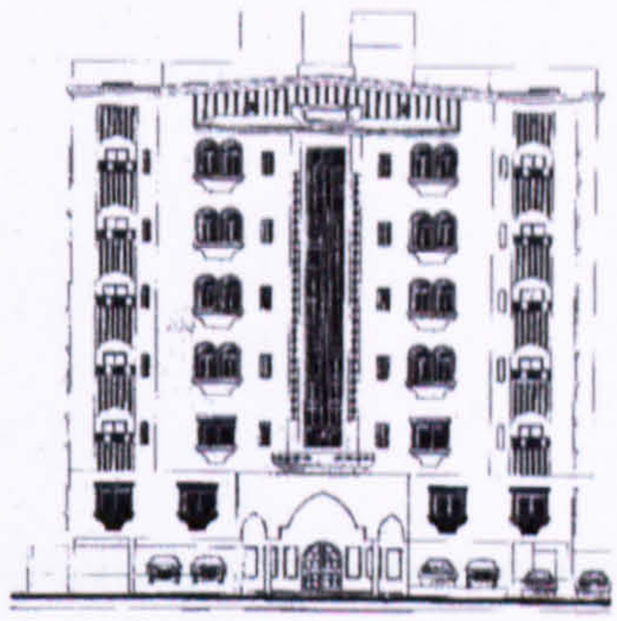


House **37**			Date built	**2004**
Owner names	Al Zahjrani, I.	Location	Makkah, Alaziziah	
House Type	Apartment	No. of floors	6	No. of flats per floor	4

Plan and Elevation



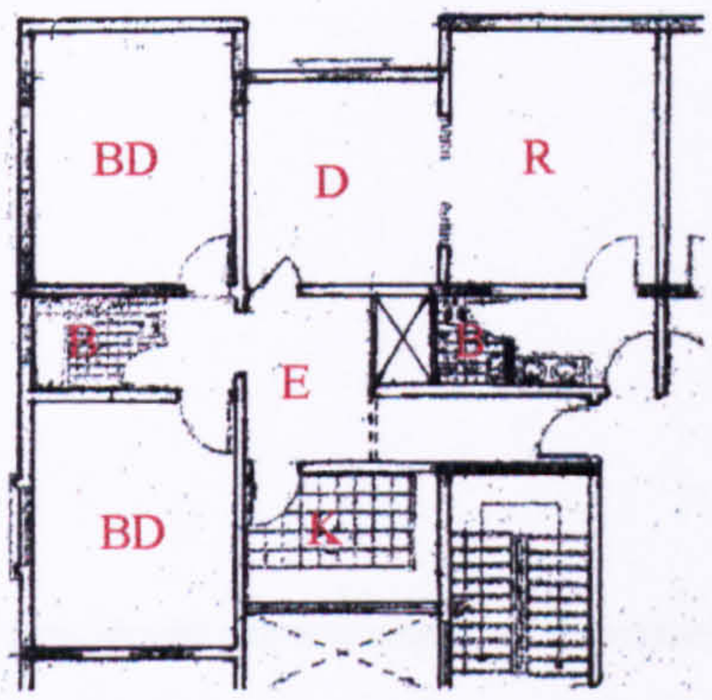
Typical floor



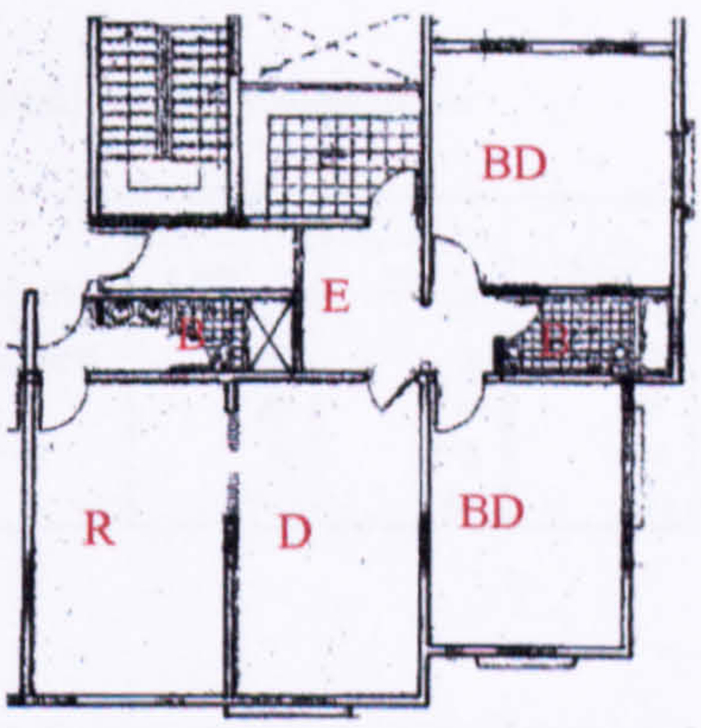
Main elevation

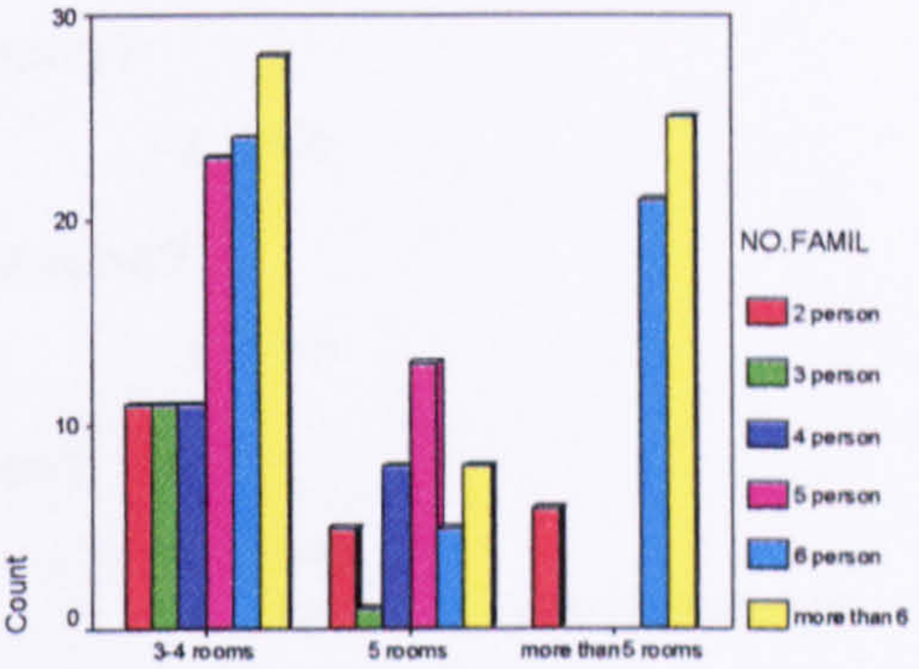
E	entrance hall
R	reception
D	dining room
K	kitchen
BD	bedroom
B	bathroom

Flat No. 1, (Four rooms)



Flat No. 2, (Four rooms)





TYPES * NEEDS Crosstabulation

Count

		NEEDS		Total
		yes	no	
TYPES	Flat	46	70	116
	semi detatch	16	3	19
	Villa	45	6	51
	Other	9	5	14
Total		116	84	200

Appendix C
QUESTIONNAIRE SAMPLE AND CHARTS

English Questions

Name: .....
Vocation: .....

Q1- What type of house do you live in?

( ) traditional ( ) apartment
( ) detached ( ) villa ( ) other .....

Q2- How many entrances are there in your house?

( ) one entrance
( ) two entrance
( ) more than two

Q3- How many rooms are there in your house?

( ) 3-4 rooms ( ) 5 rooms
( ) more than 5 rooms

Q4- Do you have a male guests' reception?

( ) Yes ( ) No

Q5- Do you have a female guests' reception?

( ) Yes ( ) No

Q6- How many bedrooms in your house?

( ) one ( ) two
( ) three ( ) four ( ) more than four

Q7- How many bathrooms or toilets in your house?

( ) one ( ) two
( ) three ( ) four ( ) more than four

Q8- Do you have storage in your house?

( ) Yes ( ) No

Q9- Do you have a living room in your house?

( ) Yes ( ) No

Q10- How many persons are occupied this house?

( ) 1 person ( ) 2 persons ( ) 3 persons
( ) 4 persons ( ) 5 persons ( ) 6 persons
( ) more than 6 persons

Q11- Are you satisfied with your house as an internal space?

For example (number of rooms, location of the rooms, distribution of rooms, services ... etc)

( ) I am satisfied with.
( ) I satisfy some spaces in my houses as internal spaces.
( ) I am not satisfied with.

Q12- If you are not satisfied with your house as Interior design, what are the reasons?

(1) .....
(2) .....
(3) .....
(4) .....

Q13- Does the house you live in supply all your needs?

(i.e. does the internal design of your house provide you with the required number of rooms to receive men and women as well as enough bedrooms and service areas, and does it provide the necessary privacy?)

( ) Yes ( ) No

Q14- If the answer is No what are the things you need that are not available in your house?

( ) no enough bed rooms
( ) no female guests reception
( ) no male guests reception
( ) no storage
( ) no Enough bathroom or toilets
( ) no open space (terrace)
( ) Others (please give details) .....

Q15- What are the problems in your house in the internal spaces?

( ) One entrance only for both the family and the guests
( ) The house is very small
( ) Number of rooms is not enough
( ) Some rooms are very small
( ) No natural ventilation
( ) No natural lighting
( ) The windows are overlooked by neighbours
( ) No privacy in some spaces
( ) No open area (terrace or courtyard)
( ) Other problems (mention it) .....

Q16- Did you make any changes to the internal design of your house after you moved in?
(Such as partition of some rooms or combination of some rooms with each other ...etc)

( ) Yes ( ) No

Q17- If the answer is Yes, what were those changes and why?

Change 1 ..... why? .....
Change 2 ..... why? .....
Change 3 ..... why? .....
Change 4 ..... why? .....

Q18- If you have the chance to build a house, what are the things you need to be in your house?

( ) Two entrances, one for the family and another for the guests
( ) Enough rooms
( ) Numbers of family members In the future
( ) Design provides the family privacy
( ) Solution for natural ventilation and lighting
( ) Open space (terrace)
( ) Some storage
( ) Others (mention it) .....

Q19- If your house has balconies, do you agree that they do not function well for social activities and they should not be built?

( ) agree ( ) do not agree

Q20- Do you and your family use the terrace?

( ) Yes Go to **Q21**
( ) No Go to **Q22**

Q21- If you use the terrace, what are the reasons?

( ) Sleeping at night ( ) Drying the clothes
( ) For festival ( ) Children play
( ) Others (mention it).....

Q22- If you do not use the terrace, what are the reasons?

( ) The terrace is just for the owner ( ) the terrace is overlooked by neighbours
( ) The weather is very hot ( ) others (mention it) .....

Q23- Do you and your family make use of your windows?

( ) using all the windows
( ) using some windows go to **Q24**
( ) do not use the windows go to **Q24**

Q24- If you make use of some of the windows or if you do not use the windows, what are the reasons?

( ) To keep the air-conditioning in
( ) Some of the windows are overlooked by neighbours
( ) All my windows are overlooked by neighbours
( ) Others (mention it) .....

Arabic Questions:

الأســـم: .....
المؤهل العلمي: .....

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1. ما نوع المنزل الذي تسكنة؟

( ) تقليدي ( ) عمارة سكنية
( ) دوبلكس ( ) فيلا ( ) غيرهحدد .....

2. كم عدد مداخل منزلك؟

( ) مدخل واحد ( ) مدخلين

3. كم عدد الغرف في منزلك؟

( ) 3-4 غرف ( ) 5 غرف
( ) أكثر من خمسة غرف

4. هل يحتوي منزل على مجلس للرجال؟

( ) نعم ( ) لا

5. هل يحتوي منزلك على مجلس للنساء؟

( ) نعم ( ) لا

6. كم عدد غرف النوم في منزلك؟

( ) واحدة فقط ( ) إرفتي نوم
( ) ثلاثة غرف ( ) أربعة ( ) أكثر من أربعة غرف نوم

7. كم عدد الحمامات في منزلك؟

( ) واحد فقط ( ) أثنين
( ) ثلاثة ( ) أربعة ( ) أكثر من أربعة حمامات

8. هل يوجد مخزن في المنزل الذي تسكنة؟

( ) نعم ( ) لا

9. هل يحتوي منزلك على غرفة معيشة؟

( ) نعم ( ) لا

10. كم عدد أفراد الأسرة (أو ساكني المنزل)؟

( ) شخص واحد فقط ( ) إثنان
( ) ثلاثة اشخاص ( ) أربعة
( ) خمسة اشخاص ( ) ستة اشخاص
( ) اكثر ستة اشخاص يسكنون المنزل

11. ما مدى رضاك عن المنزل الذي تسكنه من ناحية التصميم الداخلي؟
على سبيل المثال (من ناحية عدد الغرف، موقع الغرف، حجم الغرف و الخدمات الموجودة في المنزل)

( ) إرتياح كلي للتصميم الداخلي
( ) إرتياح لبعض الفراغات فقط
( ) عدم الرضا عن التصميم الداخلي

12. إذا لم تكن راضيا عن التصميم الداخلي لمنزلك، فما هي الأسباب؟

1. .....
2. .....
3. .....

13. هل بأن تشعر المنزل الذي تسكنه يفي بإحتياجات ساكنيه؟

( ) نعم ( ) لا

14. إذا كانت الإجابة بـ (لا) فما هي الأشياء التي تحتاجها أنت وعائلتك ولم تتحقق في المنزل الذي تسكنه؟

( ) لا يحتوي المنزل على عدد كاف من الغرف
( ) لا يحتوي المنزل على غرفة ضيوف للنساء
( ) لا يحتوي المنزل على غرفة ضيوف للرجال
( ) لا يحتوي المنزل على عدد كاف من الحمامات
( ) لا يحتوي المنزل على سطح
( ) غير ذلك أذكر .....

15. ما هي المشاكل التي واجهتك في المنزل من حيث التصميم الداخلي؟

( ) للمنزل مدخل واحد فقط يجمع يستخدم للضيوف والعائلة معا
( ) ضيق المنزل عامة
( ) عدد الغرف غير كاف
( ) صغر مساحة بعض الغرف
( ) عدم المقدرة على الإستفادة من التهوية الطبيعية
( ) عدم المقدرة على الإستفادة من الإضاءة الطبيعية
( ) إنعدام الخصوصية في بعض المرافق
( ) عدم الإستفادة من النوافذ وذلك بسبب كشفها من الجيران
( ) عدم وجود فراغ سماوي (سطح)
( ) غير ذلك أذكر .....

16. هل عملت تغيرات في التصميم الداخلي لمنزلك بعد أن سكنت فيه؟

(وذلك مثل فصل غرفة او صالة بحواجز أو غيرها، أو فتح غرفتين أو أكثر على بعضها وذلك لغرض توسعة الفراغ، أو إلغاء نافذة أو باب.... الخ)

( ) نعم ( ) لا

17. إذا كانت الإجابة للسؤال السابق بـ (نعم) فما هي التغيرات التي عملت؟

( ) التغيير الأول: ..... السبب: .....
( ) التغيير الثاني: ..... السبب: .....
( ) التغيير الثالث: ..... السبب: .....
( ) التغيير الرابع: ..... السبب: .....

18. إذا اتيحت لك الفرصة في بناء منزل خاص بك، ما هي المرافق أو المميزات الهامة التي تحبذ توفرها في منزل المستقبل؟

( ) أن يحتوي المنزل على مدخلين (مدخل للضيوف وآخر للعائلة)
( ) أن يحتوي المنزل على عدد كاف من الغرف
( ) الأخذ بعين الإعتبار زيادة عدد الأسرة مستقبلا
( ) تصميم يوفر الخصوصية التامة لأفراد الأسرة
( ) حلول تصميمية للإستفادة من التهوية والإضاءة الطبيعية
( ) لا يحتوي المنزل على سطح
( ) توفر مخازن
( ) غير ذلك أذكر .....

19. هل توافق بأن البلكونات لاتؤدي الغرض المطلوب من الناحية الإجتماعية، وأنها لا تلائم إحتياجات المجتمع السعودي؟

( ) أوافق ( ) لا أوافق

20. هل تستخدم السطح أنت وعائلتك؟

( ) نعم ( ) لا

21. إذا كنت ممن يستخدم السطح، فلأي الأغراض تستخدمه؟

( ) للنوم ليلا ( ) للإحتفالات
( ) للعب الأطفال ( ) لتجفيف الملابس ( ) لأغراض أخرى أذكرها .....

22. إذا كنت ممن لا يستخدمون السطح، فما الأسباب؟

( ) سطح المبنى يخص المالك ( ) الجو غير ملائم لإستخدام السطح
( ) السطح مكشوف من قبل الجيران ( ) أسباب أخرى أذكرها .....

23. ما مدى الإستفادة من نوافذ منزلك؟

( ) إستفادة تامة
( ) إستفادة من بعض النوافذ فقط
( ) عدم الإستفادة من جميع النوافذ

24. إذا كانت إستفادتك من بعض النوافذ فقط أو عدم الإستفادة، فما هي الأسباب؟

( ) للحفاظ على برودة التكييف داخل الغرف
( ) بعض النوافذ مكشوفة من قبل الجيران
( ) جميع النوافذ مكشوفة من قبل الجيران
( ) أسباب أخرى أذكرها .....

Tables and Graphs:

TYPES

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Flat	116	58.0	58.0	58.0
	semi detatch	19	9.5	9.5	67.5
	Villa	51	25.5	25.5	93.0
	Other	14	7.0	7.0	100.0
	Total	200	100.0	100.0	

Table C.1: Types of the house percentage

ENTRANCE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	one entrance	95	47.5	47.5	47.5
	two entrance	83	41.5	41.5	89.0
	more than two	22	11.0	11.0	100.0
	Total	200	100.0	100.0	

Table C.2: Entrance percentage

TYPES * ENTRANCE Crosstabulation

Count

		ENTRANCE			Total
		one entrance	two entrance	more than two	
TYPES	Flat	78	34	4	116
	semi detatch	4	12	3	19
	Villa	6	33	12	51
	Other	7	4	3	14
Total		95	83	22	200

Table C.3: Types of the house and entrance Cross tabulation

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.419	.066	6.485	.000[c]
Ordinal by Ordinal	Spearman Correlation	.448	.064	7.060	.000[c]
N of Valid Cases		200			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

Table C.4: Types of the house and entrance Correlation

NO.ROOM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3-4 rooms	108	54.0	54.0	54.0
	5 rooms	40	20.0	20.0	74.0
	more than 5 rooms	52	26.0	26.0	100.0
	Total	200	100.0	100.0	

Table C.5: Number of room percentage

TYPES * NO.ROOM Crosstabulation

Count

		NO.ROOM			
		3-4 rooms	5 rooms	more than 5 rooms	Total
TYPES	Flat	85	22	9	116
	semi detatch	13	6		19
	Villa	10	6	35	51
	Other		6	8	14
Total		108	40	52	200

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.604	.051	10.658	.000[c]
Ordinal by Ordinal	Spearman Correlation	.578	.054	9.973	.000[c]
N of Valid Cases		200			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

Table C.6: Types of the house and number of rooms cross tabulation and correlation

NO.FAMIL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 person	22	11.0	11.0	11.0
	3 person	12	6.0	6.0	17.0
	4 person	19	9.5	9.5	26.5
	5 person	36	18.0	18.0	44.5
	6 person	50	25.0	25.0	69.5
	more than 6	61	30.5	30.5	100.0
	Total	200	100.0	100.0	

Table C.7: Number of family members percentage

TYPES * FEMALE Crosstabulation

Count

		FEMALE		Total
		yes	no	
TYPES	Flat	70	46	116
	semi detatch	19		19
	Villa	41	10	51
	Other	14		14
Total		144	56	200

Table C.8: Types of the house and female reception Correlation

BEDROOM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 bedroom	57	28.5	28.5	28.5
	2 bedroom	91	45.5	45.5	74.0
	3 bedroom	23	11.5	11.5	85.5
	4 bedroom	14	7.0	7.0	92.5
	more than 4	15	7.5	7.5	100.0
	Total	200	100.0	100.0	

Table C.9: Number of bedroom percentage

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.596	.040	10.445	.000[c]
Ordinal by Ordinal	Spearman Correlation	.597	.043	10.460	.000[c]
N of Valid Cases		200			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

Table C.10: Types of the house and number of bedroom Correlation

TYPES * BEDROOM Crosstabulation

Count

		BEDROOM					Total
		1 bedroom	2 bedroom	3 bedroom	4 bedroom	more than 4	
TYPES	Flat	51	56	6	3		116
	semi detatch	6	13				19
	Villa		16	13	7	15	51
	Other		6	4	4		14
Total		57	91	23	14	15	200

Table C.11: Types of the house and number of bedroom Cross tabulation

NO.FAMIL * BEDROOM Crosstabulation

Count

		BEDROOM					
		1 bedroom	2 bedroom	3 bedroom	4 bedroom	more than 4	Total
NO.FAMIL	2 person	14	2	6			22
	3 person	7	5				12
	4 person	10	9				19
	5 person		36				36
	6 person	9	20	8	9	4	50
	more than 6	17	19	9	5	11	61
Total		57	91	23	14	15	200

Table C.12: Number of family and number of bedroom Cross tabulation

BATHROOM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	one bathroom	4	2.0	2.0	2.0
	two bathroom	113	56.5	56.5	58.5
	three bathroom	44	22.0	22.0	80.5
	four bathroom	16	8.0	8.0	88.5
	more than 4	23	11.5	11.5	100.0
	Total	200	100.0	100.0	

Table C.13: Number of bathroom percentage

TYPES * BATHROOM Crosstabulation

Count

		BATHROOM					
		one bathroom	two bathroom	three bathroom	four bathroom	more than 4	Total
TYPES	Flat	4	83	26	3		116
	semi detatch		7	12			19
	Villa		16	3	9	23	51
	Other		7	3	4		14
Total		4	113	44	16	23	200

Table C.14: Types of the house and number of bathroom Cross tabulation

TYPES * NO.ROOM * BATHROOM Crosstabulation

Count

BATHROOM			NO.ROOM			Total
			3-4 rooms	5 rooms	more than 5 rooms	
one bathroom	TYPES	Flat	4			4
	Total		4			4
two bathroom	TYPES	Flat	70	10	3	83
		semi detatch	7			7
		Villa	10	6		16
		Other		3	4	7
	Total		87	19	7	113
three bathroom	TYPES	Flat	11	12	3	26
		semi detatch	6	6		12
		Villa			3	3
		Other		3		3
	Total		17	21	6	44
four bathroom	TYPES	Flat			3	3
		Villa			9	9
		Other			4	4
	Total				16	16
more than 4	TYPES	Villa			23	23
	Total				23	23

Table C.15: Types of the house, number of room and number of the bathroom Cross tabulation

STORAGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	73	36.5	36.5	36.5
	no	127	63.5	63.5	100.0
	Total	200	100.0	100.0	

Table C.16: The percentage of the Storage

TYPES * STORAGE Crosstabulation

Count

		STORAGE		Total
		yes	no	
TYPES	Flat	25	91	116
	semi detatch	16	3	19
	Villa	28	23	51
	Other	4	10	14
Total		73	127	200

Table C.17: Types of the house and storage Cross tabulation

LIVING

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	184	92.0	92.0	92.0
	no	16	8.0	8.0	100.0
	Total	200	100.0	100.0	

Table C.18: The percentage of the living room

TYPES * LIVING Crosstabulation

Count

		LIVING		Total
		yes	no	
TYPES	Flat	107	9	116
	semi detatch	12	7	19
	Villa	51		51
	Other	14		14
Total		184	16	200

Table C.19: Types of the house and living room Cross tabulation

NO.FAMIL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 person	22	11.0	11.0	11.0
	3 person	12	6.0	6.0	17.0
	4 person	19	9.5	9.5	26.5
	5 person	36	18.0	18.0	44.5
	6 person	50	25.0	25.0	69.5
	more than 6	61	30.5	30.5	100.0
	Total	200	100.0	100.0	

Table C.20: Number of family percentage

TYPES * NO.FAMIL * NO.ROOM Crosstabulation

Count

NO.ROOM			NO FAMIL						Total
			2 person	3 person	4 person	5 person	6 person	more than 6	
3-4 rooms	TYPES	Flat	8	11	11	13	17	25	85
		semi detatch	3			4	3	3	13
		Villa				6	4		10
	Total		11	11	11	23	24	28	108
5 rooms	TYPES	Flat	3			9	5	5	22
		semi detatch	2	1	2	1			6
		Villa			3	3			6
		Other			3			3	6
	Total		5	1	8	13	5	8	40
more than 5 rooms	TYPES	Flat	6				2	1	9
		Villa					11	24	35
		Other					8		8
	Total		6				21	25	52

Table C.21: House type, number of family and number of rooms cross tabulation

SATISFY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	satisfied	65	32.5	32.5	32.5
	satisfied with some space	77	38.5	38.5	71.0
	not satisfied	58	29.0	29.0	100.0
	Total	200	100.0	100.0	

Table C.22: Satisfied with the house as interior design percentage

TYPES * SATISFY Crosstabulation

Count

		SATISFIED			
		satisfied	Satisfied some space	not satisfied	Total
TYPES	Flat	33	38	45	116
	semi detatch	2	17		19
	Villa	30	15	6	51
	Other		7	7	14
Total		65	77	58	200

Table C.23: Satisfied with the house and type of the house, cross tabulation

TYPES * SATISFY * NO.ROOM Crosstabulation

Count

			SATISFIED			
NO.ROOM			satisfied	satisfy some space	not satisfied	Total
3-4 rooms	TYPES	Flat	15	25	45	85
		semi detatch	2	11		13
		Villa	1	9		10
	Total		18	45	45	108
5 rooms	TYPES	Flat	12	10		22
		semi detatch		6		6
		Villa		3	3	6
		Other		3	3	6
	Total		12	22	6	40
more than 5 rooms	TYPES	Flat	6	3		9
		Villa	29	3	3	35
		Other		4	4	8
	Total		35	10	7	52

Table C.24: Satisfied, type of the house and number of the rooms correlation

NEEDS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	116	58.0	58.0	58.0
	no	84	42.0	42.0	100.0
	Total	200	100.0	100.0	

Table C.24: Family requirements percentage

TYPES * NEEDS Crosstabulation

Count

		NEEDS		Total
		yes	no	
TYPES	Flat	46	70	116
	semi detatch	16	3	19
	Villa	45	6	51
	Other	9	5	14
Total		116	84	200

Table D.25: Type of house and family requirement correlation

CHANGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	82	41.0	41.0	41.0
	no	118	59.0	59.0	100.0
	Total	200	100.0	100.0	

Table C.26: Percentage making change

TERRACE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	64	32.0	32.0	32.0
	no	136	68.0	68.0	100.0
	Total	200	100.0	100.0	

Table D.27: Using terrace

BALCONY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	158	79.0	79.0	79.0
	no	42	21.0	21.0	100.0
	Total	200	100.0	100.0	

Table C.28: Using balcony

USE OF WINDOWS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	use all	27	13.5	13.5	13.5
	use some windows	133	66.5	66.5	80.0
	not used	40	20.0	20.0	100.0
	Total	200	100.0	100.0	

Table C.29: Showing use of windows

MALE.RM

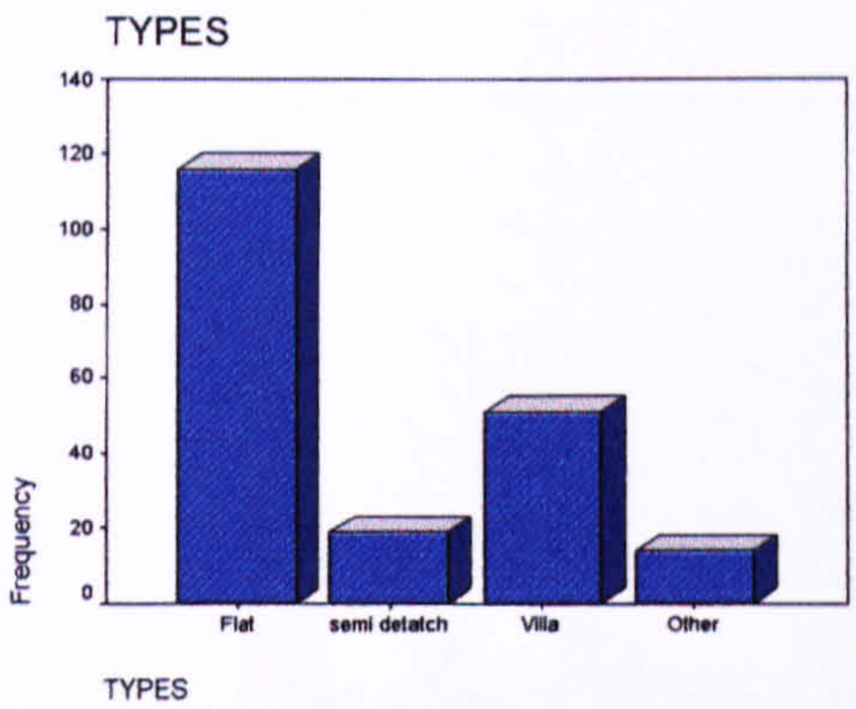
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	200	100.0	100.0	100.0

Table C.30: Male reception percentage

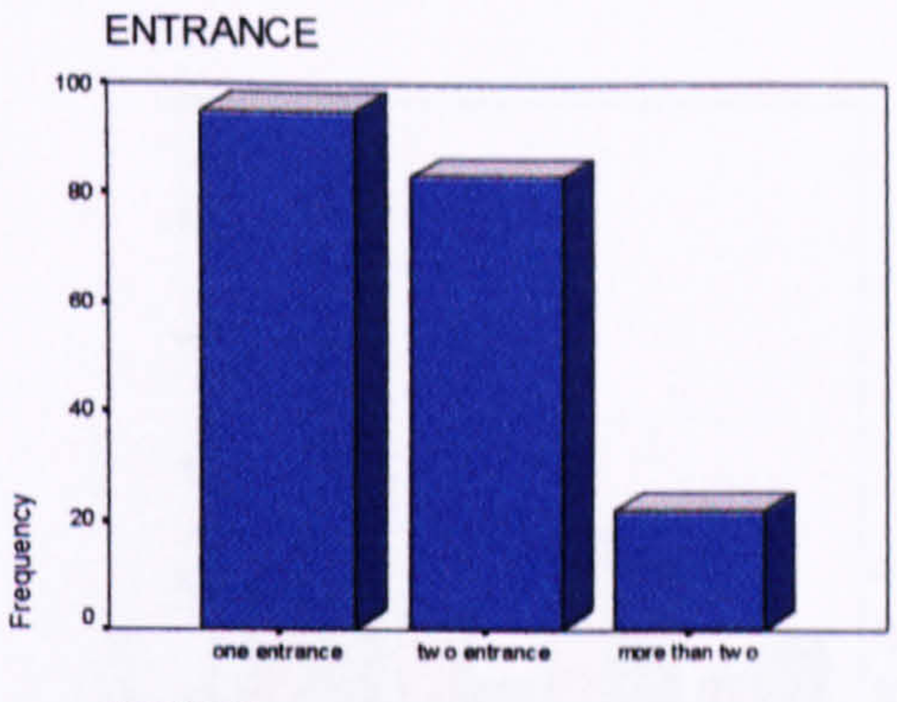
FEMALE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	144	72.0	72.0	72.0
	no	56	28.0	28.0	100.0
	Total	200	100.0	100.0	

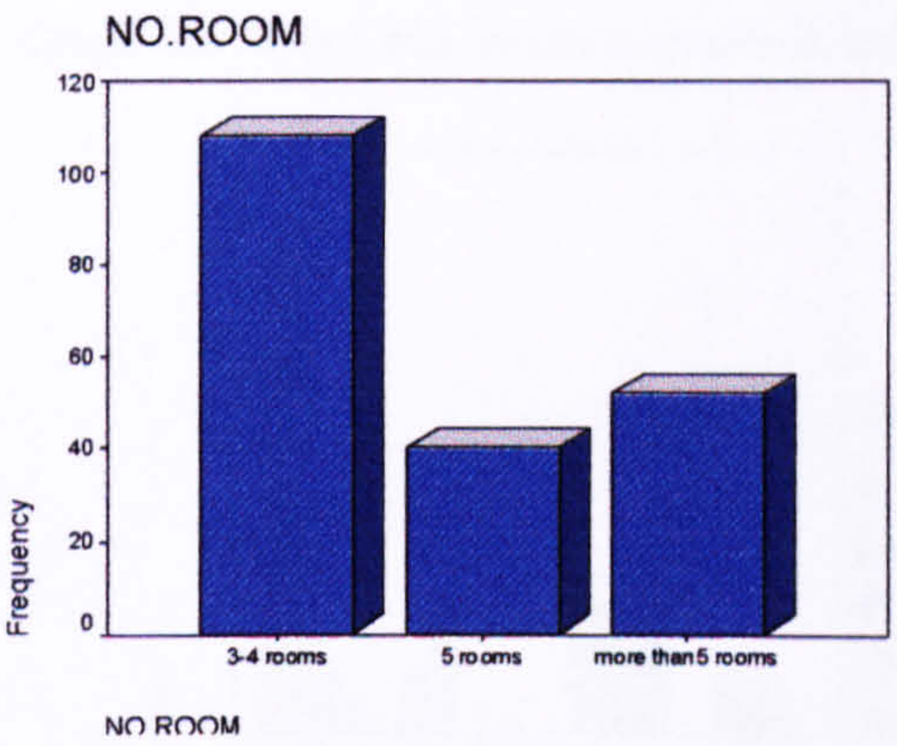
Table C.31: Female reception percentage



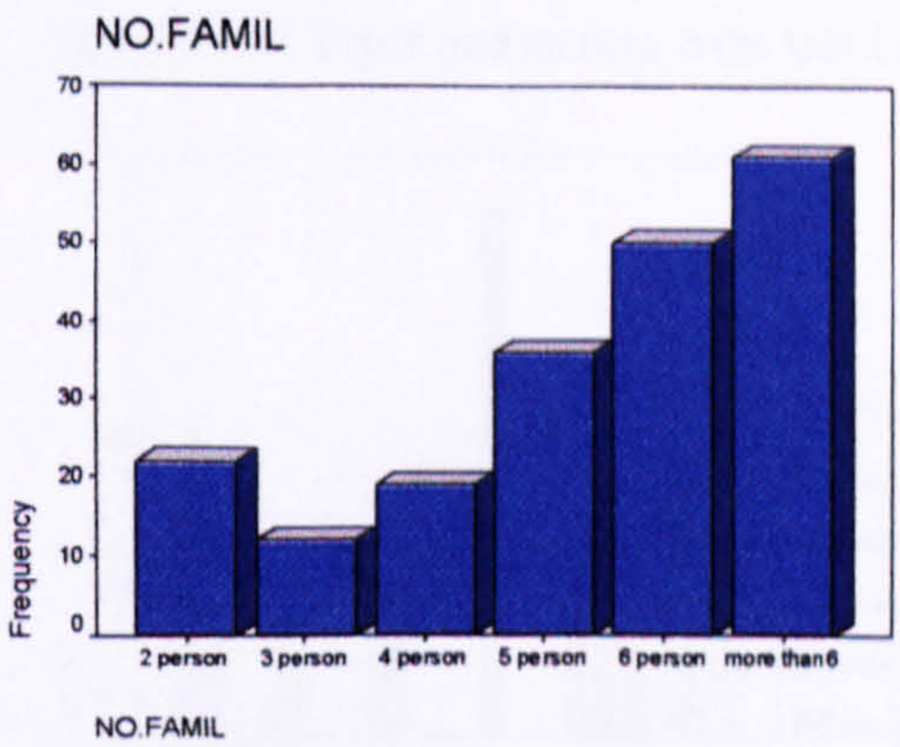
Graph C.1: Type of house



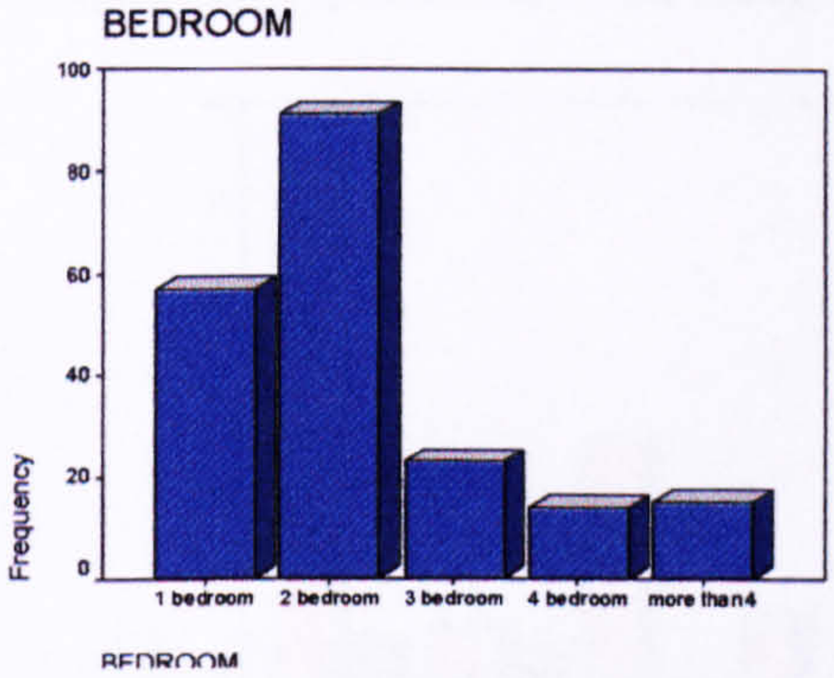
Graph C.2: Number of entrances



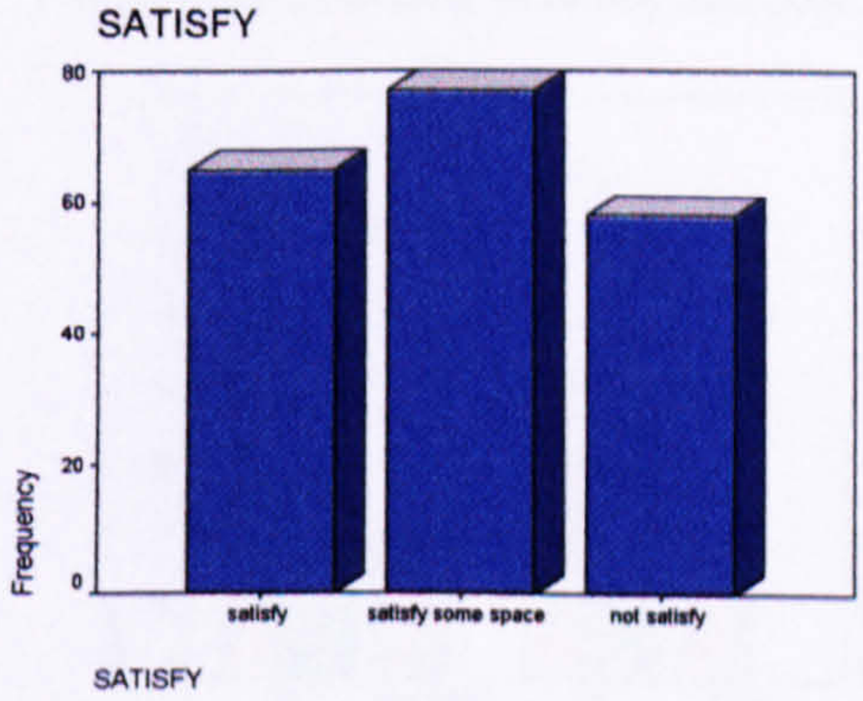
Graph C.3: Number of rooms



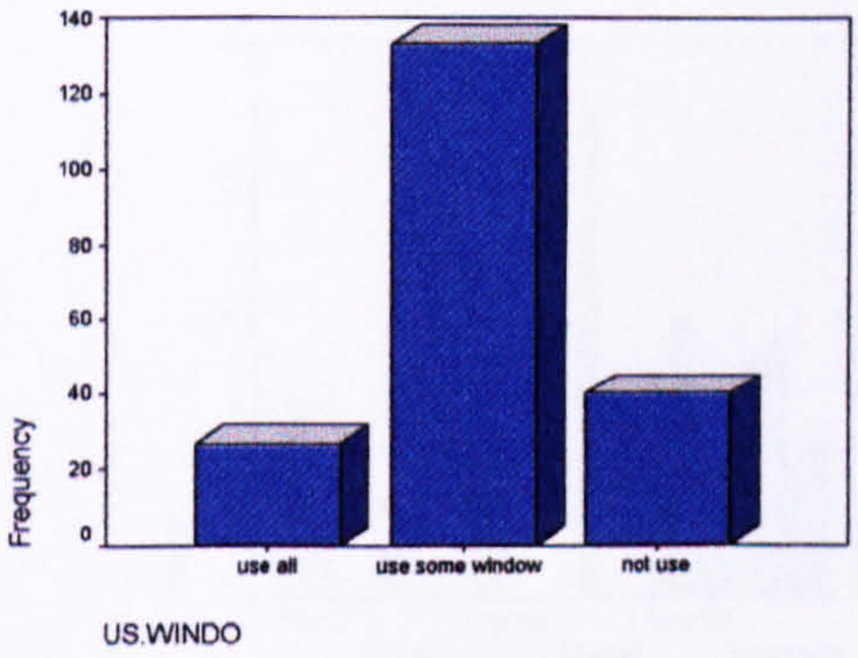
Graph C.4: Family membership



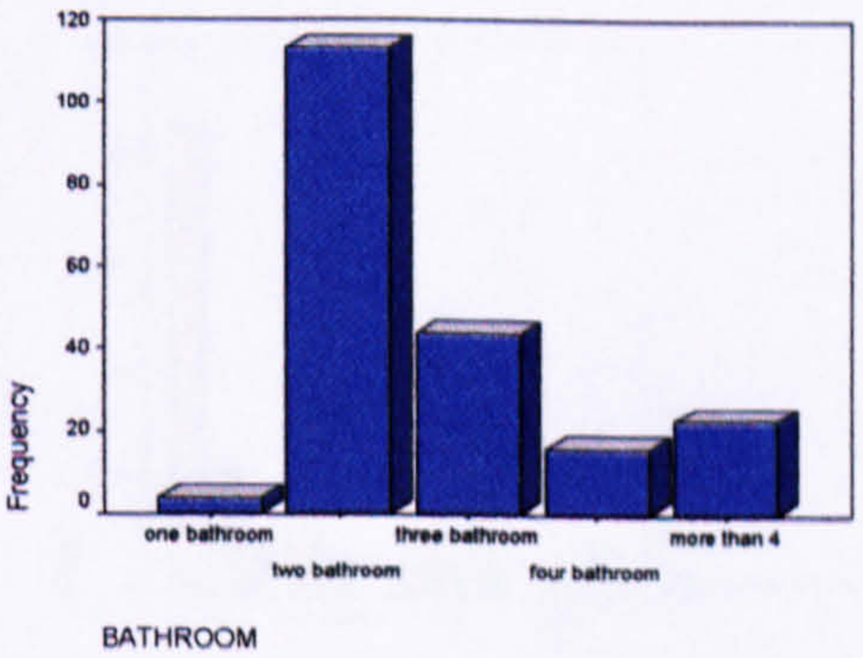
Graph C.5: Number of bedrooms



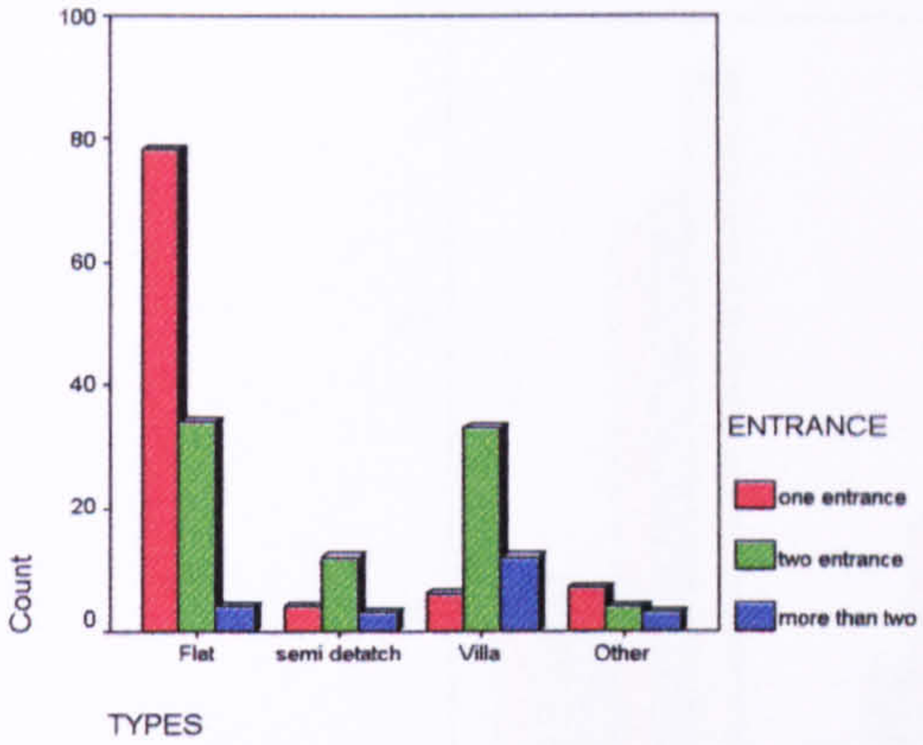
Graph C.6: Satisfaction



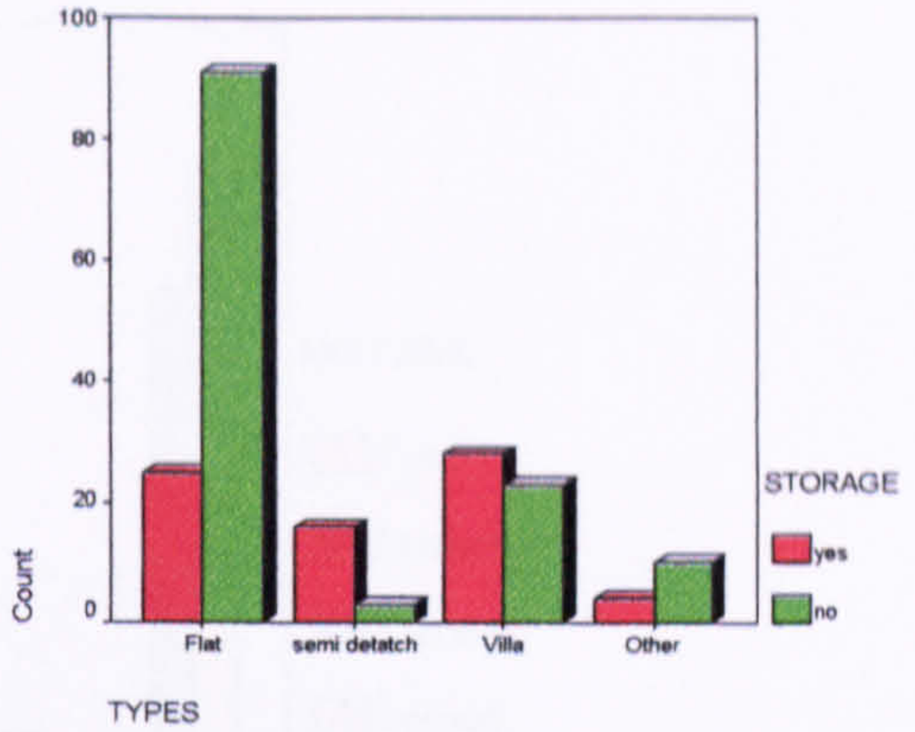
Graph C.7: Use of windows



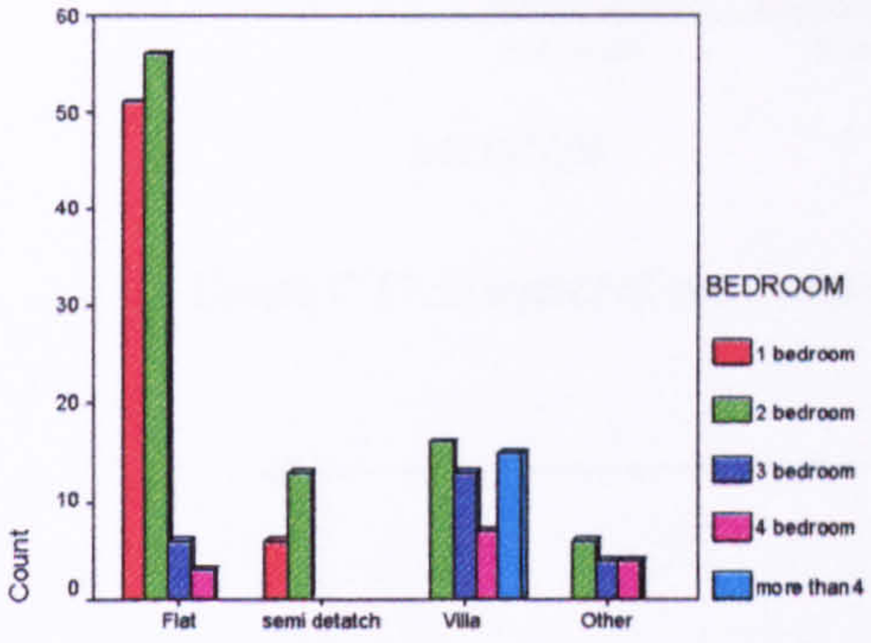
Graph C.8: Number of bathrooms



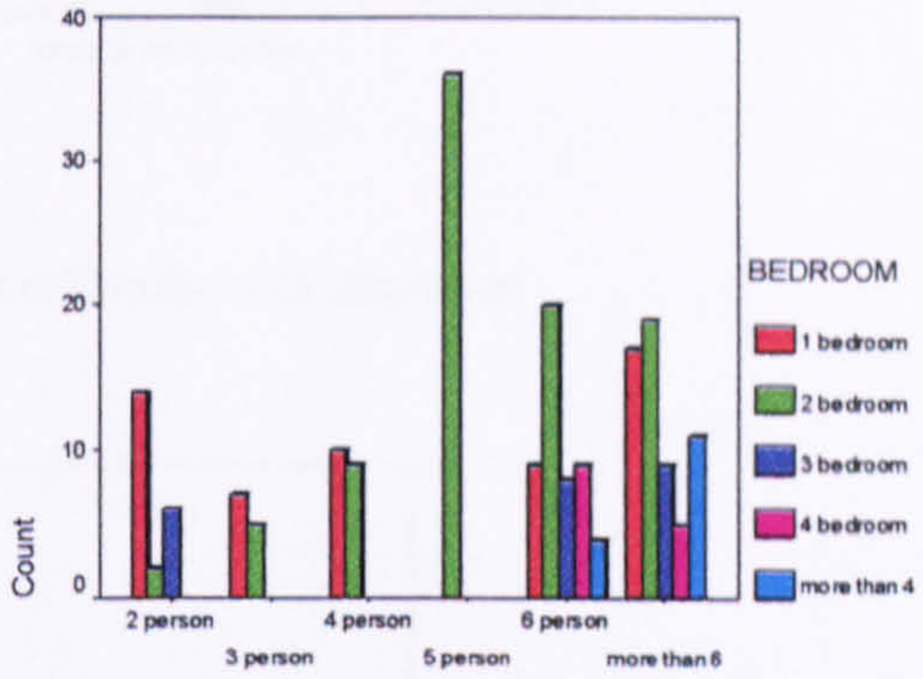
Graph C.9: Types and entrance cross tabulation



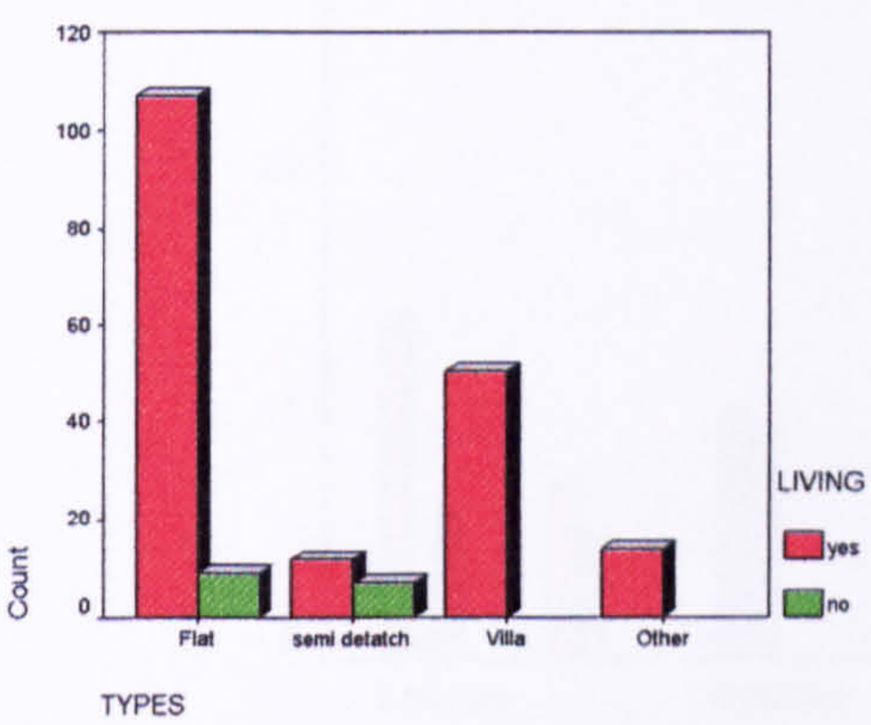
Graph C.10: Types and storage cross tabulation



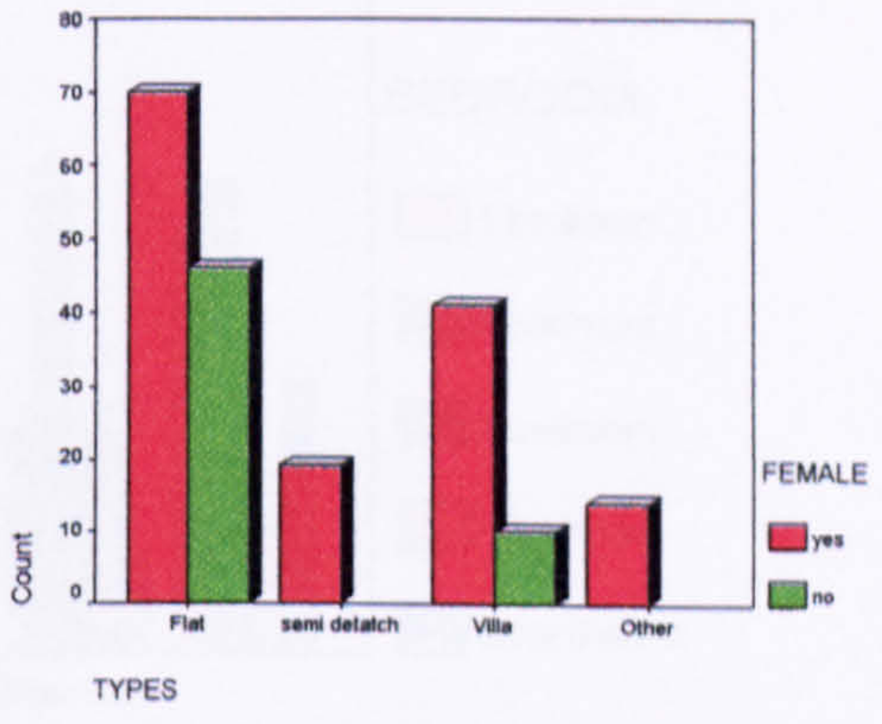
Graph C.11: Type and bedroom cross tabulation



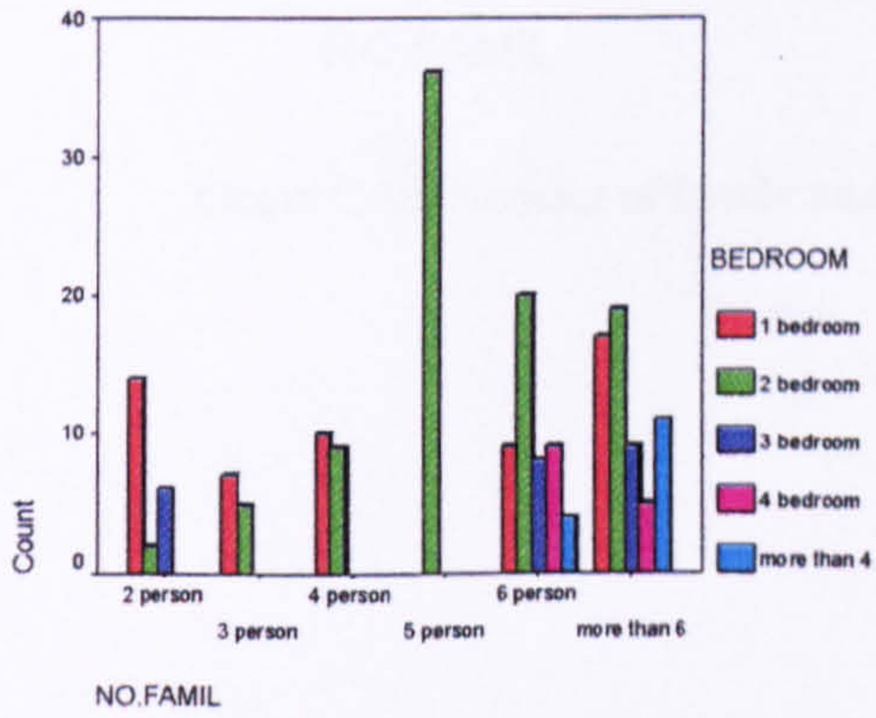
Graph C.12: Number in family and bedrooms



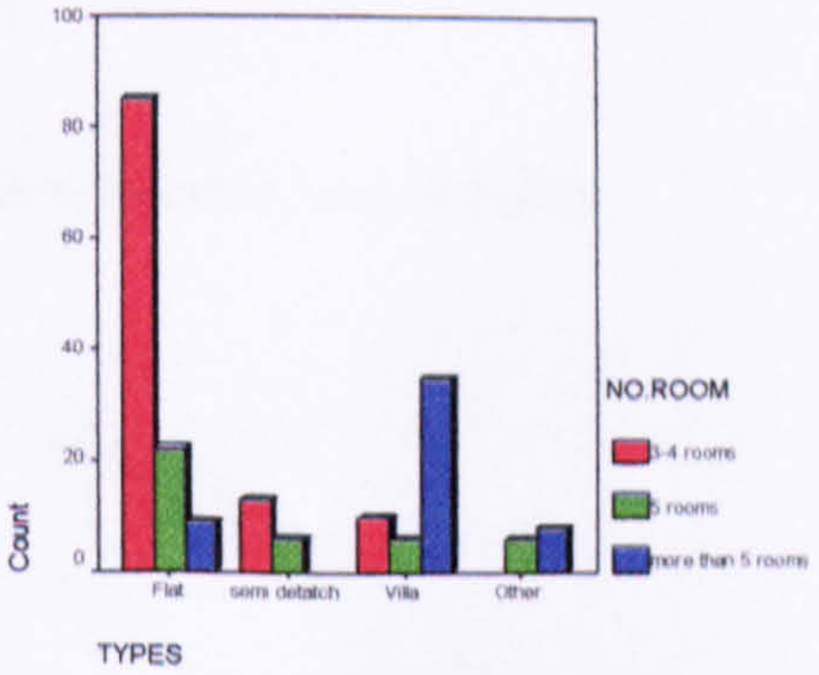
Graph C.13: Types and living room cross tabulation



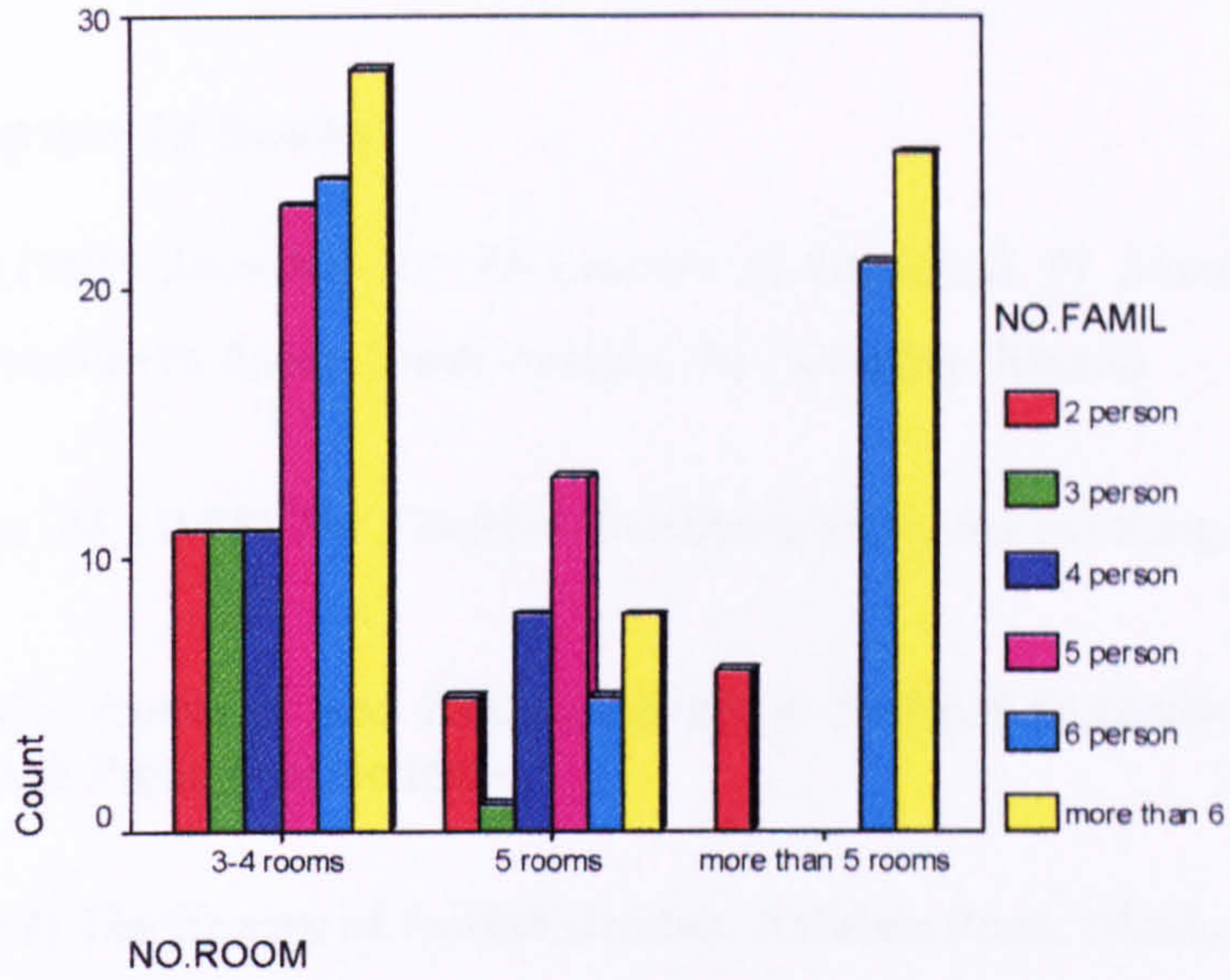
Graph C.14: Types and number in family



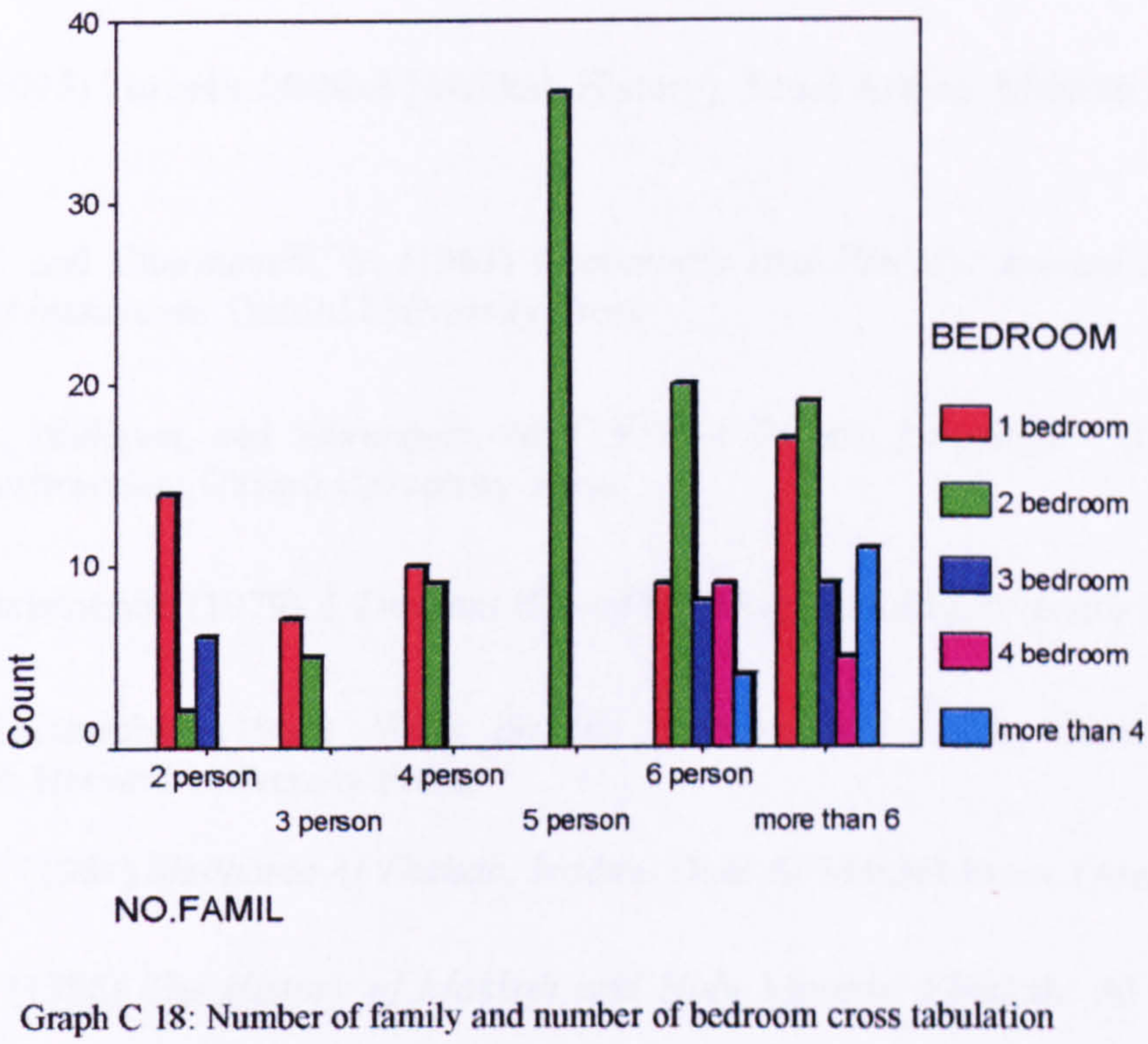
Graph C.15: No. of family and No of bedroom



Graph C.16: Types and No of room



Graph C 17: Number of room and number of family cross tabulation



Graph C 18: Number of family and number of bedroom cross tabulation

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