Doctoral Dissertation

A Study on the Spatial Structure of Houses and Open Spaces by the Analysis of Physical Improvements and Daily Activities in the Typical Residential Areas in Kabul City

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Abbreviations

AKTC	the Aga Khan Trust for Culture
ICT	Intercontinental Consultants and Technocrats Pvt. Ltd.
JICA	Japan International Cooperation Agency
MoUD	Ministry of Urban Development and Housing
PB	Public Space
PR	Private Space
SPB	Semi-Public Space
SPR	Semi-Private Space

Abstract

In the developing countries cities suffer from rapid urbanization, generally. Kabul city, the capital of Afghanistan is one of those fast growing cities, where the level of its population growth is faster than its economic growth. Lack of capacity within the government to provide affordable houses for the increasing population, has led the inhabitants to take measurable steps in shaping of their living spaces by which somehow responds the housing needs of the growing population. And as a result, the living areas become denser and compact. The settlements used by one family, in the past have enlarged horizontally/vertically and used by several families, currently. The areas conserved for recreation is being filled with unplanned settlements, assisted in degradation of the living environments and negatively influenced on social relationships and the quality of the residential environments.

In order to comprehend the effects of the rapid urbanization in different residential areas of the Kabul city, four residential areas of *Shahr-e-Kohna* (Historical area), *Char Qala* (Sprawled area), *Khair Khana* (Planned area), and *Shahrak-e-Aria* (Newly planned area) was selected, for the study.

This study attempts to address issues of housing transformation, housing typology, quality of the spatial structure of the open spaces, outdoor activities and social interaction, in the mentioned residential areas of Kabul city.

The analysis of the research data indicates the occurrence of different types of transformations. The majority of the increased populations have been accommodated in the transformed houses. The analysis also indicates that the spaces with better quality and facilities are used for different types of activities and a higher level of social interaction.

Some positive and negative results were encountered during the transformation process. The positive aspects are:

1. The majority of refugees, internally displaced people, and migrants have found places to live.
2. The spaces are added for income resource (Shops, rooms to be used by tenants, etc.), which due to usage of cheap material the rent is very cheap for low income people.
3. The spaces are made spacious, etc.

The negative aspects are:

1. The density is increased in the houses/areas.
2. The light and ventilation is blocked because of the extension of the spaces.

3. The open spaces reserved for conservation is transformed to housing blocks, which resulted negatively on social relationships and the quality of the residential environments, etc.

Having the above points into consideration, the study findings are essential to assist the government to undertake corrective actions for the improvement of the existing residential areas, as well as the future planned residential areas which are under urban development programs.

Chapter 1
Introduction

1.1 Background

Urbanization is a global phenomenon which influences both the developed and developing countries. However, the rate of urbanization in the developing countries is much higher than the developed ones. A report by the World Health Organization about the global urban population estimates that:

> *'By the middle of the 21st century, the urban population will almost [sic] double, increasing from approximately 3.4 billion in 2009 to 6.4 billion in 2050. Almost all urban population growth in the next 30 years will occur in cities of developing countries. It is estimated that the urban population of these countries will [sic] more than double, increasing from 2.5 billion in 2009 to almost 5.2 billion in 2050'* (World Health Organization, 2012).

In the developing countries, the push/pull factors such as; poverty, lack of security and civil conflicts/better job opportunities in the urban areas, better quality of urban services and facilities, to name few, are the driving forces that make people to migrate towards urban areas.

Afghanistan is a rapidly urbanizing country where, the rate of the growth of its population is much faster than its economic capacity. The four decade of political conflicts and civil war caused repeated displacement of the population and immigration of many families to other countries. But by ending of the civil conflict most of those refugees return back from the other countries. Social disasters such as flood and drought etc. also played role in the displacement of people in the country.

In particular, Kabul city is affected by the rapid urbanization process. According to MoUD, 52.3% of urban populations in Afghanistan live in Kabul city, while 47.7% live in other 123 cities (MoUD, 2008, p.11). This clearly indicates the unbalanced urban development in the country.

Kabul is the largest and a very fast growing city. One of the main problems of Kabul city is the rapid population growth. The city with 2 million populations in 2002 has an estimated population growth of over 5 million people, today.

Also, due to the returning of refugees from other countries as well as the internally displaced people and the rural migration towards Kabul, the physical and social fabric of the city has been affected enormously by a rapid change. It is due to the location and concentration of social, economical, educational centers and other institutions in the city. Lack of these amenities and economic opportunities in other cities and rural areas, has created major urban problems in Kabul such as;

shortage of housing, rapid squatter development, lack of basic infrastructure and social services, environmental and social problems (Unemployment, poverty, insecurity) and so on. As a result, the living areas become denser and compact. The settlements used by one family, in the past have enlarged horizontally/vertically to be used by several families, today. The areas that were conserved for recreation are filled with unplanned settlements which assisted in degradation of the living environments and negatively influenced on social relationships and the quality of the living environments.

In order to comprehend the effects of the rapid urbanization on different residential areas in the city, four residential areas of *Shahr-e-Kohna* (Historical area), *Char Qala* (Sprawled area), *Khair Khana* (Planned area), and *Shahrak-e-Aria* (New planned area) was selected for the study.

This study is an attempt to address issues of housing transformation, housing typology, quality of the spatial structure of open spaces, outdoor activities and social interaction in the four residential areas of Kabul city.

1.2 Statement of the Problem

Since 2001, Kabul has become the center of attention and a great deal of concentration has been given to various issues, mostly at the Macro-Level, such as: general development, infrastructure, land issues, etc. Having Thorns saying into consideration, "at the level of everyday life, the city is a complex web of associations and meanings" (Thorns D. C., 2002, p.96), and in order to realize the complexity, functionality and dynamics of living environments in the city at the scale of everyday life; need for studies at the Micro-Level is very necessary.

General observations of the city indicate that the mentioned changes not only affected the quality of the physical and social structure of the living environment but also influenced people's behavior. Therefore, this study analyzes and evaluates the fundamental changes in spatial structure, use of spaces, and social interaction in the four residential areas of Kabul.

1.3 Objectives of the Study

The main objective of this study is to analyze the process of transformation of the houses, the spatial structure of open spaces and their usage, and social interaction within the four residential areas in the city. In other words the study assist to understand how/why transformation took place, factors that

make one area more/less active than the other, and encourage/discourage interaction among people of all ages and genders.

The specific objectives are:

- To explore the transformation process in the settlements in relation with their typology.
- To analyze and evaluate the relationship between the spatial structure of open spaces and outdoor activities.

This research attempts to provide reasons for the following questions:

- Why the residents brought changes to their living spaces?
- How the changes in the settlements met the residents' demands?
- How the residents use the open spaces?
- What are the influential factors that promote people to spend more time outside and use the spaces?
- What are the influential factors that foster social cohesion among people?

1.4 Significance of the Study

This study is targeting different residential areas (Historical, sprawled, planned, and a new township) of Kabul city, and highlights challenges, needs and preferences of the people of different backgrounds and social classes. It also attempts to clarify the positive/negative aspects in each area, for the future planned actions regarding the development/improvement of the residential areas in the city.

The findings of this study is essential to help the Government of Afghanistan to improve the existing residential areas, as well as for the development of the new areas in the future urban development programs, especially in the development of the new satellite town* in the North of the existing Kabul City (Fig.1.1).

* To cope with the problems that Kabul city is facing, the government considers that the development of a satellite town in the north of the existing city will respond to the urban needs of Kabul residents. A new Master Plan for Kabul City and a New City (In the north of the existing city) was prepared by Japan International Cooperation Agency (JICA) in 2010.

The master plan for the new city is designed for 1.5 million people in a land area of 740.41km² over a period of 15 years. The new city has the capacity to accommodate a maximum of 3 million people in the future.

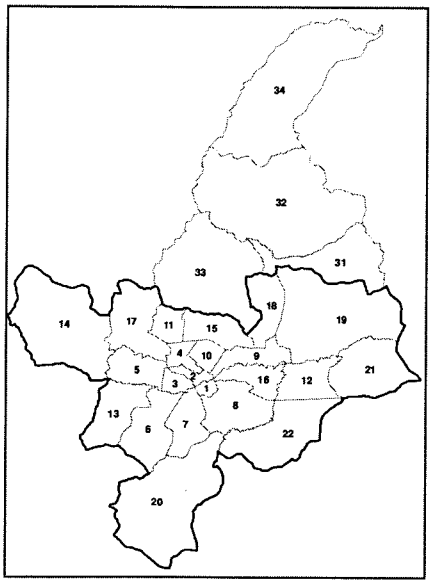

Fig.1.1. The new satellite town in the North of the existing Kabul City's map (Source: JICA)

1.5 Outline Structure

Chapter 1: This chapter provides information regarding the background of the problems that the city is facing as a result of rapid urbanization, the statement of the problem, objectives of the study, and significance of the study are discussed.

Secondly, the chapter discusses previous studies regarding approaches to studying the transformation, housing typology and transformation, and outdoor activities, and the relationship between the previous studies and the present study.

Thirdly, the chapter provides the details of the research methodology and strategy adopted in this study. The methods for collecting the data for analysis including the reasons for selection of the sites are addressed. In addition, the research limitations and potential problems are discussed.

And finally, the chapter provides a brief description on the four studied areas of *Shahr-e-Kohna* (Historical Area), *Char Qala* (Sprawled Area), *Khair Khana* (Planned Area based on the 1978 Master Plan), and *Shahrak-e-Aria* (Planned Area based on the 1978 Master Plan). The studied areas profile, total number of people, etc. is discussed.

Chapter 2: This chapter provides an overview of urban development in Kabul city in different periods. The chapter discusses various issues, such as; the history of development, the city's master plans, the years of the political conflict, the present condition, etc.

Chapter 3: This chapter reveals the results of the study described in chapter 1 Research Methods. It clarifies the transformation process occurred in the houses in the four studied areas, in relation with their typologies by provision of reasons like; how/why the residents brought changes to their living spaces and whether the changes met their demands.

Chapter 4: This chapter reveals the results of the study described in chapter 1 Research Methods. It clarifies the relationship between the hierarchy of the open spaces and their usage, as well as social interaction in the four residential areas of *Shahr-e-Kohna, Char Qala, Khair Khana,* and *Shahrak-e-Aria.*

Chapter 5: In this chapter a summary of the study, the major findings, conclusion and recommendations is discussed. The themes of this chapter include: housing typology and transformation, outdoor activities and spatial structure of open spaces, social interaction, conclusion and recommendations.

1.6 Literature Review

1.6.1 Transformation

Transformation is defined by Makachia P. A. as:

> *"transformations are understood as modifications, firstly, of the existing design product by the expansion of plinth areas, addition of spaces laterally and vertically, or by adding spatial units like rooms, alcoves, corridors, etc... secondly, transformation is viewed as qualitatively re-organizing the disposition of the provided spaces, through relocating, resizing of openings between spaces and/or to the exterior environment. Dweller-initiated transformations presume that the architect made no provision for the phenomenon at conception and design stage"* (Makachia P. A., 2005).

Based on Makachia's definition, the word transformation means modification, in this study. It's a process of expansion (Addition of the spaces laterally/vertically), alteration (Re-organization of spaces such as; resizing, changing of the function, etc.) and removal (Removal of a space for alteration/replacement) brought about by the residents to their living spaces on an ad hoc basis.

1.6.2 Housing Typology and Transformation

Funo Sh. *et al.* (2002) conducted a study on typology of *Kampung* houses and their transformation process in Surabaya city, Indonesia. The study explains the mechanism of the *kampungs* transformation focusing on the addition and alteration of space in dwelling units. The findings of the study are based on the field survey and the use of field data. The researchers identified different types of *kampung* houses and their variations based on the number of units/ridges, storey, and *kampung* with open courtyards. The archetype of *kampung* house is found out to be a one room unit. The transformation process data of 15 houses were obtained, and the researchers found out that, "the standard type of *kampung* house is not constructed in one go. In general, a *kampung* house is gradually completed by additions and alterations according to the needs" (Funo Sh. *et al.* 2002). It is also mentioned that the reason for transformation (addition of the rooms to the houses) is due to increase in the number of family members. The transformation of different housing types is addressed.

Chiranthanut Ch. and Funo Sh. (2008) conducted a study on spatial formation and transformation of Kaloeng houses in Mukdahan province, in Thailand. The study examines the relations between the types of Kaloeng houses and their transformation process. The method for the study is based on the field survey and the data on aspects such as family structure and the age of buildings are based on personal interview with the residents. 33 houses were selected for the study. The researchers found

out that a Kaloeng house basically consists of living space and service/utility space (Cooking and storing). Four types of housing were identified based on the relationship between those two spaces. It was found out that the houses are formed gradually due to the changing needs of the residents. It was also mentioned that the addition of the rooms are based on an increase to the number of family members in a house. The different types of transformation of the houses are explained as variations of the four mentioned types.

The present study follows the same procedures carried out by Funo Sh. *et al.* (2002) and Chiranthanut Ch. and Funo Sh. (2008), which is based on field survey and using of questionnaire (Interviewing with the residents). The mentioned studies explain how the changes are made to the houses. Unfortunately, both of the studies lack adequate reasoning and evidence. A number of explanations are given which are based on assumptions and in general way. For instance, in both studies the researchers mention that:

- The changes are made according to the residents needs
- The rooms are added due to the increase in the family members
- Shops and stalls are added to the building for rental purposes [Funo Sh. *et al.* (2002)]
- The spaces are added to the building gradually

But no detailed information has been provided about the need and the increased number of the families. The shops and stalls are not shown on the drawings. The dates of the chronological changes in the spatial structure of the spaces are also not specified.

It is the interest of the present study to find an explanation to the issues discussed above.

Makachia P. A. (2005) conducted a study on the influence of house form on dweller-initiated transformations in urban housing in Nairobi, Kenya. The study is based on a qualitative case study methodology; identifying four categories of housing types such as, single-storey (Detached/semi-detached) linear, single-storey grouped (Courtyard), multi-storey linear and multi-storey courtyard. The types of transformation of the houses are derived from the above types. The findings of the study indicate that:

a) "Thus in the area and spatial unit terms, the single storey typologies are prone substantive transformations; a reflection of the cost and technological limitations of transformations at upper levels. It reflects also on the complexity of need covenants between adjacent dwellers required to effect such transformations" (Makachia P. A., 2005). The additional spaces are added either for owner's accommodation/as a rental unit for residential or other function such as; shop. The location of

the residential spaces and shops are dependent on location of the units on the plot. Frontal placement of the units is used for shops and the inner locations are used for residential purposes.

b) In all apartment typologies, no significant spatial transformations are observable except temporal extensions in the ground floor units such as petty trade like grocery kiosks, hair saloon, barbers, etc. The upper levels mostly used for residential accommodation. These types are only for the purpose of income generation. The reasons for no spatial transformation in the multi-storey housing types are mentioned as; the cost and technological ramifications, and the complex covenants needed between vertical and lateral neighbors.

The study concludes that, "The form as a design strategy can promote or deter dweller-initiated transformations and in the process generate varying environmental qualities" (*ibid.*).

The study by Makachia P. A. (2005) is discussed in general way and lacks evidence. The illustrations representing the transformations are not clearly understandable. The methodology of the study on how the data was gathered has not been explained. The findings of Makachia's study regarding the single story typologies are almost the same as the present study, but the difference is on the multi story typologies. For instance, in the Makachia's study, in the single story typologies, spaces are added either to be used by owner/rental unit for tenants or other functions such as, shop.

The present study, the reason for addition of spaces to the buildings in response to the residents' demands/gradual changes in the household demographic has been explained. As in *Char Qala* and *Khair Khana* some spaces are added to the building to be used by the owners/rental purposes. In *Char Qala,* shops are added in the yards along the streets to find a source of income.

In the Makachia's study, in the multi story typologies, no spatial transformations has taken place in the individual units but there are some temporal extensions in the ground floor units such as petty trade like grocery kiosks, hair saloon, barbers, etc.

The present study explains that in the apartment buildings of *Shahrak-e-Aria,* many spatial transformations have taken place in the individual units but no extensions were observed, in the ground floor units.

The present study draws the same conclusion as Makachia's study, "The form as a design strategy can promote or deter dweller-initiated transformations" (*ibid.*).

Mirmoghtadaee M. conducted a study on the process of housing transformation, in 2009, in Iran. The study evaluates the compatibility between the house form and lifestyle, in Iran.

The researcher explains that urbanization has led to the gradual replacement of individual houses with residential multifamily complexes and apartments. In the traditional houses (Inward-looking courtyard houses) harmony between people's needs and the physical characteristics of the house have been considered. The houses were developed to accommodate the changing needs of an extended family comprising several generations.

The transformation process in the traditional houses was based on the increase in the number of families and the household economic conditions. In contrast, the new residential environment (Outward-looking apartment buildings), the house spaces were according to their general functions not in accordance with current lifestyles. Spatial arrangements, together with plan layout and proportions facilitate a limited potential for varied lifestyles. Although, the physical characteristics of the houses have changed profoundly as well as the household size (From patriarchal extended family in the past to independent nuclear family in the present), but the residents' living habits and lifestyles have not changed.

The researcher concludes that the "habitats should be physically harmonious [*sic*] with traditions and lifestyles; otherwise, residents will react by changing the environment according to their wishes. When the environment itself is not changeable, residents have to adapt themselves to the new conditions; consequently, some valuable traditions would be lost forever" (Mirmoghtadaee M., 2009).

The study by Mirmoghtadaee does not explain the methodology used for collecting the data. The study has been discussed very generally and lacks to provide any evidence. The researcher explains that the physical characteristics of the houses have changed profoundly (From traditional courtyard houses to apartment buildings) as well as the household size but the residents' living habits and lifestyles have not been changed.

In contrast to Mirmoghtadaee's study, the present study, found out that the physical environment can influence social and cultural beliefs of the residents. For instance, in the studied area of *Shahrak-e-Aria,* the residents have brought lots of changes to their living habits and lifestyles since they have settled there. The process of settlement is totally different from the traditional areas.

The collected data indicates that life/lifestyle in the traditional areas is no longer attractive to people. The majority of the people prefer living in the new/modern residential areas. The analysis also indicates that the majority of the residents have the tendency to change their lifestyles from traditional to a new/modern lifestyle.

Nguluma H. M. conducted a study on housing transformation in the informal settlements in Dar es Salaam, Tanzania in 2003. The methodology of the study is based on interview, measurement, observation, etc.

The result of the study shows that different types of transformation have taken place in the houses such as, horizontal, demolition, replacing, new addition, interior and vertical. As a result of the transformation, new house types have emerged. Seven types of housings were identified in the area. The researcher also identified three main factors for the transformation of the houses such as: economic, social-cultural and modernization. The results of the study show that; 36% of the residents brought changes to their living spaces due to an increase in the number of their household members. 20% of the residents attributed transformation to modernization. Other reasons stated by residents include the desire for renting out or increased space for income generating activities.

The study identifies positive as well as negative aspects of transformation. The positive aspects are those of increased indoor space, increase of rooms for renting and in other cases separation of functions. The negative aspects include: decrease of outdoor space, increase of housing density, blockage of ventilation and light in the transformed houses.

The study concludes that the transformation has given low-income people an opportunity to access affordable rooms for renting. On the other hand, housing transformation leads to better houses than the original structure. The house extensions are being carried out outside the established formal planning regulations. It is in the light of these developments that cause the government intervention to guide housing development processes in informal settlements (Nguluma H. M., 2003).

The present study follows the same methodology and draws (Almost) the same conclusions as Nguluma's study. However, there are some differences between the two studies as following:

- Nguluma studied the housing transformation only in an informal area.

In the present study, in order to comprehend the process of transformation considered four different residential areas, such as: historical, informal, planned, and newly planned.

- The researcher studied the usage of outdoor spaces (Within the lots).

The present study analyzes and evaluates the hierarchy of the open spaces, their usage, and the relationship between them (Within and outside the lots). It also finds out the influential factors that make one area more/less active than the other, and encourage/discourage interaction among the people.

- The researcher found out that housing transformation leads to better houses than the original structure.

The present study found out that, the quality of the transformed spaces relate to the characteristic and the quality of the transformation process in each of the studied areas.

1.6.3 Outdoor Spaces and Activities

Gehl J. (1971, cited in Carmona M. and Tiesdell S., 2007, p. 143) argues that there are three types of activities such as:

1. Necessary activities include those that are more or less compulsory. For instance, going to school or to work, shopping, waiting for a bus or a person, etc. These activities take place under nearly all conditions and are more or less independent of the exterior environment.
2. Optional activities those pursuits participated in case there is a wish to do so and if time and place make it possible. This category includes activities such as; taking a walk to get a breath of fresh air, standing around enjoying life, etc. These activities take place only when exterior conditions are optimal, when weather and place invite them. These activities are dependent on exterior physical conditions.
3. Social activities are all activities that depend on the presence of others in public spaces. These activities include the children at play, greetings and conversations, etc.

Necessary, optional, and social activities occur in a finely inter-woven pattern. The researcher argues that the more time people spend outdoors, the more frequently they meet and the more they talk. He also argues that there is a close relationship between outdoor quality and outdoor activities. The study concludes that if the physical framework gets better, outdoor activities tend to grow in number, duration and scope.

The findings of the present study prove that the spaces with good quality are used more by people and the number of activities is higher in those spaces. In contrast to Gehl's study, in the present study the activities are classified into three different and more specific categories such as:

1. Physical: Is any type of structured/unstructured bodily activity, comprised of different types such as; Exercise (Jogging, running, etc.), Work (Gardening, digging a ditch, etc.), Play (Playing tag, hopscotch, etc.) and Kinetic (Walking while playing with a toy, leaving/returning home, etc.).

2. Social: Is any type of activity done by a group of people, such as; standing/sitting and talking with someone/group of people, sitting with others while playing guitar and singing, etc.
3. Stationary: Is any type of activity performed by individuals such as; standing/sitting somewhere while watching others, etc.

Kanazawa Sh. and Jun Ch. (2002) conducted a comparative study on residents' perception and activities in their outdoor spaces in two residential areas, a traditional block (Shique Hutong) and a new housing project (Enji) in Beijing, China. The study clarifies how the open spaces are perceived, evaluated, and used by the residents and to compare characteristics and problematic aspects of outdoor spaces in the contrasting types of residential areas.

The Enji residential project contains four clusters of mid-rise housing units and the Shique Hutong is one of the old city's typical blocks, a prototype of the single story courtyard houses. The methodology for the study was observation and questionnaire surveys. The researchers identified three types of activities: 1) necessary activities carried out for satisfying one's specific needs such as doing one's job including housework, shopping, walking or riding a bicycle for certain purposes, 2) spontaneous activities carried out by an individual for passing one's time like taking a walk, sitting and watching other people, sunbathing, and 3) social activities carried out by a group of people such as playing games, greeting or talking to each other.

The results of the study indicate that the spaces in the traditional blocks are used and satisfied by the residents than those in the new project perceived as problematic in evacuation and rescue in emergencies while the spaces in the new project are seen as areas of potential criminal activities. The traditional outdoor space have a clear cognitive hierarchy space from public to private domains, whereas the modern outdoor spaces lack definite regions such as semiprivate or private.

Although the present study has followed the same methodology as Kanazawa and Jun's study, but the results of the present study is very different. The differences between the two studies are discussed as follows:

- Kanazawa and Jun, studied two residential areas, a traditional and a new housing project.

The present study targets four residential areas (Historical, sprawled, planned, and newly planned) in Kabul city.

- The researchers have classified three types of activities such as; necessary, spontaneous, and social.

The present study classifies three different and more specific categories of activities such as: 1) Physical [Exercise (Jogging, running, etc.), Work (Gardening, digging a ditch, etc.), Play (Playing tag, hopscotch, etc.) and Kinetic (Walking while playing with a toy, leaving/returning home, etc.)]. 2) Social, 3) Stationary.

- The researchers have classified the generation of the participants into three groups of; less than 18 years old as (Young), over 19 but less than 60 years old as (Adults), and those over 60 years old as (Elderly).

The present study classifies the generation of the participants into five specific groups such as; people below 9 years as (Children), 10-19 years as (Teenage), 20-39 years as (Young), 40-59 years as (Middle age), and over 60 years as (Elderly).

- The researchers have found out that the spaces in the traditional used blocks satisfied the residents more than those in the new projects. The spaces in the traditional blocks are perceived as problematic in evacuation and rescue in emergencies while the spaces in the new project are seen as areas of potential criminal activities. The reason for the different usage and satisfaction level in the outdoor spaces of the two studied areas is explained as the dissimilarity in their hierarchical composition of public-private spaces. The new housing project lack definite regions such as semiprivate or private, whereas those in the traditional housing blocks hold a clear spatial hierarchy from public down to private regions.

The present study found out that the spaces in the newly planned residential area are used satisfies by the residents more than the other three studied areas (Historical, sprawled, and planned). The newly planned residential area is a gated-community attempt to provide high security facilities for the residents. The security in the newly planned residential area is better than the other three studied areas. The newly planned residential area lacks private and public spaces. The lack of private outdoor space has influenced the residents' cultural beliefs. As a result, in contrast to the other three studied areas which have private outdoor spaces, the spaces in the newly planned residential area are used by people of all ages and genders and the social interaction between the residents is higher.

1.7 Research Methods

1.7.1Research Strategy

As mentioned earlier, the main objective of this study is to analyze the process of transformation of the houses, the spatial structure of open spaces and their usage, and social interaction in the four residential areas in Kabul city.

Given what mentioned above, a strategy that meets the needs of this research is a case study. The reason for the selection of a research strategy for this study is based on the nature of the research objectives to find answers for the asked questions to reflect the problems, and suggest recommendations.

As Yin R. K. described, 'The strength of the case study method is its ability to examine, in-depth, a "case" within its "real-life" context' (Yin R. K., 2004).

Furthermore, Yin states, "The case study method is best applied when research addresses descriptive or explanatory questions and aims to produce a first-hand understanding of people and events" (*ibid.*).

Having this into consideration, in order to probe deeply and find out the descriptive and exploratory reasons on, why/how people transformed their living spaces, how they use the spaces, their relationship with each other, etc., quantitative and qualitative approaches are adopted for this study.

1.7.2 Data Collection

A comprehensive field work was conducted in September of 2010 in the four residential areas of *Shahr-e-Kohna, Char Qala, Khair Khana,* and *Shahrak-e-Aria.*

The following processes were undertaken to collect the data:

- **Physical Measurement:** Buildings, streets, shops, etc. were measured. The sketches of the plans include all the necessary measurements, furniture, greenery, the usage of inside and outside spaces.
- **Interview with Key Informants (Used a Questionnaire):** A questionnaire format containing open and closed questions, was used during the interviewing process from the residents of the surveyed houses based on specific criteria's such as, the number of family members, period of living, chronological changes brought to their living spaces and so on.

- **Observation:** All the outdoor activities were recorded on the maps prepared after the physical measurement, through walking on the routes where made it possible for the researcher to record as many activities as possible without any visual blockage or any other difficulties in the surveyed areas. The process of recording the outdoor activities was for 20 minutes in every 2 hours starting from 6:00AM to +6:00PM.
- **Reviewing Institutional Records:** The data, and document review from the government or other institutions were examined and the maps were taken to the sites to check for update.

The findings of the study are based on 181 individual responses of the residents of the surveyed houses. This study is limited to the survey sample of 101 houses, in the four residential areas of Kabul city.

1.7.3 Limitations and Potential Problems

The problems encountered during the process of collecting data are as followings:

- Unwillingness of some residents to cooperate: Several reasons for the unwillingness of the residents to cooperate are: a) So far, a number of studies have been carried out in the residential areas of Kabul. In some cases the so-called researchers had obtained information from the residents by deception (By promising the residents that they will help them in the future or...). Therefore, some of the residents suspiciously behave to the people who ask for information. b) The residents in the informal areas suffer from tenure insecurity. Therefore, they feel threatened, when someone asks them for some information about their houses. They think that the government will expropriate their lands. c) It was noticed that some of the residents do not feel comfortable to let a stranger (Especially someone who study in abroad) to enter to their rooms/houses because of privacy and cultural reason. d) Security was another issue which makes some residents to not let a stranger to enter into their houses. For instance: during the field study in *Char Qala,* there was an incident. A resident (12-15 years old boy) agreed to let me enter to their house (After taking permission from his mother) to take the measurements of the house. His father came in and asked the reason for my presence in their house. I explained to him my purpose but he did not wanted to believe it. I showed him my university ID card but he said "How do I know you are a student or a spy. Just leave the house...!"
- Unwillingness of some residents to respond accurately and in detail: During the interview, there were several cases that the residents responded to the questions with short answers and some of their answers were quick and without thinking. For instance: during the interview in *Shahr-e-Kohna,* when I asked the owner of a house about the total number of

people living in the house, he responded, "I really do not know; several families are living here. Just write it 35 or 40 people". But after I insisted and explained to him the importance of the study; he gave me the exact number.

NOTE: In such cases try has been made by the researcher to avoid discrepancy of data by validating the data through matching it with different sources, as (Asking the same questions from different people from neighborhood).

- One of the main challenges during the field study was difficulty of obtaining permission of the house owners to access their houses for measurement and ask questions from women directly (Especially, when there were no men in the house). Traditionally, it was hard for the women to permit a stranger to enter their houses/rooms and ask questions, in absence of their husband/brother/son.

NOTE: In such cases, the researcher managed to visit the houses again when the husband/brother/son was at home. Sometimes even at night. Sometimes I was not permitted to enter to one or two rooms to measure because the women were in those rooms. In such cases, the owner of the house was asked to provide measure of the rooms.

- Photography from the site: Before starting the field work, it was consulted with the community leaders of the areas for their permission to take pictures from the rooms, houses, etc. But the community leaders did not give permission of using the camera.

1.7.4 Selection of the Studied Areas

As mentioned earlier, Kabul city is a very fast growing city. The main problem of the city is the rapid population growth. The city with 2 million populations in 2002 has an estimated population growth of over 5 million people, today. As a result, the physical and social fabric of the city has been affected enormously by a rapid change.

The development process of the city from its origin up to the present time has taken place in two different ways:

1. Unplanned Development: Some areas in the city have been developed without any plan or developmental programs, in advance.
2. Planned Development: These areas in the city have developed based on prepared Master Plans, by the government.

Considering its development patterns, the development condition of the city is reflected by variety of areas such as:

a) Historical Areas: The historical areas in Kabul city are developed without any plan. As Arez G. J. & Dittmann A. writes:

> *'The layout of preindustrial Kabul was not based on a well-planned and geometrical blueprint. Irregularity, darkness and narrowness of each street threatened the security of life and health of Kabul citizens. Recreational centers, parks, resorts, sidewalks, and other civic and social facilities were not [sic] available neither along the streets nor inside the quarters of the city'* (Arez G. J. & Dittmann A., 2005, p.34).

b) Sprawled (Informal) Areas: Massive population growth has led to the development of informal areas in the city in violation of the laws represented in the Master Plan of Kabul city. According to the World Bank; 'Informal settlements now shelter about 80% of Kabul's population; cover 70% of its land area' (World Bank, 2005, p.2). The informal areas are developed in a chaotic way and lacks basic infrastructure, green areas, and community facilities, such as; school, clinic, etc.

c) Planned Areas (based on the Master Plan of 1978): In the past, due to the problems of massive population growth, the government decided to control the urban development of the city by preparing the Master Plan of 1978 (It was the revision of the two previous Master Plans of 1960s and 1970s) with the help of Afghan and international experts. According to ICT, about 60% of this plan has been implemented (ICT, 2007, p.4). The majority of the planned residential areas developed based on typical detailed infrastructure plan.

Kabul city has 22 districts (Fig.1.2). Since, the city is comprised of many distinctive residential areas which are different from each other; physically, socially, economically, culturally. Therefore, in order to comprehend the results of the changes in the physical and social fabric of different residential areas, four residential areas with distinctive profiles were selected which are located in three districts:

1. *Shahr-e-Kohna*: Is a historical area. Architectural remaining confirms that settlements in the area existed between the 1st and 5th century AD. The majority of the houses have kept their original forms and features until today (Fig.1.2 & 1.3).
2. *Char Qala*: Is an old sprawled area. The settlements in this area exist from 1960-70s. The houses are built on the privately owned agricultural lands (In violation of the Master Plan of 1978) (Fig.1.2 & 1.4).
3. *Khair Khana*: Is the first residential area with regular net of circulation designed by the government in early 1968-70s. The area was implemented according to the master plan of 1978 (Fig.1.2 & 1.5).

4. *Shahrak-e-Aria*: In the master plan of 1978, the area was designated for mid/high-rise residential buildings, but was occupied by informal settlements. This area is being developed since 2003. The demand for living in this area is very high (Fig.1.2 & 1.6).

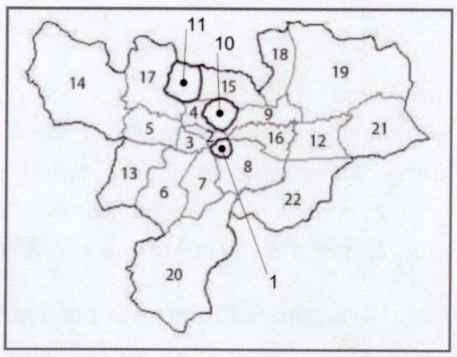

Fig.1.2. The studied areas in districts (1, 10 and 11) in Kabul City's map (Source: JICA)

The selection of the studied areas was based on the following criteria:

a) The agreement of the residents to survey their houses.

b) The location of the studied areas in relation with the hierarchy of the open spaces.

c) The location of the studied areas in relation with the existed facilities (Mosques, shops/markets, etc.) in the areas.

Fig.1.3. The studied area in *Shahr-e-Kohna*

Fig.1.4. The studied area in *Char Qala*

Fig.1.5. The studied area in *Khair Khana*

Fig.1.6. The studied area in *Shahrak-e-Aria*

1.8 The Studied Areas

As discussed earlier, four residential areas were selected for this study as followings:

1. *Shahr-e-Kohna* (Historical Area)
2. *Char Qala* (Sprawled Area)
3. *Khair Khana* (Planned Area based on the 1978 Master Plan)
4. *Shahrak-e-Aria* (Planned Area based on the 1978 Master Plan)

1.8.1 *Shahr-e-Kohna* (Historical Area)

Shahr-e-Kohna with an area of 4.83km² is located in District-1. Its population in 2008 was 72,100 with a population density of 217/ha (JICA, 2009). The houses are built on the privately owned land (According to the community leader). The restoration and rehabilitation of *Shahr-e- Kohna* have been undertaken and supported by the Aga Khan Trust for Culture (AKTC) since 2002.

In this study, a block of 20 houses in the most densely neighborhood of *Asheqan wa Arefan* was selected (Fig.1.7). The *Asheqan wa Arefan* neighborhood, takes its name from an important shrine. The neighborhood is one of the last surviving clusters in *Shahr-e-Kohna*. In 2010, totally 50 families, 292 people lived, in the mentioned 20 houses (Table.1.1). The majority of people living in the area have low-income (Table.1.2).

The courtyard house is the dominant form of housing in this part of the city. The construction of the houses in *Shahr-e-Kohna* is composed of wood-frame walls with infill of sun-dried bricks covered with the mixture of mud and straw *(Kahgel)* as plaster. This system is known as *Senj* construction. The roof consists of poplar poles coated with boards, reeds and different layers of mud and a thin layer of *Kahgel* at the top. The decoration of wood carvings and other artifacts are elaborately made in different patterns.

Fig.1.7. The 20 surveyed houses in *Shahr-e-Kohna* (Source: Author's Illustration, based on the maps from the AKTC*) The houses that are used by tenants are shown darkened

In the studied area of *Shahr-e-Kohna,* 20% of the houses are single storey, 70% are two storey and 10% are three storey buildings. The front views of the houses are facing to a closed courtyard. The plots are irregular in shape and different in size ranging 85-350m², in the studied area. 36 families lived in 14 houses, as private owners and 14 families lived in 6 houses, as tenants. The people who have their own houses have been living there for a long period of time ranging 20-150 years and the tenant's period of living is ranging 1-15 years.

The majority of the local streets have irregular layout and are narrow. The widths of the streets differ in different parts and usually are approximately 2-3m and do not give access to the houses for cars. The residents have to park their cars in other places. Some of the streets are covered by wooden joists at some parts. The streets are paved with stones and are in a good condition.

* It is worth mentioning that, the author contributed to the process of mapping and detailed on-site surveys of buildings and infrastructure in *Shahr-e-Kohna* in 2003. In response to the author's request to investigate the process of transformation in *Shahr-e-Kohna*, the AKTC kindly provided him with the maps from 2003.

1.8.2 *Char Qala* (Sprawled Area)

Char Qala is an old informal residential area located in District-10. Most of the houses are built on the privately owned agricultural lands (According to the community leader). The population in District-10 was 380,288 with a population density of 352/ha in a land area of 13.03km² in 2008 (JICA, 2009).

In this study, a block with 21 houses was selected in a characteristic area (Fig.1.8). The total number of families live in the mentioned block was 42 with totally 199 people, in 2010 (Table. 1.1). 32 families out of 42 lived in 15 houses are the owners of those houses and 9 families out of 42 lived in 6 houses are tenants. The private owner's period of living is 8-35 years and the tenant's period of living is 1-10 years. Most of the people living in this area have low- income (Table.1.2).

Fig.1.8. The 21 surveyed houses in *Char Qala* (Source: Author's Illustration) The houses that are used by tenants are shown darkened

The courtyard house is the most commonly used type of housing in the area. In the studied area of *Char Qala,* 28.6% of the houses are two storey and the rest are single storey buildings. The walls of the houses are constructed of massive sun-dried bricks and the roofs are constructed in the similar manner as the *Shahr-e-Kohna*'s houses.

Plots are different and mostly large in size ranging 90-895m² in the studied area. The ground floors of most of the houses located along the streets are used as shops and some of them have back doors to the houses. The roads are narrow with the width of about 3-6m. Lack of roadside drainage and pavement creates problems for the pedestrians during the winter time. Also, as observed there are a big difference between the level of the houses and the level of the roads. The level of some houses is lower than the level of the roads. Therefore, except 12% of the houses, the majority of the houses lack parking spaces.

Table.1.1.The total number of people in the 4 studied areas

	Total No. of People	-9 Years	10-19 Years	20-39 Years	40-59 Years	60+ Years
Shahr-e-Kohna	292	36.3%	20.6%	16.4%	19.5%	7.2%
Char Qala	199	32.2%	17.6%	20.6%	20.1%	9.5%
Khair Khana	255	29%	19.6%	20.8%	18.4%	12.2%
Shahrak-e-Aria	257	27.6%	21.8%	24.2%	20.2%	6.2%

NOTE: The generation of the people in the 4 studied areas is categorized into 5 groups such as; people below 9 years as (Children), 10-19 years as (Teenage), 20-39 years as (Young), 40-59 years as (Middle age), and over 60 years as (Elderly).

Table.1.2.The social class of the residents in the 4 studied areas

	High-Income	Mid-Income	Low-Income	Total
Shahr-e-Kohna	Doctor (1), Businessman (1)	Shopkeeper (1), General (1), Painter (2)	Labor (1), Gov.Emp (3)., Jobless (1), Teacher (1), Shopkeeper (4), Butcher (2), Priest (1), Cameraman (1)	20 Household
Char Qala	Businessman (2)	Shopkeeper (4), Businessman (1)	Shopkeeper (4), Gov.Emp. (4), Watchmaker (1), Guard (2), Driver (1), Carpenter (1), Currency Exch. (1)	21 Household
Khair Khana	Businessman (3), Engineer (2), Gov. Emp. (1)	Gov. Emp. (2), Mechanic (2), Businessman (2), Shopkeeper (1)	Driver (1), Shopkeeper (2), Baker (1), Gov. Emp. (4)	21 Household
Shahrak-e-Aria	Engineer (8), Diplomat (2), Businessman (3), Doctor (4), Currency Exch. (2), Const. Company Director (2)	Shopkeeper (3), Admin (2), General (2), Professor (1), Gov. Emp. (3), Judge (2)	Driver (1), Shopkeeper (2), Gov. Emp. (2)	39 Household

Gov. Emp.=Government Employee, Exch.=Exchanger, Const.=Construction, (Number)=The Number of People who has the Same Jobs

The majority of the residents of the 4 areas were not willing to talk about the amount of income that they earn per month. There were 2 ways of identifying low, mid and high-income people. a) Based on the residents' job, for instance; people categorizing them to labor, government employee (Based on their position), etc. were defined as low-income people. People who are small businessman owners, shopkeeper (Based on the type/location of the shops), etc. were defined as mid-income people. People who are engineers, doctors, etc. (Based on the organizations they work for) were defined as high-income people. b) Based on the quality of the rooms (Interior decoration, color, etc.), furniture (design and brand if it's local or foreign), etc. observed during the physical measurement of the houses. Most of the residents in *Shahr-e-Kohna* and *Char Qala* are low-income people. Among them 30% of the residents of the houses in *Shahr-e-Kohna,* and 38% of the residents of the houses in *Char Qala,* are richer. Most of the residents in *Khair Khana* and *Shahrak-e-Aria* are mid and high-income people. Among them 66.7% of the residents of the houses in *Khair Khana,* and 79.5% of the residents of the apartments in *Shahrak-e-Aria,* are richer.

1.8.3 *Khair Khana* (Planned Area based on the 1978 Master Plan)

Khair Khana, with an area of 17.42km² is located in District 11. Its population in 2008, was 280,000 with a population density of 221/ha (JICA, 2009). The land area in *Khair Khana,* was owned by the government and distributed to those who did not have a private house.

In this study a cluster of 21 houses was surveyed in a characteristic area (Fig.1.9), which includes totally, 46 families, 255 people in 21 houses (Table.1.1). 35 families are private owners and 10 of them are tenants. The period of living of the private owners are 3-40 years and of tenants are 6 months-15 years. The sizes of the lots are 375m² in the studied area. The number of the low-income and mid-income people is almost the same in the area [But the number of richer people (mid-income + high-income) is higher] (Table.1.2).

Fig.1.9. The 21 surveyed houses in *Khair Khana* (Source: Author's Illustration) The houses that are used by tenants are shown darkened

There are 2 rows of houses separated from each other by a local street. Unlike the other housing clusters, there is an alleyway located in the south of the studied area. Most of the houses have the second entrance from the alleyway.

Detached house is the common type of housing in *Khair Khana.* In most of the houses in *Khair Khana* fired bricks are used in load-bearing walls, externally and internally. The roof consists of wooden beams covered by local materials earth and a mixture of mud and straw. The majorities of the new buildings consist of reinforced concrete structural frame with concrete slabs and fired bricks walls.

In the studied area of *Khair Khana,* 57.2% of the houses are single storey, 23.8% are two storey and 19% are three storey buildings. The widths of the streets are 8-12m. Each cluster is connected with the secondary district transportation frameworks (Asphalted in the beginning of 2010) by a local unpaved street. The interviews with the government officials indicate that the pavements of the local streets are also in the plan to be rehabilitated. In the studied area, each plot provides parking spaces for cars.

Some of the residents have paved the sidewalks in front of their houses, while other houses' sidewalks are in a bad condition.

1.8.4 *Shahrak-e-Aria* (Planned Area based on the 1978 Master Plan)

Shahrak-e-Aria is located in the north of District-10. It is designed in an area of 2.9km² lands. The land area is owned by the government. The *Shahrak-e-Aria,* township is being developed by a private sector (Century Land Corporation).

Shahrak-e-Aria project has 350 blocks that include residential, business and social services. The majority of these buildings are from 5 to 10 floors. So far, the construction of 10-12 blocks is complete and another 5-6 blocks are under construction.

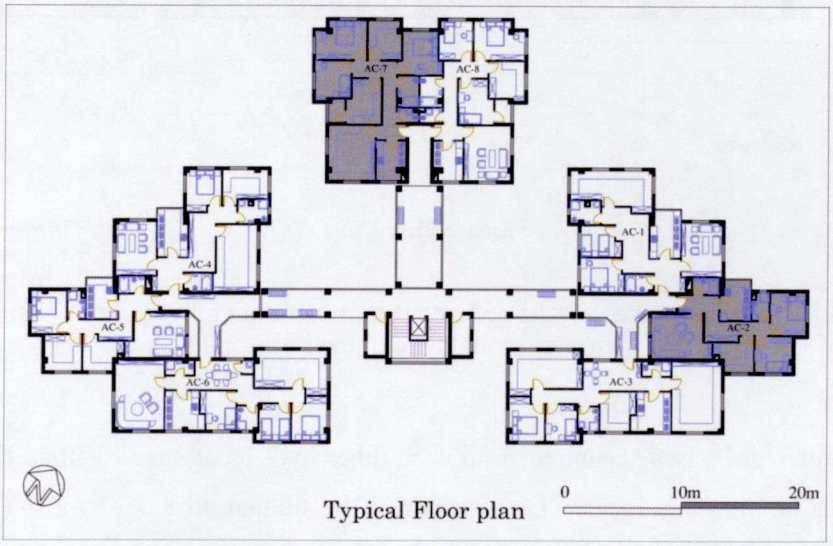

Fig.1.10. A typical floor plan of 39 surveyed apartments in *Shahrak-e-Aria* (Source: Author's Illustration) The apartments that are used by tenants are shown darkened

In *Shahrak-e-Aria,* reinforced concrete frames have been used in the construction of the buildings which enables the people to shape their living spaces according to their requirements. The columns are on a rectangular grid supporting main floor beams and the floor slabs. The floors are made of precast reinforced concrete beams that are laid between supports with the precast hollow concrete filler blocks between them and a concrete topping which is spread over the beams and filler blocks. The walls are made of hollow concrete blocks of 100mm thickness for exterior walls and 75mm thickness for interior walls.

Most of the apartments are sunny side and this project has facilities like lift, central heating system, green areas and recreation areas, green house, parking lots, grocery shops, equipment and hardware stores and other necessities to accommodate the residents' needs.

In this study, a block with 39 apartments, 43 families and 257 people was surveyed (Table.1.1). In the studied block of *Shahrak-e-Aria,* 20% of the apartments are in two levels. The studied block is one of the first blocks built in the area.

The sizes of the apartments are different ranging 92-251m². 27 families out of 43, lived in 24 apartments, are the owners of the apartments and 16 families out of 43 lived in 16 apartments are tenants. The period of living of the apartment owners is 10 months-3 years and the period of living of the tenants is 6 months-3 years (Fig.1.10). The majority of people living in this area have high-income (Table.1.2).

Shahrak-e-Aria is a gated-community, attempts to provide high security facilities for the residents and other various shared facilities such as: parks, playgrounds, parking, etc. The streets and sidewalks are paved and together with other facilities in the area, are in a good condition.

This chapter provided the reader with background information on the city, the relationship between the previous and present studies, the research methodology for collecting the data, and a description on the four studied areas of *Shahr-e-Kohna* (Historical Area), *Char Qala* (Sprawled Area), *Khair Khana* (Planned Area based on the 1978 Master Plan), and *Shahrak-e-Aria* (Planned Area based on the 1978 Master Plan). In the next chapter, a brief overview of urban development in Kabul city in different periods is discussed.

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Chapter 2

Kabul City's Urban Development - a Historical Perspective

2.1 Introduction

In the previous chapter the background to the research, literature review, research methods and a brief description of the studied areas were discussed. This chapter provides a brief overview of urban development in Kabul city in different periods. The chapter discusses various issues, such as; the history of development, the city's master plans, the years of the political conflict, and the current situation.

2.2 Historical Background

> *"The original birth place of Kabul City was Khurd Kabul (34° 23` North Latitudes and 69° 23`Eeast longitudes) which has a small distance to the east of present Kabul city. That place was also called Shah Kabul because the first emperor of Kushanid Empire established the capital of his empire there"* (Arez G. J. and Dittmann A., 2005, p. 1).

Kabul city has a history of over 3,500 years. In Rigveda and the Avesta, the word *Kubha* or *Kabukha* is mentioned which appears to refer to the Kabul River. Alexander the Great also mentioned about the city of Kabul in 328 BC. In the 1st century the city was called as *Ortaspana* which means The Highland Region. In the second half of the 2nd century, a Greek geographer Beltemous referred to the city as *Kaboura* and its residents as *Bolitio*.

Because of Kabul's strategic location along the trade routes of South and Central Asia, many empires have long fought over the valley. The area was part of the Median Empire and was called *Kabura* after it was conquered by the Achaemenid Empire. It became a center of Zoroastrianism followed by Buddhism and Hinduism later.

During the Kushanid Empire, the colony of Kabul was located in the valley of *Logar* in *Chakari.* It was relocated many times from the *Chakari* area of *Shiwaki, Khord*-Kabul, valley of *Takht-e-Shah Khanborak* toward northwest direction. Its last location was the fortress of *Bala Hisar,* which was established by *Shahan* on *Bala Hisar* hill. The fortress was surrounded by walls against Islamic invaders. The construction of a huge *Bala Hissar* fortress in Kabul belongs to the end of 3rd century.

Subsequently, the city was developed toward northwest of *Bala Hissar* and *Kharabat* on the left bank of Kabul River.

The Arabs invaded the city in the 7th century. As a result, Kabul lost its significance and remained a secondary centre for several hundreds of years especially during the *Sultan Muhammad Ghaznawi* period, when the royal attention focused on *Ghazni* City (Sadid, 1976a, cited in Noori W. A. 2010, p. 25). The city was successively come under the control of Samanids, Ghaznavids, Ghurids, and Kartids over the centuries.

During the dynasty of Babur Shah in 1504, the city became the capital city of the Mughal Empire. During his era, the city was expanded and a number places and gardens such as: *Bagh-e-Babur, Bagh-e-Mian, Char-Bagh, Bagh-e-Shahrarah, Bagh-e-Jelwakhana, Bagh-e-Mahtab* constructed in different parts of the city.

By the end of 17th century Kabul became the main trade center of the country with 10,000 residents. The King Ahmad Khan Abdali transferred the capital from Kabul to Kandahar in 1781. His son King Timur Shah moved the capital back from Kandahar to Kabul in 1776. During this period the city expanded and developed based on a designed plan. As a result, the construction of a new royal palace on *Bala Hisar*, public baths, and parks took place within the residential areas. Some new residential areas such as: *Ali Rezakhan, Muradkhani, Sarai Shahzadah Abass*, etc. were developed within the urban boundary of the city.

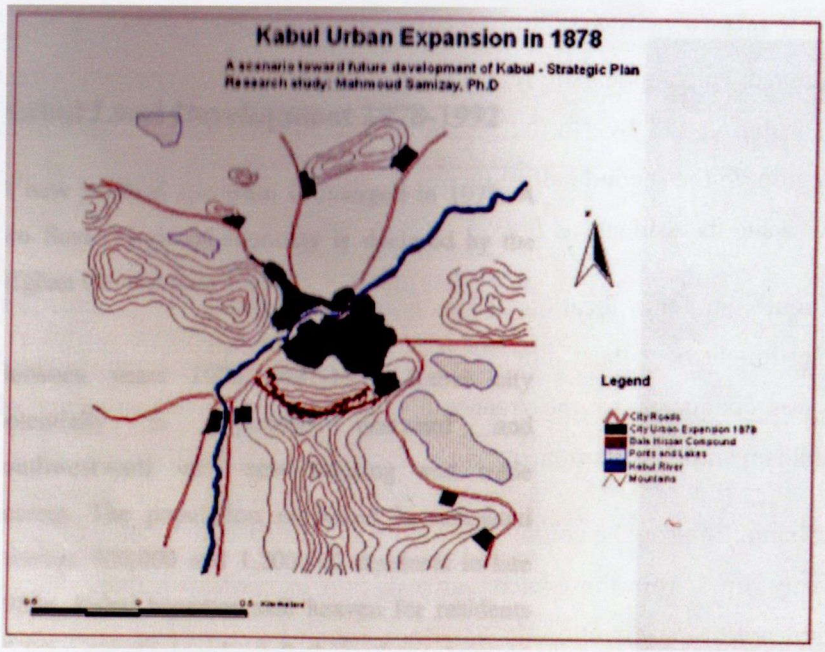

Fig.2.1. Kabul urban expansion in 1878 (Source: Samizay M.)

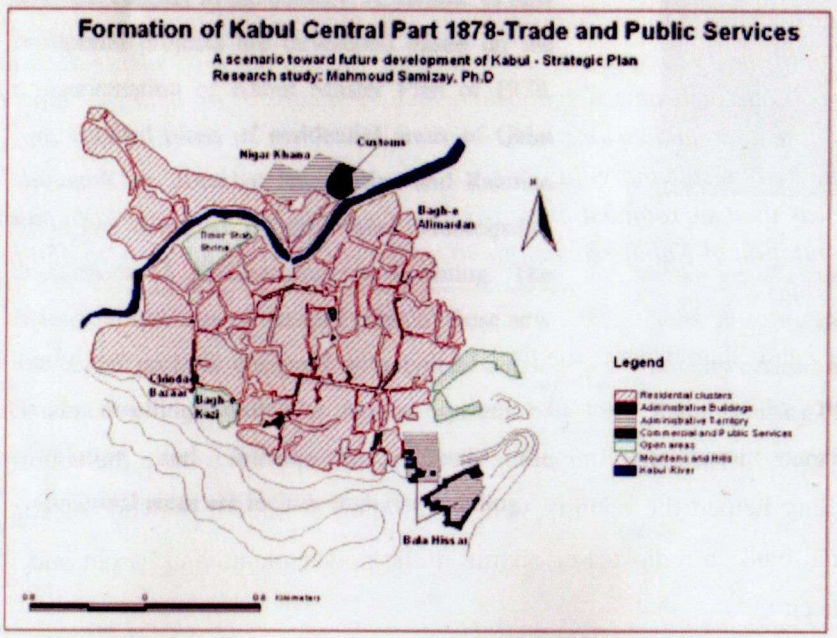

Fig.2.2. Formation of central parts of Kabul in 1878 (Source: Samizay M.)

In early 19th century, Amir Sher Ali Khan built a new residential area of *Sherpur* and a military compound in the east part of the city. The residential areas were divided into separate sections including a public center with mosque, café, and small shops. Based on the assumption of Hissman in 1878 the population of Kabul was estimated approximately 70,000 people with 180 hectare urban territory (Samizay M., 2006).

> *"By 1886 the construction of small plants such as; Mashin-Khana, the Skin Products Plant, Kabul Textile Plant are among major industrial potential of the country in this period. The Kabul Arg (palace), the Gulistan Khana buildings, Bostan Sarai, a number of government guesthouses, the Shahrarah tower, Gunbad-e-Kotawali, Polikhishti mosque, Salamkhana palace, Bagh-e-Bala palace, mausoleum Amir, Chihlsotun palace, and Kabul National Museum were built by Amir Abdul Rahman Khan in late 19th during the period of 1878-1916 century [sic]. Kabul city population is increased to 65,000 people and its territory to 400 hectare land in 1916"* (*ibid*).

During the king Amanullah Khan's period, a master plan was prepared for the development of the city. As a result, the foundation of a new city called *Darul-Aman* was laid in the southwest of Kabul. During his period, after the independence in 1919, his reform included electricity for the city, the growth of some industries, and the construction of new roads connecting Kabul with other large cities.

> *"Until the beginning of the 20th century, Kabul was still a compact city and confined in the south of the river with villages such as Deh Afghanan, Bibi Mehro, and Dehmazang serving as satellite settlements. Sher Ali Khan's Sherpur and Abdul Rahman Khan's Bustan Sarai, or Amanullah's new capital was isolated attempts to*

break away from the mold densely built city and mostly remained marginal. And, it wasn't until the 1920's that actual neighborhoods were built outside the wall across the river. One such new neighborhood was referred to as Shahr-e-Nao (The New City). These new subdivisions were motivated by European architecture and planning concept. As a result the villa concept translated into a house in the middle of lot, which was then surrounded by a privacy compound wall, became a popular model. The population of Kabul reached to 90,000 people and its territory to 450 hectare in 1925" (ibid).

In 1933-1973 Zahir Shah became the long lasting king of Afghanistan. When he took power, Kabul had only 6 miles of rail, few internal telegraph or phone lines and few roads. During his period, France and Germany provided technical and educational supports to help the country develop. Japan, Germany and Italy helped the country with developing a modern network of communications and roads. A national bank, a radio tower, textile mills, power plants and carpet and furniture factories were built in the city.

The population of Kabul reached to 120,000 and its territory was expanded to 500 hectare land in 1940. The construction of major projects took place in Kabul during 1940s and 50s. For instance: cinema *Behzad* in 1941, Faculty of Literature and Humanitarian Science in 1945, Kabul University in 1946, the *Zahishgaha* hospital with 12 beds in the *Shahrara* district, reconstruction of *Polikhishti* street in 1948, *Jade Maiwand* boulevard in 1949, a cinema-theater for 1200 people, restaurants, a trade center of *Mandawee* were built to modernize the capital within the boundary of the city.

Kabul became the largest city in Afghanistan in 1962, with 380,000 population and 6840 hectare land. The rapid expansion of the city emerged the necessity of a strategic plan of development. In 1964, the municipality of Kabul was established and began to influence the development pattern of the city.

2.3 The First Master Plan

The first master plan was prepared in 1962-1964 by a group of Afghan and foreign planners for a city of 800,000 people in 23,780 hectare land area, over a period of 25 years. The group was leading by a French planner who had designed the Sindh province of India (According to Eng. Saifulrahman, Kabul Municipality).

"This plan was the absolute replica of those Master Plans produced during the 1960s in different European cities. It was very similar to the Geneva Master Plans of 1965: independent districts surrounded by motorways and fly-over, parks in the center, the formal zoning dividing the territory between residential and industrial areas. It is also very similar to Master Plans developed by the famous modern architect Le Corbusier. His "Neighborhood Units" planned for Chandigarh, the new

capital of Punjab, and other projects, present the same image; a primary network of roads surrounding an alveolar district, with green areas and pedestrian paths through its center, the buildings being located on the perimeter" (A. Viaro, 2004, cited in Mumtaz B. and Noschin K., 2004, p. 155).

The core and main element of the plan was housing, therefore, the Housing Plant (*Fabrike Khanasazi*) was established by the help of USSR to achieve the goal. In this plan most parts of the Old City was replaced by the typical Soviet style apartment buildings Microregion (*Microrayon*) for public uses. The construction of *Wazir Akbar Khan* residential area, the Indera Gahndi hospital and the reconstruction of some parts of *Shahr-e-Kohna* was part of the master plan. The implementation of the plan took place without enough control of the authorities. As a result, some areas of the city such as: *Sayed Noor Mohammad Shah Mina*, *Khoshaal Khan*, *Khair Khana*, 3rd *Parwan*, and *Wazir Abad* were distributed among people and developed informally, in violation of the master plan. The hills that were reserved for recreational purposes, filled with unplanned settlements.

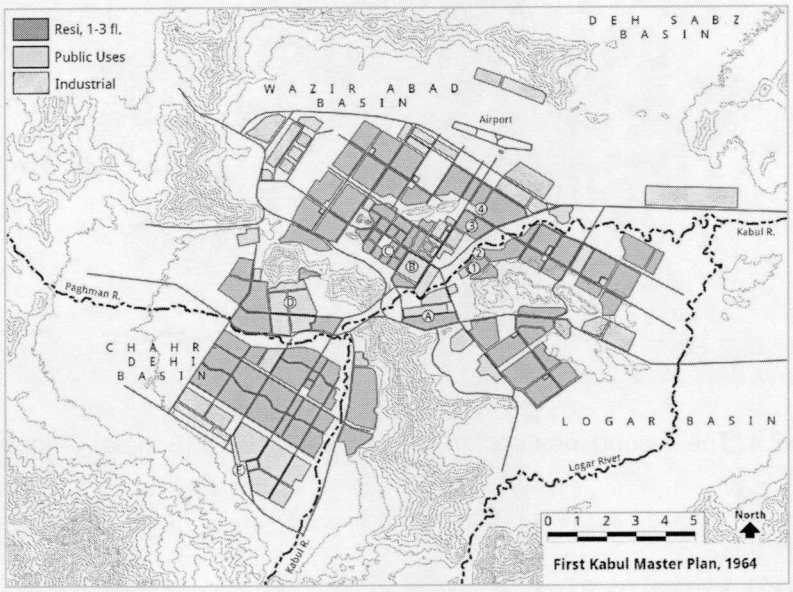

Fig.2.3. The first master plan of Kabul City (1962-1964) (Source: Calogero P.)

2.4 The Second Master Plan

The master plan of Kabul City was revised in 1970-1971 by Afghan and Soviet planners and UNESCO, for 1.4 million people in 29,900Ha land area, over a period of 25 years. *Khair Khana* and *Khushaal Khan Mina* were developed according to this plan on the northwest and west of the city.

"The master plan foresaw 10 to 15 per cent buildings with nine floors or more, 65 to 70 per cent buildings with four to five storeys, 20 to 25 per cent buildings with two to three storeys. Only 15 per cent of the existing town was kept with its one family two-

storey houses. In the 1971 Master Plan, the town was divided into four main sectors (N-W, N-E, S-E, S-W), those were again divided into sub-sectors, and these divided into neighborhood units. Each sub-sector comprised a central area for services, with shops, restaurants, hotels, cinemas, a mosque, a theatre, a concert hall, banks, offices and a public park, as well as an industrial area. Each neighborhood unit had a small centre with a kindergarten, shops and services, schools and a mosque" (ibid).

Due to lack of control and sufficient economic resources and shortage of professionals at that time, the goals and objectives of the second master plan couldn't keep up with the rapid pace of squatter development in the city.

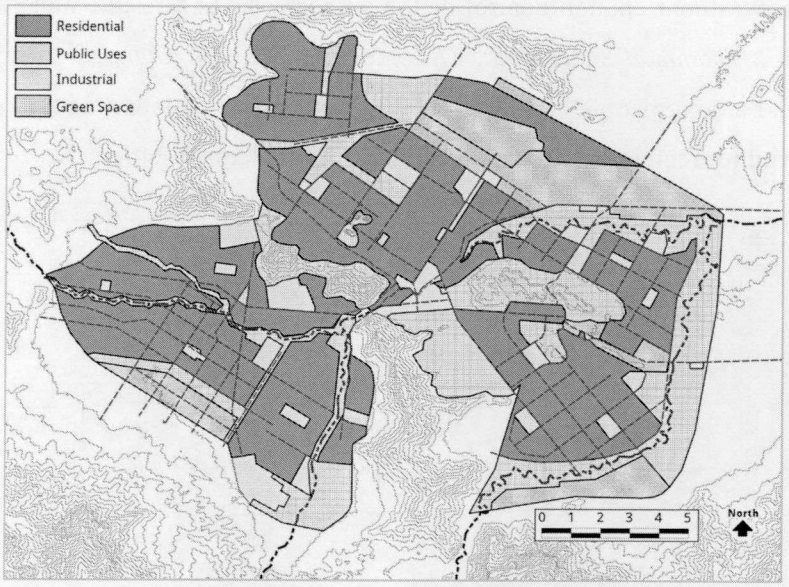

Fig.2.4. The second master plan of Kabul City (1970) (Source: Calogero P.)

2.5 The Third Master Plan

The master plan of Kabul City was revised and updated by the Afghan and Soviet planners in 1975-1978, for a projected population of 2 million, in 32,338Ha land area, over a period of 25 years until 2003. The 1978 master plan of the Kabul city consists of a general plan, 10 structure plans and many detailed plans (JICA, 2009).

The master plan was based on the socialist planning concept (Soviet centralized concept of planning), in which, the central government has authority over the development of the economy and society. The main idea underlying the decisions made by the planners to apply such a concept in Kabul was due to low price of land in that time, to achieve their goals through:

1. To expropriate the properties
2. To exchange the properties and,

3. To implement the plan on the expropriated properties (reusing the properties).

It was expected in the plan that the city will experience a rapid increase in population therefore; the plan promoted much higher residential densities. Because of the expected population growth, the roads in the plan were designed much wider than the existing roads in that time.

"Mid-rise densification only began in a few areas of Kabul after 2002, but only in the form of private apartment districts or *shahraks*" (Calogero P., 2011).

(Table.2.1) shows the land use of the city.

Table.2.1. Proposed land use of Kabul City in 1978 (Source: ICT)

Land Use	Area (Hectars)	Percentage of Total Area
Roads and Streets	2,878	8.9
Public Structures	679	2.1
Parks and Open Spaces	3,557	11
Individual Houses	4,222	13.06
Commercial and Residential Buildings	4,574	14.14
Mountains and Rivers	16,428	50.8
Total Surface Area of Kabul	32,338	100

Table.2.2. The zones of the master plan of 1978 (Source: Samizay M.)

	Urban Zones	Urban Areas		Urban Population	
		Hectares	%	People	%
1	Northwest	4,920	29.3	630,000	31.5
2	Northeast	1,670	9.9	210,000	10.5
3	Southwest	7,440	44.2	840,000	42.0
4	Southeast	2,800	16.6	320,000	16.0
	Total	16,730	100.0	2,000,000	100.0

The master plan was planned of 4 large urban zones of 210,000-840,000 population. The northwest zone (*Polecharkhi* and *Qala-e-Zaman Khan* areas) covered 4,820Ha areas of land for 630,000 people. The northeast zone (*Khair Khana* and *Karte Parwan* areas) covered 1,670Ha areas of land for 210,000 people. The southwest zone (*Darul Aman, Karte 4,* etc.) covered 7,440Ha areas of land for 840,000 people. And finally, the southeast zone (*Karte Naw* and *Shah Shahid*) covered 2,800Ha areas of land for 320,000 people (Fig.2.4 & Table.2.2). In the plan, the urban boundary of the city was in a radius of 10km from the city center.

> *"In this master plan, many facilities which are important from cultural and socio-economic points were provided. Such establishments are; 240 kindergartens, 250 primary schools, 100 secondary schools, 50 schools for girls, medical and clinic facilities were planned for each section, 40 clinics, 100 pharmaceutical centers, 25 modern public baths, 35 libraries, 300 mosques, 20 praying halls, 200 bakeries, and 252 fire extinguishing centers. [...] furthermore, 480km streets were planned to be asphalted. Along the main roads of Kabul airport the constructions of 12 storey buildings were also planned" (Op. cit.).*

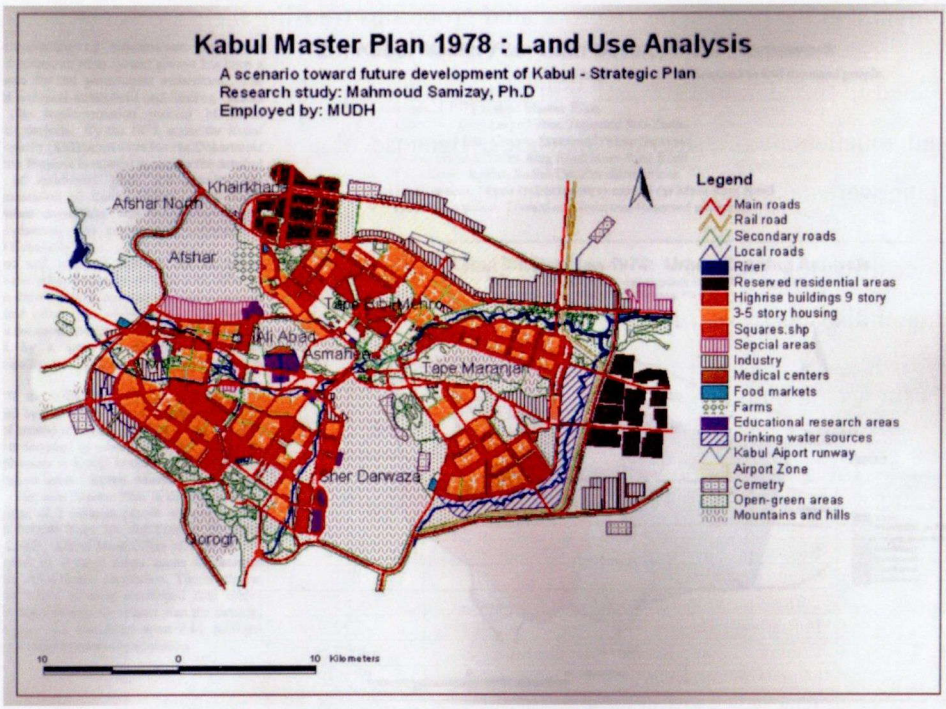

Fig.2.5. The third master plan of Kabul City (1975-1978) (Source: Samizay M.)

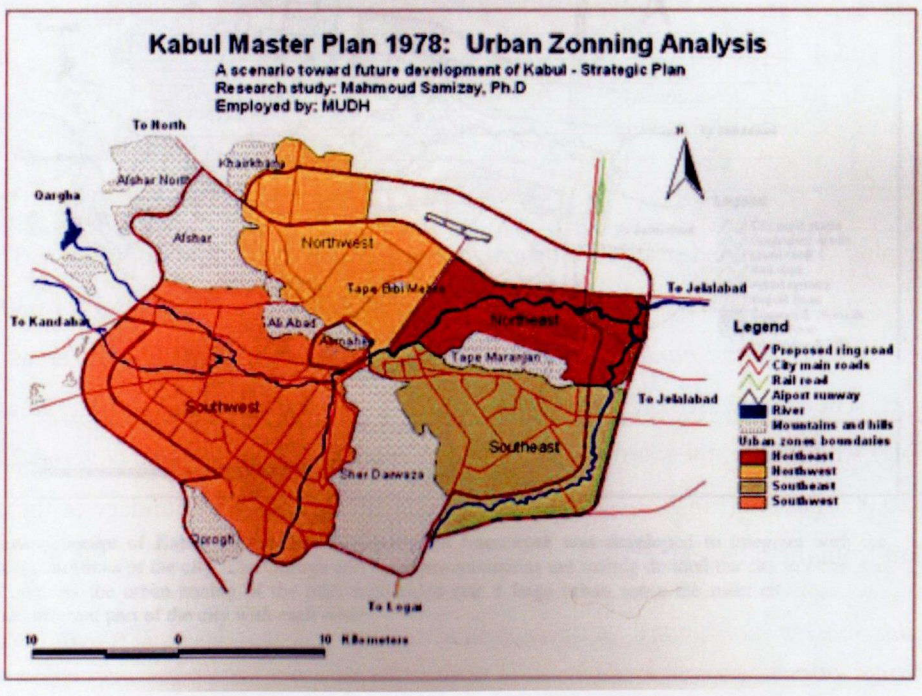

Fig.2.6. The four zones in the third master plan of Kabul City (Source: Samizay M.)

As Samizay M. states; "a soviet town planning style of three level system of Public Services-Daily, Periodical and Episodic is considered in the Master Plan of 1978. Such a system includes city center,

sub centers of residential and industrial districts; and special centers. The area of City Center in the Master Plan of 1964 was estimated 450 hectare land while the Detailed Plan of 1983 includes 1460 hectare land. The largest planning element of Kabul Master Plan is the Residential District (*Mantaqa Rhaishi*). Each Urban Zone is consisted of 3 to 4 *Mantaqa-e Rehaishi* with 100,000 to 250,000 population and its own public service centers. [...] The multi level system of public center are classified as follows: 1) City Center, 2) *Mantaqa Rehaishi* Center, 3) Residential District Centers, 4) Local Center, and 5) Special Center" (Samizay M., 2006).

The key concepts of the master plan were as follows:

1. Land Use: 4 large urban zone and sub-zones.
2. Planning: Multi-centric system of public services.
3. Transportation: Outer ring road and inner-ring road.
4. Circulation: Radial, and radial-circular distributions.
5. Environment: Green defensive strip around the main ring road.
6. Future Expansion: Toward East direction, reserved territories (*ibid*).

The Spatial Structure of Kabul City: The city is divided into two parts, northeastern and southwestern, separated by the *Asmai* Mountains and the Kabul River. Therefore, the main concept of the Kabul master plan transportation framework was developed to integrate with the physical conditions of the city. In order to connect the two parts as well as the four zones with each other two ring roads (inner and outer) were developed in the master plan. The inner ring road defined the boundary of the central part of the city and the outer ring road limited the boundary of the city.

There roads in the plan were classified into six types.

1. Ring roads (Inner and outer) 60m wide.
2. Main city roads 40m wide.
3. Secondary or Residential District roads 30- 40m wide.
4. Residential Streets 22m wide.
5. Local paved street 12 m wide.

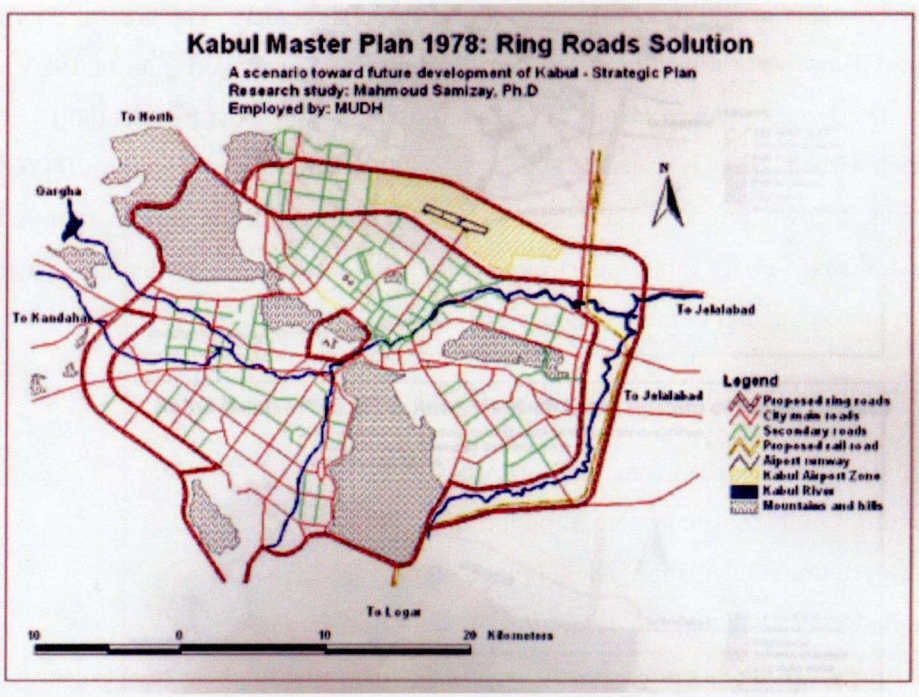

Fig.2.7. The ring roads in the third master plan of Kabul City (Source: Samizay M.)

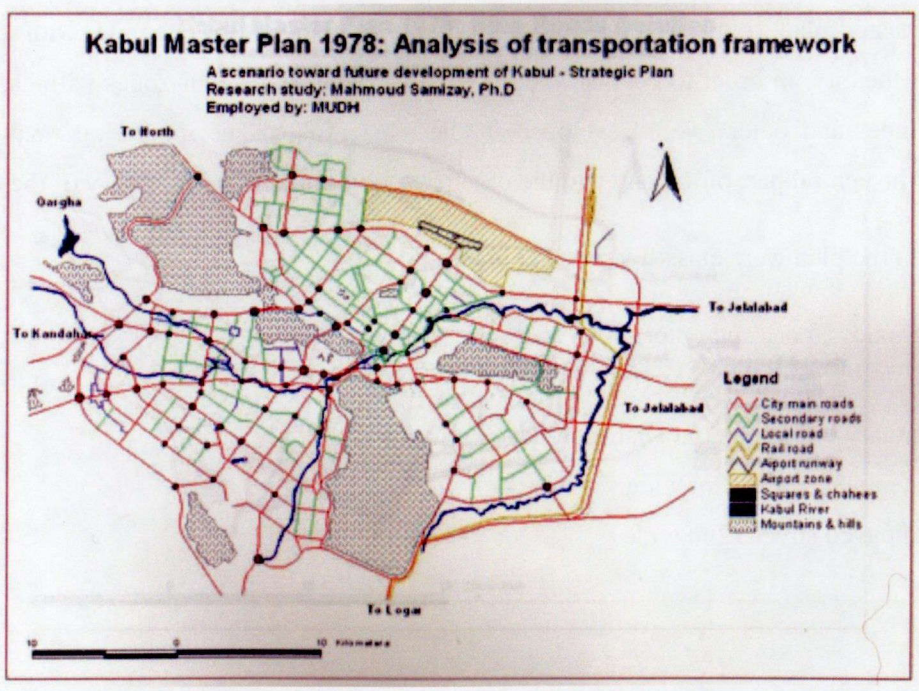

Fig.2.8. The transportation framework in the master plan of 1978 (Source: Samizay M.)

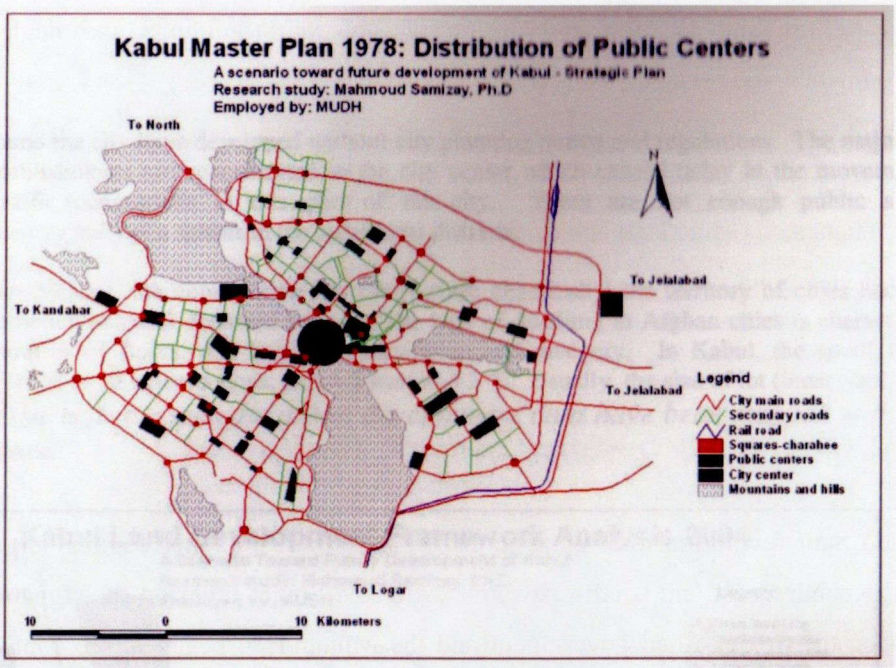

Fig.2.9. The distribution of public centers in the master plan of 1978 (Source: Samizay M.)

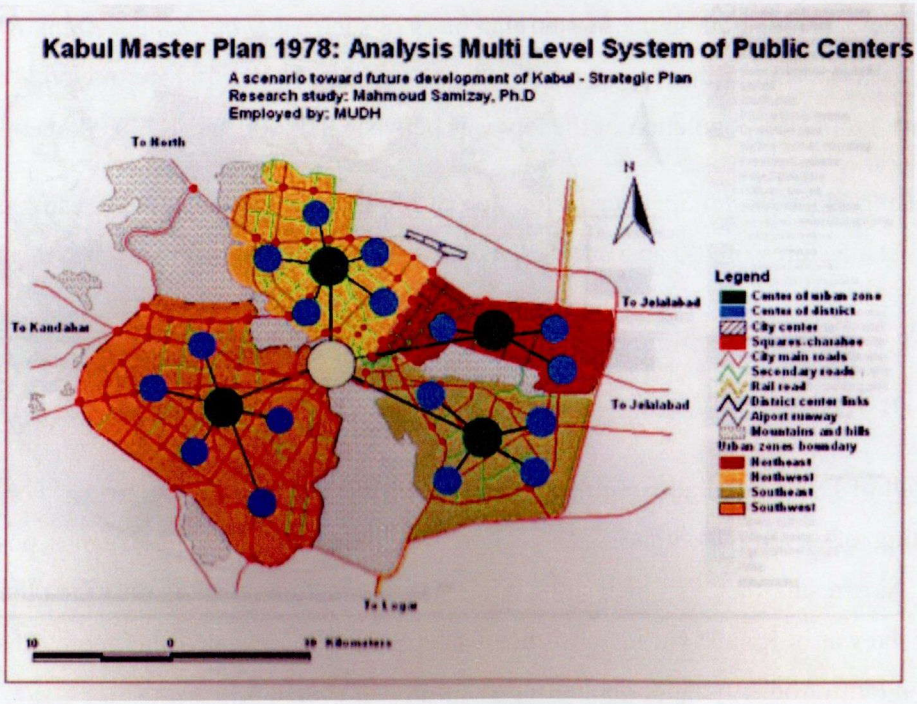

Fig.2.10. The multi level system of public centers in the master plan of 1978 (Source: Samizay M.)

The problem of the Master Plan: The master plan is criticized that it represents an old school of thoughts in urban planning. The main points of criticism include the following:

1. Stress on physical location and design of sites and buildings and neglect of social, environmental and financial aspects;
2. Prescriptive plan without much flexibility;
3. Top down planning with no citizens involvement;
4. Over reliance on public land acquisition and public investment; and
5. Lack of viewpoint to guide and utilize private investments (*Op. cit.*).

2.6 Kabul Development 1978-1992

The so-called Saur revolution took place in 1978. The new communist regime seized the power. The city was expanded east and southwestwards. After the Soviet invasion of Afghanistan in 1979, the war between the Soviet-allied government and the Mujahideen began in the countryside and in other major cities. During that period Kabul remained relatively calm. Therefore, people from countryside and other cities took refuge to Kabul in search of security. A number of residential projects were developed based on the master plan of 1978 such as: *Qalai Zaman Khan, Khoshal Khan Mina, Rahman Mina,* and prefabricated housing blocks of the 3rd and 4th Microrayon, *Tahia Maskan* etc. In the late 1980s, the population of the city was between 900,000 and 1,200,000 people.

Kabul Housing Plant *Khana Sazi* was able to produce prefabricated concrete housing elements and capable to erect a 5 storey of 100 apartment blocks in one month (*Op. cit.*).

2.7 War in Kabul

After the fall of Dr. Najibullah's regime in 1992, the Mujaheedin took the power. The Mujaheedin were consisting of several factions. Each faction was trying to get to the higher position in the government. As a result, they lost their unification and one faction stood against the other. It was the beginning of the war in Kabul. The city was not a safe place to its residents any more. The majority of the population left for other neighbor countries like Iran and Pakistan.

> *"In addition to the exodus of population, the high number of casualties affected the dwindling population of the city. It was reported that in 1993-1994, 20,000 were killed, 100,000 wounded and 30,000 became internal refugees as a result of the infighting. It was reported that in 1994, half the city's population, close to one million, left the city. The vast ruins of the city are mostly from this period"* (*Op. cit.*).

During the war most of the housing stock was destroyed. According to the Afghan government, 63,000 houses and 60 percent of the infrastructure was destroyed in Kabul city.

Because of the war and the rapid growth of the informal housings, the master plan of the city was failed to be implemented. As a result; according to ICT; "Only 60% of the master plan had implemented until 2007" (ICT, 2007, p. 21). According to another report by ICT;

- Only 33% residential area developed as per the master plan of 1978.
- Informal settlements developed on some parts of the hilly areas (Reserved for conservation) in the master plan of 1978.
- Proposed industrial areas were not developed in some parts of the city as per master plan of 1978.
- Proposed railway lines and ring roads were not developed as per master plan 1978.
- Over exploitation of natural resources (Water, land, hills, etc.) due to uncontrolled growth (ICT, 2008).

2.8 The Current Situation

Since 2001, due to the intensified returning of refugees from other countries and the rural-urban migration, the physical and social fabrics of the city have been changed, enormously. These changes are reflected from the existence of a multi-ethnic and multi-cultural population. Demographic analysis shows that the population of Kabul city was around 2 million people in 2002 but today it reaches to over 5 million people.

The main problem of Kabul city has been rapid population growth. This is because of the concentration of social, economical, and educational centers and other institutions in the city. Lack of these amenities and economic opportunities in the secondary cities and rural areas created major urban problems in Kabul such as shortage of housing, illegal squatter settlements, congestion and environmental and social problems.

There are push and pull factors causing people to migrate to Kabul city:

- Lack of security and civil strife's
- Destruction caused by war/natural calamities
- Poverty/very low incomes
- Difficult access to land
- Environmental degradation
- Lack of basic infrastructure and services
- Political persecution
- Food insecurity

- Huge urban-rural differentials
- Available better jobs in urban centers
- Better quality urban services and facilities (Education, electricity, water, etc)
- The attractive quality of urban life

The rapid population growth has boosted the demand for housing in Kabul. The housing shortage in the city has led to the expansion of informal settlements without access to the most basic city services. In Kabul, informal settlements provide shelter for 80% of the population; cover 70% of the residential land (*Op. cit.*). Most of the informal housing is built on government lands and in poor condition.

(Fig.2.9) shows the development of the city, outside the boundary of the third master plan. The red-line on the left figure shows the boundary line of the third master plan on the current city map.

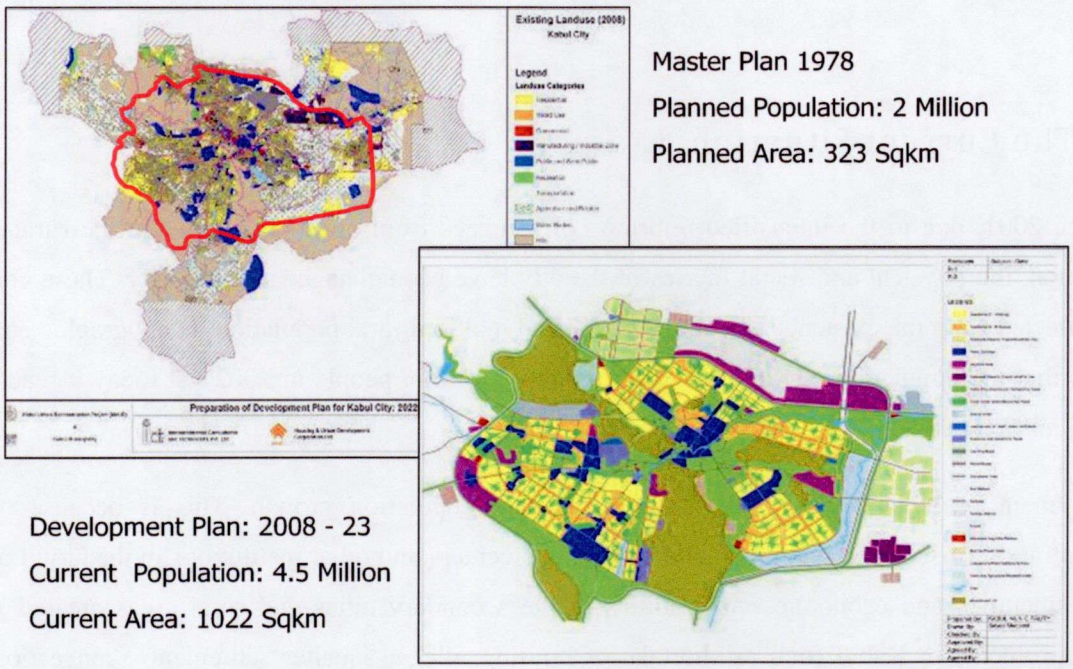

Fig.2.11. The current city map (left) and the third master plan (right) (Source: ICT)

To cope with the problems that Kabul city is facing, the government considers that the development of a satellite town in the north of the existing city will respond to the urban needs of Kabul residents. A new Master Plan for Kabul City and a New City (In the North of the existing city) was prepared by Japan International Cooperation Agency (JICA) in 2010. The master plan for the new city is designed for 1.5 million people in a land area of 740.41km². For the government, the building of the new city is considered as the key to solving the problems that afflict Kabul.

In this chapter an overview of Urban Development in the Kabul City in different periods, including; the history of development, the city's master plans, the years of the social and political disorder and the present condition of the city is discussed. In the next chapter, the process of transformation in relation with the typology of the houses, in the four studied areas of *Shahr-e-Kohna, Char Qala, Khair Khana,* and *Shahrak-e-Aria*, is discussed.

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Chapter 3
Typology of Housings and Their Transformation

3.1 Introduction

This chapter reveals the results of the study described in chapter 1 Research Methods. It clarifies the transformation process occurred in the houses in the four studied areas of *Shahr-e-Kohna, Char Qala, Khair Khana,* and *Shahrak-e-Aria*, in relation with their typologies by provision of reasons like; how/why the residents brought changes to their living spaces and whether the changes met their demands.

The gathering of empirical data for this section is based on the physical measurement of the houses, shops, streets, etc. and using a questionnaire.

3.2 Typology of Houses

3.2.1 Main Types

Kabul City is characterized by a variety of housing types. There are 3 main housing types found in the mentioned four studied areas:

1. Courtyard Houses: Is a type of house where the main part of the building is disposed around the central courtyard. Access to other rooms or service areas are often through open space (Courtyard). Sometimes the main rooms of a courtyard house open to the courtyard, directly.

There are different variations of courtyard houses classified into six types, based on their forms such as; C-U, C-LI, C-G, C-O, C-L, and C-NY (Fig.3.1 & Table.3.1).

2. Single-Family Detached Houses: Is a type of house standing as a separate building, adding an area surrounding the house.

There are different variations of detached houses classified into four types based on their locations (Attachment/detachment of the sides of the house to the boundary walls in a plot) such as D1, D2, D3, and D4 (Fig.3.1 & Table.3.1).

There are another 11 variations (Mixes of the above types) such as C-L+LI, D3+C-LI, D1+C-L, D2+C-LI, D4+C-LI, C-U+L, C-LI+LI, D1+C-LI, D3+C-L, C-LI+LI+D3, and C-LI+D2+D3 (Fig.3.1 & Table.3.1).

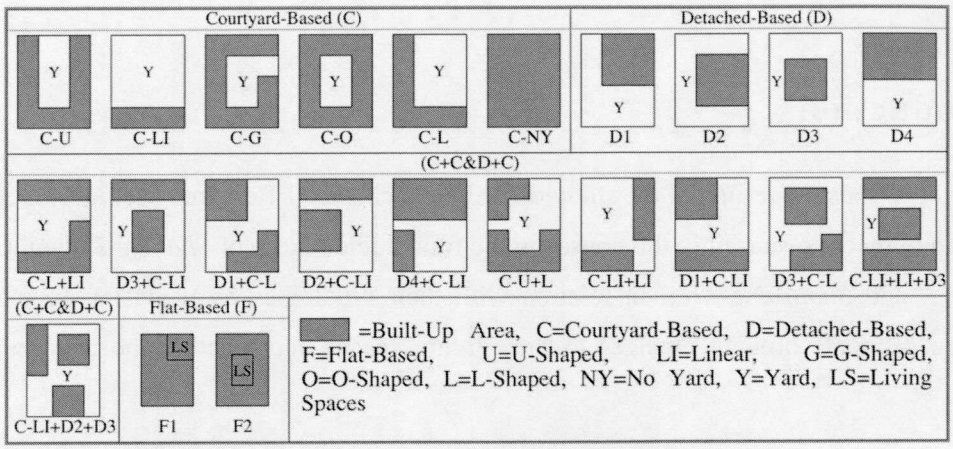

Fig.3.1. Housing types in the 4 studied areas in Kabul City

Table.3.1. The typology of houses in the 4 studied areas

	Shahr-e-Kohna	***Char Qala***	***Khair Khana***	***Shahrak-e-Aria***
C-U	OC-(1, 6, 14*, 18)	CH-(3, 12*, 15, 18, 21*)		
C-LI	OC-(2, 8)	CH-(5*, 8, 9*)		
C-G	OC-(3, 5*, 10, 17)	CH-(6*, 7*)		
C-O	OC-(7, 19)			
C-L	OC-(9, 12, 13*, 16*, 20)	CH-(17, 19)		
NY	OC-11			
D1			KH-(1,9,10, 16)	
D2			KH-3*	
D3			KH-(5*, 6*, 20)	
D4			KH-8	
C-L+LI	OC-(4, 15)	CH-(2*,20*)		
D3+C-LI		CH-1*	KH-14*	
D1+C-L			KH-21*	
D2+C-LI		CH-10*	KH-(17*, 19*)	
D4+C-LI		CH-11*		
C-U+L		CH-(13*,14*,16*)		
C-LI+LI			KH-2	
D1+C-LI			KH-(4*, 7, 12*, 13, 15*)	
D3+C-L			KH-11	
C-LI+LI+D3			KH-18*	
C-LI+D2+D3		CH-4*		
F1				AC-(1*,2,3*,4*,5,6*,7,8,9,10,11,12,16,17,18,19,20,21,23,24,25,26*,27*,28,29,30*,33,34,35,36,37,38)
F2				AC-(13&14*,15*,22*,31*,32*,39*,40*)

OC-1=House No-1 In *Shahr-e-Kohna*, CH-3=House No-3 In *Char Qala*, KH-1=House No-1 In *Khair Khana*, AC-1=Apartment No-1 In *Shahrak-e-Aria*, NY=No Yard, L=L-Shaped, LI=Linear, U=U-Shaped, G=G-Shaped, O=O-Shaped, C=Courtyard-Based, D=Detached-Based, F=Flat-Based, **(*)=The Transformed House**

3. Flats in the Multifamily Medium-Rise Apartment Blocks: A multifamily medium-rise apartment block is a type of housing which is vertically oriented with repetitive qualities and shared facilities. There are different variations of apartments classified into two types based

on the location of the living spaces either in the center or in the corner in an apartment, such as; F1 and F2 (Fig.3.1 & Table.3.1).

3.2.2 Different Variations of Houses in the Studied Areas

In the studied area of *Shahr-e-Kohna,* 7 variations of courtyard houses types exist. The types are based on the number of houses in descending order as follows; C-L (5 houses), C-U (4 houses), C-G (4 houses), C-LI (2 houses), C-O (2 houses), C-L+LI (2 houses) and C-NY (1 house) (Table.3.1). All of the surveyed houses in the area are courtyard-based.

In the studied area of *Char Qala,* there are 10 different variations of housing types. The housing types are based on the number of houses in descending order as follows; C-U (5 houses), C-LI (3 houses), C-L (3 houses), C-U+L (3 houses), C-G (2 houses), C-L+LI (1 house), D3+C-LI (1 house), D2+C-LI (1 house), D4+C-LI (1 house), and C-LI+D2+D3 (1 house) (Table.3.1).

The surveyed houses in *Char Qala* are courtyard-based. In rare cases, detached-based houses also can be found in the studied area. Most of the detached-based houses are new buildings*. For example, the house CH-4&5 was built in 1975 (Fig.3.5). The house was courtyard-based, Linear in shape in 982.07m² land area. In 1990, a two storey detached- based building was added in the west of the old building due to increase in the number of family. In 2010, the old building was used by the owner and his wife (92 and 85 years old). And the new building was used by the owner's sons with their families. This example shows the tendency of the residents and the transition from the traditional style of living to a new one.

In the studied area of *Khair Khana,* there are 11 different variations of housing types. The housing types based on the number of houses are in descending order as follows; D1+C-LI (5 houses), D1 (4 houses), D3 (3 houses), D2+C-LI (2 houses), D2 (1 house), D4 (1 house), D3+C-LI (1 house), D1+C-L (1 house), C-LI+LI (1 house), D3+C-L (1 house) and C-LI+LI+D3 (1 house) (Table.3.1).

The surveyed houses in *Khair Khana* are detached-based. In rare cases, courtyard-based houses can be found, in the studied area, such as, the house KH-2 (C-LI+LI in Fig.3.1). The majority of the courtyard-based houses are new buildings (Fig.3.6). In some cases, in *Khair Khana,* courtyard-based

* It has been observed that Courtyard-Based houses are the preferred type of housing for people with low-income. Those houses are simple in form and are constructed by local craftsmen (Sometimes by owner) and are made of raw and cheap materials such as mud, sun-dried brick and so on. In contrast, Detached-Based and Flat-Based houses are the preferred type of housing for people with mid/high-income. Some of them are designed by architects and engineers and have complicated forms and are made of solid and expensive materials such as cement, fired-brick and so on.

houses' condition and the residents' lifestyle is better than the lifestyle condition, in the sprawled area of *Char Qala.*

In the studied block of *Shahrak-e-Aria*, there are 2 different variations of housing types. The housing types based on the number of apartments are in descending order as follows; F1 (32 apartments), F2 (7 apartments). All of the surveyed apartments are flat-based (Table.3.1).

3.2.3 Sub-Types

The main types of housing in *Shahr-e-Kohna*, *Char Qala*, and *Khair Khana* are categorized into different sub-types based on the location of the residence and the annexes (Kitchens, toilets, shops, storages and bathrooms). The locations of the annexes are either attached or detached on the opposite side of the residence. The types of housings that have sub-types are as follows; C-U, C-LI, C-G, C-L, D1, D3, C-L+LI, D3+C-LI, D2+C-LI, C-U+L, D1+C-LI (Fig.3.2).

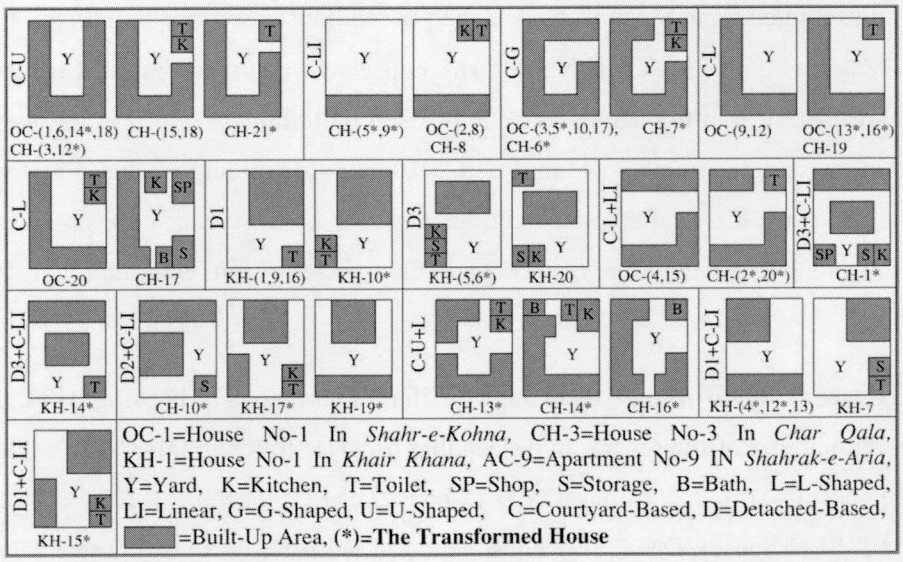

Fig.3.2. Housing sub-types in the 4 studied areas in Kabul City

The types of housing without sub-types are as follows; C-O (OC-7, 19), C-NY (OC-11), D2 (KH-3), D4 (KH-8), C-LI+LI (KH-2), D1+C-L (KH-21), D4+C-LI (CH-11), D3+C-L (KH-11), C-LI+LI+D3 (KH-18) and C-LI+D2+D3 (CH-4) in the three studied areas; *Shahr-e-Kohna*, *Char Qala* and *Khair Khana,* as well as 2 types such as; F1 (AC-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 33, 34, 35, 36, 37, 38) and F2 (AC-13&14, 15, 22, 31, 32, 39, 40) in *Shahrak-e-Aria* (Fig.3.1 & Table.3.1).

Table.3.2. Analysis of the surveyed houses in the four residential areas of Kabul City

Analysis of the Surveyed Houses in the Four Residential Areas of Kabul City

Study Area	House Number	Typology of Houses		Built-Up Area (m²)		Number of Stories		Number of Families		Number of people		Residents' Occupation	Period of Living until 2010	Constructed/Occupation Year	Transformation Years	Stages of Transformation Until (2010)	The Reasons for Transformation by the Types of Transformation					
		Past condition	(2010) Condition	Past Condition	(2010) Condition	Past Condition	(2010) Condition	Past Condition	(2010) Condition	Past Condition	(2010) Condition						No Transformation	Series Extension	Vertical Extension	Independent Structure	Removed Space	Interior Space
1. *Shahr-e-Kohna* (Historical Area)	OC-1	C-U	C-U	178	178	2	2	4	5	12	12	Labor	1	2009	0	0	O					
	OC-2	C-LI	C-LI	103	103	1	1	1	1	7	9	Gov. Employee	7	2003		0	O					
	OC-3	C-G	C-G	327	327	2	2	2	3	10	7	Doctor	100	1910			O					
	OC-4	C-L+LI	C-L+LI	149	149	2	2	2	1	8	5	Jobless	100	1910			O					
	OC-5	C-U	C-G	179	179	2	2	1	2	4	13	Teacher	70	1940	1940, 97	2		á				
	OC-6	C-U	C-U	270	270	2	2	2	2	7	10	Shopkeeper	15	1995	0		O					
	OC-7	C-O	C-O	628	628	2	2	5	8	30	46	Shopkeeper	30	1980			O					
	OC-8	C-LI	C-LI	177	177	2	2	1	1	6	9	Priest	100	1910			O					
	OC-9	C-L	C-L	176	176	3	3	2	2	8	21	Butcher	15	1995		0	O					
	OC-10	C-G	C-G	171	171	3	3	1	1	3	4	Painter	50	1960			O					
	OC-11	NY	NY	139	139	2	2	1	1	6	6	Gov. Employee	5	2005			O					
	OC-12	C-L	C-L	227	227	2	2	2	2	6	14	Painter	55	1955			O					
	OC-13	C-L	C-L	156	167	2	2	1	2	4	9	Shopkeeper	60	1950	1950, 05	2				á	á	
	OC-14	C-U+LI	C-U	338	191	2	2	2	3	11	16	Shopkeeper	8	2002	1950, 06	2		á			á	
	OC-15	C-L+LI	C-L+LI	339	339	2	2	3	4	15	28	Butcher	40	1970		0	O					
	OC-16	C-L	C-L	162	167	2	2	2	2	12	15	Cameramen	20	1990	1970, 04	2				á		
	OC-17	C-G	C-G	200	200	2	2	1	2	6	15	Businessmen	35	1975	0		O					
	OC-18	C-U	C-U	134	134	2	2	2	3	5	19	Shopkeeper	70	1940		0	O					
	OC-19	C-O	C-O	442	442	2	2	3	3	10	19	Gov. Employee	60	1950			O					
	OC-20	C-L	C-L	129	129	1	1	3	2	20	15	General	150	1860			O					
2. *Char Qala* (Sprawled Area)	CH-1	D3+C-LI	D3+C-LI	334	334	2	2	2	1	12	8	Businessman	20	1990	1990, 10	2					ú	ú
	CH-2	C-L	C-L+LI	84	231	1	1	1	1	2	4	Shopkeeper	25	1985	1985, 95	2				ú		
	CH-3	C-U	C-U	147	223	1	1	2	3	4	9	Gov. Employee	30	1980	0	0	O					
	CH-4	C-LI	C-LI+D2+D3	183	509	1	2	1	2	7	11	Businessman	35	1975	1975, 80, 9002	4		é í ú	é í ú	é í ú		
	CH-5	C-LI	C-LI	31	67	1	2	1	1	6	6	Watch Maker	4 m	2010	1980, 90	2			é í ú	é í ú		
	CH-6	C-L+L	C-G	170	356	1	2	1	2	5	13	Shopkeeper	28	1982	1982, 95, 02	3		é ó ú	é ó ú			é ó ú
	CH-7	C-U+U	C-G	181	334	1	2	1	4	7	21	Shopkeeper	35	1975	1975, 80, 90, 02	4		é ú	é ú			é ú
	CH-8	C-LI	C-LI	62	62	1	1	1	1	5	6	Guard	8	2002	0	0	O					
	CH-9	C-LI	C-LI	78	160	1	2	1	1	8	8	Shopkeeper	1	2009	1990, 02	2			é í			
	CH-10	C-LI+LI	D2+C-LI	76	202	1	1	1	1	3	9	Shopkeeper	20	1990	1990, 00, 02	3				é í		
	CH-11	D4	D4+C-LI	150	190	1	1	1	1	4	10	Driver	25	1985	1985, 95	2				ó		
	CH-12	C-U	C-U	70	123	1	1	1	2	6	9	Businessman	30	1980	1980, 00	2		é				é
	CH-13	C-U	C-U+L	134	134	1	1	3	2	10	8	Gov. Employee	8	2002	1980, 95	2				ó		
	CH-14	C-L+L	C-U+L	111	141	1	1	1	3	4	11	Carpenter	30	1980	1980, 00	2		é				
	CH-15	C-U	C-U	124	124	1	1	1	3	6	8	Shopkeeper	20	1990	0	0	O					
	CH-16	C-U+L	C-U+L	148	212	1	2	1	2	5	12	Guard	16	1994	1994, 98	2			ó			ó
	CH-17	C-L	C-L	169	169	1	1	2	2	7	6	Shopkeeper	5	2005	0		O					
	CH-18	C-U	C-U	156	156	1	1	1	2	5	6	Gov. Employee	10	2000		0	O					
	CH-19	C-L	C-L	123	123	1	1	1	2	5	9	Currency Exch.	10	2000			O					
	CH-20	C-L	C-L+LI	128	185	1	1	1	3	6	13	Gov. Employee	30	1980	1980, 98	2				é		
	CH-21	C-L	C-U	86	149	1	1	1	3	4	12	Shopkeeper	35	1975	1975, 95	2		é				
3. *Khair Khana* (Planned Area)	KH-1	D1	D1	310	310	2	2	1	2	6	9	Gov. Employee	35	1975	0		O					
	KH-2	C-LI+LI	C-LI+LI	135	135	1	1	1	2	6	8	Driver	15	1995		0	O					
	KH-3	D2	D2	223	410	1	3	1	3	5	11	Gov. Employee	35	1975	1975, 90	2			é			
	KH-4	D1	D1+C-LI	135	180	1	1	2	3	6	15	Businessman	25	1985	1985, 05	2				é		
	KH-5	D3	D3	147	147	1	1	1	2	9	18	Shopkeeper	25	1985	1985, 00	2			ó			
	KH-6	D3	D3	164	355	1	3	1	1	3	12	Baker	35	1975	1975, 00	2			é			
	KH-7	D1+C-LI	D1+C-LI	163	163	1	1	1	1	10	16	Shopkeeper	25	1985	0		O					
	KH-8	D4	D4	186	186	1	1	1	1	4	5	Gov. Employee	15	1995			O					
	KH-9	D1	D1	154	154	1	1	1	1	6	7	Mechanic	10	2000		0	O					
	KH-10	D1	D1	265	302	2	2	2	3	10	12	Gov. Employee	15	1995			O					
	KH-11	D3+C-LI	D3+C-LI	142	142	1	1	1	2	4	9	Engineer	40	1970			O					
	KH-12	D1	D1+C-LI	135	178	1	1	2	2	10	10	Businessman	3	2007	1990, 05	2				é		
	KH-13	D1+C-LI	D1+C-LI	206	206	1	1	1	2	6	10	Businessmen	32	1978	0	0	O					
	KH-14	D3+C-LI	D3+C-LI	162	206	1	2	1	2	7	13	Businessman	40	1970	1970, 05	2			é í			
	KH-15	D1	D1+C-LI	367	399	3	3	1	3	6	18	Gov. Employee	30	1980	1980, 02	2				í		í
	KH-16	D1	D1	124	124	1	1	2	2	9	11	Gov. Employee	15	1995	0	0	O					
	KH-17	D2	D2+C-LI	166	426	1	3	1	3	6	14	Engineer	30	1980	1980, 90, 00	3			í	í		í
	KH-18	C-LI+LI	C-LI+LI+D3	118	212	1	1	2	3	9	20	Shopkeeper	35	1975	1975, 08	2				é		
	KH-19	D3	D2+C-LI	262	473	3	3	2	4	12	14	Mechanic	6 m	2010	1975, 00	2				í		
	KH-20		D3		262	2	2		1	6	5	Retired Gov. Emp.	35	1975								
	KH-21	D1	D1+C-L	233	284	2	2	1	3	5	18	Businessman	30	1980	1980, 95, 00	3				é í	é í	é í
4. *Shahrak-e-Aria* (New Township)	AC-1	F1	F1	113	113	1	1	1	1	6	6	Engineer	2	2008	2007	1					ć	ć
	AC-2	F1	F1	92	92	1	1	1	1	6	6	Diplomat	2.5	2007	0	0	O					
	AC-3	F1	F1	132	132	1	1	1	1	7	7	Businessman	3	2007	2006	1					ć	ć
	AC-4	F1	F1	113	113	1	1	1	1	5	5	Gov. Employee	2.5	2007	2006	1					ć	ć
	AC-5	F1	F1	92	92	1	1	1	1	5	5	Shopkeeper	2.5	2007	0	0	O					
	AC-6	F1	F1	132	132	1	1	1	1	5	5	Engineer	2	2008	2006	1					ć	ć
	AC-7	F1	F1	123	123	1	1	1	1	3	3	Diplomat	3	2007	0		O					
	AC-8	F1	F1	110	110	1	1	3	3	7	8	Admin	3	2007			O					
	AC-9	F1	F1	113	113	1	1	1	1	8	8	Gov. Employee	2	2008		0	O					
	AC-10	F1	F1	92	92	1	1	1	1	5	5	General	2	2008			O					
	AC-11	F1	F1	132	132	1	1	1	1	7	7	Doctor	3	2007			O					
	AC-12	F1	F1	113	113	1	1	1	1	4	5	Driver	2	2008			O					
	AC-13	F1	F2	92	224	1	1	1	1	6	7	Shopkeeper	3	2007	2006	1					ć	ć
	AC-14	F1	F2	132																		
	AC-15	F1	F2	123	123	1	1	3	3	10	12	Retired General	3	2007	2006, 10	2					ć	ć
	AC-16	F1	F1	110	110	1	1	1	1	4	4	Engineer	1	2009	0		O					
	AC-17	F1	F1	113	113	1	1	1	1	13	14	General	1	2009			O					
	AC-18	F1	F1	92	92	1	1	1	1	4	3	Businessman	2	2008		0	O					
	AC-19	F1	F1	132	132	1	1	1	1	7	7	Shopkeeper	6 m	2010			O					
	AC-20	F1	F1	113	113	1	1	1	1	9	9	Engineer	1.5	2008			O					
	AC-21	F1	F1	92	92	1	1	1	1	3	2	Gov. Employee	1	2009			O					
	AC-22	F1	F2	132	132	1	1	1	1	5	6	Shopkeeper	3	2007	2006	1					ć	ć
	AC-23	F1	F1	123	123	1	1	1	1	7	7	Judge	2	2008	0		O					
	AC-24	F1	F1	110	110	1	1	1	1	3	3	Doctor	6 m	2010		0	O					
	AC-25	F1	F1	113	113	1	1	1	1	7	7	Currency Exch.	11m	2009			O					
	AC-26	F1	F1	92	92	1	1	1	1	6	6	Professor	10m	2009	2008	1					ć	ć
	AC-27	F1	F1	132	132	1	1	1	1	7	8	Currency Exch.	3	2007	2006	1					ć	ć
	AC-28	F1	F1	113	113	1	1	1	1	6	6	Engineer	2	2008	0	0	O					
	AC-29	F1	F1	92	92	1	1	1	1	8	10	Doctor	3	2007		0	O					
	AC-30	F1	F1	132	132	1	1	1	1	8	9	Shopkeeper	3	2007	2006	1					ć	ć
	AC-31	F1	F2	123	123	1	1	1	1	3	3	Admin	2	2008	2007	1					ć	ć
	AC-32	F1	F2	110	110	1	1	1	1	6	6	Engineer	2.5	2007	2006	1					ć	ć
	AC-33	F1	F1	228	228	2	2	1	1	10	10	Const. Company	2	2008	0		O					
	AC-34	F1	F1	224	224	2	2	1	1	7	8	Engineer	3	2007			O					
	AC-35	F1	F1	225	225	2	2	1	1	15	15	Const. Company	1	2009		0	O					
	AC-36	F1	F1	228	228	2	2	1	1	6	7	Prosecutor	2	2008			O					
	AC-37	F1	F1	224	224	2	2	1	1	8	9	Gov. Employee	1.5	2008			O					
	AC-38	F1	F1	225	225	2	2	1	1	2	2	Doctor	2	2008			O					
	AC-39	F1	F2	251	251	2	2	1	1	3	2	Businessman	2.5	2007	2006	1					ć	ć
	AC-40	F1	F2	225	225	2	2	1	1	4	5	Engineer	2.5	2007	2006	1					ć	ć

OC-1=House No-1 In *Shahr-e-Kohna*, CH-1=House No-1 In *Char Qala*, KH-1=House No-1 In *Khair Khana*, AC-1=Apartment No-1 In *Shahrak-e-Aria*, C=Courtyard-Based, D=Detached-Based, F=Flat-Based, U=U-Shaped, LI=Linear, G=G-Shaped, L=L-Shaped, O=O-Shaped, NY=No Yard, Gov.=Government, Emp.=Employee, Exch.=Exchanger, Const.=Construction, M=Month

3.3 The Transformation Process of Houses

The process of transformation was recorded by the physical measurement and conducting of interview with the residents of 101 houses in the four mentioned studied areas.

The number of the transformed houses in the four studied areas are as follows; *Shahr-e-Kohna* (4 houses), *Char Qala* (15 houses), *Khair Khana* (11 houses) and *Shahrak-e-Aria* (14 apartments).

The number of houses transformed in each housing types are as follows; C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-U+L (3 houses), D1+C-LI (3 houses), C-LI (2 houses), C-L (2 houses), D3 (2 houses), C-L+LI (2 houses), D3+C-LI (2 houses), D2 (1 house), D1+C-L (1 house), D4+C-LI (1 house), C-LI+LI+D3 (1 house) and C-LI+D2+D3 (1 house) in 3 studied areas of *Shahr-e-Kohna, Char Qala* and *Khair Khana* as well as, F1 (7 apartments) and F2 (7 apartments) in *Shahrak-e- Aria* (Table.3.1 & Fig.3.2).

3.3.1 Types of Transformation

Many types of transformation have taken place in the settlements in the course of time in the four studied areas such as:

1. Series: In this type, different parts of a building were extended one after the other in the course of time.
2. Vertical: The building was extended vertically. The ground floor of a building was built at first, and then the first/second floors were built later.
3. Independent: A separate unit (Annex) was added adjacent to the main building.
4. Removal: Some or the whole parts of a building were removed.
5. Interior Space: In this type, only the interior spaces of the houses were changed by adding/removing/altering of some parts (Table.3.2).

NOTE: No Transformation: The building is in its original form since it was constructed with no changes except some minor improvements such as; painting and repairing of the doors, windows and ceilings (This was observed in all the houses in the four studied areas). No Transformation is designated as (○) in (Table.3.2).

Various types of transformation were noticed in the houses such as:

a) *Shahr-e-Kohna*: Series-2, Independent-2 and Removal-2.

b) *Char Qala*: Series-6, Vertical-6, Independent-7, Removal-1 and Interior Space-5.

c) *Khair Khana*: Vertical-5, Independent-7, Removal-1 and Interior Space-3.

d) *Shahrak-e-Aria*: Removal-14 and Interior Space-14 (Table.3.2).

Table.3.3 shows the different types of transformation occurred in the housing types in the 4 studied areas of *Shahr-e-Kohna, Char Qala, Khair Khana* and *Shahrak-e-Aria.*

Table.3.3. The different types of transformation in the housing types

C-U	SE, RE, IS	C=Courtyard-Based, D=Detached-Based, F=Flat-Based, U=U-Shaped, G=G-Shaped, LI=Linear, L=L-Shaped, SE=Series Transformation, VE=Vertical Transformation, IN=Independent Transformation, RE=Removal Transformation, IS=Interior Space Transformation
C-G	SE, VE, IS	
D2+C-LI	VE, IN, IS	
C-U+L	SE, VE, IN, IS	
D1+C-LI	IN, IS	
C-LI	VE, IN	
C-L	IN, RE	
D3	VE	
C-L+LI	IN	
D3+C-LI	VE, RE, IS	
D2	VE	
D1+C-L	IN, RE, IS	
D4+C-LI	IN	
C-LI+LI+D3	IN	
D2+D3+C-LI	SE, VE, IN	
F1&F2	RE, IS	

3.3.2 Mechanisms of Transformation and Reasons

The transformation process was noticed in 44 out of 101 surveyed houses in the 4 studied areas. There are houses that their forms have changed from one type of housing to another due to the transformation process. The houses are as follows; OC-(5, 14), CH-(4&5, 6, 7), KH-(17, 19, 21), AC-(13&14, 39) (Table.3.2 & Fig. 3.4, 3.5, 3.6, 3.7), CH-(2, 20, 4, 9, 10, 11, 13, 14, 21), KH-(4, 12, 15, 18) and AC-(15, 22, 31, 32, 40) (Fig.3.3 & Table.3.2). The transformation process occurred in the houses based on different reasons, categorized in to 6 types, such as:

- Bathroom: The addition of a bathroom in a yard, designated as (á) in (Table.3.2).
- Increase: The increase in the number of family in a house, designated as (é) in (Table.3.2).
- Tenant: The addition of spaces to be used by tenants, designated as (í) in (Table.3.2).
- Privacy: The spaces are added to enhance privacy, designated as (ò) in (Table.3.2).
- Shop: The addition of shops, designated as (ù) in (Table.3.2).
- Spaciousness: The making of the living spaces spacious, designated as (ć) in (Table.3.2).

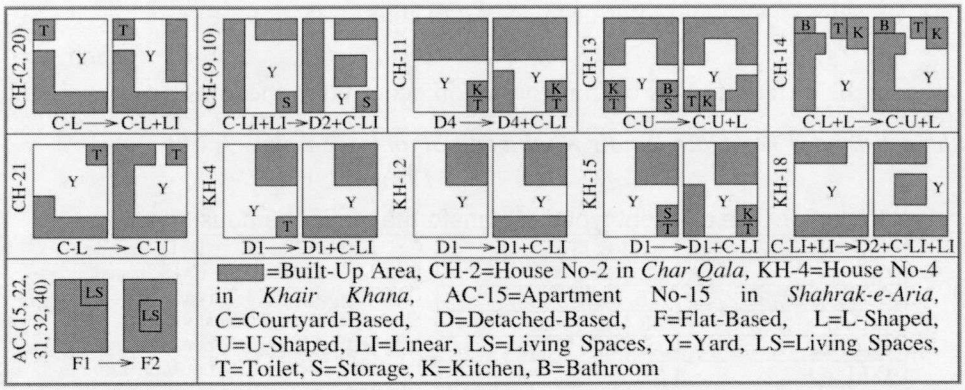

Fig.3.3. Changes of housing forms from one type to another due to the transformation process

1. *Shahr-e-Kohna*: In *Shahr-e-Kohna,* as a result of the interviews with the residents, the process of transformation was noticed only in 4 houses out of 20 surveyed houses (Fig.3.4, Table.3.1 & 3.2). The majority of the houses have continued to keep their original forms until today. The reasons for such low-level of transformation process in *Shahr-e-Kohna* can be summed up as follows:

- The majority of the residents in *Shahr-e-Kohna* are low-income people. They try to adjust themselves into one or two rooms in spite of the family increase.
- The houses in *Shahr-e-Kohna* are very old. Some of them were built between 60-150 years ago (Table.3.2). Based on the inheritance law, the property and land are passing down to descendants. Therefore, some of the residents of the houses are younger. They shared the information that they were witnessed during their lives as a resident. It can be assumed that the houses probably have gone through different stages of transformations from the time they were constructed until they took the current form.

  The tangible (Physical, e.g. building, etc.) and intangible (Non- physical, e.g. custom, etc.), attributes of inheritance have played an important role on the lives of the people. For instance, those who received the houses as inheritance from the past generations, have their own places for living which shows the influence of the inheritance on the economic status of the inhabitants. On the other hand, the values and sense of identity attached with those places are reflected from the way of living and behavior of the inhabitants.
- The majority of the houses don't have vacant space for expansion and most of the houses in *Shahr-e-Kohna* are very old to support any expansion vertically. For example, the house OC-(1, 6, 7, 8, 9, 10, 11, 12, 16, 17, 19).

NOTE: There are houses that were restored by AKTC for example the houses OC-(4, 9). This study is focusing only on the improved spaces brought about by the residents.

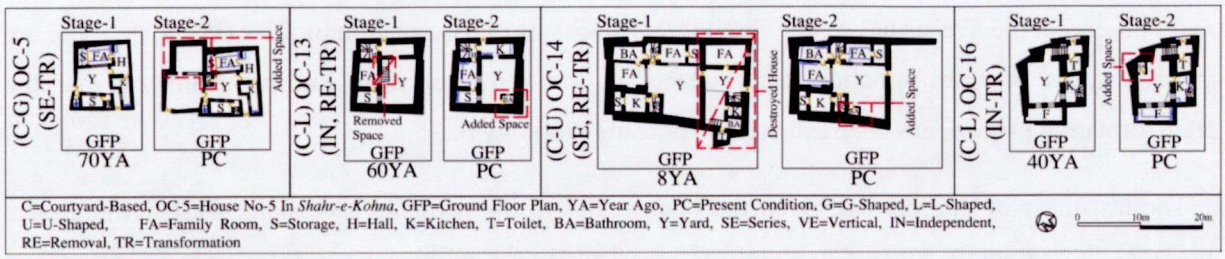

Fig.3.4. The transformation process of the settlements in *Shahr-e-Kohna* (Source: Author's Illustration)

Description of Figure.3.4

OC-5: *There is only one type of transformation Series taken place in the house. The Stage-1 shows the house condition in 1940. A family of 4 people was living there. The Stage-2 shows the house condition in 1997. The only added space is a bathroom in the yard. In 2010, two families of 13 people were living there. There was a two storey building under construction on the left side of the existing building, during the survey.*

OC-13: *There are two types of transformation Independent and Removal taken place in the house. The Stage-1 shows the condition of the house in 1950. A family of 4 people was living there. The Stage-2 shows the condition of the house in 2005. The only added space is a bathroom in the yard and removing a staircase from the yard. Two families of 9 people were living there in 2010.*

OC-14: *This house was occupied by tenants in 2002. There are two types of transformation Series and Removal has taken place in the house. The Stage-1 shows the condition of the house in 2002. The house on the right side was destroyed due to the lack of maintenance in 2006 (according to the community leader). The Stage-2 shows the condition of the house in 2010. The only added space is a bathroom in the yard. The house is more than 60 years old (According to the community leader).*

OC-16: *There is one type of transformation Independent taken place in the house. The Stage-1 shows the condition of the house in 1970. A family of 12 people was living there. The Stage-2 shows the condition of the house in 2004. The only added space is a bathroom in the yard. Two families of 15 people were living there in 2010.*

Reasons for the Transformation of the Houses in *Shahr-e-Kohna*

The addition of a bathroom in a yard: In the past, there were public baths in most of the sections of the city. Some of those public baths were destroyed or used for other purposes now. So the bathrooms are added in the yards just for the convenience of the residents of the houses. This can be seen in the houses; OC-(5, 13, 14, 16) in *Shahr-e-Kohna* (Fig.3.4). This reason is shown as (á) in (Table.3.2).

2. *Char Qala*: In *Char Qala,* as a result of the interviews with the residents, the process of transformation was noticed in 15 houses out of 21 surveyed houses (Table.3.1 & 3.2).

As observed, the houses have gone through 2-3 stages of transformation process (Fig.3.5). There are various types of transformation taken place, in the settlements. It can be estimated that the transformation process has been affected by housing typology there.

The largeness of the lots has given the opportunity to the residents to expand their living spaces horizontally/vertically. Since *Char Qala* is a sprawled area without basic infrastructure, green and recreational spaces, community facilities and services, further densification would be a matter of concern for the government.

In *Char Qala,* in addition to the gradual changes in the settlements; it seems that there always been a tendency by the residents to find a source of income by using the spaces of their lots as shops, drug stores or bakeries. This example can be seen in the houses that are located along the streets (Fig.3.5).

Description of Figure.3.5

CH-1: *There are two types of transformation Removed and Interior Space taken place in the house. The Stage-1 shows the building in 1990. A family of 12 people was living there. The Stage-2 shows the condition of the house in 2010. The shops that were located on the West side of the lot were in the process of removing, during the survey.*

CH-2: *There is one type of transformation Independent taken place in the house. The Stage-1 shows the building 1985. A family of 2 people was living there. The Stage-2 shows the condition of the house in 2010. Shops are added on the South of the lot, to find a source of income. A family of 4 people was living there in 2010.*

CH-4&5: *There are three types of transformation Series, Vertical and Independent taken place in the house. The Stage-1 shows the building after it was constructed in 1975. A family of 5 people was living there. The Stage-2 shows the condition of the house in 1990. A two storey building was built on the west side of the lot as the number of the family increased to two. The part of the house on the left corner was sub-divided to be used by a tenant. The ground floor of the building along the street was used as shops. The Stage-3 shows the condition of the house in 2010. Another single storey building was under construction during the survey. Three families of 17 people were living there in 2010.*

CH-6: *There are three types of transformation Series, Vertical and Interior Space taken place in the house. The Stage-1 shows the house condition in 1982 after construction. A family of 5 people was living there. The space along the street was used as shops. The Stage-2 shows the house condition in 1995. A new building was added in the south of the yard as the number of family increased to two. The Stage-3 shows the house condition in 2002. The first floor of the house was built as the number of the people increased. The first floor of the building was for guests in order to minimize contact with the family for more privacy. In 2010, two families of 13 people were living there.*

CH-7: *There are three types of transformation Series, Vertical and Interior Space taken place in this house. The Stage-1 shows the building after it was constructed in 1975. A family of 7 people was living there. The spaces along the street were used as shops. The Stage-2 shows the condition of the house in 1980. The first floor of the house was built as the number of the family increased to two. The Stage-3 shows the condition of the house in 1990. Another room was added to the main building as the number of the family increased to three. The Stage-4 shows the condition of the house in 2002.*

Another room and a bathroom were added on the first floor as well as some changes on the ground floor of the building as the number of the family increased. 4 families of 21 people were living there in 2010.

CH-9&10: *There are two types of transformation Independent and Vertical taken place in this house. The Stage-1 shows the building in 1990. A family of 3 people was living there. The Stage-2 shows the house condition in 2000. Another building was added as the number of people increased in the family. The Stage-3 shows the condition of the building in 2002. The second floor of the building in the north of the lot was added for the rental purpose. In 2010, two families of 17 people were living there.*

CH-11: *There is one type of transformation Independent taken place in the house. The Stage-1 shows the building in 1985. A family of 4 people was living there. The Stage-2 shows the condition of the building in 1995. A guest room and bathroom is added in the south-west of the building. In 2010, a family of 10 people was living there.*

CH-12: *There are two types of transformation Series and Interior taken place in the house. The Stage-1 shows the building in 1980. A family of 6 people was living there. The Stage-2 shows the condition of the building in 2000. Few rooms were added in the west of the lot as the number of the family increased. Two families of 9 people were living there in 2010.*

CH-13: *There is one type of transformation Independent taken place in the house. The Stage-1 shows the building in 1980. Three families of 10 people were living there. The Stage-2 shows the condition of the building in 1995. Few rooms were added in the north of the lot. Two families of eight people were living there in 2010.*

CH-14: *There is one type of transformation Series taken place in the house. The Stage-1 shows the building in 1980. A family of four people was living there. As the number of the family increased, another room was added on the west side of the building. The Stage-2 shows the condition of the building in 2000. Three families of 11 people were living there.*

CH-16: *There are two types of transformation Vertical and Interior Space taken place in the house. The Stage-1 shows the building in 1994. A family of 5 people was living there. As the number of the family increased, some alteration was made in the ground floor of the building (Stage-2) and then the building was expanded vertically (Stage-3). Two families of 12 people were living there in 2010.*

CH-20: *There is one type of transformation Independent taken place in the house. The Stage-1 shows the building in 1980. A family of 6 people was living there. As the number of the family increased to 3, another building was added on the east side of the lot in 1998. In 2010, three families of 13 people were living there (Stage-2).*

CH-21: *There is one type of transformation Series taken place in the house. The Stage-1 shows the building in 1975. A family of four people was living there. The Stage-2 shows the condition of the building in 1995. Few rooms were added in the north-east of the building as the number of the family increased to 3. In 2010, three families of 12 people were living there.*

Fig.3.5. The transformation process of the settlements in *Char Qala* (Source: Author's Illustration)

Reasons for the Transformation of the Houses in *Char Qala*

1. Increase in the number of a family in a house: The spaces are gradually added to a house due to an increase in the number of a family. This can be seen in the houses; CH-(6, 7, 12, 14, 20, 21). This reason is shown as (é) in (Table.3.2).

   The majority of Afghans believe in a close/joint-family culture, where parents live with their children (Usually sons), in a house together. In some of the houses in surveyed areas, it was noticed that the new spaces are continuously added, in a house, in response to an increase in the number of a family (When the sons got married). When there is no space left for expansion, one of the members of the family (The elder son) tries to find his own place to live. For example, the house CH-6 was built in 1982. A family of 5 people was living there. As the number of people increased, the first and second sons built their own houses (CH-10&11) (Fig.3.5 & Table.3.2).
2. Spaces were added to enhance privacy: The spaces are added in a short distance to the entry for guests to avoid interference with the family privacy. This can be seen in the houses CH-(6, 11, 13, 16) [Fig.3.5-(CH-6)]. This reason is shown as (ò) in (Table.3.2).
3. The addition of shops: The spaces are added in the yard along the streets in order to find a source of income. This can be seen in the houses CH-(1, 2, 4, 5, 6, 7, 17) (Fig.3.5). This reason is shown as (ù) in (Table.3.2).
4. The addition of spaces to be used by tenants: The spaces are added in the house for economic purposes to find a source of income. This can be seen in houses CH-(5, 9) (Fig.3.5). This reason is shown as (í) in (Table.3.2).

3. *Khair Khana*: In *Khair Khana,* as a result of the interviews with the residents, the process of transformation was noticed in 11 houses out of 21 surveyed houses (Table.3.1 & 3.2). As observed, the houses have gone through 1-2 stages of transformation process (Fig.3.6). There are various types of transformation process has taken place in the settlements. It can be estimated that the transformation process has been affected by housing typology there.

Description of Figure.3.6

KH-3: *There is one type of transformation Vertical taken place in the house. The Stage-1 shows the house condition in 1975 after it was built. A family of five people was living there. The Stage-2 shows the house condition in 1990. The first and second floors of the house were added to the building, as the number of the family increased. In 2010, three families of 11 people were living there.*

KH-4: *There is one type of transformation Independent taken place in the house. The Stage-1 shows the house condition in 1985. Two families of six people were living there. The Stage-2 shows the*

house condition in 2005. Another building was added on the south of the lot, as the number of family increased to 3. In 2010, three families of 15 people were living there.

KH-5: *There is one type of transformation Vertical taken place in the house. The Stage-1 shows the house condition in 1985. A family of nine people was living there. As the number of the family increased to 2, the first floor of the building on the south-west of the lot was added in 2000 (Stage-2). In 2010, two families of 18 people were living there.*

KH-6: *There is one type of transformation Vertical taken place in the house. The Stage-1 shows the house condition in 1975. A family of three people was living there. As the number of people increased, the first and second floors of the building were added in 2000. In 2010, a family of 12 people was living there.*

KH-12: *There is one type of transformation Independent taken place in the house. The Stage-1 shows the house condition in 1990. In 2005, another building was added on the south of the lot. Two families of 10 people were living there in 2010.*

KH-14: *There is one type of transformation taken place in the house. The Stage-1 shows the house condition in 1970. A family of seven people was living there. In 2005, the first floor of the building on the south of the lot was added for rental purpose (Stage-2). In 2010, two families of 13 people were living there.*

KH-15: *There is one type of transformation taken place in the house. The Stage-1 shows the house condition in 1980. A family of six people was living there. In 2002, another building was added on the south-west of the lot for rental purpose. In 2010, three families of 18 people were living there.*

KH-17: *There are three types of transformation Vertical, Independent and Interior Space taken place in the house. The Stage-1 shows the house condition in 1980 after it was built. A family of 6 people was living there. The Stage-2 shows the house condition in 1990. The first and second floors of the house were added to the building. The ground floor was used by a family of 6 people as a tenant. The first and second floors were used by the owner. The Stage-3 shows the house condition in 2000. A new building was added in the south of the lot to be used by tenants. In 2010, three families of 14 people were living in the house.*

KH-18: *There is one type of transformation Independent taken place in the house. The Stage-1 shows the house condition in 1975. Two families of 9 people were living there. The Stage-2 shows the house condition in 2008. Another building was added in the middle of the lot, as the number of the family increased to 3. In 2010, three families of 20 people were living there.*

KH-19&20: *There is one type of transformation Independent taken place in the house. The Stage-1 shows the house condition in 1975. A two storey building was built in a land area of 750m². Two families of 6 people were living there. The Stage-2 shows the house condition in 2000. A three storey building as well as a single storey building was added on the right side of the building to be used by tenants. As the owner is a retired government employee, the addition of the new buildings is a source of income for him. Four families of 14 people were living in the new buildings as tenants as well as one family of 5 people were living in the old building in 2010.*

KH-21: *There are three types of transformation Independent, Removal and Interior Space taken place in this house. In 1980, there was a single storey building made of raw materials in the lot and a family of 5 people was living there. The building was destroyed and instead a new concrete building was*

built there in 1995 as the number of the family increased (the author couldn't get a clear idea about the shape of the destroyed house from the owner). The Stage-1 shows the ground floor and first floor of the new building in 1995. Two families of 9 people were living there. The Stage-2 shows the house condition in 2000. Another new building was added in the south of the lot to be used by tenants. Three families of 18 people were living in the house in 2010.

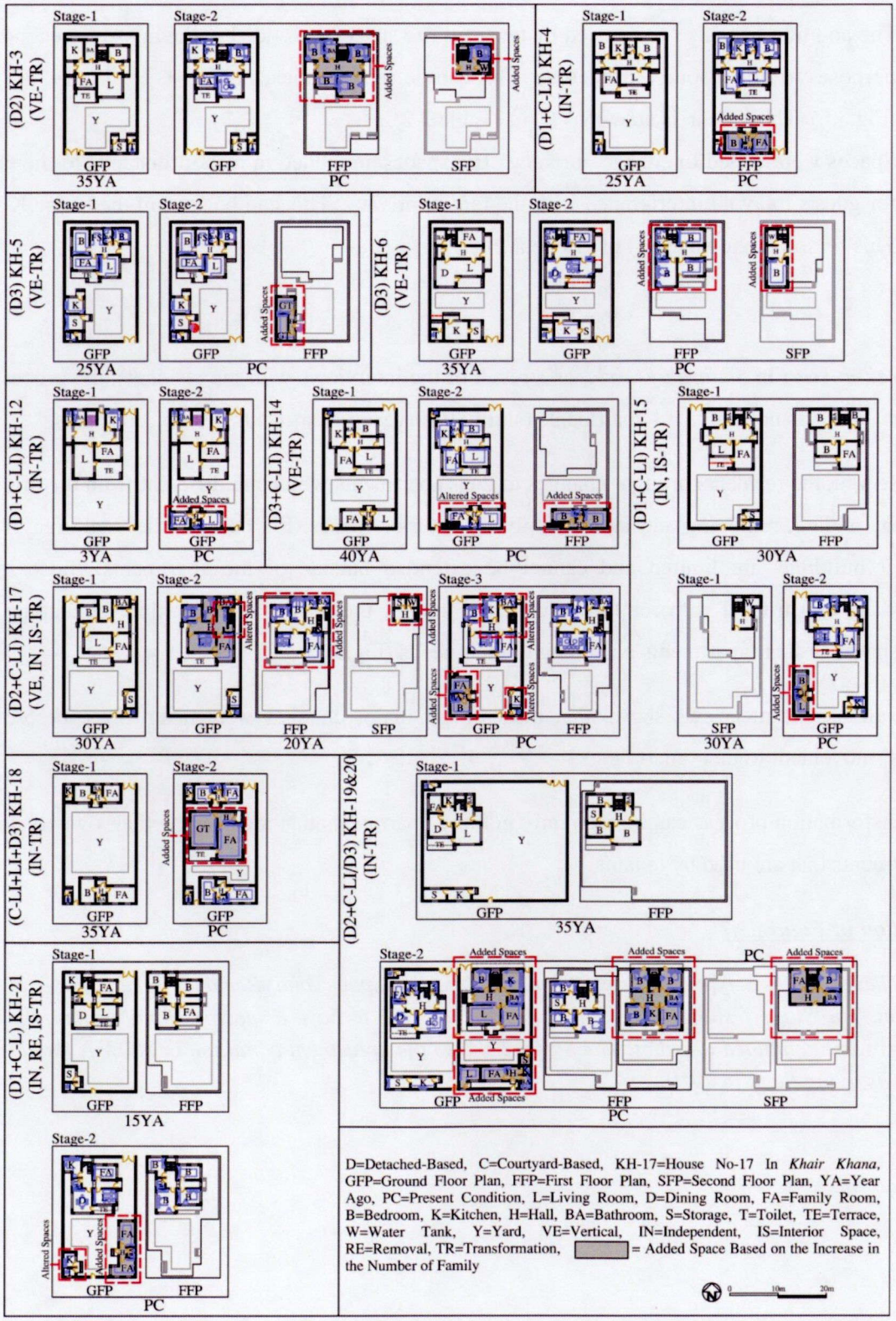

Fig.3.6. The transformation process of the settlements in *Khair Khana* (Source: Author's Illustration)

Reasons for the Transformation of the Houses in *Khair Khana*

1. Increase in the number of a family in a house: The spaces are gradually added to a house due to an increase in the number of a family. This can be seen in the houses; KH-(3, 4, 6, 12, 18). This Reason is shown as (é) in (Table.3.2).
2. The addition of spaces to be used by tenants: The spaces are added in the house for economic purposes to find a source of income. This can be seen in houses KH-(14, 15, 17, 19, 20, 21) (Fig.3.6). This reason is shown as (í) in (Table.3.2).
3. Spaces were added to enhance privacy: The spaces are added in a short distance to the entry for guests to avoid interference with the family privacy. This can be seen in the house KH-5. This reason is shown as (ò) in (Table.3.2).

4. *Shahrak-e-Aria*: In *Shahrak-e- Aria,* as a result of the interviews with the residents, the process of transformation was noticed in 14 apartments out of 39 surveyed apartments (Table.3.1 & 3.2).

As observed, the residents brought changes to their apartments which are different from the original designs by adding, removing and altering only the interior spaces. It's because the total area of the apartment buildings are limited and cannot be extended outside of the apartments. Since these buildings are constructed with reinforced concrete frames, the residents are flexible in shaping the interior spaces of their apartments according to their needs (Fig.3.7).

The result of the interviews shows that most of the major changes were taken place before the residents' movement to their apartments.

The transformation process can be seen only in those apartments that are used by their owners not in the apartments that are used by tenants.

Description of Figure.3.7

AC-1: There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have a specious family room, the two bedrooms were combined together. The Stage-2 shows the apartment condition in 2007. A family of 6 people was living there in 2010.

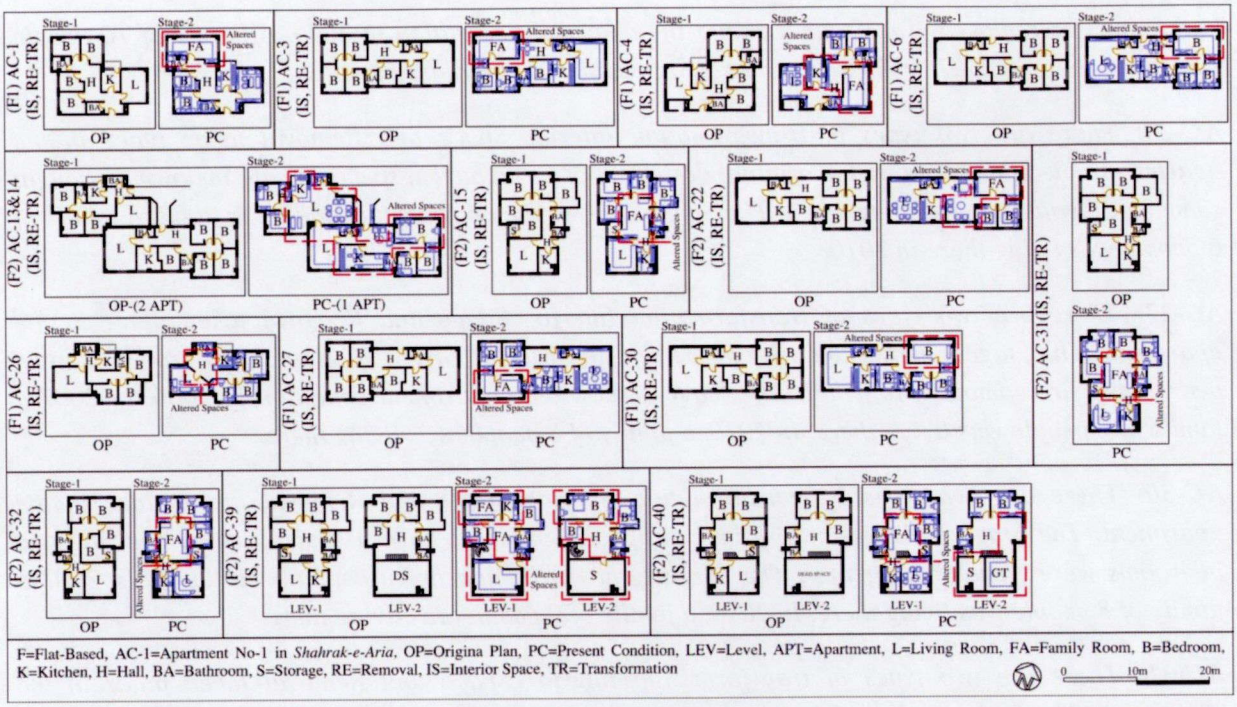

Fig.3.7.The transformation process of the settlements in *Shahrak-e-Aria* (Source: Author's Illustration)

AC-3: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have a specious family room, the two bedrooms were combined together. The Stage-2 shows the apartment condition in 2006. A family of 7 people was living there in 2010.*

AC-4: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have a specious family room, the two bedrooms were combined together. The kitchen was also made larger by removing the wall. The Stage-2 shows the apartment condition in 2006. A family of 5 people was living there in 2010.*

AC-6: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have a specious bedroom, the two small bedrooms were combined together. The Stage-2 shows the apartment condition in 2006. A family of 5 people was living there in 2010.*

AC-13&14: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design of the apartments. These two apartments were bought by one person. The owner of the apartments brought lots of changes in order to have spacious spaces. The Stage-2 shows the apartments condition in 2006. A family of 6 people was living there in 2007. In 2010 a family of 7 people was living there.*

AC-15: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have a specious family room, a bedroom was removed. The Stage-2 shows the apartment condition in 2006. A family of 10 people was living there in 2008. In 2010, the number of people was increased to 12.*

AC-22: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have a specious family room, the two bedrooms were combined together. Also, in order to have a sitting place in the hall, a bedroom and a*

bathroom was removed. The Stage-2 shows the apartment condition in 2006. A family of 10 people was living there in 2007. In 2010, the number of people was increased to 12.

AC-26: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have a specious hall, the owner brought some modification in the living room. The Stage-2 shows the apartment condition in 2008. A family of 6 people was living there in 2010.*

AC-27: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have a specious family room, the two bedrooms were combined together. The Stage-2 shows the apartment condition in 2006. In 2007 a family of 7 people was living there. In 2010, a family of 8 people was living there.*

AC-30: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have a specious bedroom, the two bedrooms were combined together. The Stage-2 shows the apartment condition in 2006. In 2007 a family of 8 people was living there. In 2010, a family of 9 people was living there.*

AC-31: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have a specious family room, a bedroom was removed. The Stage-2 shows the apartment condition in 2007. In 2010, a family of 3 people was living there.*

AC-32: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have a specious family room, a bedroom was removed. The Stage-2 shows the apartment condition in 2006. In 2010, a family of 6 people was living there.*

AC-39: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have spacious living room, family room, and bedroom, the owner brought lots of changes by removing/altering the spaces. The Stage-2 shows the apartment condition in 2006 and a family of 3 people was living there. In 2010 a family of 2 people was living there.*

AC-40: *There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design. In order to have spacious family room, the owner brought lots of changes by removing/altering the spaces. On the second level, there used to be a dead space under the roof. The owner changed it to guest room and storage. The Stage-2 shows the apartment condition in 2006. In 2007 a family of 4 people was living there. In 2010 a family of 5 people was living there.*

Reasons for the Transformation of the Houses in *Shahrak-e-Aria*

The making of living spaces spacious: Some spaces are removed or altered in order to have large and spacious living spaces. This can be seen in the apartments AC-(1, 3, 4, 6, 13&14, 15, 22, 26, 27, 30, 31, 32, 39, 40). This reason is shown as (ć) in (Table.3.2).

3.4 Flexibility of the Areas for Acceptance of Extension, and Increasing Population

The analysis of the flexibility of the areas for acceptance of extension indicates that, *Char Qala* is the most flexible area, has the capacity for accepting further extensions. As observed, different types of extensions are taken place in the area based on different types of reasons, such as: the extension types are (Series, Vertical and Independent) and the reasons are (é-Increase, í-Tenant, ò-Privacy and ù-shop) (Table.3.2). It's important for the government to provide services and community facilities in case of further densification of the area in the future.

The second most flexible area for acceptance of extension is *Khair Khana.* As observed, different types of extensions based on different types of reasons are taken place in the area, such as: the extension types are (Vertical and Independent) and the reasons are (é-Increase, í-Tenant and ò-Privacy) (Table.3.2). The addition of the spaces in the planned area of *Khair Khana* is taken place without consideration of the urban planning regulations and is for one's own benefit.

In *Char Qala* and *Khair Khana,* the increase in population and the flexibility of the houses for acceptance of extension are directly related to each other. The addition of the spaces in the houses which have taken place is based on an increase in the number of the family. For instance, in *Char Qala,* the total number of increased families is 18, from which 72.2% is living in the 8 transformed houses (Table.3.2 & 3.4). In *Khair Khana,* the total number of increased families is 22, from which 77.3% is living in the 9 transformed houses (Table.3.2 & 3.4).

Shahr-e-Kohna is the least flexible area for acceptance of extensions. In *Shahr-e-Kohna,* different types of extensions and one type of reason are observed such as: the extension types are (Series and Independent) and the reason is (á-bathroom) (Table.3.2). In *Shahr-e-Kohna,* the houses are very old and most of them don't have enough space for extension. The total number of increased families is 11 in the studied area (Table.3.2 & 3.4).

Table.3.4. The flexibility of the houses for acceptance of extension, increase in population and family number

	Flexibility of the Houses for Acceptance of Extension	**Total Number of Increased Population**	**Percentage of the Increased Population in the Transformed Houses**		**Total Number of Increased Family**	**Percentage of the Increased Family in the Transformed Houses**	
		No.	**%**	**No. of Transformed Houses**	**No.**	**%**	**No. of Transformed Houses**
Shahr-e-Kohna	X	102	21.6	4	11	27.3	3
Char Qala	O	78	84.6	15	18	72.2	8
Khair Khana	O	106	76.4	11	22	77.3	9
Shahrak-e-Aria	X	12	50	14	0	0	0

Shahrak-e-Aria is not flexible for acceptance of extensions. There is no extension taken place in the apartments except the interior space improvements (Table.3.2). It is because the total areas of the apartment buildings are limited and cannot be extended outside of the apartments. There is no increase in the number of the families in the studied block (Table.3.2 & 3.4).

In *Shahr-e-Kohna* and *Shahrak-e-Aria,* there are no relationship between the increased number of families and the flexibility of the houses for acceptance of extension. The transformation process is taken place in the houses based on the residents' demands.

The relationship between the increasing number of the families and the flexibility of the areas for acceptance of extension are different, and related to the characteristics of the transformation process of each studied areas.

The increase in the number of population can be observed in all transformed houses of each studied areas: a) *Shahr-e-Kohna*: The increasing number of population was 102 people in 20 houses in 2010. 21.6% of the population was living in the 4 transformed houses. b) *Char Qala*: The increasing number of population was 78 people in 21 houses in 2010. 84.6% of the population was living in the 15 transformed houses. c) *Khair Khana*: The increasing number of population was 106 people in 21 houses in 2010. 76.4% of the population was living in the 11 transformed houses. d) *Shahrak-e-Aria*: The increasing number of population was 12 people in 39 apartments in 2010. 50% of the population was living in 14 transformed apartments (Table.3.4).

NOTE: The increase in the number of the families and population in the areas are calculated from the time the houses were constructed or occupied until 2010 in each studied areas.

This chapter clarified the transformation process occurred in the houses in the four studied areas, in relation with their typologies by provision of reasons like; how/why the residents brought changes to their living spaces and whether the changes met their demands. In the next chapter the relationship between the hierarchy of the open spaces and their usage in the four residential areas is discussed.

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Chapter 4

The Spatial Structure of Open Spaces and Outdoor Activities

4.1 Introduction

This chapter reveals the results of the study described in chapter 1 Research Methods. It clarifies the relationship between the hierarchy of the open spaces and their usage in the four residential areas of *Shahr-e-Kohna, Char Qala, Khair Khana,* and *Shahrak-e-Aria.*

At first, the paper discusses the studied areas' actual condition and residents' perceptions. Secondly, the outdoor activities, the hierarchy of the open spaces, and the relationship between them are addressed. And finally, the social interaction and the level of cooperation between the residents are discussed.

The gathering of empirical data for this section is based on using a questionnaire and observation survey.

4.2 The Relationship between the Existing Condition of the Studied Areas and the Residents Perceptions

In order to comprehend the relationship between the existing condition of the areas and the residents' perceptions, the existing condition's map and the figure representing the residents' perceptions, is shown together as (Fig.4.1).

1. *Shahr-e-Kohna*: The environment in *Shahr-e-Kohna,* offers facilities such as: school, playground, mosque, shops, a shrine (*Asheqan wa Arefan*), and a *Khanaqa* (*Khanaqa* is a religious facility used for Sufism purposes), within a 200m radius of the studied area. There are shops, restaurants, guest houses, administrative and government offices located along the main and secondary streets. There are no parks, in the area (Fig.4.1 & Table.4.1).

The provision of facilities such as; kindergarten (90%), school and fire protection (both 40%) was the priorities for the residents (Fig.4.1, *Need for Facilities and Services*) [Int.].

40% of the residents' complained from the low quality of teaching of *Shahr-e-Kohna's* school. 40% of the residents had concern regarding accessibility of Fire Department; in case of fire because the local streets are very narrow for firefighting vehicle access to the houses [Int.].

2. *Char Qala*: The developed sprawled area, in a chaotic way lacks green areas (Parks, playgrounds, etc.) and community facilities (Schools, clinics, etc.). There are 2 mosques, *Sarai* (The *Sarai,* is usually a large open space surrounded by rooms, used for different purposes like stock, parking, rented rooms for travelers, etc.), and shops (Along the main streets), within a radius of 200m of the studied area (Fig.4.1 & Table.4.1).

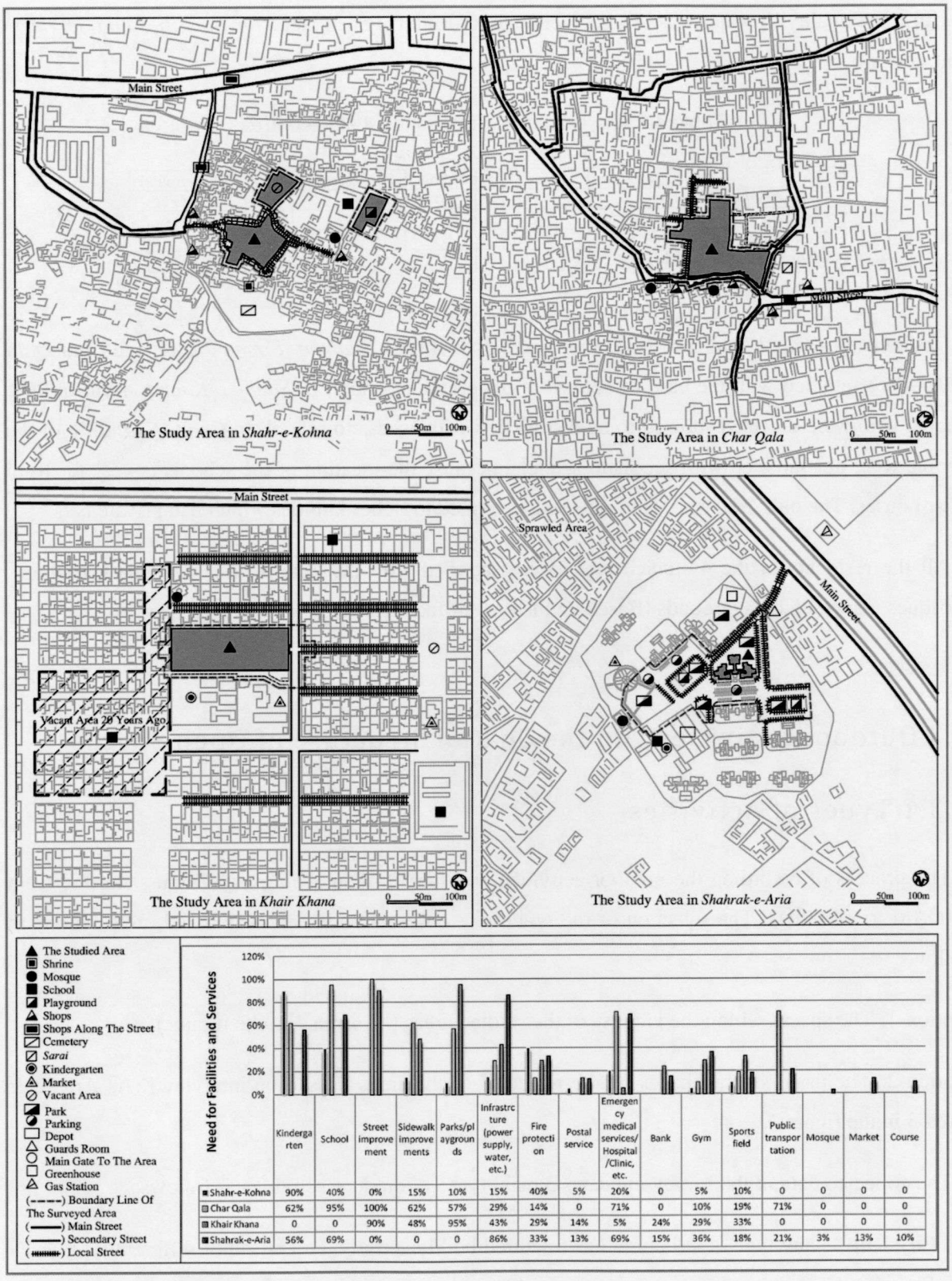
The provision of facilities such as; street improvement (100%), school (95%), emergency medical clinic and public transportation (Both 71%), kindergarten and sidewalk improvement (both 62%), park and playground (57%) was the priorities for the residents (Fig.4.1, *Need for Facilities and Services*) [Int.].

3. *Khair Khana*: The environment in *Khair Khana,* offers facilities such as: 2 private schools, a kindergarten, a market, and mosque within a radius of 200m of the studied area (There are a public school and a market, etc. outside the perimeter) (Fig.4.1 & Table.4.1). The area lacks playgrounds and parks. There used to be a vacant area reserved for conservation (Shown in Dashed-Line in Fig.4.1) adjacent to the studied area. The area had a very positive social effects on people especially, children and teenage in the neighborhood used for sporting competitions and playing games. It was occupied and transformed informally, to low-rise residential housing blocks in 1992 (According to the community leader). There are some vacant spaces near the studied area, some of them are not flat and others are not used by the residents of the studied area (Fig.4.1 & Table.4.1).

The provision of facilities such as; parks and playgrounds (95%), street improvements (90%), sidewalk improvement (48%) and water (43%) was the priorities for the residents (Fig.4.1, *Need for Facilities and Services*) [Int.].

4. *Shahrak-e-Aria*: The environment in *Shahrak-e-Aria,* offers facilities such as; playgrounds, parks, market, restaurant, mosque, private school/kindergarten, depot, and greenhouse (Fig.4.1 & Table.4.1). There are several restaurants and a gas station outside of the area.

The provision of facilities such as; school and emergency medical clinic (Both 69%), kindergarten (56%), and gym (36%) was the priorities for the residents. 18 out 36% of the residents said there should be a gym for women in the area. Besides, a mosque, a market and a school/kindergarten exist in the area. The residents showed dissatisfaction with the high fees of the school/kindergarten and low quality of teaching (They were satisfied with the facility but dissatisfied with the services).



	Kindergarten	School	Street improvement	Sidewalk improvements	Parks/playgrounds	Infrastructure (power supply, water, etc.)	Fire protection	Postal service	Emergency medical services/ Hospital /Clinic, etc.	Bank	Gym	Sports field	Public transportation	Mosque	Market	Course
Shahr-e-Kohna	90%	40%	0%	15%	10%	15%	40%	5%	20%	0	5%	10%	0	0	0	0
Char Qala	62%	95%	100%	62%	57%	29%	14%	0	71%	0	10%	19%	71%	0	0	0
Khair Khana	0	0	90%	48%	95%	43%	29%	14%	5%	24%	29%	33%	0	0	0	0
Shahrak-e-Aria	56%	69%	0%	0	0	86%	33%	13%	69%	15%	36%	18%	21%	3%	13%	10%

Fig.4.1.The existing condition of the 4 studied areas and residents' perceptions (*the surveyed areas are bordered with short dashed-lines*) (Source: Author's Illustration)

Based on the findings of the interview, the size of the mosque and the market cannot meet the demand of increasing population in the area. 86% of the residents said they buy water for drinking

because the quality of water was not good enough to drink (Fig.4.1, *Need for Facilities and Services*) [Int.].

Table.4.1.The existed facilities in the 4 studied areas

	Mosque	Market/Shop	School	Kindergarten	Park	Playground
Shahr-e-Kohna	O	O	O	-	-	O
Char Qala	O	O	-	-	-	-
Khair Khana	O	O	O	O	-	-
Shahrak-e-Aria	O	O	O	O	O	O

Residents in *Khair Khana* and *Shahrak-e-Aria* (Both 100%), *Shahr-e- Kohna* (96%), and *Char Qala* (2%) were satisfied with the ease of access to kindergarten/school. In *Shahr-e-Kohna,* 4 out of 96% people who were disabled showed to be dissatisfied with access to school. In *Char Qala,* 98% of the people were not satisfied with access to schools, because the location of the schools is very far from their houses. The only 2%, who were satisfied, belonged to richer families which had private cars.

All the residents of the 4 studied areas were satisfied with the ease of access to markets/shops, mosques, parks, and playgrounds (Based on the type of facilities found in the areas) [Int.].

4.3 Outdoor Activities and the Spatial Structure of Open Spaces

4.3.1 Types of Activities

The process of recording the outdoor activities was for 20 minutes in every 2 hours starting from 6:00AM to +6:00PM. The selection of the spaces for observation survey was based on 2 options as follows:

Option-1: The spaces within the vicinity of the studied areas (As Area-1 in the figures).

Option-2: The usage of the spaces by the residents of the areas (Based on interview) (As Area-2 & Area-3 in the figures).

The collected data of the survey indicates 3 main types of outdoor activities as follows:

(1) Physical: Is any type of structured/unstructured bodily activity, comprised of different types such as; Exercise (Jogging, running, etc.), Work (Gardening, digging a ditch, etc.), Play (Playing tag, hopscotch, etc.) and Kinetic (Walking while playing with a toy, leaving/returning home, etc.). The total number of people participated in the physical activities in the 4 studied areas are in descending order as follows:

Shahrak-e-Aria (278 people), *Shahr-e-Kohna* (187 people), *Char Qala* (33 people), and *Khair Khana* (31 people). The majority of the participants in the physical activities are children in the 4 studied areas. The observed activities are as follows; exercise, work, play, and kinetic (In both *Shahr-e-Kohna* and *Shahrak-e-Aria*), work, play, and kinetic (*Char Qala*), exercise, play, and kinetic (*Khair Khana*) (Table.4.2).

(2) Social: Is any type of activity done by a group of people, such as; standing/sitting and talking with someone/group of people, sitting with others while playing guitar and singing, etc. The total number of people participated in the social activities in the 4 studied areas are in descending order as follows:

Shahrak-e-Aria (128 people), *Shahr-e-Kohna* (66 people), *Char Qala* (47 people), and *Khair Khana* (11 people). The majority of the participants in the social activities are; children in (*Shahr-e-Kohna*), teenage in (Both *Char Qala* and *Khair Khana*), and young people in (*Shahrak-e-Aria*) (Table.4.2).

(3) Stationary: Is any type of activity performed by individuals such as; standing/sitting somewhere while watching others, etc. The total number of people participated in the stationary activities in the 4 studied areas are in descending order as follows:

Shahr-e-Kohna (22 people), *Shahrak-e-Aria* (10 people), *Char Qala* (4 people), and *Khair Khana* (3 people). The majority of the participants in the stationary activities are; children in (*Shahr-e-Kohna, Char Qala,* and *Shahrak-e-Aria*), and 1 teenage, 1 young person and 1 elderly in (*Khair Khana*) (Table.4.2).

The peak hour of the activities was; at 16:00 in (Both *Shahr-e-Kohna* and *Char Qala*) and at 18:00 in (Both *Khair Khana* and *Shahrak-e-Aria*) (Table.4.2).

The collected data also indicates that all of the activities are inter-related with each other and comprised of sub-activities. Therefore, one activity cannot be 100% physical, social or stationary. For instance: [(Standing and talking with someone is a social activity and throwing/catching a ball is a physical activity. When it was performed as a team then, becomes an activity mixed of social and physical), (Sitting and watching the kids are a (Stationary) activity. Walking is (Physical) and talking to someone is (Social). When they performed together, makes it an activity mixed of stationary, physical and social), etc.].

Table.4.2.The total number of people participated in the activities (based on their age and the time the activities took place)

		Shahr-e-Kohna					Char Qala					Khair Khana					Shahrak-e-Aria				
		-9	10-19	20-39	40-59	60+	-9	10-19	20-39	40-59	60+	-9	10-19	20-39	40-59	60+	-9	10-19	20-39	40-59	60+
Physical Activity (Exercise, Work, Play, Kinetic)	6:00			1 (0.4%)				2 (2.4%)	2 (2.4%)	1 (1.2%)	1 (1.2%)				1 (2.2%)				7 (1.7%)	1 (0.2%)	3 (0.7%)
	8:00	4 (1.5%)	3 (1.1%)		1 (0.4%)		3 (3.6%)							2 (4.4%)		1 (2.2%)	5 (1.2%)	5 (1.2%)	6 (1.4%)	2 (0.5%)	
	10:00	11 (4%)	7 (2.6%)	2 (0.7%)				2 (2.4%)	1 (1.2%)	1 (1.2%)		5 (11.1%)				1 (2.2%)	26 (6.3%)		1 (0.2%)		1 (0.2%)
	12:00	33 (12%)	2 (0.7%)				3 (3.6%)	3 (3.6%)				2 (4.4%)					60 (14.4%)	4 (0.96%)			
	14:00	10 (3.6%)	4 (1.5%)				3 (3.6%)				1 (1.2%)	3 (6.7%)			1 (2.2%)		21 (5.1%)	5 (1.2%)	1 (0.2%)	2 (0.5%)	1 (0.2%)
	16:00	53 (19.3%)	6 (2.2%)	2 (0.7%)			7 (8.3%)		2 (2.4%)			3 (6.7%)					55 (13.2%)	11 (2.6%)	2 (0.5%)	1 (0.2%)	
	18:00	42 (15.3%)	6 (2.2%)							1 (1.2%)		3 (6.7%)	8 (17.8%)	1 (2.2%)			54 (13%)	4 (0.96%)			
Social Activity	6:00									2 (2.4%)											
	8:00		2 (0.7%)	2 (0.7%)		4 (1.5%)												1 (0.2%)	2 (0.5%)		
	10:00							1 (1.2%)	5 (6%)	1 (1.2%)	1 (1.2%)			2 (4.4%)	1 (2.2%)		6 (1.4%)	6 (1.4%)	1 (0.2%)		1 (0.2%)
	12:00	5 (1.8%)	5 (1.8%)		4 (1.5%)	1 (0.4%)		4 (4.8%)	2 (2.4%)	1 (1.2%)							9 (2.2%)				
	14:00	5 (1.8%)	2 (0.7%)				1 (1.2%)	2 (2.4%)									1 (0.2%)	3 (0.7%)	3 (0.7%)		2 (0.5%)
	16:00	15 (5.5%)	3 (1.1%)		1 (0.4%)	1 (0.4%)	12 (14.3%)	2 (2.4%)					2 (4.4%)				8 (1.9%)	13 (3.1%)	17 (4.1%)	2 (0.5%)	1 (0.2%)
	18:00	5 (1.8%)	6 (2.2%)	5 (1.8%)				6 (7.1%)	2 (2.4%)	3 (3.6%)	2 (2.4%)		8 (6.7%)	2 (4.4%)		1 (2.2%)	5 (1.2%)	11 (2.6%)	24 (5.8%)	7 (1.7%)	5 (1.2%)
Stationary Activity	6:00																				
	8:00			1 (0.4%)																	
	10:00	3 (1.1%)	1 (0.4%)			1 (0.4%)											5 (1.2%)		1 (0.2%)		
	12:00	2 (0.7%)	1 (0.4%)	1 (0.4%)			2 (2.4%)									1 (2.2%)	1 (0.2%)				
	14:00	2 (0.7%)	1 (0.4%)	1 (0.4%)																	
	16:00	1 (0.4%)	2 (0.7%)		1 (0.4%)		1 (1.2%)			1 (1.2%)			1 (2.2%)							1 (0.2%)	
	18:00	3 (1.1%)		1 (0.4%)										1 (2.2%)					1 (0.2%)		1 (0.2%)
Total		194 (70.6%)	51 (18.6%)	16 (5.8%)	7 (2.6%)	7 (2.6%)	32 (38.1%)	22 (26.2%)	14 (16.7%)	11 (13.1%)	5 (6%)	16 (35.6%)	14 (31.1%)	8 (17.8%)	3 (6.7%)	4 (8.9%)	256 (61.5%)	63 (15.1%)	66 (15.9%)	16 (3.9%)	15 (3.6%)
		275					84					45					416				

4.3.2 The Spatial Structure of Open Spaces

(1) The Hierarchy of Open Spaces

In order to comprehend the relationship between the activities and the spatial structure of open spaces, the studied areas were divided into spaces based on their hierarchy, such as; yard as [Private (PR)], cul-de-sac/corridor as [Semi-private (SPR)], local street/Alleyway/open space as [Semi-public (SPB)], and secondary/main street as [Public (PB)] (Fig.4.2).

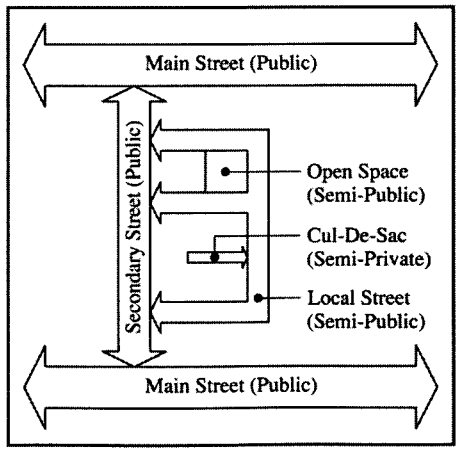


Fig.4.2.The hierarchy of open spaces

(2) Units of the Spaces

Furthermore, the spaces (PR, SPR, SPB, and PB) were broken down to units based on the location of the observer's standing point and the field of views from the standing point. The spaces that were of the same type, but separated by physical barriers/boundary lines of other types of spaces, were counted as different spaces (Fig.4.3), and (SPR-1, SPR-2 or SPB-1, SPB-2, etc. in Fig.4.4, 4.5, 4.6, 4.7).

*NOTE: In order to read the next section's figures (Fig.4.4, 4.5, 4.6, 4.7) easily, (Table.4.4) is created. Please refer to the instructions (**How to Read the Figures**) in (Table.4.4).*

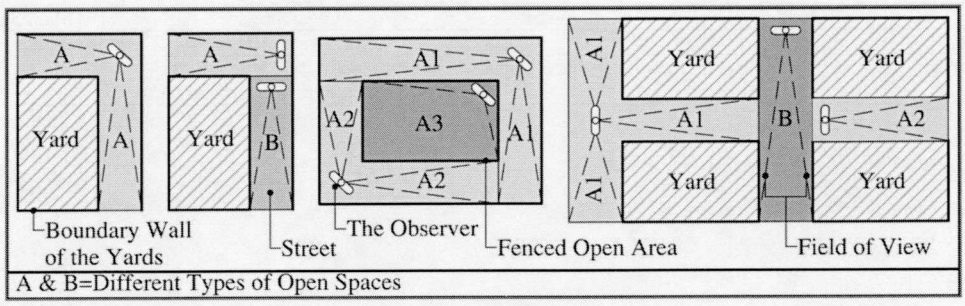


Fig.4.3.Units of the spaces

4.3.3 The Relationship between the Outdoor Activities and the Spatial Structure of Open Spaces

(1) Private Spaces (PR): The houses in *Shahr-e-Kohna, Char Qala,* and *Khair Khana,* have private outdoor spaces (Yard), while, the apartments in *Shahrak-e-Aria,* lacks such a space (Table.4.3 & Fig.4.4, 4.5, 4.6, 4.7).

The private outdoor spaces (Yards) are used for different daily activities, for example; gardening, drying the clothes, playing games, etc.

(2) Semi-Private Spaces (SPR): The 3 areas of *Shahr-e-Kohna, Char Qala,* and *Shahrak-e-Aria,* have semi-private spaces. In *Shahr-e-Kohna* and *Char Qala,* (Cul-de-sac), and in *Shahrak-e-Aria,* (Corridors and the adjacent spaces) are semi-private spaces (Table.4.3 & Fig.4.4, 4.5, 4.7).

- In *Shahr-e-Kohna,* pre-school children use the cul-de-sac for playing games, such as; hopscotch, *Chelakbaazi* (A native game), etc. (SPR in Fig.4.4 & Table.4.4).
- In *Char Qala,* there is a bakery in the cul-de-sac, therefore the cul-de-sac, is used by the residents for different types of activities. For example; people of different ages (Mostly female) stand/wait in a queue in front of the bakery, and talk with each other. Some people bring their children with them. While they wait there, the children play games together, such as; riding bicycle, etc. (SPR-1 in Fig.4.5 & Table.4.4).

- In *Shahrak-e-Aria,* the corridors connect the apartments with each other. The corridors are used for different types of activities. For example; people dry the cloths there, people of other ages (Mostly female) communicate with each other, pre-school children use the corridors and the spaces adjacent, for playing games, etc. (SPR-1, 3 in Fig.4.7 & Table.4.4).

Table.4.3.The spatial structure of open spaces in the areas

	Private (PR)	Semi-Private (SPR)	Semi-Public (SPB)	Public (PB)
Shahr-e-Kohna	Yard	Cul-de-sac	Local Street, Vacant Space, Playground	-
Char Qala	Yard	Cul-de-sac	Local Street	Main Street
Khair Khana	Yard	-	Local Street, Alleyway	Secondary Street
Shahrak-e-Aria	-	Corridor/Adjacent Spaces	Entrance, Local Street, Side Walk, Park, Playground	-

Table.4.4.Types of activities and the participants who engaged in the activities in each unit of the spaces

	Private (H, Y, A)	Semi-Private (CDS, C)	Semi-Public (Al, L.St, S.St, P, PG)						Public (S.St, M.St, V, PG)		
Shahr-e-Kohna	20 Houses	SPR ■ [1]x5, ①x3	SPB-1 ■● [2]x3, [3]x2	SPB-2 ■ [1]x1, ①x2, ②x2	SPB-3 ■ [1]x3, [3]x1	SPB-4 ■● ①x1, [3]x1, ③x1, [4]x2, [5]x3	SPB-5 ■●▲ [1]x3, ①x1, [2]x3, [3]x2	SPB-6 ■●▲ [1]x104, ①x71, [2]x30, ②x13, [3]x9, [4]x5, [5]x3			
Char Qala	21 Houses	SPR-1 ■●▲ [1]x2, ①x7, ②x1, ③x2, ④x2	SPR-2	SPR-3	SPB ■● [1]x4, ①x3, [2]x5, ②x2, [3]x1, ③x1, [4]x1				PB-1 ■● [1]x7, [2]x9, [3]x8, [4]x5, [5]x4, ③x1	PB-2 ■● [1]x9, [2]x5, [3]x2, [4]x3	
Khair Khana	21 Houses		SPB-1 ■●▲ [1]x6, ①x7, [2]x9, [3]x5, ③x1, [4]x2, ④x1, [5]x3, ⑤x1,	SPB-2	SPB-3 ■ [1]x3				PB ● [2]x5, [3]x2		
Shahrak-e-Aria		SPR-1 ■ [1]x1, ①x3	SPR-2	SPR-3 ■● [1]x6, ①x6, ②x2, [3]x2, ④x1	SPR-4	SPB-1 ■●▲ [1]x3, [3]x10, [4]x3, [5]x1	SPB-2 ■● [1]x2, ①x3, [2]x1, ②x2, [3]x3, ③x2, ④x1, ⑤x1	SPB-3 ● [3]x4, [4]x2, [5]x2	SPB-4 ■● [1]x5, ①x9, [2]x12, ②x2, [3]x6, ③x3, ④x1, ⑤x3	SPB-5 ■● [1]x1, ①x1, [2]x11, [3]x10, [4]x1	SPB-6 ■●▲ [1]x2, ①x1, ②x4, [3]x1, ③x4, [4]x1, [5]x1
		SPB-7 ■●▲ [1]x59, ①x47, [2]x4, ②x3, ③x3, ⑤x3	SPB-8 ■ [4]x1	SPB-9 ● [3]x3, [4]x2	SPB-10 ■● [1]x4, ①x2, [2]x6, [3]x10, ③x1, [4]x2, [5]x2	SPB-11 ● [1]x1, [2]x2, [3]x3	SPB-12	SPB-13 ■●▲ ①x1, [2]x3, ②x2, [3]x1, ④x2, ⑤x1	SPB-14 ■●▲ [1]x61, ①x38, [2]x3, ②x3, ③x1, ④x1, [5]x1	SPB-15	

H=House, Y=Yard, A=Apartment, CDS=Cul-De-Sac, C=Corridor, Al=Alleyway, L.St=Local Street, S.St=Secondary Street, M.St=Main Street, P=Park, PG=Playground, V=Vacant Area, SPR=Semi-Private, SPB=Semi-Public, PB=Public, □=Male, ○=Female, 1=Bellow 9 Years Old, 2=Between 10-19 Years Old, 3=Between 20-39 Years Old, 4=Between 40-59 Years Old, 5=Above 60 Years Old, (x Number)=The Number of People, ■=Physical Activity, ●=Social Activity, ▲=Stationary Activity

How to Read the Figures: In order to comprehend the Figures (Fig.4.4, 4.5, 4.6, 4.7) easily, (Table.4.4) is created. The (Table.4.4) shows the Types of Activities (Physical, Social, and Stationary) as well as the Participants (the number of the participants, their age and gender) engaged in the activities in each unit of the spaces, according to the figures. In the table, each cell represents a unit of space from the figures such as; (SPR-1, SPR-2, SPB-1, SPB-2, SPB-3, etc.). The way of reading the Figures.4.4, 4.5, 4.6, 4.7 with the help of the Table.4.4, are based on the following example: [in *Shahr-e-Kohna*, there is one semi-private (SPR) space and 6 semi-public (SPB-1, SPB-2... and SPB-6) spaces (Fig.4.4). The type of activity that took place in the (SPR) space is physical. People below 9 years old (Children) are engaged in the activities (5 boys and 3 girls) (SPR in Table.4.4). One of the boys cleans in front of their house, 4 boys play a native game of (*Chelakbaazi*), and 3 girls play hopscotch (C, Ch, and H in SPR in Fig.4.4). The types of activities that took place in SPB-1 are physical and social. People aged 10-19 (Teenage) and 20-39 (Young) are engaged in the activities [3 Teenage and 2 Young people (male)] (SPB-1 in Table.4.4). Two of the Teenage talk to each other, while the third Teenage digs a ditch with the two Young people (St, and D in SPB-1 in Fig.4.4)].

This method can be applied to read the participants' activities in each unit of the spaces in the figures.

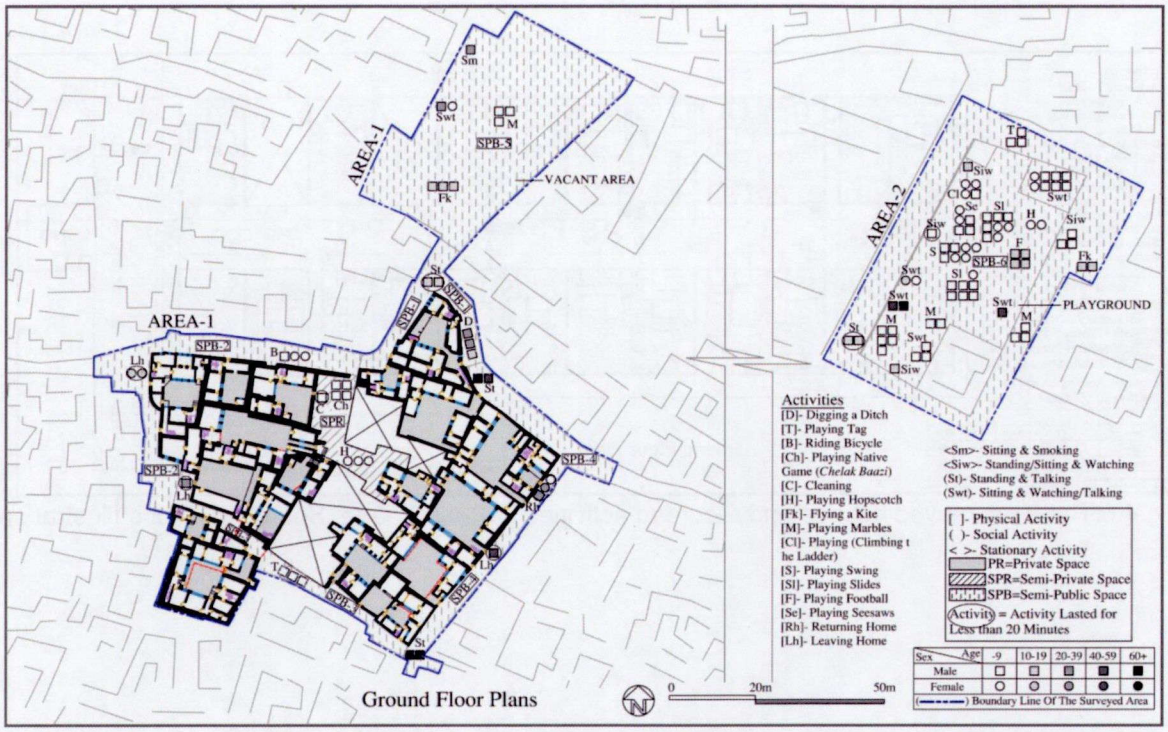


Fig.4.4.The 20 surveyed houses and recorded activities in *Shahr-e-Kohna* (Source: Author's Illustration, based on the maps received from the AGA KHAN TRUST FOR CULTURE)

NOTE: Because of the limited space, only the peak hour of the activities at 16:00 was shown in the playground in (Area-2 of Fig.4.4).

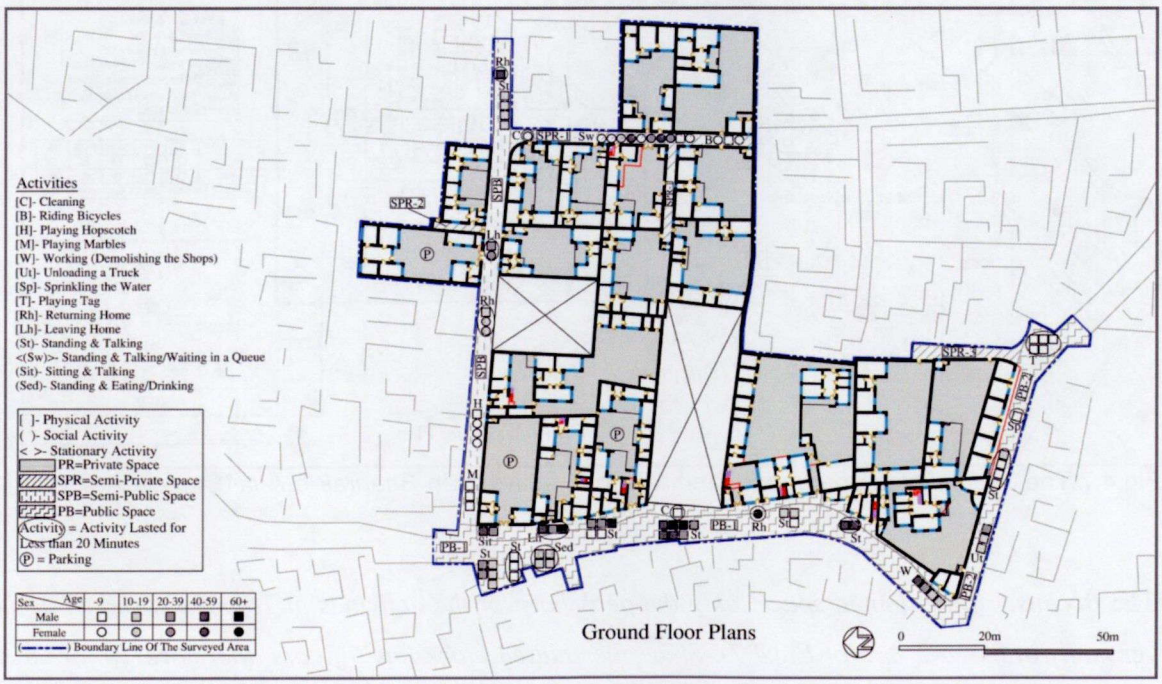


Fig.4.5.The 21 surveyed houses and recorded activities in *Char Qala* (Source: Author's Illustration)

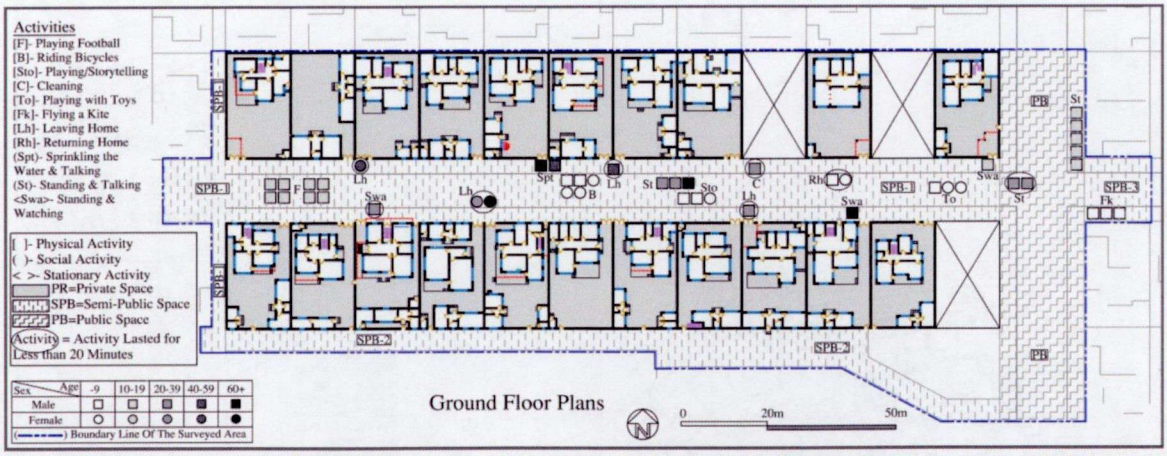


Fig.4.6.The 21 surveyed houses and recorded activities in *Khair Khana* (Source: Author's Illustration)

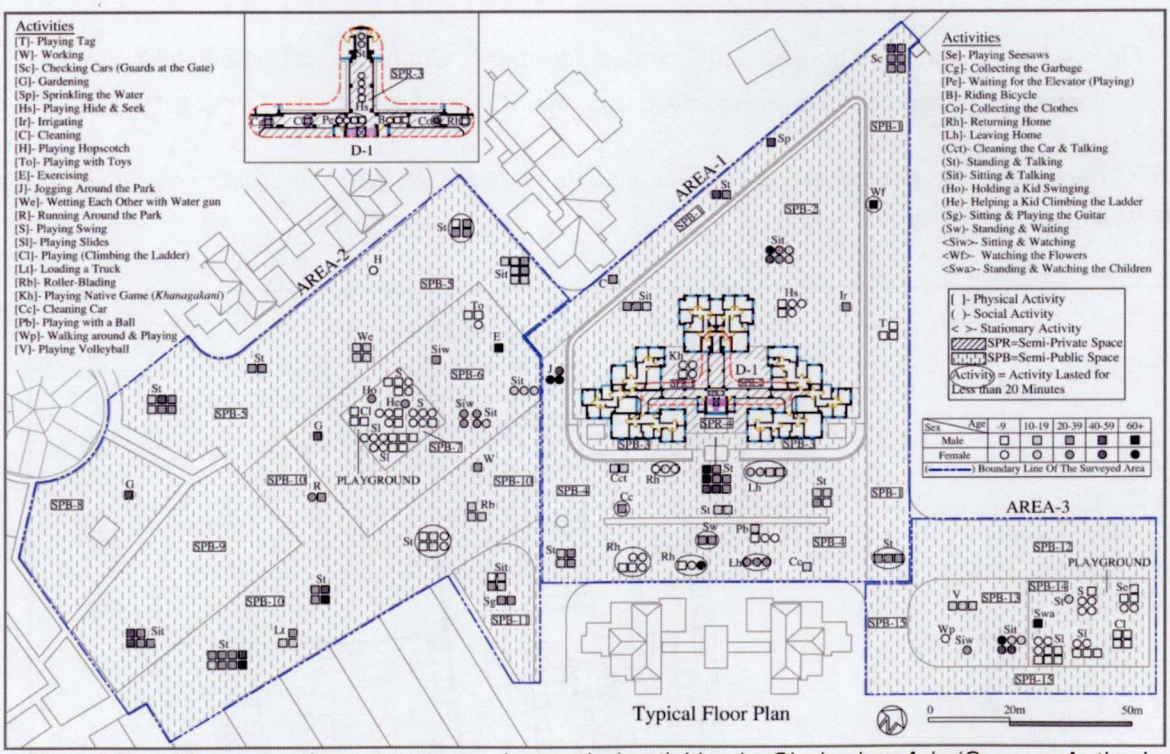


Fig.4.7.The 39 surveyed apartments and recorded activities in *Shahrak-e-Aria* (Source: Author's Illustration)

NOTE: Because of the limited space, only the peak hour of the activities at 18:00 was shown in the playgrounds in (Area-2 & 3 of Fig.4.7). Since the studied block has 5 floors, therefore, (in order to save space) all the activities that were observed in SPR-3 spaces are shown in one plan as D-1.

(3) Semi-Public Spaces (SPB): All of the 4 studied areas have semi- public spaces.

- In *Shahr-e-Kohna,* local streets, vacant space, and playground are semi-public spaces (Table.4.3 & Fig.4.4).

The local streets are narrow, mainly used for circulation. Children play games in front of their houses such as; playing tag, riding bicycle, etc., people of other ages (Mostly male) use the streets for short/long chat when they meet each other (Mostly at random), etc. (SPB-1, 2, 3, 4 in Fig.4.4 & Table.4.4).

The vacant space is a wide open space, used for different types of activities. For example; children and teenage play games such as; marbles, flying a kite, etc., people of other ages (Mostly male) use there for watching the children playing, etc. (SPB-5 in Fig.4.4 & Table.4.4).

The playground is located centrally in the neighborhood, used for different types of activities. For example; children and teenage play games such as; hopscotch, football, slide, swing, etc., people of other ages (Mostly male) go there and spend time/meet others, etc. (SPB-6 in Area-2 in Fig.4.4 & Table.4.4).

- In *Char Qala,* the local street is semi-public space, used for different types of activities. For example; children play games such as; marbles, hopscotch, etc., while teenage use the street for short/long chat, etc. (SPB in Fig.4.5 & Table.4.4).
- In *Khair Khana,* the Local Street and alleyway are semi-public spaces. The local street is the only shared open space between the two rows of the houses, used for different types of activities. For example: children and teenage play games such as; riding bicycle, football, etc., people of other ages (Mostly male) use there for short/long chat when they meet each other (Mostly at random), etc. (SPB-1 in Fig.4.5 & Table.4.4).

- In *Shahrak-e-Aria,* the space in front of the entrance to the block, local streets/sidewalks, parks, and playgrounds are semi-public spaces.

The space in front of the entrance to the block has a central location. Most of the meetings between the residents, take place in the space. For example; when there is an issue, the community leader or the residents of the block want to discuss it with the other residents (Small scale, involving only the residents of the block), they usually gather there to discuss the issue (SPB-3 in Fig.4.7 & Table.4.4) [Int.].

NOTE: When the issue involves everyone in the area (large scale), they choose the mosque to address the issue to all of the people, living in the area. This trend is common in all 4 studied areas [Int.].

The local streets are used for different activities. For example; children and teenage play games

such as; playing tag, roller-blade, etc., people of other ages (Female and mostly male) use the streets for; exercise, short/long chat, standing and watching the flowers, etc., (SPB-1, 4, 5, 10 in Area-1, 2, 3 in Fig.4.7 & Table.4.4).

The parks are centrally located in the area, used for different types of activities. For example; children play games such as; hide and seek, etc., teenage play volleyball, people of other ages (Male and mostly female) use parks for; exercise, meeting others, playing guitar and singing, sitting and watching the children etc. (SPB-2, 6, 9, 11, 13 in Area-1, 2, 3 in Fig.4.7 & Table.4.4).

The playgrounds are centrally located in the area, used for different types of activities. For example; children and teenage use the playgrounds for playing slide, swing, exercise, etc., people of other ages (Mostly female) accompany their children there (SPB-7, 14 in Area-2, 3 in Fig.4.7, & Table.4.4).

(4) Public Spaces (PB): The 2 studied areas of *Char Qala* and *Khair Khana* have public spaces. In *Char Qala,* the main street and in *Khair Khana,* the secondary street is the public spaces.

- In *Char Qala,* the main street is used for different activities. For example; children play games such as; playing tag, etc., people of other ages (Mostly male) stand in front of the shops and talk with each other/watch others pass, etc. (PB-1, 2 in Fig.4.5 & Table.4.4).
- In *Khair Khana,* the secondary street is the main route to the schools, markets, etc., used for different activities. For example; teenage (Mostly male) stand there and talk with each other while watching people pass (PB in Fig.4.6 & Table.4.4).

4.4 Social Relationship

A high quality space offer great variety of resources and encourages people to spend time outside. The more people spend time outside, the more they have chances of interacting with each other's. In order to comprehend the amount of time, the residents spend outside in accompany with other neighbors, a questionnaire format was used.

Spending Time outside (Planned in Advance): Residents in *Shahrak-e-Aria* (72%), *Char Qala* (39%), *Khair Khana* (37%), and *Shahr-e-Kohna* (32%) are having the experience of being companied by other neighbors outside **[Int.]** (Fig.4.8).

Communication Outside (At Random): As saying 'hello', in short and having a long chat, etc. in the outside. Almost all of the residents of the 4 studied areas communicate when they meet each other outside **[Int.]** (Fig.4.8).

Based on the observation survey, the majority of the residents who spend time outside in the 3 studied areas of *Shahr-e-Kohna, Char Qala,* and *Khair Khana,* are the men, while the presence of the

women were not observed. Therefore, in order to comprehend how women interact with each other, a questionnaire format was used. It was found out that the women have indoor (Family) network connections with their neighbors such as visiting neighbors' houses and spending time with them. The indoor network connections are mostly common among women, while the men only visit their neighbors' houses when there is an occasion **[Int.]**.

Visiting Houses: Residents in *Shahrak-e-Aria* (84%), *Shahr-e-Kohna* and *Char Qala* (Both 78%), and *Khair Khana* (73%), have indoor (Family) network connections **[Int.]** (Fig.4.8).

NOTE: The number family network connection between the neighbors in the 4 studied areas is; in Shahrak-e-Aria (With 1-5 neighbors), in Shahr-e-Kohna and Char Qala (Both with 1-3 neighbors), and in Khair Khana (With 1-2 neighbors) **[Int.]** (Fig.4.8).

Cooking Together: Residents in *Shahrak-e-Aria* (19%), *Khair Khana* (16%), *Char Qala* (15%), and *Shahr-e-Kohna* (8%) have the experience of visiting their neighbors at houses to cook together **[Int.]** (Fig.4.8).

Eating Together: Residents in *Char Qala* (22%), *Shahrak-e-Aria* (19%), *Khair Khana* (16%), and *Shahr-e-Kohna* (8%) have the experience of visiting their neighbors at houses to eat meals together **[Int.]** (Fig.4.8).

There are some influential factors that affect people's interaction, such as:

a) The Period of Living: The longer people live in an area, the more they know each other's, which influence their interactions. In the 3 studied areas of *Shahr-e-Kohna, Char Qala,* and *Khair Khana,* the majority of the households have lived there for more than 10 years. In contrast, in *Shahrak-e-Aria,* all of the residents have lived there less than 10 years, and yet, the interaction between the residents is higher than the other 3 areas (Fig.4.8).

b) Family Relationship: In *Shahr-e-Kohna* (12%), *Char Qala* (9.5%), and in *Khair Khana* (8.7%) of the families are relatives with each other. In *Shahrak-e-Aria,* there are no relatives of the residents living in the studied block, and yet, the interaction between the residents is higher than the other 3 areas (The households that are relatives to each other are shown as ® in Fig.4.8).

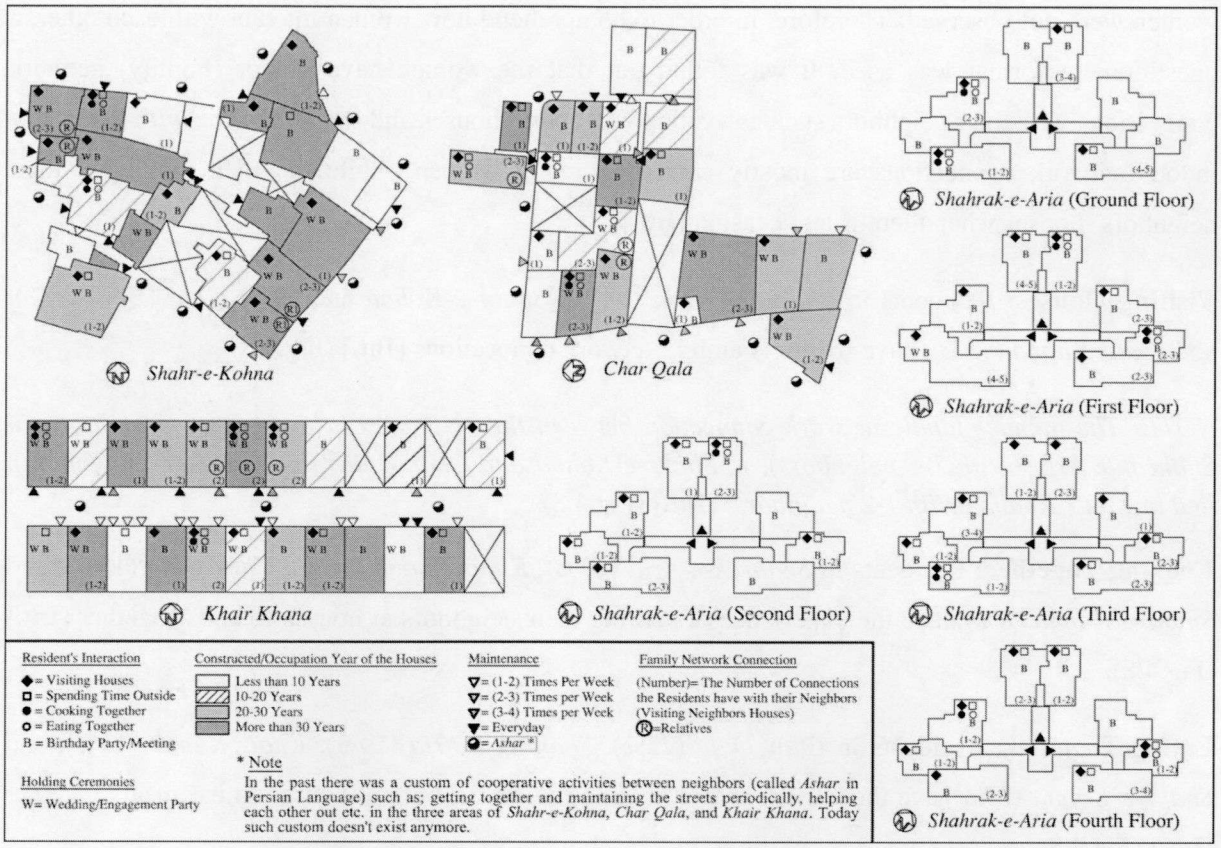


Fig.4.8.Social interaction in the 4 studied areas

4.5 Level of Cooperation between the Residents

From the interviews, it was found out that, in the past there was a custom of cooperative activities between neighbors (*Ashar*) such as; getting together and maintaining the streets periodically, helping each other out, etc. in the 3 studied areas of *Shahr-e-Kohna, Char Qala,* and *Khair Khana*. Today such custom does not exist anymore. The residents of *Shahr-e-Kohna, Char Qala*, and *Khair Khana* participate in the cleaning of the sidewalks in front of their houses, while, in *Shahrak-e-Aria*, there are responsible people for cleaning, gardening, etc.

The residents in *Shahr-e-Kohna* (10%, 1-2 times per week), (10%, 2-3 times per week), (5%, 3-4 times per week) and (75%, everyday) were participating in cleaning the frontage of their houses (Fig.4.8).

The residents in *Char Qala* (24%, 1-2 times per week), (24%, 2-3 times per week), (29%, 3-4 times per week) and (23%, everyday) were participating in cleaning the frontage of their houses (Fig.4.8).

The residents in *Khair Khana* (33%, 1-2 times per week), (10%, 2-3 times per week), (19%, 3-4 times per week) and (38%, everyday) were participating in cleaning the frontage of their houses (Fig.4.8).

In *Shahrak-e-Aria,* the activities (Cleaning, gardening, etc.) were performed everyday by responsible people for such activities (Fig.4.8).

4.6 Evaluation of the Four Studied Areas

The factors that make one area more/less active than the other, and encourage/discourage interactions among the people of all ages and genders, are as follows:

4.6.1 Housing Types

There are 3 different types of housings in the 4 studied areas such as; *Shahr-e-Kohna* and *Char Qala* (Both Courtyard-Based), *Khair Khana* (Detached-Based), and *Shahrak-e-Aria* (Flat-Based). Both, Courtyard-Based and Detached-Based houses have private outdoor spaces (Yard), which separate the residents from having a direct connection with the streets and neighbor's houses. The apartments in *Shahrak-e-Aria* don't have private outdoor spaces and the residents have short and direct connection with the shared spaces and other neighbor's houses.

The existence/lack of private outdoor spaces has influenced the cultural beliefs of the people in the 4 studied areas. In the areas with the private outdoor spaces (Yard), people have their own individual spaces and all the activities are limited within those spaces. The residents are concerned more with privacy, as no women's outdoor activities were observed in the areas (Except one case in *Char Qala* in SPR-1 in Fig.4.5).

NOTE: In Islamic culture, privacy as an important feature is the separation of spaces based on the gender differentiation.

In *Shahrak-e-Aria,* which lacks private outdoor spaces, there are many women's activities observed in SPR and SPB spaces. Even, some women exercise early in the morning, such as; running, jogging, etc outside. Such quality was not observed in other studied areas. It was found out that the majority of the residents in *Shahrak-e-Aria* used to live in *Khair Khana* and other areas with similar profiles before they came to settle in *Shahrak-e-Aria* [Int.]. This shows the transition of cultural beliefs of the people, to be receptive to a new environment which is based on the communal style of living.

4.6.2 Community Form

Community form also plays an important role on the usage of the outdoor spaces by participants (Especially women). For example; *Shahrak-e-Aria* is a gated-community, and highly guarded 24 hours a day. Except the residents, outsiders are not allowed to enter to the area, freely. This feature (Security) has influenced the residents of all ages and genders to participate freely in the outdoor activities. In other areas because the outdoor spaces are open to everyone, women's outdoor activities are limited, into the inside house yards.

4.6.3 Accessibility and Quality of the Spaces

How a space is used, is directly related to accessibility to the space, its quality, the facilities the space offer and the people who use it. Accessibility is defined based on two attributes; 1) Distance to the space (Nearness/farness), and 2) Quality of the route to the space (Good/bad condition).

In *Shahr-e-Kohna, Char Qala,* and *Shahrak-e-Aria,* the SPR spaces are located adjacent to the houses (Away from the spaces that are used by everyone), in the areas. Therefore, the spaces are used mostly by pre-school children (Because they need to be under surveillance) and in some cases by women [One case in *Char Qala* (SPR-1 in Fig.4.5) and two cases in *Shahrak-e-Aria* (SPR-3 in Fig.4.7)].

All the SPB spaces in *Shahrak-e-Aria* are easily accessible and are of high quality and well maintained. The streets/sidewalks are wide and paved, the parks have many colorful different flowers and other plants, the playgrounds are equipped with playing equipment, etc. Therefore, the majority of the spaces are used several times (More than twice) during the day for a wide variety of activities, by a great number of people of all ages and genders (SPB-4, 7, 14 in Table.4.5 & Fig.4.7).

All the SPB spaces in *Shahr-e-Kohna* are easily accessible. Among them, the playground is located centrally in the neighborhood (In front of the school, close to the shops and a mosque, etc.) and is in a better quality than the other SPB spaces in the area. It offers playing equipment, places to sit, a flat field, etc. Therefore, it is used several times during the day for a wide variety of activities, by a great number of people of all ages (SPB-6 in Table.4.5 & Fig.4.4).

The SPB spaces in *Char Qala* and *Khair Khana* are easily accessible; consist of only streets which are unpaved, in low quality. Therefore, the number of the activities and the number of people who participated in the activities are lesser than the other areas (Table.4.5 & Fig.4.5, 4.6).

The PB spaces in *Char Qala* and *Khair Khana* are easily accessible; as streets. The main street in *Char Qala* is unpaved and in low quality. There are shops of various kinds on both sides of the street. The frontages of the shops are the places for communication. Therefore, the spaces are used several times during the day for different types of activities, by a great number of people of all ages (PB-1, 2 in Table.4.5 & Fig.4.5).

The secondary street in *Khair Khana* is paved and is in good quality. Since the majority of the houses on both sides of the secondary street do not open to the street, directly; therefore, the number of activities and the participants are very less in the space (Table.4.6 & Fig.4.6).

4.6.4 Variety of Amenities

How Interaction between people and the number of activities are high in the areas/spaces that offer a wide variety of amenities. The two areas; *Shahrak-e-Aria* and *Shahr-e-Kohna,* offer a wide variety of amenities.

Shahrak-e-Aria offers amenities, such as; parks, playgrounds, etc. The total number of 257 people was living in the studied block in 2010 and the total number of 416 people was observed participating in 41 different activities in the area (Table.4.6 & Fig.4.7).

Shahr-e-Kohna offers amenities, such as; vacant space and playground, etc. The total number of 292 people was living in the studied area in 2010 and the total number of 275 people was observed participating in 19 different activities in the area (Table.4.6 & Fig.4.4).

Char Qala and *Khair Khana* do not offer any amenities for their residents. In *Char Qala,* the total number of 199 people was living in the studied area, in 2010 and the total number of 84 people was observed participating in 14 different activities (Table.4.6 & Fig.4.5).

Table.4.5.The spaces that are used several times during the day by people of different ages for different types of activities

	Unit No.	Time	Age	Behavior
Shahr-e-Kohna	SPB-4	8:00	(40-59), (60+)	Leaving Home, Standing & Talking
	SPB-5	18:00	(-9), (20-39)	Playing, Standing & Talking
	SPB-6	8:00	(-9), (10-19), (20-39), (60+)	Playing, Standing/Sitting & Talking Or Watching
		10:00	(-9), (10-19), (60+)	Playing, Sitting & Watching
		12:00	(-9), (10-19), (20-39), (40-59)	Playing, Standing/Sitting & Talking Or Watching
		14:00	(-9), (10-19)	
		16:00	(-9), (10-19), (40-59), (60+)	Playing, Exercising, Standing/Sitting & Talking Or Watching
		18:00	(-9), (10-19), (20-39)	
Char Qala	SPB	12:00	(-9), (10-19)	Playing, Returning Home, Standing & Talking
		16:00	(-9), (20-39)	Playing, Leaving Home
	PB-1	10:00	(10-19), (20-39), (40-59), (60+)	Standing/Sitting & Talking
		14:00	(-9), (10-19), (60+)	Returning Home, Standing & Talking
		16:00	(-9)	Standing & Talking
		18:00	(10-19), (20-39), (40-59), (60+)	Standing & Talking (While Eating Or Drinking)
	PB-2	6:00	(10-19), (20-39), (40-59)	Unloading a Truck, Standing & Talking
		16:00	(-9), (10-19)	Playing, Standing & Talking
Khair Khana	SPB-1	10:00	(-9), (40-59), (60+)	Playing, Sprinkling The Water & Talking
		12:00	(-9), (60+)	Returning Home, Standing & Watching
		14:00	(-9), (40-59)	Playing, Leaving Home
		16:00	(-9), (10-19)	Playing, Standing & Watching
		18:00	(10-19), (20-39), (60+)	Playing, Cleaning, Standing & Talking Or Watching
Shahrak-e-Aria	SPR-3	12:00	(-9)	Playing, Returning Home
		16:00	(-9), (40-59)	Playing, Collecting The Clothes
	SPB-1	6:00	(20-39), (40-59)	Cleaning, Guarding The Gate
		18:00		Standing & Talking
	SPB-2	16:00	(-9), (20-39)	Playing, Irrigating
		18:00	(10-19), (20-39), (40-59), (60+)	Sitting & Talking
	SPB-4	8:00	(10-19), (20-39)	Cleaning The Car & Talking, Leaving Home
		12:00	(-9), (10-19)	Playing, Returning Home
		16:00	(10-19), (20-39)	Cleaning The Care, Standing & Talking Or Waiting
	SPB-5	10:00	(20-39)	Standing & Talking
		14:00	(10-19), (20-39)	Standing/Sitting & Talking
		16:00	(10-19), (20-39), (40-59)	
		18:00	(-9), (10-19)	Playing,
	SPB-6	16:00	(-9), (20-39)	Playing, Sitting & Watching
		18:00	(10-19), (20-39)	Sitting & Talking
	SPB-7	8:00	(-9)	Playing
		10:00	(-9), (60+)	Playing, Standing/Sitting & Talking Or Watching
		12:00	(-9), (10-19)	Playing, Standing & Talking Or Watching
		14:00	(-9), (60+)	
		16:00	(-9), (10-19), (20-39)	Playing, Exercising, Standing/Sitting & Talking
		18:00	(-9), (20-39)	Playing, Standing/Sitting & Talking
	SPB-10	16:00	(10-19), (20-39), (40-59), (60+)	Exercising, Standing & Talking
	SPB-13	18:00	(-9), (10-19), (20-39), (40-59), (60+)	Playing, Sitting & Talking/Watching
	SPB-14	10:00	(-9), (20-39)	Playing, Exercising, Standing/Sitting & Talking Or Watching
		12:00	(-9), (10-19)	Playing, Standing/Sitting & Talking
		14:00	(-9)	Playing, Exercising
		16:00	(-9), (10-19), (40-59)	Playing, Exercising, Standing/Sitting & Talking Or Watching
		18:00	(-9), (10-19), (60+)	Playing, Standing/Sitting & Talking Or Watching

In *Khair Khana,* the total number of 255 people was living in the studied area in 2010 and the total number of 45 people was observed participating in 11 different activities (Table.4.6 & Fig.4.6).

The number of participants in the activities in *Shahrak-e-Aria* and *Shahr-e-Kohna* are higher than the number of people living in the areas. Since the majority of the activities took place, in the shared spaces such as; parks and playgrounds, therefore, they are used by people from other areas as well. During the observation survey, attempts were made to not draw attention of the participants; that's why it was hard to make a distinction between the residents of the studied areas and the people from other areas. The same case is applicable with the main street in *Char Qala*. The purpose of this section is just to show the density of the activities and the participants, in the areas. The number of participants in *Char Qala* and *Khair Khana* are lesser than the number of people living in the areas. The majority of the peoples' (Especially children and women) activities are limited within their house yards.

Table.4.6.The total number of the residents of the 4 studied areas and the total number of people engaged in the activities

		Total	-9	10-19	20-39	40-59	60+
Shahr-e-Kohna	No. of the Residents	292	106	60	48	57	21
	Participants of the Activities	275	194	51	16	7	7
Char Qala	No. of the Residents	199	64	35	41	40	19
	Participants of the Activities	84	32	22	14	11	5
Khair Khana	No. of the Residents	255	74	50	53	47	31
	Participants of the Activities	45	16	14	8	3	4
Shahrak-e-Aria	No. of the Residents	257	71	56	62	52	16
	Participants of the Activities	416	256	63	66	16	15

Table.4.7.Evaluation of the 4 studied areas

		Shahr-e-Kohna	***Char Qala***	***Khair Khana***	***Shahrak-e-Aria***
Amenities (Open Spaces, such as; Park and Playground) and Accessibility		Vacant Space & Playground	-	-	Parks & Playgrounds
Spatial Structure	PR	20 Houses	21 Houses	21 Houses	-
	SPR	1 Unit	3 Units	-	4 Units
	SPB	6 Units	1 Unit	3 Units	15 Units
	PB	-	2 Units	1 Unit	-
Balance of the Hierarchy of the Spatial Structure		Lack PB	In Order	Lack SPR	Lack PR & PB
Cultural Beliefs		Close	Very Close	Open	Very Open
Behavior (Number of People and Activity)	Men (Including female children)	Second Rank	Third Rank	Fourth Rank	First Rank
	Women	-	-	-	

Table.4.7 evaluates the 4 studied areas based on the amenities and accessibility, spatial structure and the balance of the hierarchy of the spatial structure, cultural beliefs and behavior.

Among the studied areas, *Shahrak-e-Aria* and *Shahr-e-Kohna,* offer some amenities for their residents. In *Shahrak-e-Aria,* the amenities are parks and playgrounds which are easily accessible and in a very good quality. In *Shahr-e-Kohna,* the playground is the only amenity which is in a good quality and easily accessible (Table.4.7).

Among the studied areas, the hierarchy of the spatial structure in *Char Qala* and *Shahr-e-Kohna,* are balanced and in order. The hierarchy of the spatial structure in *Khair Khana* is also balanced but it is not in order because the area lacks SPR space. *Shahrak-e-Aria* lacks private outdoor and public spaces (Table.4.7).

In contrast to the areas that have private outdoor spaces, in *Shahrak-e- Aria* which lacks private outdoor space, the resident's cultural beliefs are very open. As a result, there are many women's activities observed in *Shahrak-e-Aria.*

In *Shahrak-e-Aria,* the number of people (All ages and genders) engaged in a variety of activities is the highest among the areas. The other three studied areas are in descending order as follows; *Shahr-e-Kohna, Char Qala,* and *Khair Khana* (Table.4.6, 4.7).

This chapter clarified the relationship between the hierarchy of the open spaces and their usage in the four residential areas of *Shahr-e-Kohna, Char Qala, Khair Khana,* and *Shahrak-e-Aria.* It also clarified the influential factors that make one area more/less active than the other, and encourage/discourage interactions among the people of all ages and genders. In the next chapter a conclusion will be drawn based on the findings of this research.

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Chapter 5
Discussion of Findings

5.1 Introduction

In this chapter a summary of the study, the major findings, housing typology and transformation, outdoor activities and spatial structure of open spaces, social interaction, conclusion and recommendations are discussed.

5.2 Summary of the Study

Kabul a fast growing city has been changed enormously, due to physical and social fabric affect. As a result, the living areas become denser and compact. The settlements used by one family, in the past have enlarged horizontally/vertically to be used by several families today. The areas reserved for conservation is being filled with unplanned settlements, assisted in degradation of the living environments; and negatively influenced on social relationships and the quality of the residential environments.

In order to comprehend the effects of the rapid change in different residential areas in the city, four residential areas of *Shahr-e-Kohna, Char Qala, Khair Khana,* and *Shahrak-e-Aria* was selected for the study.

The objectives of the study are:

- To explore the transformation process in the settlements in relation with their typology.
- To analyze and evaluate the relationship between the spatial structure of open spaces and outdoor activities.

The methodology for the data collection was based on the following procedures:

- Physical measurement
- Interview with key informants (Used a questionnaire)
- Observation, and
- Reviewing institutional records

5.3 Major Findings

The major findings of the study include a general overview of the housing typology (Main and sub-types), housing transformation (Types and reasons), flexibility and population (Their relationship), outdoor activities (Types and number of participants), and the hierarchy of the spatial structure, in the four studied areas in Kabul city.

In addition, the factors that make one area more/less active than the other, and encourage/discourage interactions among the people of all ages and genders, such as; housing types, community form, accessibility and quality of the spaces, and variety of amenities, are discusses.

5.3.1 Housing Typology

There are 3 main types of housing; Courtyard-Based, Detached-Based and Flat-Based in the 4 studied areas. Each of the main types has different variations based on their forms/locations in a lot such as; Courtyard-Based (6 variation), Detached-Based (4 variation), and Flat-Based (2 variation) as well as 11 variations (Mixes of Courtyard-Based and Detached-Based). Each of the above types is categorized into 11 sub-types based on the location of the residence and the annexes.

The Courtyard-Based houses are the dominant typology of housings in *Shahr-e-Kohna* and *Char Qala.* In rare cases, new Detached-Based houses (Whose residents are richer) are built in the studied area of *Char Qala.* This shows the tendency of the residents and transition from the traditional style of architecture/living to a new style.

The Detached-Based houses are the dominant typology of housing in *Khair Khana.* In rare cases, Courtyard-Based houses are built in the studied area. The lifestyle of the Courtyard-Based houses' residents is very different than the lifestyle of the residents in the surrounding Detached-Based houses. In some cases their lifestyle is similar to the residents' lifestyle in *Char Qala.*

The Flat-Based apartment buildings are the dominant typology of housing in *Shahrak-e-Aria*, which offer a very modern style of living to its residents.

It has been observed that Courtyard-Based houses are the preferred type of housing for people with low-income. Those houses are simple in form and are constructed by local craftsmen (Sometimes by owner) and are made of raw and cheap materials such as mud, sun-dried brick and so on. In contrast, Detached-Based and Flat-Based houses are the preferred type of housing for people with mid/high-income. The Flat-Based and some of the Detached-Based houses are designed by architects and

engineers and have complicated forms and are made of solid and expensive materials such as cement, fired-brick and so on.

5.3.2 Housing Transformation

There are 5 types of transformation (Series, vertical, independent, removal, and interior space) taken place in 44 out of 101 surveyed houses in the 4 studied areas [*Shahr-e-Kohna* (4 houses), *Char Qala* (15 houses), *Khair Khana* (11 houses), and *Shahrak-e-Aria* (14 apartments)]. The forms of 28 out of 44 transformed houses were affected by the transformation process and changed from one type of housing to another. The transformation process occurred based on the different reasons as following:

In *Shahr-e-Kohna,* the types of transformation are (Series, independent, and removal) and the only reason for the transformation is the addition of a bathroom for convenience (4 houses).

In *Char Qala,* the types of transformation are (Series, vertical independent, removed and interior space) and the reasons for the transformation are [Increase in the number of a family (6 houses), to enhance privacy (4 houses), addition of shops to have a source of income (7 houses), and spaces for tenants to have a source of income (2 houses)].

In *Khair Khana,* the types of transformation are (Vertical, independent, removal, and interior space) and the reasons for the transformation are [Increase in the number of a family (5 houses), spaces for tenants to have a source of income (6 houses), and to enhance privacy (1 house)].

In *Shahrak-e-Aria,* the types of transformation are (Removal and interior space) and the reason for the transformation is making the living spaces spacious (14 apartments).

Source of Income: There have always been tendencies of the residents in *Char Qala,* to find a source of income by using the spaces of their lots as shops, drug stores and bakeries. This example can be seen in the houses along the main streets. But in *Khair Khana,* spaces were added inside the lots for rental purposes to find a source of income to be used by tenants.

Flexibility and Population: Most of the increasing number of population (From the time that the houses were constructed/occupied until 2010) was living in the transformed houses in the 4 areas; 21.6% in the 4 transformed houses in *Shahr-e-Kohna,* 84.6% in the 15 transformed houses in *Char Qala,* 76.4% in the 11 transformed houses in *Khair Khana* and 50% in the 14 transformed houses in *Shahrak-e-Aria.*

Among the studied areas, *Char Qala* and *Khair Khana* are the most flexible areas for acceptance of further extensions. The transformation process in *Char Qala* and *Khair Khana* has been affected by

housing typology. As observed, different types of extensions are taken place in the areas based on different reasons. In *Char Qala* and *Khair Khana,* the increase in population and the flexibility of the houses for acceptance of extension are directly related to each other. The addition of the spaces in the houses which have taken place is based on an increase in the number of the family. For instance, in *Char Qala,* the total number of increased families is 18, from which 72.2% is living in the 8 transformed houses. In *Khair Khana,* the total number of increased families is 22, from which 77.3% is living in the 9 transformed houses.

Shahr-e-Kohna is the least flexible area for acceptance of extension. In *Shahr-e-Kohna,* the houses are very old and most of them do not have enough space for extension. On the other hand, the residents in *Shahr-e-Kohna* have low-income and cannot afford to bring changes to their houses.

In *Shahrak-e-Aria,* no extension was noticed. It is because the total areas of the apartment buildings are limited and cannot be extended outside of the apartments.

In *Shahr-e-Kohna* and *Shahrak-e-Aria* the transformation process is taken place in the houses based on the residents' demands.

5.3.3 Outdoor Activities

There are three main types of outdoor activities:

1. Physical (Exercise, Work, Play, and Kinetic): The total number of people participated in the physical activities in the 4 studied areas are: *Shahrak-e-Aria* (278 people), *Shahr-e-Kohna* (187 people), *Char Qala* (33 people), and *Khair Khana* (31 people). The majority of the participants in the physical activities are children in the 4 studied areas.
2. Social: The total number of people participated in the social activities in the 4 studied areas are: *Shahrak-e-Aria* (128 people), *Shahr-e-Kohna* (66 people), *Char Qala* (47 people), and *Khair Khana* (11 people). The majority of the participants in the social activities are; children in (*Shahr-e-Kohna*), teenage in (both *Char Qala* and *Khair Khana*), and young people in (*Shahrak-e-Aria*).
3. Stationary: The total number of people participated in the stationary activities in the 4 studied areas are: *Shahr-e-Kohna* (22 people), *Shahrak-e-Aria* (10 people), *Char Qala* (4 people), and *Khair Khana* (3 people). The majority of the participants in the stationary activities are; children in (*Shahr-e-Kohna, Char Qala,* and *Shahrak-e-Aria*), and 1 teenage, 1 young person and 1 elderly in (*Khair Khana*)

The analysis indicates that all of the activities are inter-related with each other and comprised of sub-activities. Therefore, one activity cannot be 100% physical, social or stationary.

5.3.4 The Hierarchy of the Spatial Structure

Among the studied areas, the hierarchy of the spatial structure in *Char Qala* and *Shahr-e-Kohna,* are balanced and in order comprised of [PR, SPR, SPB, and PB (In the studied area of *Shahr-e-Kohna* there is no PB spaces)].

The hierarchy of the spatial structure in *Khair Khana* is also balanced but it is not in order because the area lacks SPR space. *Shahrak-e-Aria* lacks PR outdoor and PB spaces.

Housing types: There are 3 types of housings in the 4 studied areas: *Shahr-e-Kohna* and *Char Qala* (Both Courtyard-Based), *Khair Khana* (Detached-Based), and *Shahrak-e-Aria* (Flat-Based). Courtyard-based and detached-based houses have private outdoor spaces (Yard), which separate the residents from having a direct connection with the streets and neighbors' houses. The flat-based apartments lack private outdoor space and the residents have short and direct connection with the shared spaces and other neighbors' houses.

The existence/lack of private outdoor spaces has influenced the cultural beliefs of the people in the 4 studied areas. As a result, the residents in Courtyard-based and Detached-based houses are concerned more about their privacy, as no women's activities were observed outside. In *Shahrak-e-Aria,* which lacks private outdoor spaces, the outdoor spaces are used by people of all ages and genders.

Community Form: Community form plays an important role on the usage of the outdoor spaces by participants. For example; in *Shahrak-e-Aria* which is a Gated-community, and highly guarded 24 hours a day, the number of participants (Especially women) in the outdoor activities are the highest among the other areas. In other areas because the outdoor spaces are open to everyone, women's outdoor activities are limited, into the inside of the house yards.

Accessibility and Quality of the Spaces: The degree the spaces are used is directly related to the accessibility to the spaces, their quality, the facilities they offer and the people who use them. The SPR spaces in *Shahr-e-Kohna, Char Qala,* and *Shahrak-e-Aria* are used mostly by pre-school children based on its ease in accessibility (Adjacent to the houses).

The usage of the SPB spaces in all the 4 studied areas is directly related to the quality of the spaces. All the SPB spaces in *Shahrak-e-Aria* are easily accessible and are of high quality and well maintained. Therefore, the majority of the spaces are used several times during the day for a wide

variety of activities, by a great number of people of all ages and genders. All the SPB spaces in *Shahr-e-Kohna* are easily accessible. Among them, the playground in a better quality than the other SPB spaces in the area. Therefore, it is used several times during the day for a wide variety of activities, by a great number of people of all ages. The SPB spaces in *Char Qala* and *Khair Khana* are easily accessible; consist of only streets which are unpaved, in low quality. Therefore, the number of the activities and the number of participants in the activities are lesser than the other areas

The PB spaces in *Char Qala* and *Khair Khana* are used based on the facilities that the areas offer. The PB spaces in *Char Qala* and *Khair Khana* are easily accessible. The main street in *Char Qala* is unpaved and in low quality. There are shops of various kinds on both sides of the street. The frontages of the shops are the places for communication. Therefore, the spaces are used several times during the day for different types of activities, by a great number of people of all ages. The secondary street in *Khair Khana* is paved and is in good quality. Since the majority of the houses on both sides of the secondary street do not open to the street, directly; therefore, the number of activities and the participants are very less in the space.

Variety of Amenities: Interaction between people and the number of activities are high in the areas/spaces that offer a wide variety of amenities.

Shahrak-e-Aria offers amenities such as; parks and playgrounds. In *Shahr-e-Kohna* the playground is the only amenity. As a result, the number of people engaged in the activities is higher in *Shahrak-e-Aria* and *Shahr-e-Kohna* than the other studied areas, as the majority of the activities took place in the parks and playgrounds. The total number of 416 people was observed participating in 41 different activities in *Shahrak-e-Aria* and the total number of 275 people was observed participating in 19 different activities in *Shahr-e-Kohna.*

Char Qala and *Khair Khana* do not offer any amenities to their residents. As a result, the resident's (Especially children and women) activities are limited within the house yards. The total number of 84 people was observed participating in 14 different activities in *Char Qala* and the total number of 45 people was observed participating in 11 different activities in *Khair Khana.*

5.4 Conclusion and Recommendations

Housing Transformation: In the developing countries cities suffer from rapid urbanization, in general. Kabul City, the capital of Afghanistan is one of those fast growing cities, where the level of its population growth is faster than its economic growth. Lack of capacity within the government to provide affordable houses for the increasing population has led the inhabitants to take measurable

steps in shaping of their living spaces by which somehow responds the housing needs of the growing population. As a result, the living areas become denser and compact. The settlements used by one family, in the past have enlarged horizontally/vertically and used by several families, currently.

The results of the study indicate that the majority of the increasing number of population has been accommodated by the transformed houses, and is directly related to the flexibility and characteristics of the transformation process of the areas. For instance:

Char Qala and *Khair Khana* are the most flexible areas, have the capacity for acceptance of further extensions. The addition of the spaces in the houses is based on an increase in the number of the families in the areas.

Shahr-e-Kohna is the least flexible area for acceptance of extensions, because the majority of the houses cannot afford further extensions. The majority of the buildings are old and some of them do not have enough space for further extensions. *Shahrak-e-Aria* is not flexible for acceptance of extensions, because the total areas of the apartment buildings are limited and cannot be extended outside of the apartments. In *Shahr-e-Kohna* and *Shahrak-e-Aria,* there are no relationship between the increased number of families and the flexibility of the houses for acceptance of extension.

Char Qala is an informal area, developed in a chaotic way. The area lacks green areas, parks, playgrounds, community facilities (School, clinic, etc.). Therefore, further densification of the area should be a matter of concern for the government. If the development of housings for the low-income people is promoted there, then the government should provide services and community facilities in the area.

In *Khair Khana,* as a result of transformation, the outdoor spaces in the yards are reduced in size; the density of the households in the houses is increased, and the green areas are occupied by people and transformed to low-rise housings.

Thus, since the majority of the socio-economical and educational centers and other institutions are concentrated in Kabul City; the city is expected to experience further densification, in the future.

Having this into consideration, it's important for the government to establish limits and regulations in order to have a sense of control over the use of the properties (The flexibility of the property for extension/restriction of further development), preservation of the living environment, and the quality of transformation especially in the areas where further densification will create more problems. In contrast, there should be strategic design approaches for flexibility of the property for extension to anticipate the transformation in the areas where further densification is in the plan.

Spatial Structure of Open Spaces, Outdoor Activities and Social Interaction: As a result of rapid population growth in the residential areas of Kabul, the areas that were reserved for conservation, was filled with unplanned settlements, which assisted in degradation of the living environments; and negatively influenced on social interaction among people.

The results of the study indicate that the number of people in activities is higher in the areas that offer a variety of amenities to their residents. *Shahrak-e-Aria* offers amenities such as; parks and playgrounds, etc. which are in good quality. In *Shahr-e-Kohna* the playground is the only amenity. As a result, the number of people engaged in the activities is higher in *Shahrak-e-Aria* and *Shahr-e-Kohna* than the other 2 studied areas, as the majority of the activities took place in the parks and playgrounds.

Char Qala and *Khair Khana* do not offer any amenities to their residents. As a result, the resident's (Especially children) activities are limited within the houses yards.

The results of the study also indicate that in the areas with private outdoor spaces (Yard), people have their own individual spaces and all the activities are limited within those spaces. The residents are concerned more with privacy, as no women's outdoor activities were observed in the areas.

In *Shahrak-e-Aria,* which lacks private outdoor spaces, the interaction between the residents is the highest among the other 3 studied areas. Many women's activities were observed in SPR and SPB spaces. In addition, community form is another factor that promotes women to participate in the outdoor activities. For example; *Shahrak-e-Aria* is a gated-community, offers high security to its residents. This feature (Security) has influenced the residents of all ages and genders to participate freely in the outdoor activities. In other 3 studied areas, because the outdoor spaces are open to everyone, therefore, women's outdoor activities are limited within the house's yards.

Having this into consideration, since the city has developed horizontally, the proper type of housing for the future urban development plans can be mid/high-rise apartment buildings. Unlike the low-rise housings, the mid/high-rise apartment buildings accommodate higher density and occupy small degree of site coverage. And there are always spaces available for parks, playgrounds, parking, etc. in between the buildings. On the other hand, since the connection with the shared spaces and neighbors' houses is short and direct, the social interaction is higher in the apartment buildings than the low-rise housings.

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Appendixes

The Questionnaire

		Questionnaire	Date:	
District		No. of Family (past/present)		
House No.		Type of Ownership		
Occupation		No. of Rooms		
Period of Living		Nationality		
1	No. of People in Your Household	Below 9 Years		
		10-19 Years		
		20-39 Years		
		40-59 Years		
		Above 60 Years		
2	Requirements for Physical/Mental Disabilities of a Family Member	Ramp		
		Easy Access to Bathroom		
		Other		
		If No, What is Required?		
		Ramp		
		Easy Access to Bathroom		
		Other		
3	Are You Happy from the Spaces of Your House? (No. of Family in a Household)	Yes	The House Space is Acceptable for Living	
			The House Has Enough Privacy	
			The Height of the House is Acceptable	
			Natural Light	
			Orientation	
			Other	
		If No, What is Required?		
4	Are You and the Members of Your Family Safe?	Yes		
		If No, What is Required?		
5	Are You Satisfied with:	Sidewalk Condition		
		Street Condition		
		Water Condition (potable)		
		Green Areas		
		Playground		
		Parking		
		Kindergarten/School		
		Market/Drug Store		
		Mosque		
		Other		
		If No, What is Required?		
6	How often do You Go to Pray in the Mosque together with other People in the Neighbourhood?	(1-2) Times per Day		
		(2-3) Times per Day		
		(3-4) Times per Day		
		(4-5) Times per Day		
		Only on Fridays		
7	Do You have any Social Relation with Your Neighbors?	Visiting each other at Houses		
		Cooking		
		Eating		
		Spending time Outside (planned in advance)		
		Communication		
		Helping Out		
		Participating in the Parties		
		Other		
8	What System do You Use for Heating?	Central Heating System		
		Gas		
		Fuel Wood		
		Sandali		
		Other		
9	What Improvements have You brought for Improving/Repairing the Condition of Your House and Why? (date)			
10	Availability of Your House for Holding Traditional Ceremonies:	Engagement Party		
		Wedding Party		
		Birthday Party		
		Meeting		
		Other		
11	Do You Participate and Cooperate in Maintenance, Gardening, Cleaning or any other Activities in Order to have a Better Living Environment?	If Yes, How Often?	(1-2) Per Week	
			(2-3) Per Week	
			(3-4) Per Week	
			Almost Everyday	
			Other	
		If No, Whose Responsibility is that?	Government	
			Private Agencies	
			International Organizations	
			Other	
12	In order to have a Better Living Environment, what Improvements would You Propose to the Government to Consider?	Kindergarten		
		School		
		Street Improvement		
		Sidewalk Improvement		
		Parks/Playgrounds		
		Infrastructure (power supply, water, etc.)		
		Fire Protection		
		Postal Service		
		Emergency Medical Services/Hospital/Drug Store etc.		
		Bank		
		Gym		
		Sports Field		
		Public Transportation		
		Mosque		
		Market		
		Course		
		Other		

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