A STUDY ON THE PROCESS AND MECHANISM OF TRANSFORMATION IN SETTLEMENTS IN KABUL CITY

The relationship between the typology of spatial structure and residents demands

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.

This paper comprehends the spatial formation in blocks and houses through the process of transformation of the houses in relation with their typology in 4 residential areas (Historical, Sprawled, Planned and a New Township) in Kabul city. The typological study and the analysis of the collected data from the houses indicates 3 main housing types such as; Courtyard-Based, Detached-Based and Flat-Based in the 4 studied areas. Each of the main types has different variations, categorized into different sub-types.

The analysis indicates that there are 5 types of transformations taken place in the houses and the majority of the increasing population is accommodated by the transformed houses. It also indicates that the Sprawled and Planned areas are the most flexible areas for acceptance of further extensions.

Keywords: Urban Fabric, Process of Transformation, Typology of the Houses, Improvement, Acceptance

1. Introduction

Kabul is the capital and the largest city of Afghanistan, with a history of over 3,500 years. The city underwent a series of political turmoil for over 5,000 years. Kabul has a history of a series of political turmoil for almost 3 decades. As a result, today, different sectors throughout the city suffer from big urban problems such as: shortage of housing, rapid squatting development, lack of infrastructure and social services, environmental and social problems (unemployment, poverty, etc.).

Due to the returning of refugees from other countries as well as the internally displaced people and the rural migration towards Kabul, physical and social fabric of the city has been affected enormously by a rapid change. As a result, the urban boundary of the city is stretched out to a radius of more than 30km from the city center. The areas that were conserved for recreation are filled with unplanned settlements. 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, today.

The main problem of Kabul city has been rapid population growth. The city with 2 million populations in 2002 has an estimated population growth of over 5 million people today.

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 developed without any plan or developmental programs in advance.
2. Planned Development: These areas in the city have developed based on prepared Master Plans *h by the government.

Considering its development patterns, the development condition of the city is reflected by variety of areas such as: a) Historical, b) Sprawled, and c) Planned (based on the Master Plan of 1978).

This paper analyzes the current spatial formation in blocks and houses, through the process of transformation in relation with the typology of the houses at the Micro-Level. Therefore, in order to comprehend the mechanism of transformation which is basically based on the adaptation to the residents’ demands, a comprehensive field survey was conducted in September of 2010 in different residential areas of the city such as:

1. Shahr-e-Kohna in District-1 (Historical Area): Architectural remaining confirms that settlements in the area existed between the 1st and 5th century AD (Fig.1).
2. Char Qala in District-10 (Sprawled Area): The settlements in this area exist from 1960-70s (Fig.1).
3. Khair Khana in District-11 (Planned Area based on the Master Plan of 1978): Is the first residential area with regular net of circulation designed by the government in early 1968-70s (Fig.1).
4. Shahrak-e-Aria in District-10 (New Township based on the Master Plan of 1978): This area is being developed since 2003 (Fig.1). (The demand for living in this area is very high).

At first, this paper provides a brief introduction on each of the studied areas. Secondly, the paper clarifies the transformation process occurred in the houses in relation with their typologies by provision of reasons like; why the residents brought changes to their living spaces and whether the changes met their demands.

---

* Ph.D. Candidate, Division of Global Architecture, Graduate School of Engineering, Osaka University, M. Eng.

** Prof., Division of Global Architecture, Graduate School of Engineering, Osaka University, Dr. Eng.
2. Previous Studies

So far, several studies have been conducted regarding Kabul city, focusing on various issues. Particular instances are of; the study by B. A. Kazimee and J. Mcquillan (2002) *2 focused on the analysis of domestic outdoor space in different regions of Afghanistan such as; Kabul, Herat, etc. at a variety of scales in an attempt to derive general principles of architecture in an Islamic tradition. It proposes that a principle of “diurnal rotation” is the key to the layout of domestic courtyards in Afghanistan. According to this principle, activities naturally rotate around courtyard areas according to daily and seasonal cycles and in response to climatic factors. Another study was done by W. B. Bechhoefer et al. (1975) *7 on Serai Lahori (the Serai, is an open space surrounded by rooms, is a typical building type in that its access is always at one guarded point, and its activity is oriented to the space within), a residential enclave in Shahr-e-Kohna of Kabul. Its main focus is to develop an understanding on the relationship between built form and societal needs and to find ways to reinterpret these forms in a modern context. Another study was done by J. Habib (2011) *6, focused on urban cohesiveness in Kabul city. The study examines urban segregation in Kabul based on ideology, ethnicity and socio-economic class. It explains how urban cohesiveness is central to development and security.

Based on the previous studies, it can be stated that none of them have covered the process and mechanism of transformation in settlements in the city. Therefore, this study is focusing at the Micro-Level, considered to assist in understanding the current spatial formation in blocks and houses through the physical transformation process in the four residential areas of Kabul city.

3. Research Methodology

This paper clarifies the process of transformation by physical measurement of the surveyed houses and interviewing with the residents of the houses. The bellow mentioned processes were followed to conduct the survey:

- Physical Measurement: Buildings, streets and shops were measured and sketches of the plans indicating all the necessary measurements, furniture, greenery, etc. were drawn on site.
- Questionnaire: A questionnaire format was used during the interviewing process from the residents of the surveyed houses based on specific criteria’s such as: the number of family, period of living, chronological changes they brought to their living spaces and so on.
- Reviewing Institutional Records: The received data from the government or other institutions were examined and the maps were taken to the sites to check for update.

4. Survey Findings

The findings of the study are based on 181 individual responses of the residents of the surveyed houses. In this study a block with 21 houses were surveyed (Fig.3). The total number of families live in the mentioned block was 42 with totally 199 people, in 2010. 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 *7.

The majority of the access roads have irregular layout and are narrow. The widths of the roads differ in different parts and usually are approximately 2-3m. Some of them are covered by wooden joists at some parts (Fig.2).

4.1. 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) *5. 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) *3 since 2002.

In this study, a block of 20 houses in the dense neighborhood of Asheqan wa Arefan was selected (Fig.2). In 2010, totally 50 families, and 292 people lived in the mentioned 20 houses. The majority of people living in the area have low-income *7.

The courtyard house is the dominant form of housing in this part of the city *8. 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 court yard. 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 (Table.2).

The majority of the survey areas has many cracks in the houses. The walls in different parts are ruined and many of the doors and windows are broken. The cracks are formed due to the natural phenomena such as earth quakes and also due to the road traffic. The main roads were built just after the houses were built, hence there is a gap between the main roads and the houses. This gap is filled in some areas with debris and plastic waste.
storeys 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 (Table.2). 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.

The land area in Khair Khana, was owned by the government and distributed to those who did not have a private house. Detached house is the common type of housing in Khair Khana. 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.


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).

5. Typology of Houses

5.1. 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 owners is 10 months-3 years and the period of living of the tenants is 6 months-3 years (Fig.5). The majority of people living in this area have high-income.

---

Fig.3. The 21 surveyed houses in Char Qala (Source: Author’s Illustration)

The houses that are used by tenants are shown darkened

4.3. Khair Khana (Planned Area based on the Master Plan of 1978)

Khair Khana is located in the eastern part of District-11. The total population of the district was 280,000 in a land area of 17.42km² with the population density of 221/ha in 2008 (JICA, 2009).

Fig.4. The 21 surveyed houses in Khair Khana (Source: Author’s Illustration)

The houses that are used by tenants are shown darkened

In this study a cluster of 21 houses was surveyed which include totally, 46 families, 255 people in 21 houses. 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 (Fig.4). 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].

Fig.5. 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

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.

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. In the studied block of Shahrak-e-Aria, 20% of the apartments are in two levels. 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.5). The majority of people living in this area have high-income.

5.1. 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.6&Table.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.6&Table.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.6 & Table.1).

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; D1+C-LI (5 houses), D1 (4 houses), D3 (3 houses), D2+C-LI (2 houses), D1 (1 house), D3+C-LI (1 house), D1+C-L (1 house), C-LI+L1 (1 house), D3+C-LI (1 house) and C-LI=L1+D3 (1 house) (Table.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+L1 in Fig.6). The majority of the courtyard-based houses are new buildings **(Fig.11) in some cases, in Khair Khana, courtyard-based houses’ condition and the residents’ lifestyle is better than the lifestyle condition, in the sprawled area of Char Qala.

3. Flat 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.6&Table.1).

The types of housing without sub-types are as follows; C-U, C-LI, C-G, C-L, D1, D3, C-LI+L1, D2+C-LI, C-U+L, C-LI+L1, D1+C-L (Fig.7).

3.5. Sub-Typ es

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).

5.2. Different Variations of Houses in the Studied Areas

In the studied area of Shahr-e-Kohna, 7 variations of courtyard house 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.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-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.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 **(Fig.10). For example, the house CH-4&5 was built in 1975 (Fig.10). 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), D1 (1 house), D3+C-LI (1 house), D1+C-L (1 house), C-LI+L1 (1 house), D3+C-LI (1 house) and C-LI=L1+D3 (1 house) (Table.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+L1 in Fig.6). The majority of the courtyard-based houses are new buildings **(Fig.11). In some cases, in Khair Khana, courtyard-based 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 in descending order as follows; F1 (32 apartments), F2 (7 apartments). All of the surveyed apartments are flat-based (Table.1).

5.3. Sub-Typ es

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).

Fig.6. Housing types in the 4 studied areas in Kabul City

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 in descending order as follows; F1 (32 apartments), F2 (7 apartments). All of the surveyed apartments are flat-based (Table.1).

Fig.6. Housing types in the 4 studied areas in Kabul City

Fig.7. Housing sub-types in the 4 studied areas in Kabul City

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-LI+L1, D2+C-LI, C-U+L, C-LI+L1, D1+C-L (Fig.7).

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+L1 (KH-2), D1+C-L (KH-21), D4+C-LI (CH-11), D3+C-L (KH-11), C-LI+L1+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, 21, 32, 39, 40) in Shahrak-e-Aria (Fig.6&Table.1).
Table 2. Analysis of the surveyed houses in the four residential areas of Kabul City

<table>
<thead>
<tr>
<th>Study Area</th>
<th>House Number</th>
<th>Typology of Houses</th>
<th>Built-up Area (m²)</th>
<th>Number of People</th>
<th>Number of Family Members</th>
<th>Number of Storeys</th>
<th>Period of Being Built (Yr)</th>
<th>Reason for Transformation</th>
<th>The Reason for Transformation by the Types of Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shahr-e-Kohna (Urbane Area)</td>
<td>1</td>
<td>S</td>
<td>150</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1975</td>
<td>1 new</td>
<td>C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-LI+LI+D3 (1 house)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>S</td>
<td>150</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1975</td>
<td>1 new</td>
<td>C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-LI+LI+D3 (1 house)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>S</td>
<td>150</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1975</td>
<td>1 new</td>
<td>C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-LI+LI+D3 (1 house)</td>
</tr>
<tr>
<td>2. Char Qala (Urban Area)</td>
<td>4</td>
<td>S</td>
<td>150</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1975</td>
<td>1 new</td>
<td>C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-LI+LI+D3 (1 house)</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>S</td>
<td>150</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1975</td>
<td>1 new</td>
<td>C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-LI+LI+D3 (1 house)</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>S</td>
<td>150</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1975</td>
<td>1 new</td>
<td>C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-LI+LI+D3 (1 house)</td>
</tr>
<tr>
<td>3. Khair Khana (Residential Area)</td>
<td>7</td>
<td>S</td>
<td>150</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1975</td>
<td>1 new</td>
<td>C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-LI+LI+D3 (1 house)</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>S</td>
<td>150</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1975</td>
<td>1 new</td>
<td>C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-LI+LI+D3 (1 house)</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>S</td>
<td>150</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1975</td>
<td>1 new</td>
<td>C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-LI+LI+D3 (1 house)</td>
</tr>
<tr>
<td>4. Shahr-e-Kohna (New Township)</td>
<td>10</td>
<td>S</td>
<td>150</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1975</td>
<td>1 new</td>
<td>C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-LI+LI+D3 (1 house)</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>S</td>
<td>150</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1975</td>
<td>1 new</td>
<td>C-U (3 houses), C-G (3 houses), D2+C-LI (3 houses), C-LI+LI+D3 (1 house)</td>
</tr>
</tbody>
</table>

6. 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 Shahr-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).
(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.1&Fig.7).

6.1. 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.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 (v) in (Table.2)].

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


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


d) Shahrak-e-Aria: Removal-14 and Interior Space-14 (Table.2).

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Series</th>
<th>Vertical</th>
<th>Independent</th>
<th>Removal</th>
<th>Interior Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-LI</td>
<td>VE-IN</td>
<td>NI</td>
<td>IN</td>
<td>RE</td>
<td>IS</td>
</tr>
<tr>
<td>C-U</td>
<td>VE-IN</td>
<td>NI</td>
<td>IN</td>
<td>RE</td>
<td>IS</td>
</tr>
<tr>
<td>C-L</td>
<td>VE-IN</td>
<td>NI</td>
<td>IN</td>
<td>RE</td>
<td>IS</td>
</tr>
<tr>
<td>D1+D3</td>
<td>LI+LI</td>
<td>D1+D3</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
<td>LI+LI+D3</td>
</tr>
<tr>
<td>D1+C-LI</td>
<td>LI+LI</td>
<td>D1+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
<td>LI+LI+D3</td>
</tr>
<tr>
<td>D2+C-LI</td>
<td>LI+LI</td>
<td>D2+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
<td>LI+LI+D3</td>
</tr>
<tr>
<td>D3+C-LI</td>
<td>LI+LI</td>
<td>D3+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
<td>LI+LI+D3</td>
</tr>
<tr>
<td>C-LI+LI</td>
<td>D1+C-LI</td>
<td>LI+LI</td>
<td>D1+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
</tr>
<tr>
<td>C-U+L</td>
<td>VE-IN</td>
<td>NI</td>
<td>IN</td>
<td>RE</td>
<td>IS</td>
</tr>
<tr>
<td>D1+C-LI</td>
<td>LI+LI</td>
<td>D1+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
<td>LI+LI+D3</td>
</tr>
<tr>
<td>D2+C-LI</td>
<td>LI+LI</td>
<td>D2+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
<td>LI+LI+D3</td>
</tr>
<tr>
<td>D3+C-LI</td>
<td>LI+LI</td>
<td>D3+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
<td>LI+LI+D3</td>
</tr>
<tr>
<td>C-LI+LI</td>
<td>D1+C-LI</td>
<td>LI+LI</td>
<td>D1+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
</tr>
<tr>
<td>C-U+L</td>
<td>VE-IN</td>
<td>NI</td>
<td>IN</td>
<td>RE</td>
<td>IS</td>
</tr>
<tr>
<td>D1+C-LI</td>
<td>LI+LI</td>
<td>D1+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
<td>LI+LI+D3</td>
</tr>
<tr>
<td>D2+C-LI</td>
<td>LI+LI</td>
<td>D2+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
<td>LI+LI+D3</td>
</tr>
<tr>
<td>D3+C-LI</td>
<td>LI+LI</td>
<td>D3+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
<td>LI+LI+D3</td>
</tr>
<tr>
<td>C-LI+LI</td>
<td>D1+C-LI</td>
<td>LI+LI</td>
<td>D1+C-LI</td>
<td>LI+Li</td>
<td>D3+D1+C-L</td>
</tr>
</tbody>
</table>

6.2. 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.2&Fig. 9, 10, 11, 12), CH-(2, 20, 4, 9, 10, 11, 13, 14, 21), KH-(4, 12, 15, 18) and AC-(15, 22, 31, 32, 40) (Fig.8&Table.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.2).
- **Increase:** The increase in the number of family in a house, designated as (í) in (Table.2).
- **Tenant:** The addition of spaces to be used by tenants, designated as (í) in (Table.2).
- **Privacy:** The spaces are added to enhance privacy, designated as (ó) in (Table.2).

- **Shop:** The addition of shops, designated as (ù) in (Table.2).
- **Spaciousness:** The making of the living spaces spacious, designated as (é) in (Table.2).

![Fig.8. Changes of housing forms from one type to another due to the transformation process](image)

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 (Table.1&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.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).

![Fig.9. The transformation process of the settlements in Shahr-e-Kohna](image)

[NOTE: Due to the limited space, 3 houses from each studied areas were selected based on the composition of the attributes they represent and are typical in the houses in the studied areas (Fig.9, 10, 11, 12)].

- 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.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].
**Description of Figure 9**

OC-5: There are two types of transformation Series and Vertical 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 to 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).

**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.9). This reason is shown as (á) in (Table.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.1,k2).

As observed, the houses have gone through 2-3 stages of transformation process (Fig.10). 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.10).

**Description of Figure 10**

CH-14:5: 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 stage along the street was used as shops. The Stage-2 shows the house condition in 1995. A new building was added to 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 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 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.

---

**Fig.10. 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.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 3 people was living there. As the number of people increased, the first and second sons built their own houses (CH-10&11) (Fig.10&Table.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.10-(CH-6)]. This reason is shown as (ô) in (Table.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.10). This reason is shown as (ii) in (Table.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.10). This reason is shown as (i) in (Table.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 (ii) in (Table.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.1&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.12).

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.

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

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.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.11). This reason is shown as (i) in (Table.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 (ii) in (Table.2).

### Description of Figure.11

Khair Khana: 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-19&20: There is one type of transformation Independent taken place in the house. The Stage-1 shows the house condition in 1980. A family of 6 people was living there. The Stage-2 shows the house condition in 2007 and a family of 6 people was living there. In 2010 a family of 7 people was living there.

KH-17: There are three types of transformation Independent, Removal and Interior Space taken place in the house. The Stage-1 shows the house condition in 1975. A two story 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 story 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.

### Description of Figure.12

AC-1: There are two types of transformation Interior Space and Removal taken place in the apartment. The Stage-1 shows the original design and The Stage-2 shows the apartment condition in 2007. A family of 6 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. The Stage-2 shows the apartments condition in 2007 and a family of 6 people was living there. In 2010 a family of 7 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. The Stage-2 shows the apartment condition in 2007 and a family of 3 people was living there. In 2010 a family of 2 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 (é) in (Table.2).
7. 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 (_increase, _tenant, _privacy and _shop) (Table.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 (_increase, _tenant and _privacy) (Table.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.2&4). In Khair Khana, the total number of increased families is 22, from which 77.3% is living in the 9 transformed houses (Table.2&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 (_bathroom) (Table.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.2&4).

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.2). It is because the total areas of the apartment buildings are limited and cannot be extended outside of the apartments. There are no increase in the number of the families in the studied block (Table.2&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.

Table 4. The flexibility of the houses for acceptance of extension, increase in population and family number

<table>
<thead>
<tr>
<th>Flexibility of the Houses for Acceptance of Extension</th>
<th>Total Number of Increased Populations</th>
<th>Percentage of the Increased Population in the Transformed Houses</th>
<th>Total Number of Increased Family</th>
<th>Percentage of the Increased Family in the Transformed Houses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shahr-e-Kohna</td>
<td>102</td>
<td>21.6%</td>
<td>11</td>
<td>77.3%</td>
</tr>
<tr>
<td>Char Qala</td>
<td>76</td>
<td>14.0%</td>
<td>11</td>
<td>77.3%</td>
</tr>
<tr>
<td>Khair Khana</td>
<td>106</td>
<td>11.4%</td>
<td>12</td>
<td>73.5%</td>
</tr>
<tr>
<td>Shahrak-e-Aria</td>
<td>12</td>
<td>6.2%</td>
<td>9</td>
<td>75.0%</td>
</tr>
</tbody>
</table>

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.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).

8. Conclusion

This paper, clarifies the transformation process in relation with the typologies of the settlements in 4 residential areas of Kabul City. The major outcomes are as follows:

1. 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) (Fig.6&Table.1). Each of the above types is categorized into 11 sub-types based on the location of the residence and the annexes (Fig.7).

2. The courtyard 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 (Fig.10-CH-4&5).

3. The Detached-Based and Mid-Rise Apartment buildings are the preferred types of housings for mid and high-income people. 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.

4. There are 5 types of transformation taken place in 44 out of 101 surveyed houses in the 4 studied areas. The forms of 28 out of 44 transformed houses were affected by the transformation process and changed from one type of housing to another (Fig.8).

5. In Char Qala, there have always been tendencies of the residents 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 (Fig.10). But in Khair Khana, spaces were added inside the lots for rental purposes to find a source of income to be used by tenants (Fig.11-KH-19&20).

6. 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 Shahr-e-Kohna, 84.6% in Char Qala, 76.4% in Khair Khana and 50% in Shahrak-e-Aria.
7. Among the studied areas, Char Qala and Khair Khana are the most flexible areas for accepting further extensions. Shahrek-e-Kohna is the least flexible area for acceptance of extension. In Shahrek-e-Aria, no extension was noticed.

8. The process of transformation in the 4 studied areas is in response to the residents’ demands/gradual changes in the household demographic.

This study clarifies the process of transformation of the 4 studied areas in Kabul city, as well as, the influential factors in the formation of the areas (On how the houses were transformed in the areas to the spaces for living, spaces to be used as a source of income, etc.). This study intends to be used as a cornerstone for the government to develop strategies and regulatory tools for the future strategic urban development plans, especially for the development of the New City. In the future urban development programs, the establishment of limits and regulations are necessary 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 (Based on the findings of this paper).

The evaluation of the relationship between the spatial structure of open spaces and outdoor activities in the 4 studied areas will be discussed in the next paper.

Notes

*1) The third Master Plan for Kabul City was prepared in 1978 (it was the revision of the two previous master plans of 1960s and 1970s) by Afghan and Soviet urban planners. It was planned for a population of 2 million people in a land area of 323 km² over a period of 25 years. The master plan was planned of 4 large urban zones of 210,000-840,000 population. 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. The master plan was based on the socialist planning concept (Soviet centralised 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) Expropriation of the properties, 2) Exchanging of the properties, and 3) Implementation of the plan on the expropriated properties (reusing the properties). In the master plan all the courtyard houses were replaced by mid and high-rise prefabricated apartment buildings (Micro-apartment) in the plan. The roads in the plan were much wider than the existing roads in that time. It was all because of the expected increase in population. Only 60% of the master plan had implemented until 2007 (according to the Intercontinental Consultants and Technocrats-ICT, Inception Report, 2007, P-21).


*3) W. B. Bechhoefer, (1975), Serai Lahori, Traditional Housing in the Old City of Kabul. Afghanistan Journal.


*6) The Aga Khan Trust for Culture (AKTC) is an agency of the Aga Khan Development Network (AKDN), focuses on the physical, social, cultural and economic revitalization of communities in the Muslim world.

*7) 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 businessmen 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 Shahrek-e-Kohna and Char Qala are low-income people.

Among them 30% of the residents of the houses in Shahrek-e-Kohna, and 38% of the residents of the houses in Char Qala, are richer. Most of the residents in Khair Khana and Shahrek-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 Shahrek-e-Aria, are richer [for the occupations of the residents of the houses in the four studied areas, please refer to (Table.2)].

*8) The construction of the houses in Shahrek-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 Senji 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.

*9) 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.

*10) In Shahrek-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.

*11) 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.

*12) 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 (Fig.13).

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.

References


4) B. Mumtaz and K. Noschin, (2004), Development of Kabul, Switzerland, 10th Architectural & Behavior Colloquium.


7) G. J. Arez and A. Dittmann, (2005), Kabul; Aspects of Urban Geography; Peshawar.


和文要約

本稿は、カブール市における典型的な住宅街区について、住宅群の空間構成の変遷過程とその原理を明らかにするため、シャハレ・コホナ（伝統的市街地）、チャハル・カラ（旧マスタープランに違反して形成された市街地）、カイル・カラ（旧マスタープランによる開発地区）、シャハラケ・アーリア（新マスタープランによる開発地区）の4地区を選定し、住宅の平面図の採取、増改築履歴とその理由、室の使い方の変化等のインタビューを行った。

住宅の平面タイプと増改築の方法を類型化したところ、いずれの地域も固有の空間構成に応じた増改築がされており、地区全体の家族や人口の増加、街路沿いの商業機能の充実に寄与していったことが分かった。特にチャハル・カラでは、「水平増築」、「垂直増築」、「独立建屋」、「撤去」、「内部改築」のすべてのタイプの増改築がされており、世帯の増加、店舗の拡充、テナントスペースの拡充、水回りの拡充、プライバシーの確保など、あらゆる住生活の要求を受け入れてきたことが明らかとなった。次いで、近代的なカイル・カラも増改築対策の柔軟性の高い住宅と街区構成を有していたことがわかった。一方、新マスタープラン下で開発されたシャハラケ・アーリアでの変化は室内の改修に限られており、今後の住宅地計画のあり方を検討する必要性があることが示唆された。

（2012年2月10日原稿受理、2012年7月25日採用決定）