A STUDY ON THE RELATIONSHIP BETWEEN
THE SPATIAL STRUCTURE OF OPEN SPACES AND
OUTDOOR ACTIVITIES IN THE TYPICAL RESIDENTIAL AREAS
IN KABUL CITY
カブール市の典型的住宅地区群におけるオープンスペースの構造と戸外活動との関係に関する研究

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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 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.

This paper analyzes and evaluates the relationship between the hierarchy of the open spaces and their usage in the four residential areas (Historical, Sprawled, Planned and a New Township) in Kabul city. The analysis indicates that the lack of private outdoor space in the New Township has influenced the residents' cultural beliefs in the area. As a result, in contrast to the other three studied areas, the spaces in the New Township are used by people of all ages and genders. The analysis also indicates that, the degree the spaces are used is directly related to the accessibility to the spaces, their quality and the facilities they offer and the people who use them.

Keywords: Urban Fabric, Spatial Structure, Outdoor Activity, Hierarchy of Open Space, Accessibility
都市構造, 空間構造, 戸外活動, オープンスペースの階層, アクセシビリティ

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 almost 3 decades. As a result, today, different sectors throughout the city suffer from big urban problems 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.

The main problem 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.

Due to influential factors such as; the returning of refugees from other countries, the repeated internally displacement of people, and the rural-urban migration, the physical and social fabrics of the city has been changed, enormously. These changes are reflected from the existence of a multi-ethnic and multi-cultural population that as a result, the living areas become denser and compact. The areas that were conserved for recreation is filled with unplanned settlements assisted in degradation of the living environments and has negatively influenced on social relationships and the quality of living environment in the residential areas.

The development process of the city from its origin to the present 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, b) Sprawled Areas, and c) Planned Areas (based on the 1978 Master Plan).

This paper analyzes and assesses the relationship between the hierarchy of the open spaces and their usage in different residential areas in Kabul city.

Kabul city has 22 districts (Fig.1). In this study, four residential areas were selected which are located in three districts:
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 1978 Master Plan): 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 1978 Master Plan): This area is being developed since 2003. The demand for living in this area is very high (Fig.1).

At first, this paper provides a brief introduction on each of the studied areas, their actual conditions and residents' perceptions. Secondly, the paper clarifies the outdoor activities, the hierarchy of the open spaces, and the relationship between them. And finally, it analyses the influential factors that make one area more/fewer active than the other, and encourage/discourage interaction among the people.

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2. Previous Studies

So far, several studies have been conducted regarding Kabul city focusing on various issues. Particular instances are: the study by J. Habib (2011) which 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. Another study was done by W. B. Bechhoefer et al. (1975) on Serai Labori, 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 re-interpret these forms in a modern context.

Based on the previous studies, it can be stated that this study as the first attempt focus at the Micro-Level and assists in understanding the relationship between the hierarchy of the open spaces and their usage, in the four studied areas of Kabul City.

3. Research Methodology

The following processes were undertaken to conduct a survey in the four residential areas of Kabul city in 2010:

- Physical Measurement: Buildings, streets and shops were measured. The sketches of the plans include all the necessary measurements, furniture, greenery, the usage of inside and outside spaces. (NOTE: The Physical Measurement is done to be discussed in another paper which studies the process and mechanism of transformation of the houses in relation with their typology in the four residential areas).

- 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, residents’ perceptions, etc.

- Observation Survey: 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 selection of the studied areas were 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 existing facilities (mosque, shops/market, etc.) in the areas.

4. Survey Findings

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 in Kabul city.

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 217ha (JICA, 2009). The houses are built on the privately owned land (according to the community leader).

In this study, a block of 20 houses in the most densely neighborhood of Ashoqan wa Arefan was selected (Fig.2). The Ashoqan 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). The majority of people living in the area have low-income (Table.2).

The courtyard house is the dominant form of housing in this part of the city. The plots are irregular in shape and different in size, ranging 85-350m², in the studied area. The widths of the roads differ in different parts, usually are approximately 2-3m and do not have access to the houses for cars. The residents have to park their cars in another place. The local streets are paved with stones and are in a good condition.

4.2. Char Qala (Sprawled Area)

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

In this study, a block with 21 houses was selected in a characteristic area (Fig.2). The total number of families lived in the mentioned block was 42 with totally 199 people, in 2010 (Table.1). Most of the people living in this area have low-income (Table.2).

The courtyard house is the dominant form of housing in the area. The plots are different and mostly large in size ranging 90-895m² in the studied area. The ground floor in most of the houses located along the street is used as shops. The roads are narrow with the width of approximately 3-6m. Lack of roadside drainage and pavement creates problems for the pedestrians, during the winter time. 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 The Total Number of People in the 4 Studied Areas

<table>
<thead>
<tr>
<th>Area</th>
<th>Total No. of People</th>
<th>0-9 Years</th>
<th>10-19 Years</th>
<th>20-39 Years</th>
<th>40-59 Years</th>
<th>60+ Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shahr-e-Kohna</td>
<td>292</td>
<td>36.5%</td>
<td>20.6%</td>
<td>16.4%</td>
<td>15.5%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Char Qala</td>
<td>199</td>
<td>32.2%</td>
<td>17.6%</td>
<td>30.6%</td>
<td>26.1%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Khair Khana</td>
<td>256</td>
<td>24%</td>
<td>22.6%</td>
<td>28%</td>
<td>14.6%</td>
<td>12.2%</td>
</tr>
<tr>
<td>Shahrab-e-Arke</td>
<td>257</td>
<td>27.6%</td>
<td>21.8%</td>
<td>34.2%</td>
<td>30.3%</td>
<td>6.2%</td>
</tr>
</tbody>
</table>

(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. 2 The Social Class of the Residents in the 4 Studied Areas

<table>
<thead>
<tr>
<th>Income Group</th>
<th>High Income</th>
<th>Middle Income</th>
<th>Low Income</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shahr-e-Kohna</td>
<td>Doctor (1)</td>
<td>Businessman (1)</td>
<td>Shopkeeper (1)</td>
<td>21 Households</td>
</tr>
<tr>
<td></td>
<td>Engineer (2)</td>
<td>Gov. Emp. (1)</td>
<td>Shopkeeper (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engineer (2)</td>
<td>Gov. Emp. (1)</td>
<td>Shopkeeper (1)</td>
<td></td>
</tr>
<tr>
<td>Char Qala</td>
<td>Businessman (2)</td>
<td>Shopkeeper (1)</td>
<td>Shopkeeper (1)</td>
<td>21 Households</td>
</tr>
<tr>
<td></td>
<td>Shopkeeper (4)</td>
<td>Gov. Emp. (4)</td>
<td>Shopkeeper (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Driver (1)</td>
<td>Shopkeeper (1)</td>
<td>Shopkeeper (1)</td>
<td>21 Households</td>
</tr>
<tr>
<td>Khair Khana</td>
<td>Businessman (2)</td>
<td>Gov. Emp. (2)</td>
<td>Shopkeeper (3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engineer (2)</td>
<td>Gov. Emp. (2)</td>
<td>Shopkeeper (3)</td>
<td></td>
</tr>
<tr>
<td>Shahrab-e-Arke</td>
<td>Engineer (1)</td>
<td>Businessman (2)</td>
<td>Shopkeeper (1)</td>
<td>21 Households</td>
</tr>
<tr>
<td></td>
<td>Engineer (2)</td>
<td>Businessman (2)</td>
<td>Shopkeeper (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engineer (2)</td>
<td>Businessman (2)</td>
<td>Shopkeeper (1)</td>
<td></td>
</tr>
</tbody>
</table>

(Note: In Afghanistan, due to cultural beliefs, women are expected to put their role in the family especially after they get married. The number of women who have occupation in the 4 studied areas is shown in Table 2).

4.3. 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 221ha (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, which includes totally, 46 families, 255 people, in 21 houses (Table 1 & Fig 2).

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.

The sizes of the lots are 375m². The number of the low-income and mid-income is almost the same in the area [but the number of the richer people (mid-income + high-income) is higher] (Table 2).

Detached house is the common type of housing in Khair Khana. The widths of the streets are 8-12m. The local streets are unpaved, while, the secondary and main streets are paved. 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.

4.4. Shahrak-e-Aria (New Township 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, owned by the government. The Shahrak-e-Aria township is being developed by a private sector (Century Land Corporation).
The Shahrak-e-Aria project has 350 blocks that include residential, business and social services. In this study, a block with 39 apartments, 43 families and 257 people was surveyed (Table 1 & Fig.2). The studied block 48 is one of the first blocks built in the area. The sizes of the apartments are different, ranging 92-251 m², in the studied block. The majority of the people living in this area have high-income 49 (Table 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.

5. 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.2).

5.1. 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 2 & Table 4).

The provision of facilities such as; kindergarten (90%), school and fire protection (both 40%) was the priorities for the residents (Fig.2, Need for Facilities and Services) [Int.].

40% of the residents’ complained from the low quality of teaching of the school in Shahr-e-Kohna. 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.].

5.2. 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 2 & Table 4).

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.2, Need for Facilities and Services) [Int.].

5.3. 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.2 & Table 4). The area lacks playgrounds and parks. There used to be a vacant area reserved for conservation (shown in Dashed-Line in Fig.2) 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.2 & Table 4).

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.2, Need for Facilities and Services) [Int.].

5.4. 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.2 & Table 4). 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 of 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). 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 waterwas not good enough to drink (Fig.2, Need for Facilities and Services) [Int.].

<table>
<thead>
<tr>
<th>Table 4 The Existed Facilities in the 4 Studied Areas</th>
</tr>
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<tbody>
<tr>
<td></td>
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<tr>
<td>Shahr-e-Kohna</td>
</tr>
<tr>
<td>Khair Khana</td>
</tr>
<tr>
<td>Shahrak-e-Aria</td>
</tr>
</tbody>
</table>

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% of 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.].

6. Outdoor Activities and the Spatial Structure of Open Spaces

6.1. 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 5).

(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), teenager in (both Char Qala and Khair Khana), and young people in (Shahrak-e-Aria) (Table 5).

(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:

Physical Activity: Work, Play, Kinetic
0-0.00 0.01-0.09 0.10-0.19 0.20-0.29 0.30-0.39 0.40-0.49 0.50
0 0 0 1 2 3 4
(0.0%) (0.0%) (0.0%) (2.4%) (4.8%) (7.5%) (12.9%) (19.6%)

Social Activity
0 0 0 0 0 0 0
(0.0%) (0.0%) (0.0%) (0.0%) (0.0%) (0.0%) (0.0%)

Stationary Activity
0 0 0 0 0 0 0
(0.0%) (0.0%) (0.0%) (0.0%) (0.0%) (0.0%) (0.0%)

Total
0 0 0 0 0 0 0
(0.0%) (0.0%) (0.0%) (0.0%) (0.0%) (0.0%) (0.0%)

6.2. 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/door as [semi-private (SPR)], local street/ Alleyway/open space as [semi-public (SPB)], and secondary/main street as [public (PB)] (Fig. 3).

(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.

6.3. 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 6 & Fig. 5, 6, 7, 8).

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 6 & Fig. 5, 6, 7, 8).

- In Shahr-e-Kohna, preschool children use the cul-de-sac for playing games, such as: hopscotch, Chelakabazi (a native game). (SPR in Fig. 5 & Table 7).

- 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.6 & Table.7).

Table. 7 Types of Activities and the Participants who engaged in the Activities in each Unit of the Spaces

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shah-e-Kohna</td>
<td>20 Houses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Char Qala</td>
<td>21 Houses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khor Khana</td>
<td>21 Houses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shahruk-e-Aria</td>
<td>18 Houses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How to Read the Figures: In order to comprehend the Figures (Fig.5, 6, 7, 8) easily, (Table.7) is created. The (Table.7) shows the Types of Activities (Physical, Social, and Stationary) as well as in 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, SPR-1, SPR-1, SPR-1, etc.). The way of reading the Figures 5, 6, 7, 8 with the help of the Table.7, are based on the following example: In Shah-e-Kohna, there is one semi-private (SPR) space and 6 semi-public (SPR-1, SPR-2, and SPR-6) spaces (Fig.5). The type of activity that took place in the (SPR) space is physical. People below 9 years old (Children) are engaged in the activities (3 boys and 3 girls) (SPR in Table.7). One of the boys claims in front of their house, 4 boys play a native game of (Chelakbac), and 3 girls play hopscotch (C, Ch, and H in SPR in Fig.5). The types of activities that took place in SPR-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)) (SPR-1 in Table.7). Two of the Teenage talk to each other, while the third Teenage digs a ditch with the two Young people (St, and D in SPR-1 in Fig.5).

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

Fig. 5 The 20 Surveyed Houses and Recorded Activities in Shah-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.5)].

- In Shahruk-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.8 & Table.7).

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

- In Shah-e-Kohna, local streets, vacant space, and playground are semi-public spaces (Table.6 & Fig.5).

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.5 & Table.7).

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.5 & Table.7).

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.5 & Table.7).

- In Char Qola, 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.6 & Table.7).

- 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.7 & Table.7).

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.8 & Table.7).

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.8 & Table.7).

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.8, & Table.7).

(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.6 & Table.7).

- 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.7 & Table.7).

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 the 4 studied areas [Int.].
7. 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:

7.1. Housing Types: There are 3 different types of housing 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.6). (NOTE: In Islamic culture, privacy is an important feature, which is the separation of the 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.

7.2. 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 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.

7.3. 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/had 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.6) and two cases in Shahrak-e-Aria (SPR-3 in Fig.8)].

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.8 & Fig.8).

All the SPB spaces in Shahr-e-Kohna are easily accessible. Among them, the playground is located centrally in the neighborhood (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.8 & Fig.5).

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.8 & Fig.6, 7).

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 8 & Fig.6).

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 9 & Fig.7).

Table 8 The Spaces that are Used Several Times during the Day by People of Different Ages for Different Types of Activities

<table>
<thead>
<tr>
<th>Unit</th>
<th>Time</th>
<th>Age</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shahr-e-Kohna</td>
<td>8:00-8:30</td>
<td>60+</td>
<td>Leaving Home, Standing &amp; Talking</td>
</tr>
<tr>
<td></td>
<td>8:30-9:00</td>
<td>60+</td>
<td>Playing, Standing &amp; Talking</td>
</tr>
<tr>
<td></td>
<td>9:00-9:30</td>
<td>60+</td>
<td>Playing, Standing &amp; Talking</td>
</tr>
<tr>
<td></td>
<td>9:30-10:00</td>
<td>60+</td>
<td>Playing, Standing &amp; Talking</td>
</tr>
<tr>
<td></td>
<td>10:00-10:30</td>
<td>50+</td>
<td>Standing &amp; Talking</td>
</tr>
<tr>
<td></td>
<td>10:30-11:00</td>
<td>40+</td>
<td>Standing &amp; Talking</td>
</tr>
<tr>
<td>Char Qala</td>
<td>12:00-12:30</td>
<td>60+</td>
<td>Playing, Standing &amp; Talking</td>
</tr>
<tr>
<td></td>
<td>12:30-13:00</td>
<td>60+</td>
<td>Playing, Standing &amp; Talking</td>
</tr>
<tr>
<td></td>
<td>13:00-13:30</td>
<td>60+</td>
<td>Playing, Standing &amp; Talking</td>
</tr>
<tr>
<td></td>
<td>13:30-14:00</td>
<td>60+</td>
<td>Playing, Standing &amp; Talking</td>
</tr>
<tr>
<td></td>
<td>14:00-14:30</td>
<td>50+</td>
<td>Playing, Standing &amp; Talking</td>
</tr>
</tbody>
</table>

Khair Khana

Table 9 The Total Number of the Residents of the 4 studied areas and the Total Number of People Engaged in the Activities

<table>
<thead>
<tr>
<th>Shahr-e-Kohna</th>
<th>Total</th>
<th>16-19</th>
<th>20-29</th>
<th>30-50</th>
<th>60+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents</td>
<td>252</td>
<td>106</td>
<td>63</td>
<td>68</td>
<td>53</td>
</tr>
<tr>
<td>Participants</td>
<td>275</td>
<td>194</td>
<td>51</td>
<td>56</td>
<td>7</td>
</tr>
<tr>
<td>Char Qala</td>
<td>199</td>
<td>65</td>
<td>43</td>
<td>40</td>
<td>19</td>
</tr>
<tr>
<td>Khair Khana</td>
<td>255</td>
<td>74</td>
<td>53</td>
<td>47</td>
<td>31</td>
</tr>
<tr>
<td>Shahr-e-Aria</td>
<td>257</td>
<td>71</td>
<td>62</td>
<td>52</td>
<td>16</td>
</tr>
<tr>
<td>Participants</td>
<td>175</td>
<td>164</td>
<td>20</td>
<td>11</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 10 Evaluation of the 4 Studied Areas

<table>
<thead>
<tr>
<th>Shahr-e-Kohna</th>
<th>Char Qala</th>
<th>Khair Khana</th>
<th>Shahr-e-Aria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amenities</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Parks &amp; Playgrounds</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Spatial Access</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 10 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, Shahr-e-Aria and Shahr-e-Kohna, offer some amenities for their residents. In Shahr-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 10).

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. Shahr-e-Aria lacks private outdoor and public spaces (Table 10).

7.4. Variety of Amenities: Interaction between people and the number of activities are high in the areas/spaces that offer a wide variety of amenities. The two areas, Shahr-e-Aria and Shahr-e-Kohna, offer a wide variety of amenities.

Shahr-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 9 & Fig.8).

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 9 & Fig.5).

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 9 & Fig.7).

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 9 & Fig.7).

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 not to 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.
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 Khan (Table 9, 10).

8. Conclusion

This paper clarifies the relationship between the hierarchy of open spaces and their usage in the four residential areas in Kabul City. The major outcomes are as follows:

1. There are 3 types of activities: Physical (Exercise, Work, Play, and Kinetic), Social, and Stationary. The collected data of the survey 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.

2. 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. 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 Khan do not offer any amenities to their residents. As a result, the resident’s (especially children) activities are limited within the house yards.

3. The hierarchy of the spatial structure in Char Qala and Shahr-e-Kohna, are balanced and in order such as; PR, SPR, SPB, and PB (Shahr-e-Kohna, lacks PB spaces). The hierarchy of the spatial structure in Khair Khan is also balanced but it is not in order because the area lacks SPR space. Shahrak-e-Aria lacks PR and PB spaces (Table 10).

4. There are 3 types of housings in the 4 studied areas: Shahr-e-Kohna and Char Qala (both Courtyard-Based), Khair Khan (Detached-Based), and Shahrak-e-Aria (Flat-Based). Courtyard-based and detached-based houses have private outdoor spaces (yard), while, flat-based apartments lack such a space. The residents in courtyard-based and detached-based houses are concerned more about their privacy, as no women’s activities were observed outside. The lack of private outdoor space in Shahrak-e-Aria has influenced the residents’ cultural beliefs. As a result, the spaces in Shahrak-e-Aria are used by people of all ages and genders (Table 10).

5. 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 case 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. The PB spaces in Char Qala and Khair Khan are used based on the facilities that the areas offer.

This study clarifies the relationship between the hierarchy of open spaces and their usage in the 4 residential areas in Kabul City as well as 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. The findings of this paper which is based on the evaluation of the 4 different residential areas (historical, sprawled, planned, and a new township) in the city, is essential for the future urban development/ improvement programs to be considered.

The process and mechanism of transformation of the settlements in the four studied areas is discussed in another 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 based on the socialist planning concept, in which, the central government has authority over the development of the economy and society.


*5) 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 business owners, shopkeeper (based on the type 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 (decoration, color, etc.), furniture (design and brand if it’s local or foreign), etc. observed during the physical measurement of the houses. 30% of the residents of the houses in Shahr-e-Kohna, 38% in Char Qala, 66.7% in Khair Khan, and 79.5% in Shahrak-e-Aria, are richer.

*6) 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 (Khegel) as plaster. The roof consists of poplar poles coated with boards, reeds and different layers of mud and a thin layer of Khegel at the top.

*7) The walls of the houses in Char Qala, are constructed of massive sun-dried bricks and the roofs are constructed in the similar manner as the Shahr-e-Kohna’s houses.

*8) In most of the houses in Khair Khan 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.

*9) In Shahrak-e-Aria, reinforced concrete frames have been used in the construction of the buildings. 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.

*10) The Aga Khan Trust for Culture (AKTC), focuses on the physical, social, cultural and economic revitalization of communities in the Muslim world.

References


和文要約

本研究では、カプール市における市街化履歴の典型的な4地区を選定し、居住者の年齢・職業・住環境評価（施設やサービスに対するニーズ）や、市街地における施設の整備状況など都市的基礎データを把握した上で、街路・敷地内空地などのオープンスペースの階層構成を明らかにするとともに、戸外行動の実態を調査した。以上を基に、戸外行動の多様性に影響する要因を社会階層、生活習慣、オープンスペースの階層構造など総合的な観点から考察し、各地区的特徴や問題点を明らかにした。調査対象として、シャハレ・コホナ（伝統的市街地）、チャハル・カル（旧マスタープランに違反して形成された市街地）、カイル・カナ（旧マスタープランによる開発地区）、シャラクラ・アリヤ（新マスタープランによる開発地区）の4地区を選定した。施設の整備状況については、無計画に形成されたチャハル・カルと、公園が住宅地に開発されたカイル・カナの両地区において不十分であった。シャハレ・コホナ、チャハル・カルのような「自然形成的」な市街地ではオープンスペースの階層性が整っており、他の「計画的」な市街地では階層性に欠陥が見られた。しかし、「アクセシビリティ」が悪ければ、階層性の整ったオープンスペースでも利用度の低いことが明らかとなった。現代に開発されたシャラクラ・アリヤは、女性の解放が進んでおり、戸外行動も圧倒的に多く見られたものの、他の3地区の敷地内空地で行われていた家事や交流が、シャラクラ・アリヤでは見られないということがわかった。

（2012年8月10日受理、2012年12月25日採用決定）