Study on the Living Space Planning in Ulaanbaatar, Mongolia
- Common Spaces in Apartment Complexes -

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Abstract

In this report, the authors analyzed the relationship between the living environments and the attitudes of residents and the characteristics of apartment buildings through the visual survey of use of common spaces around two apartment buildings of different layouts and the questionnaire survey of residents in the built-up area of Ulaanbaatar, Mongolia, and clarified the necessity of living planning based on the interpenetration of residents, activities and spaces. The trends and characteristics of living spaces in the districts and future subjects were grasped from a comprehensive perspective by making a comparative analysis of the on-site survey results and the answers to the questionnaire.

Keywords: Ulaanbaatar; living space; common space; apartment complexes; attitudes of residents

1. Introduction

Recently, in the capital, Ulaanbaatar1), a combination of unprecedented concentration of population and industry, old urban infrastructure, and non-existent urban planning, which has accompanied the social revolution, is causing social and urban stress.

Under these circumstances, the Ulaanbaatar City Government Urban Planning, Research and Design Institute was established in 1998 with, as one of its objectives, the drawing up of a long-term plan for the development of Ulaanbaatar and the capital region. In 2001, the institute published the Comprehensive Plan for Urban Development of Capital Ulaanbaatar until 2020. This report made clear that the city ranked particularly low in the following areas: cultural and service facilities (including public facilities for everyday use by citizens); housing supply (including apartment buildings, individual houses and gers); effective land use in residential, industrial, and commercial districts; and architectural and urban space plans (including plans for spatial harmony among buildings, building development, roads, open (common) spaces, and landscaping). The challenge for the city is to make improvements in these areas, push forward with development plans, and increase the housing supply ratio.

In Japan, there have been previous studies related to these areas of urban planning in Ulaanbaatar, including “Housing Policy and Conditions in Mongolia”, “Change of the Houses and Land concept by Democratization of the city of a Socialist State” and “Residential Style and Living Environment in Ulaanbaatar”2). Although similar studies have been made in Mongolia, to date, reports on the relationship between the living spaces around apartment buildings and the attitude of the residents have not been published.

2. Objective of the Study

The objective of the study is to understand the trends and characteristics of living spaces in apartment complexes in the urban area of Ulaanbaatar by clarifying the current state of living space and residential space in two apartment buildings with different layouts, focusing on the relationship between the living environment and the residential environment and the attitudes of residents in the apartment complexes.

Various activities are conducted in the outdoor common spaces of apartment buildings. These activities are thought to be affected by the location and environment of the apartment building and the layout of the common space and apartment building. They are also thought to reflect the characteristics of the activities of the residents in residential and living spaces. For this reason, in identifying the relationship between the lifestyle activities of residents and the residential environment, it is important to determine the activities in outdoor common spaces from a comprehensive perspective, within the overall picture of lifestyle
activities. For this study, two apartment buildings with high performance facility and different layouts were selected as the target for the study from among the apartment buildings equipped with outdoor common spaces and various layouts.

3. Survey and Analysis Methods

First, a land-use classification survey was conducted in outdoor common spaces around two apartment buildings with different layouts to calculate the area of each land-use class and understand the characteristics of land-use classes by comparing the calculated areas. Second, visual surveys were carried out on a weekday and a holiday (between 9:00-19:00 on August 8 and 10, 2003) to identify the trends of the following survey items: the details of land users' activities in the common spaces, the number of users performing the activities, the duration of users' activities, and the land-use class under which the activities are performed.

The temperature outdoors in Ulaanbaatar during the winter is very low, and this would naturally affect outdoor activities. Accordingly, the visual study of activities in outdoor common spaces was conducted in summer (August), when outdoor activities would not be likely to be affected by the outside temperature.

At the same time, a questionnaire survey was conducted to the residents of apartment buildings (in August 2002, inquiring about the following: basic attributes of residents, reasons for residing, attitudes toward permanently residing, evaluation of living environment, degree of participation in community activities, and evaluation of the participation, and others.)

The correlation between the land-use classes of outdoor common spaces around each apartment building and the results of the questionnaire survey was analyzed. Based on the results of the visual surveys, the relationship between the user, activity, space, and duration was analyzed to identify the trends of each survey item.

In addition, an interview survey was conducted with N. Bumtsend, Head of Urban Development Division of Urban Development and Capital Investment Department of Ulaanbaatar City, and Dr. D. Sarantuya on the history and future trends of urban development and planning in the apartment complexes (in May and August 2002 and August 2003.)

4. Outline of Research Zone (Fig. 1)

The area is home to 51.3% of the city’s population. Most of the apartment complexes provide common areas, have water supply, sewage, electrical, and district heating systems, and are fitted with flush toilets. In socialist times, all apartment buildings were administered and managed by government institutions. Once democratization came about, state-owned assets were transferred and residential units began to be privatized. Former residents were given ownership, and people gained the right to buy and sell residential units. As of 2001, about 90% of residential units in apartment buildings had been privatized. The elevators, water supply and sewage systems, and other machinery in common areas are now managed by building management associations, though the land, including common space, remains under the control of the city.

5. Outline of Apartment Complexes Surveyed (Fig. 2 and Table 1)

5-1. Bayangol District Tumur Zam - No. 2 District (Hereinafter Referred to as B.T.Z.-2)

This five-storied apartment complex is located in the south west of the surveyed area. This is an area with many facilities of the former Ministry of Railroads. Constructed in 1979, this complex is of parallel type and brick construction. The residential units are planned around staircases, with 4 units per staircase and 12 units per story. The complex came into Mongolian hands after the 1992 democratic revolution, and currently the residents are Mongolian. Each residential building in the complex has a management committee (of 16 members) and general assemblies are held biannually in a meeting hall at a neighborhood district office. At these assemblies, the building management accounts are reported and preparations and arrangements for common areas are discussed.

5-2. Sukhbaatar District Khan Uul - No. 5 District (Hereinafter Referred to as S.K.U.-5)

This four-storied apartment complex is located in the south east of the surveyed area. It abuts an arterial road and is in a commercial area. Constructed in 1960, the complex is of enclosed type and brick construction (though the floors, ceilings, and roof are of wooden construction). There are two 3-storied and one 4-storied apartment buildings. Residential units are of staircase-access type, with 2, 3 and 4 residential units per staircase.

Table 1. Outline of Residential Building Surveyed

|                     | Bayangol District Tumur Zam - No. 2 District | Sukhbaatar District Khan Uul - No. 5 District |
|---------------------|---------------------------------------------|---------------------------------------------|
| Total floor area (m²) | 14660.0                                     | 9015.9                                     |
| Total area of exclusively owned indoor spaces (m²) | 13328.4 (91.0%)                             | 8139.4 (90.0%)                             |
| Total area of residential units (m²) | 8614.2 (68.8%)                              | 5255.7 (58.3%)                             |
| Total area of dining rooms and kitchens (m²) | 1745.6 (11.9%)                              | 1105.7 (12.2%)                             |
| Total area of sanitary spaces (m²) | 924.0 (6.9%)                                | 654.8 (7.2%)                               |
| Total area of indoor common spaces (m²) | 1314.6 (9.9%)                               | 908.6 (10.0%)                              |
| Average area of total floor (m²) | 35.5                                     | 35.9                                     |
| Average area of habitable rooms (m²) | 35.9                                     | 49.1                                     |
| Average area of dining rooms and kitchens (m²) | 7.3                                     | 10.2                                     |
| Average area of sanitary spaces (m²) | 3.9                                     | 6.1                                     |

(The figures in parentheses indicate the ratio of the area to that of total floor area)
**Fig. 2. Outline of Apartment Complexes Surveyed**

**Fig. 3. Area Schedule of Outdoor Common Spaces by Land-use Class**

### Bayangol District Tumur Zam - No. 2 District
- **Traffic space**
  - Type I: 285.1 sq.m
  - Type II: 285.3 sq.m
  - Type III: 287.1 sq.m
- **Common space**
  - Type I: 89.0 sq.m
  - Type II: 57.9 sq.m
  - Type III: 196.0 sq.m
- **Green space**
  - Type I: 45.6 sq.m
  - Type II: 45.6 sq.m
  - Type III: 45.6 sq.m

| Total | Traffic space | Common space | Green space |
|-------|---------------|--------------|-------------|
|       | Type I | Type II | Type III | Type I | Type II | Type III | Type I | Type II | Type III |
| 1.0%  | 285.1  | 285.3  | 287.1  | 89.0   | 57.9   | 196.0   | 45.6   | 45.6   | 45.6   |

**Sukhbaatar District Kihun Uul - No. 5 District**
- **Traffic space**
  - Type I: 166.4 sq.m
  - Type II: 166.4 sq.m
  - Type III: 166.4 sq.m
- **Common space**
  - Type I: 42.6 sq.m
  - Type II: 42.6 sq.m
  - Type III: 42.6 sq.m
- **Green space**
  - Type I: 6.4 sq.m
  - Type II: 6.4 sq.m
  - Type III: 6.4 sq.m

| Total | Traffic space | Common space | Green space |
|-------|---------------|--------------|-------------|
|       | Type I | Type II | Type III | Type I | Type II | Type III | Type I | Type II | Type III |
| 1.0%  | 166.4  | 166.4  | 166.4  | 42.6   | 42.6   | 42.6   | 6.4    | 6.4    | 6.4    |

Average area of outdoor recreation spaces per residential unit:
- Bayangol District Tumur Zam: 54.7 sq.m
- Sukhbaatar District Kihun Uul: 54.7 sq.m

### Land-use Classification in Outdoor Common Spaces Based on Land-use Conditions

- **Traffic space**
  - Type I: Used for communal use
  - Type II: Used for commercial use
  - Type III: Used for parking

- **Common space**
  - Type I: Used for communal use
  - Type II: Used for commercial use
  - Type III: Used for parking

- **Green space**
  - Type I: Used for communal use
  - Type II: Used for commercial use
  - Type III: Used for parking
Each residential building has a management committee (of 2 members). General assemblies are held biannually in the meeting hall of a neighborhood district office. At these assemblies, the activities of the committee are reported and discussions held regarding improvements to the living environment.

6. Area of Each Land-use Class in Outdoor Common Spaces (Fig. 3)
Outdoor common spaces of the two apartment buildings are arranged according to space types (traffic, common and green spaces) and use types (Types I semiprivate ➔ II ➔ III semipublic), and the areas of the spaces are calculated from Fig. 3.
The average area of outdoor common spaces per residential unit is 54.7 m² and 89.3 m² in B.T.Z.-2 and S.K.U.-5, respectively.
Comparing the proportions of traffic spaces in outdoor common spaces, the proportion of Type II traffic spaces in B.T.Z.-2 is higher than that in S.K.U.-5, but the proportion of Type III traffic spaces in B.T.Z.-2 is lower than that in S.K.U.-5. The proportion of Type II common spaces in B.T.Z.-2 and S.K.U.-5 is 4.4% and 0%, respectively. The proportion of Type I green spaces around the two apartment buildings is 0%, and the proportion of Type II green spaces in S.K.U.-5 is higher than that in B.T.Z.-2. The primary factor behind the difference in the proportion of Type III traffic spaces is that the proportion is affected by the area of roads used for daily access of cars because the number of cars for resident’s private use has considerably increased in recent years and garages installed in outdoor common spaces. The secondary factor is that the proportion is affected by the areas of the periphery of the spaces, consisting of Type II traffic spaces, Type III common spaces, and Type II green spaces, which are used as access roads to the apartment buildings with the layout pattern of enclosure type.
The proportion of Types II and III common spaces seems to be strongly affected by locational conditions.
The proportion of Type I green spaces is 0% because there is no residence unit that has exclusive garden in the two apartment buildings.

7. Tendencies and Characteristics of Activities in Common Spaces (Visual Surveys)
7-1. Attributes of Activities (Fig. 4 - 8)
Comparing the users of common spaces in B.T.Z.-2 and S.K.U.-5, men and women account for approximately 60% and 40% of the users, respectively, in B.T.Z.-2 on a weekday and holiday. In S.K.U.-5, men and women account for approximately 70% and 30% of the users, respectively, on a weekday and holiday.
Investigating the data by generation⁵), there is a similar trend on a weekday and holiday. The proportion of children in B.T.Z.-2 is higher than that in S.K.U.-5. The proportion of the elderly and adults in B.T.Z.-2 is lower than that in S.K.U.-5.
Investigating the data by the composition of performers of activities, independent activities form the highest proportion, whereas the activities of adults and children form the lowest proportion on a weekday and holiday in B.T.Z.-2. In S.K.U.-5, the activities among adults form the highest proportion, whereas the activities among children form the lowest proportion.
Investigating the data by the time slot, the proportion of performers of activities between 10:00-11:00 on a weekday and holiday, 14:00-19:00 on a weekday, and 13:00-19:00 on a holiday holds high in B.T.Z.-2. The main factor behind the high proportion of performers between 10:00-11:00 on a weekday and holiday is that adults take a rest and talk. The main factor behind the high proportion of performers between 14:00-19:00 on a weekday and 13:00-19:00 on a holiday is that adults take a rest and talk and the children play. In S.K.U.-5,
the proportion of performers of activities between 10:00-12:00 and 14:00-15:00 on a weekday, between 10:00-11:00, 13:00-14:00 and 16:00-17:00 on a holiday holds high. The main factor behind the high proportion of performers during the time slots is that the elderly and adults take a rest and talk.

Fig.7. Number of Performers of Activities

Fig.8. Proportion of Performers of Activities by Time Slot

7-2. Tendencies and Characteristics in Terms of Space Type (Fig. 9)
Comparing the durations for which one user performs activities (in minutes per person) in the (traffic, common and green) spaces, the common spaces form the highest proportion, and the traffic spaces the second highest, followed by the green spaces in B.T.Z.-2 and S.K.U.-5.

(1) Common Spaces
The duration for which one user performs activities (in minutes per person) in the common spaces in B.T.Z.-2 on a weekday is longer than that on a holiday: 9.3 minutes/person on a weekday and 7.7 minutes/person on a holiday.

The duration in Type I common spaces is the longest on a weekday and holiday. “Take a rest” and “enjoy a conversation” make up a large proportion of the activities. These activities are performed mainly on benches.

The duration for which one user performs activities in the common spaces in S.K.U.-5 on a weekday is longer than on a holiday, as is the case with B.T.Z.-2: 8.3 minutes/person on a weekday and 6.9 minutes/person on a holiday.

The duration in Type III common spaces is the longest on a weekday and holiday. “Take a rest,” “enjoy a conversation” and “play with children” make up a large proportion of the activities. In Type III common spaces, such activities as “entertain children” and “eat and drink” are performed, which are different from the activities in B.T.Z.-2.

The duration for which one user performs activities in common spaces on a weekday and holiday in B.T.Z.-2 is longer than that in S.K.U.-5 by approximately one minute.

(2) Traffic Spaces
The duration for which one user performs activities (in minutes per person) in the traffic spaces in B.T.Z.-2 on a weekday is shorter than that on a holiday, unlike the common spaces: 3.0 minutes/person on a weekday and 4.8 minutes/person on a holiday.

The duration in Type III traffic spaces is the longest on a weekday and holiday. “Play with children,” “enjoy a conversation,” “stand while talking” and “take a rest” make up a large proportion of the activities. In Type III traffic spaces, “clean” and “maintain and inspect a car” are performed relatively more frequently than in S.K.U.-5.

The duration for which one user performs activities in the traffic spaces in S.K.U.-5 on a weekday is shorter than that on a holiday, as is the case with B.T.Z.-2: 2.9 minutes/person on a weekday and 3.9 minutes/person on a holiday.

Type I, II and III traffic spaces have a similar tendency on a weekday and holiday. “Enjoy a conversation” and “stand while talking” make up the highest proportion, followed by “take a rest.” These activities are performed on benches and by fences. In Type III traffic spaces, the activity “maintain and inspect a car” is performed frequently, and the activities “wash dishes” and “clean” are also performed.

The duration for which one user performs activities in the traffic spaces on a holiday in B.T.Z.-2 is longer than that in S.K.U.-5 by approximately one minute.
Fig. 9. Activities in Common Spaces (Activity - Space - Time Chart)
(3) Green Spaces

The duration for which one user performs activities (in minutes per person) in the green spaces in B.T.Z.-2 is much shorter than that in the common and traffic spaces: 0.2 minute/person on a weekday and 0.4 minute/person on a holiday.

Activities in Type II green spaces are performed frequently on a weekday and holiday. The activities in order of duration, the longest first, are “play with children,” “watch animals,” “have a rest,” “enjoy a conversation,” and “meet someone.” In Type III green spaces, such activities are performed as “play with children” and “enjoy a conversation.”

The duration for which one user performs activities in green spaces in S.K.U.-5 is much shorter than that in the common and traffic spaces, as is the case with B.T.Z.-2: 0.2 minute/person on a weekday and holiday.

Activities in Type II green spaces are performed frequently on a weekday and holiday. The activities are in order of duration, the longest first, “enjoy a conversation,” “stand while talking,” “make a phone call” and “meet someone”), 4.9 minutes/person on a weekday and 4.3 minutes/person on a holiday. Activities for the second longest duration are sports (“do sports,” “play with children,” and “take a walk”), 3.4 minutes/person on a weekday and 4.4 minutes/person on a holiday.

The interactions are performed mainly in Type I common spaces, and (Types I, II and III) traffic spaces. Sports are done in Types II and III common spaces and Types II and III traffic spaces. Rests are taken mainly in Types I and III common spaces and Type III traffic spaces.

In S.K.U.-5, the activities for the longest duration are, as is the case with B.T.Z.-2, interactions (“enjoy a conversation,” “stand while talking,” “make a phone call” and “meet someone”), 4.2 minutes/person on a weekday and 5.3 minutes/person on a holiday. Activities for the second longest duration are rests (“take a rest” and “have a smoke”), 4.1 minutes/person on a weekday and 1.7 minutes/person on a holiday.

The interactions are performed mainly in Type I and III common spaces, and (Types I, II and III) traffic spaces. Rests are taken mainly in Types I and III common spaces. Sports are done mainly in Type III common spaces.

The duration of sports (“do sports,” “play with children,” and “take a walk”) in B.T.Z.-2 is longer than that in S.K.U.-5. The main factor behind the longer duration is that B.T.Z.-2 is equipped with a soccer stadium and playground equipment in common spaces.

7-4. Tendencies and Characteristics in Terms of the Total Duration of Activity (Fig. 9)

The total duration for which one user performs activities (in minutes per person) in B.T.Z.-2 is 12.5 minutes/person on a weekday and 12.8 minutes/person on a holiday. There is little difference in the duration between weekday and holiday.

The total duration for which one user performs activities in S.K.U.-5 is 11.4 minutes/person on a weekday and 11.0 minutes/person on a holiday. There is little difference in the total duration between weekday and holiday, as is the case with B.T.Z.-2.

Comparing B.T.Z.-2 with S.K.U.-5, the total duration in B.T.Z.-2 is longer than that in S.K.U.-5 by approximately one minute. Comparing the areas of outdoor common spaces divided by the total number of users (641 and 570 persons on a weekday and holiday in B.T.Z.-2; 324 and 344 persons on a weekday and holiday in S.K.U.-5) (in m²/person), the per capita area of outdoor common spaces in S.K.U.-5 is higher than that in B.T.Z.-2: 20.5 and 23.0 m²/person in B.T.Z.-2, and 29.8 and 28.0 m²/person in S.K.U.-5 on a weekday and holiday, respectively.

Comparing B.T.Z.-2 with S.K.U.-5, the duration for which one user performs activities (minutes/person) in B.T.Z.-2 is longer than that in S.K.U.-5, whereas the per capita area of outdoor common spaces (m²/person) in B.T.Z.-2 is lower than that in S.K.U.-5. In the outdoor common spaces in B.T.Z.-2, community activities, including leisure activities and cooperative operation and management activities, seem to be performed more actively than in S.K.U.-5. In addition, the density of activities in the outdoor spaces in B.T.Z.-2 seems to be higher than in S.K.U.-5.

8. Results of Questionnaire

Fig. 2 shows the number of questionnaires sent out and returned from residents in B.T.Z.-2 and S.K.U.-5.

In B.T.Z.-2, approximately 60% of owners and their spouses are between 31 and 50 years of age, and approximately 80% of them have been in residence for 10 years or less. Previously, approximately 60% and 15% of them lived in other apartment buildings and gers, respectively. In S.K.U.-5, owners aged 61 years or older account for approximately 25% of the total, while those between the ages of 41 and 50 make up approximately 35%. Spouses between the ages of 31 and 50 and 61 years of age or over account for approximately 60% and 13%, respectively. Those in residence for 36 years or more and for up to 5 years account for approximately 30% and 40%, respectively. Approximately 68% of them previously lived in apartment buildings and 10% in gers, respectively.

8-1. Reasons for Residing in This District (Fig. 10)

In B.T.Z.-2, a large proportion of the reasons replied by households are “good surrounding environments (common spaces, parks, and others)” and “good location of their choice,” whereas those by spouses are
“convenience” and “good living environments.” The proportion of the reason “good surrounding environments (common spaces, parks, and others)” is 9.1%.

In S.K.U.-5, a large proportion of the reasons replied by households and spouses are “good location of their choice” and “convenience.” The proportion of the reason “good surrounding environments (common spaces, parks, and others)” replied by households and spouses is 7.7% and 10.0%, respectively.

9. Conclusions

The author conducted visual surveys of the current state and use of common spaces around two apartment buildings with different layouts, and a questionnaire survey to the residents. The trends of living spaces in the buildings with different layouts, and a questionnaire analysis of the survey results and the answers to the questions comprehensively identified by making a comparative analysis of the survey results and the answers to the questionnaire from the viewpoint of user, activity and space. The results of the study are summarized as follows.

1) Installation of garages strongly affects the proportion of traffic spaces in outdoor common spaces around the two apartment buildings with different layouts. The layout of the approach to residence units and the locational conditions of apartment buildings strongly affects the proportion of common spaces in outdoor common spaces.

2) “Enjoy a conversation,” “take a rest” and “play with children” form a large proportion of the activities in the common spaces. The activities in the spaces seem to be limited and are strongly affected by the children and the elderly.

3) The activities in the common spaces are affected by the conditions around the apartment buildings and facilities (benches, fences, playground equipment and open space) in the common spaces rather than the layout of the buildings and the area of the spaces.

4) Men form a large proportion of the performers of activities in the common spaces. The conditions of activities in the common spaces (the duration for which one user performs activities and the per capita area of outdoor common spaces) is correlated with the reply “good surrounding environments (common spaces, parks and others),” which is adduced as one of the “reasons for residing in this district.”

5) The proportion of the reason “good surrounding environments (common spaces, parks and others)” replied to the question “reasons for residing in this district” is B.T.Z.-2 is higher than that in S.K.U.-5. This result is correlated with the decreasing order of the sum of the ratios of common and green spaces to the outdoor common spaces around the apartment buildings.

The subjects for future study are to identify various problems with the residents who live in the apartment buildings, identify the relationship between the locational and surrounding conditions of the apartment buildings and local communities.

Notes

1) A plateau city at a latitude 47º 56’ north and longitude 106º 59’ east and at an elevation of 1,351 m. As of the year 2000, the capital region of Ulaanbaatar covers an area of 470,000 hectares and has a population of 792,900 people and 168,000 households. The city area accounts for 0.3% of the total national land area and the city accounts for about 33% of the country’s population. The population growth rate for the 10 years following 1990 was approximately 132%.

2) According to References 3, 4 and 5.

3) Source: Land-use Classification in Outdoor Common Spaces Based on Land-use Conditions — Survey and Research Report No. 7, 1984,6, “Study of Intermediate Areas,” Housing Planning Dept., Housing and Urban Development Corp.

Outdoor common spaces are classified into three spaces from the aspect of land use, traffic, common and green spaces. Each space is classified into three types, Types I semiprivate, Type II, and Type III semipublic.

Traffic space : A space for the passage of people and vehicles, such as passages in the apartment complexes and accesses to apartment buildings and residential units.

Common space : A space used mainly as a place for daily life and having the most direct bearing on the residents, such as play lot, promenade and open space.

Green space : A space in which landscaping effect is expected, such as planted zones functioning as covers in the landscape and common planted zones in apartment complexes.

4) The ratio of households living in apartment complexes and living in ger village communities is 51.3 : 48.7, so almost each half of the city’s population live in each type of community.

5) Those aged under 15, between 15 and 65, and over 65 are defined as children, adults and the elderly, respectively.

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