

A Study on the Design of Indoor Common Space in the Multiple Dwelling Housing

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ABSTRACT

This work is dealing with indoor common space in the multiple dwelling housing. The common space is important for the residents living in the community and for the interaction between the neighbourhoods in the communal life and moreover for the sustainable development. The purpose is to classify the indoor common space according to its characteristics, and to evaluate the indoor common space based on resident behaviour and specific use.

Indoor common space was categorized into three groups by their location and usage. 1.outward space from the front-door of unit house, 2.passageway connecting the unit house, 3.space around the entrance of unit building. Each area can be sub-categorized by the level of openness of walls and by the line of flow. Statistical analysis between the characteristics of sub-categories and the space-use of dwellers showed significantly positive relationship.

KEYWORDS: Multiple dwelling housing, Indoor common space

1. INTRODUCTION

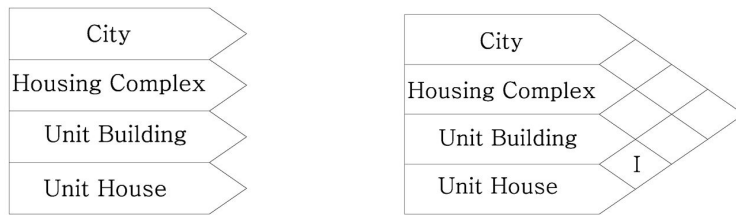
In multiple dwelling housing, indoor common space is an interface area that connects unit houses and the outside of building, which plays an important role in controlling private interactions among residents. Since this is closely related to residential satisfaction, it is a design area that cannot be overlooked considering sustainable development of multiple dwelling housing. Indoor common space is residents' common field differentiated from outdoor common space; in a strict sense, the area can be subdivided by density, the degree of desired privacy, and function. There is a general tendency to differentiate common space simply based on facility, but it needs to be studied more specifically depending on residents' concept of ownership, social issues, a formation of community culture, and individual psychology. The significance of indoor common space discovered in this process is imperative to provide designs that meet these requests.

The objectives of this study are: 1) to clearly specify the roles of indoor common space in multiple dwelling housing; 2) to define indoor common space by dividing them into several areas by role; 3) to categorizing the types of space composition by area; and 4) to study a design of environment-friendly indoor common space.

For this study, first, the areas are sorted through an analysis of functions of indoor common space in multiple dwelling housing, and the types of space composition for each area is investigated with the case of Unnam Jugong Apartment Complex in Gwangju. Then, the types of space composition are categorized by several elements, followed by the discussion on the characteristics of each type. Lastly, the characteristics of indoor common space for each area in the case are discussed in order to create design guidelines for environment-friendly indoor common space.

2. DEFINITION OF INDOOR COMMON SPACE

2.1 The Significance of Indoor Common Space



(a) modern housing Complex (b) new housing complexes

Figure 1. Modern housing complex spatial order model and new spatial order model

When the plan of modern housing complex is seen from the perspective of spatial order, as shown in Figure 1 (a), unit house – unit building – housing complex – city¹ exist independently from each other, only seeking self sufficiency for each stage of living area but without establishing organic relations among stages. However, in the new space order of multiple dwelling housing complex, not only are unit house – unit building – housing complex - city integrated as hierarchical spaces, but also some selective spaces are directly connected in semi-lattice structure (unit house- unit building, unit house - housing complex, unit house - city, unit building - housing complex, unit building - city, housing complex - city), which deems it desirable to have a variety of choices in living.²

Indoor common space of this study is the area of ‘I’ in Figure 1 (b) and it is related to the issues of aggregation method of unit houses inside a unit building, planning to make relations in common space of a unit house, and the course from unit buildings to unit houses. Of space order theories, this study is based on Team X’s concept of Multi-level City and Takada Mutsuo’s Multiple dwelling Order Theory.

2.1.1. Team X’s High-Rise Housing Plan

Team X considered the loss of a concept of street as a cause of an absence of communication activities in high-rise housing plan. They contended that it was important to create communal spaces that unites people and enclosure that allows socially actively and lively street life in residential planning. Also, they claim that streets should be conceptualized as a place not passageway or balcony and streets-in-the-air should be a common road where shops, post office, and phone booths coexist. Thus, in a place where public streets are planned faithfully in a proper manner for residents, lively lifestyle that could be found in general streets or squares can be realized in private residence or backyard, and it is expected to construct high-rise buildings without losing anything. Planning technique stressed in this argument can be organized as a concept of streets-in-the-air in communal field.

2.1.2. Takada Mutsuo’s Concept of Multiple Dwelling Order

Takada Mutsuo points out the issue of space composition in multiple dwelling housing complex in terms of the order of public space and private space of residence and proposed a necessity of reorganization into a new space order which is so-called multiple dwelling space under the name of urban housing system. The creation of space that has both the sense of personal and of public in multiple dwelling space is related to flow planning or arrangement plan in a unit house within multiple dwelling space. It is different from the construction that becomes more private as a unit building

¹ Here a unit house means a living area for a household and a unit building is a living area that is a building composed of unit houses. And, housing complex is an aggregation of unit buildings, a living area for residents of the whole complex, while city indicates public space of a city outside the housing complex.

² Park, Gwang-jae, 1998. “A Study on Spatial Order and Planning Methods for Multi-family Housing Complex” Doctoral Dissertation: Konkuk University.

becomes taller as in a tower type, so it proposes a condition that a unit house should be connected with common space other than a unit house through paths. Like this, Takada Mutsuo's discussion focuses on the area of unit building-unit house relation in the model of space order in multiple dwelling housing complex, suggesting specific planning techniques including networking the lines of flow within unit building with city streets (stereography of streets) and securing selectivity of the lines of flow within unit building.

2.2 Space Composition of Indoor Common Space

Indoor common space includes the interface from the entrance of unit building to independent unit house, and depending on the course of movement, it is divided into space around the entrance of unit building, passageway connecting unit houses, and outward space from the front door of unit house.³ Each area differs by the characters of space and the degree of desired privacy. I. Altman describes the territory people use into three territories (primary, secondary, public) from a sociological perspective on the basis of the length of space ownership or the degree of perceived ownership, and how much the space has become personalization. Indoor common space belongs to secondary and can also describe into three territories by the degree of public space made to be an personalization and the characteristics of occupation. As the area is moving from Territory 1 to Territory 3 (from residents of a unit house, residents of a unit floor, to residents of a unit building), the number of users increases and exclusivity is lowered, while close to Territory 1, it becomes easier to make the space private.

In creating defensible space, Oscar Newman proposed to establish clear hierarchy among territories as a feature of environment layout. While the territories in this study are semi-public, semi-private in Newman's study, in consideration of defensible locations, Territories 3, 2, and 1 can be associated with the first line of defense through the entrance of unit building, the second line of defense through natural watch on open space of floor, and the third line of defense through the front door of unit house, respectively. Each of these three territories creates a social block which plays a focal role in social process by making people feel the sense of belonging and self-identity in a certain area and assisting them have psychological stability and a sense of safety and further adapt themselves smoothly to social organization (Table 1).

Table 1. Each Area differs by the characters of space

Index	Social Aspect of Territory	Defensible Character	Main User
Space found the entrance of unit building	Territory 3	1 st line of defense	Residents of unit building
Passageway connecting unit houses	Territory 2	2 nd line of defense	Residents of unit floor
Outward space from the front door of unit house	Territory 1	3 rd line of defense	Residents of unit house

3. CASE STUDY

Indoor common space in 10 apartment complexes in Unnam district, Gwangju was surveyed, and analyzed and divided into the following types of space composition.

³ Park, Jung-eun et al., 2005.10 "A Study on Common Space in the Realationship with the Formation and the Specific Use in the Multiple Dwelling Housing." A Journal of Architectural Institute of Korea. In assorting common spaces connecting indoor and outdoor spaces, only indoor common space is selected.

3.1 Space around the Entrance of Unit Building

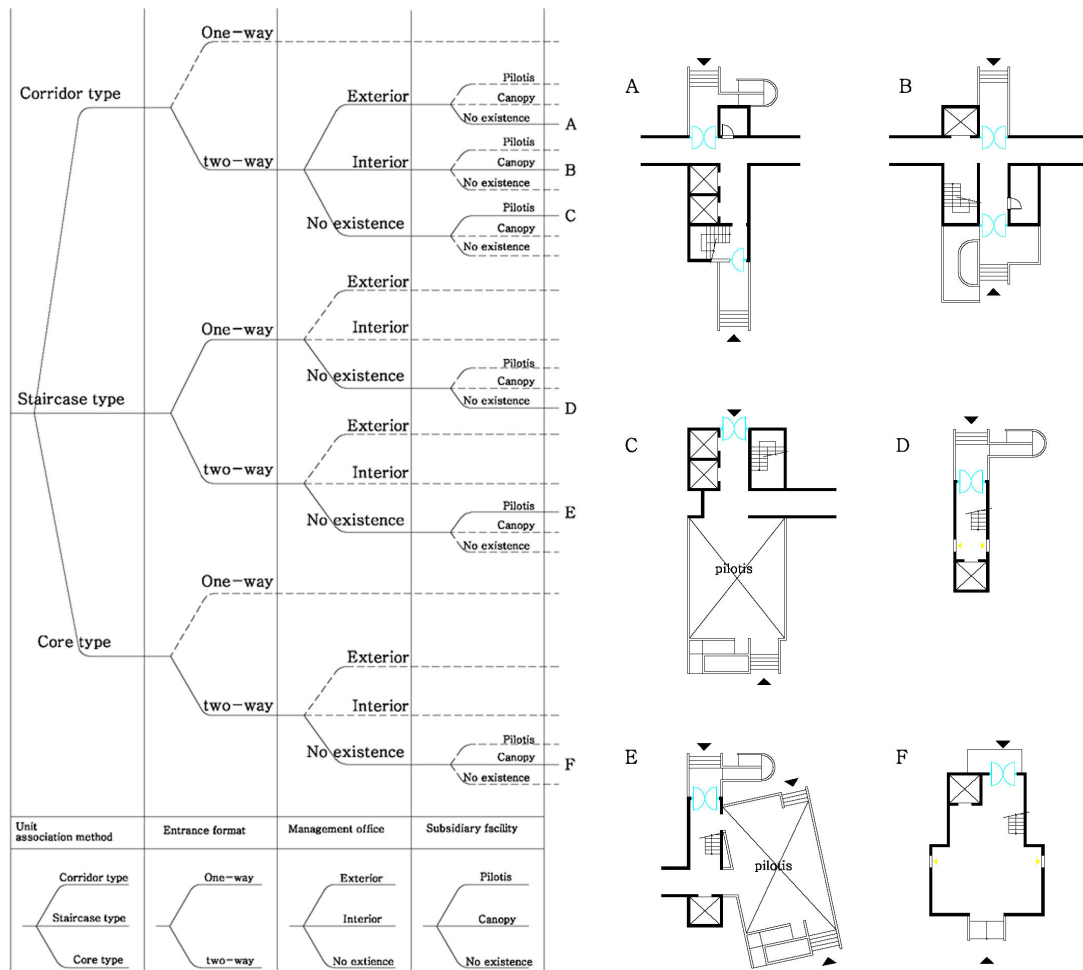


Figure 2. Composition Type and Typical Entrance Type

Regarding space around the entrance of unit building, its composition types can be divided by such elements as unit association method, entrance format, management office, and subsidiary facility. When the entrances of unit building of the case are organized by this method, 6 types were found as shown in Figure 2. Unit association method is affected by the relationship between unit associations and the core at the base floor, and entrance format is related to the degree of control equivalent to the first line of defense and openness and the degree of the outside air of Territory 3. Management office focuses on entry control, while subsidiary facility is related to residential convenience and community facilities. As shown in Figure 2 all elements are correlated so corridor type and core type has two-way entrance, and without management office, two-way entrance has subsidiary facility. Typical entrance floor type for each type is shown in Figure 2. Type D, that is, staircase-type general entrance format is without management office and subsidiary facility with a space that is most narrow and has no spare. The format like Types C and E that has two-way entrance as well as subsidiary facility at pilotis can spatially lead residents to do diverse activities.

3.2 Passageway Connecting Unit Houses

Passageway connecting unit houses can be divided by line of flow into three types – horizontal line, vertical line and the convergence of horizontal and vertical lines. Horizontal line is a 2-unit association in the case of staircase-type unit associations, which allows entering directly into a unit house from staircase or elevator with little public consumption space used in the course of movement. In the case

of corridor type, when many units communally exist, one must pass public consumption space adjacent to front doors of other unit houses without other options of path. For vertical line, elevators are mainly used due to high-rise trends and stairways that can be used as a pathway between floors are more and more abandoned. The influx of sunlight and outside air into stairways is necessary as a way to make a defensible space thru making an open space. The convergence of horizontal and vertical lines is a tree structure. Tree structure does not offer selectivity of path, is not constructed three-dimensionally, and follows a hierarchical order, making it unreasonable to accommodate various demands of human activities. In staircase-type unit association, generally elevator halls and outward space from the front door of unit house are united, creating a structure with both line of flow and visual line open. In case of corridor type or core type, it is possible to distinguish core from passage (corridor) to a certain extent, but the division of corridor and outward space from the front door of unit house is obscure, so a clear trend is shown in the case of units located at the end of corridor to personalize passage space.

3.3 Outward Space from the Front Door of Unit House

3.3.1 Types of Corridor-Type Common Space

In the case of corridor-type unit association, sections of outward space from the front door of unit house can be divided into front-wall structure and side-wall structure. Front-wall structure has three styles including rail, window and wall, while side-wall structure has three styles of rail, door, and window. When the front is constructed with wall, the side is uniformly constructed as rail, so it was possible to find total 7 types. These types have subtle differences in the environment of common space, showing the trend of closing in the order of rail, door, window, and wall. That is, while the structure of rail is most open, that of wall is most closed, and this trend of openness/closing affects ventilation or people's passage.

Table 2. Types of Corridor-type common Space

	Front-wall	rail	widow	wall
Side-wall				
rail				
door				
window				

3.3.2 Types of Staircase-Type Common Space

Staircase-type unit association is divided into the relations between stairways and elevators are categorized as a parallel relation and linear relation, which again be divided into the one with window and the other without window in common space. The plan of each type is organized in Table 3. The type with window has more spacious, more open to the outside air, and better ventilated. Also, the parallel type has relatively wider common space than the linear type, and as it has a front door to unit house facing the core, it is more flexible in using the side with more space. Therefore, the linear type without window is most narrow, while the parallel type with window has the widest common space.

Table 3. Types of Staircase-type Common Space

	Core	Liner type	Parallel type
window			
Without window			
With window			

4. CONCLUSIONS

This study highlighted the significance of indoor common space of multiple dwelling housing, divided the areas based on their roles, and analyzed space composition of each area through case studies to discuss design methods. The findings are summarized as follows.

Indoor common space is related to the issues of the aggregation method of unit houses inside a unit building, planning to make relations in common space of a unit house, and the course from unit buildings to unit houses. For theories related to this area, Team X's concept of Multi-level City, especially streets-in-the-air in community field, and Takada Mutsuo's Multiple dwelling Order Theory regarding the stereography of streets and the acquisition of selectivity of lines of flow within unit building.

Indoor common space is an interface space from the entrance of unit building to independent unit house, and depending on the character of space and the degree of desired privacy, it is divided into three areas - space around the entrance of unit building, passageway connecting unit houses, and outward space from the front door of unit house.

Regarding space around the entrance of unit building, its composition types can be divided by such elements as unit association method, entrance format, management office, and subsidiary facility. Efforts should be made to provide entrance format that can allow selecting a line of flow without deciding one-way type; to encourage residents to be engaged in various activities by being united with various subsidiary functions; and to at the same time provide a defensible space for natural watch.

Passageway connecting unit houses has a tree structure in the convergence of horizontal line and vertical line and is connected with an obscure differentiation from outward space from the front door of unit house. Passageway connecting unit houses of semi-lattice structure which secures selectivity of various paths and has a three-dimensional structure with paths connecting building. Also, it is well lit and ventilated and made as a unit of public space separated from outward space from the front door of unit house.

Outward space from the front door of unit house is a space that is easy to be made personalized and utilized by residents. It should be considered to provide design method to spatially separate it from passageway and an environment where flowers can grow well.

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