

THE ANALYSIS AND DIRECTION OF THE LDK SPACE DESIGN IN KOREAN DOMESTIC LIVING ENVIRONMENT

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ABSTRACT:

Apartment is the most common type of residence in Korea. In order to understand the change and factors of residential spaces in Korea, it is essential to understand the change of apartment plans. Not only changes in the size and position of residential spaces but also the functional characteristics of each space should be considered in examining the roles of residential spaces. Through this, we can grasp the trends of residential spaces and relations among the spaces, and such understandings expect to show how the paradigm of residence has been changed in Korea.

In this research, apartment plans were studied through analyzing the plans of apartments constructed by major construction companies during the period from 2000

year to 2006 year and selecting representative plans among them. The representative plans can be classified into traditional ones and recent ones according to LDK spaces. We analyzed changes in the plans and then explained derived factors from socio-cultural viewpoints. It is because apartment residents' consciousness is changed by the transition of basic life culture such as food, clothing and shelter, technological development and social phenomena and consequent changes in value systems.

While in the past the roles of individual spaces were changed separately in response to the change of Korean people's value system, these days the characteristic of the LDK spaces is being changed integratively. An example of change resulting from socio-cultural changes is kitchen. With women's increasing involvement in social activities, the load of housework has been distributed over all the family members, and the function of the kitchen has been diversified from cooking to the family's living space, entertainment space, etc. In addition, a factor of change resulting from technological development is the introduction of the concept of ubiquity. This means that the connection and communication of a residential space with another space or with the outside become much freer.

The present study is expected to make a significant contribution to the understanding of the latest Korean residential spaces and changes in people's consciousness of residential space. The change of apartment plans will be analyzed through comparison among different types, and factors related to the change will be analyzed from several socio-cultural viewpoints. Based on the results of the analysis, we will suggest directions for LDK plan and design fitting Korean people's lifestyle and meeting their

needs.

1. INTRODUCTOIN

1. 1. BACKGROUND AND OBJECTIVES

Along with socio-cultural changes, today's residential spaces in Korea are evolving from their limited meanings and functions (spaces for rest) in the past to new concepts of living spaces (spaces for family gathering and conversation). Since the start of apartment construction of apartments in the 1960s, 'master room-centered culture' has been gradually changed to 'living room-centered culture' and again to 'women-centered and family-centered kitchen and the function of the kitchen has been changed from a simple cooking space to a space for various family activities. These changes in Korean people's lifestyle are most remarkable in the functions of the kitchen and the dining space, which are the family's common life spaces, and each space is becoming an integrated area in terms of function. Accordingly, in designing kitchen space, we need not only to satisfy requirements for the traditional functions of kitchen but also to absorb the traditional functions of the living room by expanding the kitchen space and adopt the interior design of the living room. For this reason, the characteristics of all the LDK spaces connected to the kitchen should be changed together.

In the present study, L, D and K indicate, respectively, living room, dining room and kitchen, the basic spaces of typical Korean apartments. Through this study, we aim to analyze the relations among the spaces, to derive the roles of the LDK spaces

according to their traditional and new conceptual functions and ultimately to produce information for understanding changes in the paradigm of Korean residences.

1. 2. SCOPE AND METHODS

In this study, we analyze the change of LDK plans in response to the transition of Korean people's lifestyle with the question of whether our current residential space is reflecting today's lifestyle adequately.

In the 1st stage, relevant literature is reviewed concerning the concepts, attitudes, roles and values of residential spaces from socio-cultural viewpoints.

In the 2nd stage, the change of residential spaces is surveyed focused on the most common types and sizes of apartments in Korea, which are of around 79 m², around 105 m² and around 148 m². Recent changes in residential spaces and LDK space plans are analyzed using apartments constructed during the period from 2001 to 2006 by 5 major construction companies in Korea.

In the 3rd stage, LDK space plans are analyzed through the relations among user, space and object in the changed lifestyle.

Lastly, new directions for the LDK spaces are proposed.

2. CHANGES IN RESIDENTIAL SPACES

2. 1. CHANGES BY SOCIO-CULTURAL AND TECHNOLOGICAL

BACKGROUND

According to Clifford Richard, cultural concepts affect people's concepts and they are historically created meaning systems that provide form, order, focus and orientation to people's life. Residence is also a concept and one of meaning systems affecting human culture and concepts (Clifford Geertz, *The interpretation of cultures* 1998). In his book *House form and culture*, Amos Rapoport has noted that "the act of building a house is a cultural phenomenon, the hence its formal organization is heavily influenced by the cultural environment it belongs to" (Amos Rapoport, *House Form and Culture* 1969). Residence reflects the culture of the contemporary time and works as an important factor of culture. Residence is a vessel containing human life, and it changes continuously and is characterized by the cultural structure of the age. Thus, in order to understand the trend of residence and predict its change, we need to grasp the cultural flows of contemporary society. One of the factors of residential space change coming from the cultural background of Korean society is women's increasing involvement in social activities. With family nucleation resulting from urbanization, family size has been reduced and housewives' roles have been diversified. As a consequence, housework spaces are changing from places for cooking, eating and enjoying to places for household chores such as laundering as well as for family's conversation and children's play. This means that people's concept of and attitude toward housework spaces have been changed and they begin to regard them as active service spaces for preparing meals and saving time and effort in the preparation. In addition, with the rise of the knowledge and income level, people's value has been changed from quantitative satisfaction to qualitative and sensory satisfaction and, as a result, residential space is

drawing attention as an important factor affecting life quality Choi Yeon-jin, A Study on Space Plan according to Residents' Eating Lifestyle 2000). What is more, with women's increasing social activities, they are more concerned about energy and time consumed in housework, and demand the simplification of housework. Women's increasing social activities has changed the meaning of home from a closed private area to a social unit with public functions. This idea, in turn, has caused changes in the social functions and spaces of residence Lee Gyeng-hee, A Study on Apartment Residents' Perception of Kitchen Space and Their Behaviors in Kitchen Space 2002). The expansion and popularization of Korean women's involvement in social activities have increased the number of double-income families and this has changed men's attitude toward housework. Now housework is regarded not as women's duty but as work to be distributed among all the family members. Other key factors of change in life culture are nuclear family and the five-day-work-week system. As it was pointed out that even if people has more spare time with the introduction of the five-day-work-week system the longer time with family may be rather harmful in case conversation among the family is not kept up properly, the importance of family common life spaces such as living room and kitchen is increasing over individual spaces and spaces for the gathering of the whole family are demanded more strongly. The culture of eating life has been changed along with social changes. While meals were prepared mainly for the head of the family and the breakfast was emphasized in the past, today's meals are family-centered and the supper is emphasized more(Choi Yeon-jin, A Study on Space Plan according to Residents' Eating Lifestyle 2000). In addition, housework spaces have been affected by representative changes in eating life such as the diversification of foods, preference for convenient foods, increasing consumption of processed foods

and the change of dining pattern. The spread of Western eating culture has decreased laborious activities such as kimchi making, soy sauce and soy bean paste making and vegetable drying, and time for meal preparation by women alone, and as a consequence the kitchen has been changed to a place where the family members cook simple food conveniently (Lee Gyeng-hee A Study on Apartment Residents' Perception of Kitchen Space and Their Behaviors in Kitchen Space, 2002). Because of these changes, we need to reinterpret each residential space and people's concept of and attitude toward residence are being changed together (See Figure 1).

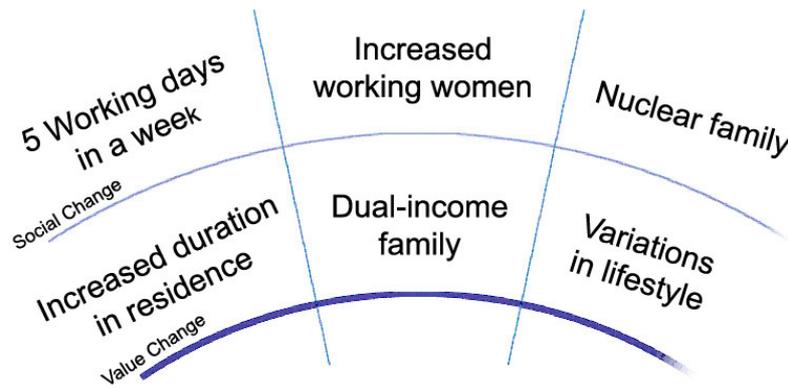


Figure 1 : Rise of family space's importance

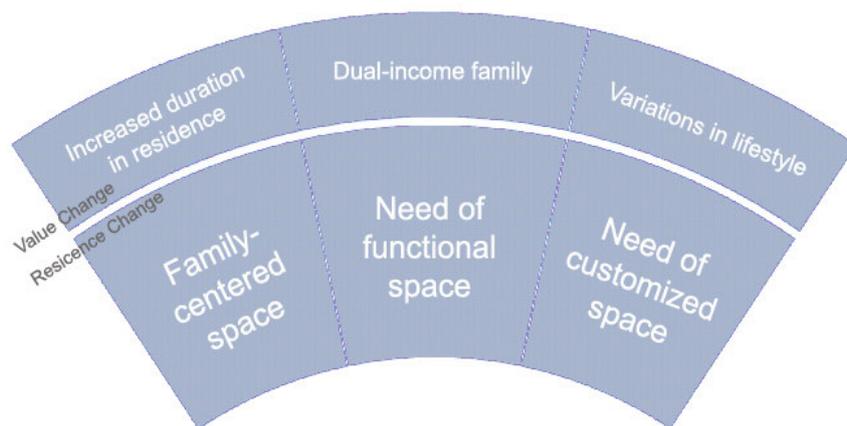


Figure 2 : Need of new plan in LDK space

In addition to residential changes coming from socio-cultural background, changes from technological background are as follows. Recently, our society is evolving to information-oriented structure thanks to the spread of materialism and the rapid development of the information industry. In the social environment, residential spaces are pursuing security, disaster prevention, video-based visitor monitoring, etc. using home automation (HA), and adopting high-tech equipment and infrastructure based on information communication technologies. HA-based housework support system, security system, indoor environment control system, health support system, etc. are still expensive, but the rapid development of information and communication technologies is expected to improve the quality of life by satisfying residents' intellectual desire and enabling home-based working, protection from disasters and infiltrations, video medical consultation, home appliance control, etc. The users of digital home services in residential spaces can access desired information and services anytime and anywhere without the limitation of time and space, and this satisfies each user's need and desire and emphasizes the user's individuality (Lee Byeong-hye, *The Effects of Values on the Use of Information Media and Services* 2005). Accordingly, in the contemporary society, new values will be created by the combination of digital technologies and networks and they will lead changes in general social environment. According to Manzini, the "materialization of cultural contexts, of organizational forms of technical system, of economic interests and the will of projectionists and groups of designers, business people and productive sectors" (*Artifacts: hacia una ecologia del ambiente artificial*, Ezio Manzini 1992).

As he remarked, the paradigm of this age will work through many factors, and contribute to the increase of utility in various areas including society, culture and

economy. In residential environment as well, such changes should be adopted so that user-centered intelligent environment is provided for services meeting users' need and that residence itself becomes a means of expressing the user's individuality.



Figure 3 : Ubiquitous Kitchen Concept Plan by Kyoung Ran Choi, Home Automation, Ubiquitous Kitchen 2004

2. 2. CHANGES IN THE ROLES OF RESIDENTIAL SPACES

We can understand the relation between space and behavior by classifying users' life behaviors in their residence by characteristic (see Figure 4).

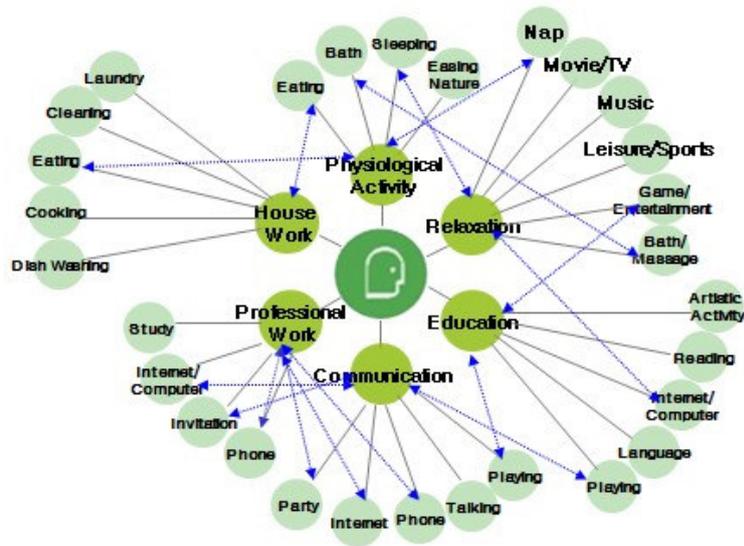


Figure 4: user activity in House

As family activities mostly happen in the living room, the living room plays the biggest role as a common space. Because many things are done in the living room, the room is called a multi-purpose space (Hong Seong-taek, Korean Design, 2006). With the increasing necessity of a family common space in contemporary people's busy life, residential environment is changing in the direction of facilitating communication among the family members in the residence. In addition, as the concept of residential space has been changed, a residence is regarded as a space not for specific users but for all the family members' rest and housework. This transition is reflected in the change of the LDK spaces. Their functions are not limited to cooking but are being diversified into spaces exclusive for women, spaces for family gatherings, spaces for serving and reception, etc. In addition, the scope of the spaces has been expanded. Thus, new functions and roles should be suggested for each space so that the role of the living room as a family common space can be shared by the kitchen and changes in residential functions and the LDK spaces are reflected.

In planning the kitchen, 'face-to-face type' (space where one works facing and communicating with other family members) is preferred to ordinary 'face-to-wall type' (space where one works facing the wall). Accordingly, the value of the LDK spaces, in which the family members come together, has a significant effect on the skeleton of residence.

3. CHANGES IN THE TYPE OF LDK PLAN IN RESIDENTIAL SPACE

3. 1. CHANGE IN THE RELATION AMONG THE LDK SPACES

We classified the LDK types of the floor plans of around 400 apartments at a size of around 79 m², around 105 m² and around 148 m² constructed during the period from 2001year to 2006year by the top 5 construction companies – Samsung Corporation, Hyundai Construction, Daewoo Construction, LG Construction and Daelim Industrial - in term of contract amount (civil engineering and construction) announced by the Construction Association of Korea, and patterned representative plans by size using the types of largest sample size. In addition, we patterned the LDK spaces of the representative plans by size and extracted representative LDK plans.

Classification Criteria	Code	Diagram	the number of rooms	arrangement methods
Partially open type (one-body type)	C		DK-1 R-3 B-2	SOUTH-L, MR,R1 NORTH-D/K,R2,B1,B2,E
	D		DK-1 R-4 B-2	SOUTH-L, MR,R1,R2 NORTH-D/K,R3,B1,B2,E
	E		DK-1 R-3 B-2	SOUTH-L, MR,R1 NORTH-D/K,R2,B1,B2, WEST-E
Pocket Type	A		DK-1 R-3 B-1	SOUTH-L, MR NORTH-D/K,R1,R2, WEST-E EAST-B
	F		DK-1 R-3 B-2	SOUTH-L, MR,R1 NORTH-D/K,R2,B1,E EAST-B2
pocket type and fully open type (one-body type)	B		DK-1 R-3 B-2	SOUTH-L, MR,R1 NORTH-D/K,R2,B1,B2,E
	G		DK-1 R-3 B-2	SOUTH-L/D/K, MR,R1 NORTH-R2,B1,B2,E
	G-1		DK-1 R-3 B-2	SOUTH-L/D/K,R1,R2 NORTH-MR,B1 EAST-E,B2
	H		DK-1 R-3 B-1	SOUTH-L, MR NORTH-B1,B2,E WEST-B 동EAST-D/K
	ii-i		DK-1 R-3 B-2	SOUTH-L,MR NORTH-R2, 서EST-E,B1,B2 EAST-R1

Figure 5 : Standard of Past and Recent Plan Classification

In the classification for examining changes in floor plan, we compared the floor plans of apartments sold during 2001~2003 and those during 2004~2006 by size (around 79 m², around 105 m² and around 148 m²). In order to analyze floor plans by construction company, we made a table of criteria for floor plan pattern showing the relations among the number of rooms, layout and LDK. The table coded the arrangement types of living room (L), dining room (D), kitchen (K), master room (MR), room (R), bathroom (B) and entrance (E) into Type A, B, C, D, E, F, ..., and classified the relation between the

kitchen and the living room into three types (partially open type – the living room and the kitchen are divided partially by a wall or furniture; fully open type - the living room and the kitchen are fully open to each other; and pocket type – the living room and the kitchen are separated from each other).

In the trends of traditional and recent LDK floor plans, the one-body type (partially open type and fully open type), in which the living room and the kitchen are positioned side by side, is more popular than the pocket type, in which spaces are rather closed. Particularly in small-size apartments, the fully open type is advantageous in terms of appearance and efficiency because the narrow kitchens and living room can be used more widely. Most of large-size apartments also adopt the one-body type for wider space and better ventilation and air circulation through opening between the living room and the kitchen/dining room. Depending on characteristic, however, the partially open type is preferred for more isolated use of each space and clean kitchen environment and because of the complicated cooking methods of Korean food and cooking smell.

3. 2. ANALYSIS OF CHANGES IN LDK PLANS ANALYSIS

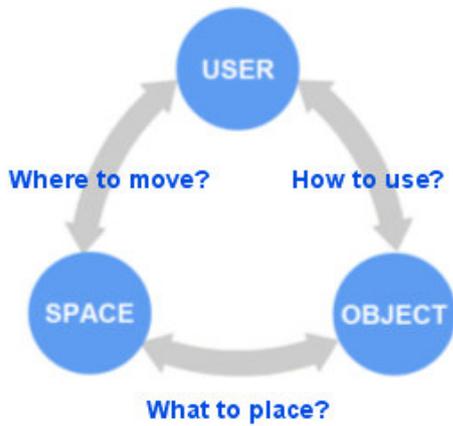


Figure 6 : Analysis Framework

In order to analyze changes in LDK plans, we examined not only the characteristics of the plans but also the relations between user and space, between user and object, and between space and object from the viewpoints of user, space and object.

First, Figure 7 summarized the patterning of representative plans for apartments at a size of around 79 m². The general structure of

residence is composed of pocket-type living room and kitchen/dining room, 3 rooms including the master room, and 1 bathroom.

			Representative types	Representative floor plan types	Representative plans
79m ² Standard Type	5 years ago	A Pocket Type		 Wall Type	
	Now	F Pocket Type		 L Type	

Figure 7 : Classification of Past and Recent Representative LDK plan in 79 m²

The largest difference in floor plan between those 5 years ago and recent ones is that bedrooms including the master bedroom face the south in the recent ones. This

change reflects Korean people's preference for southern exposure and their efforts to expose spaces in their residence to the south as much as possible. With regard to kitchen space, when Type A, the representative type among apartments constructed 5 years ago, and Type F, the representative type among recent apartments, were classified into —, ⊏, ⊐, etc., kitchen plans of the — shape with narrow space and the ⊏ shape with a + subsidiary table were most common. In addition, because the kitchen space was narrow, the refrigerator was positioned in the back balcony and space for storage was insufficient.

From the viewpoint of analysis framework, a similarity between the two floor plans was that communication with the living room was difficult because the relation between user and space was of pocket type. In addition, in the relation between user and object was the inconvenience of having to go out to the balcony to use the refrigerator, and in the relation between user and space was a narrow dining table due to insufficient space. On the contrary, a difference between the two floor plans was that the inappropriately connected spaces in the traditional plans were improved in the current one-body type, having a larger room in the dining space and closer communication with the living room. These changes are believed to result from the strengthened function of the dining room as a family common space and the perception that dining is a communication activity.

Figure 8 shows the pattern of representative plans among apartments at a size of around 105 m². The general structure of the residence is mostly Type B, the fully open type, among one-body types, and is composed of 1 kitchen/dining room, 3 rooms including the master room, and 2 bathrooms.

			Representative types	Representative floor plan types	Representative plans
105 m ² Standard Type	5 years ago	D Pocket Type		 '┌' Type + Sub-table = 'ㄱ' Type	
	Now	D Pocket Type		 'ㄱ' Type	 'ㄱ' Type + Island = 'ㄷ' Type

Figure 8 : Classification of Past and Recent Representative LDK plan in 105 m²

The kitchen plan is basically of the Γ shape with a \sqsubset -shaped island. From the viewpoint of analysis framework, a similarity between the two floor plans is that, in the relation between user and space, LDK spaces are open but the users have to face the wall during cooking and thus have difficulty in face-to-face communication. In the relation between user and object, it is inconvenient to use the refrigerator situated in the back balcony. In the relation between user and space as well, the back balcony is used as a subsidiary kitchen and as a multi-purpose room and thus it easily becomes messy.

There is no remarkable difference between the two plans. This suggests that the LDK spaces as family common spaces can be changed according to the change of concepts but it is still difficult to adopt the change of concepts actively in floor plans.

Lastly, in apartments at a size of around 148 m², Type D, the partially open type, was most common among one-body types, and the general structure of the residence is composed of 1 kitchen/dining room, 3~4 rooms including the master room, and 2

bathrooms (see Figure 9). From the viewpoint of analysis framework, a similarity between the two floor plans was that, in the relation between the living room and the kitchen in apartments of around 148 m², the partially open type with large space and partially divided dining space and living space was most common due to the characteristics of Korean food, and the  shape was most common in kitchen plans.

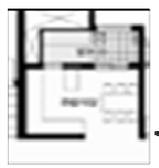
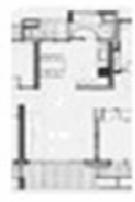
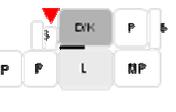
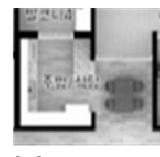
			Representative types	Representative floor plan types	Representative plans
148m ² Standard Type	Sears ago	D Pocket Type		 'ㄱ' Type + Sub-table = 'ㄱ' Type  'ㄱ' Type + Sub-table = 'ㄷ' Type	
	Now	D Pocket Type		 'ㄱ' Type  'ㄱ' Type + Island	

Figure 9 : Classification of Past and Recent Representative LDK plan in 148 m²

However, because of the long wall for covering a part of the kitchen and the cooking stand positioned deep inside the kitchen, it was difficult for kitchen users to communicate with family members in other spaces. In the relation between user and space, it is necessary to plan the kitchen in a way of shortening the flow line through rational positioning of the sink, heating stand, cooking stand and refrigerator and facilitating conversation with family members in the living room, and to provide a convenient space for dining other than the dining table. As in apartments at a size of

105 m², there is no remarkable difference between the plans 5 years ago and recent ones.

When the representative plans in apartments of 79 m², 105 m² and 148 m² were analyzed from the viewpoint of user, object and space, it was found necessary to induce smooth conversation among family members through appropriate closing and opening between the kitchen and the living room, to provide spaces for the gathering of all the family members, and to position the cooking stand, sink, heating stand and refrigerator in consideration of the users' flow line. In addition, the role of the multi-purpose room with wet floor in apartment space, which is the biggest difference of Korean residential culture from Western residential culture, needs to be defined more systematically than now.

4. CONCLUSIONS

According to the result of the present study, the values of life and lifestyle are changing with the transition of the background of life culture, and the changes are being reflected in residential space. Such changes are most remarkable in the LDK spaces, which are evolving to family-centered spaces for active fellowship among the family members. As various functions are demanded including family communication, guest reception and spaces exclusive for women, and the size of residential spaces is also being expanded. The patterns of changes between traditional plans and recent ones analyzed by size are as follows. In the relations among the LDK spaces, while the pocket type and the partially open type, which is one of the one-body types, were popular in the past, the fully open type is popular for the living room and the kitchen of small-size apartments and the partially open type for large-size ones. Because the space of the kitchen is

narrow in traditional apartments of 105 m² and 148 m², communication with the living room is difficult. Thus, open-type plans can meet users' demand for various spaces including home office and natural space while maintaining full openness to the living room. Considering that the users of apartments at a size of over 148 m² want a sufficiently large kitchen space and the partially open type, the partially open type is adopted using partitions between the living room and the kitchen. Because the degree of openness depends on family type and lifestyle but not on space size, it is essential to develop various types of opening between the living room and the kitchen by size.

In addition, as the role of the kitchen is changing from a space only for cooking to a space for family communication, the kitchen is considered integratively with the living room. This results in the popularization of the active face-to-face type and the island type, in which the kitchen is moved to the front of the residence. Today's LDK plans are switching the kitchen to the face-to-face type in order to meet its function as a family common space, but there are still points to be improved for residents to communicate with family members, do housework, and spend their spare time.

If users' behaviors in the LDK spaces are analyzed and the relation between the unique functions of each space and newly demand functions is understood, additional roles will be assigned to the spaces and the direction for the design of the LDK spaces will be determined (see Figure 10).

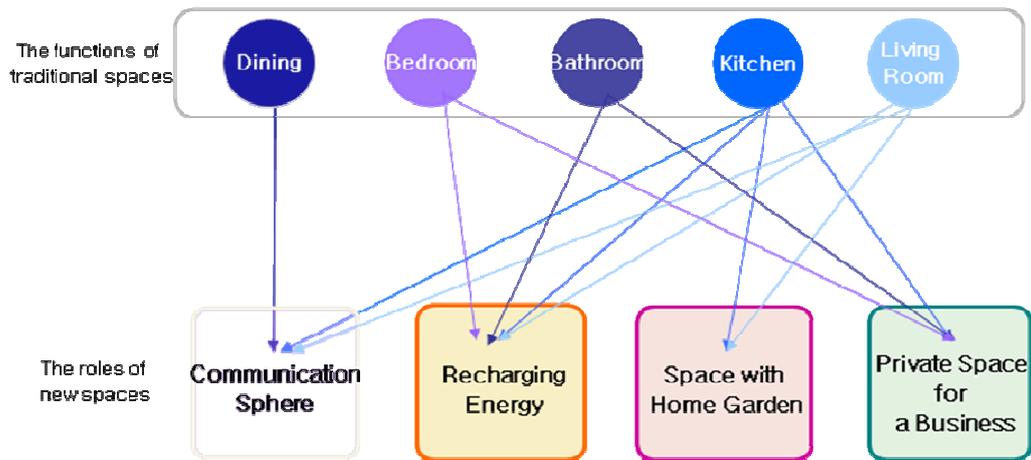


Figure 10 : The Roles of New Spaces Adopting Various Functions

In the future, these spatial characteristics will be identified, spatial centers will be diagramed horizontally and vertically, and the order and arrangement of the LDK spaces will become much more flexible by networks and the changed concept of work. With the change of space pattern, the division between the living room and the kitchen will be removed, and accordingly the size of each space will be enlarged and new space functions should be added for various life modes. Therefore, we need more active plans that regard the LDK spaces as an integrated family space without division, rather than regarding the kitchen, the dining room and the living room as separate functional spaces.

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