

# *Exploration of Living Space from the Perspective of Intergenerational Symbiosis*

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**Abstract:** With the increase of social population, intergenerational relationship has become a social issue. As a form of space, living space carries an important function of intergenerational communication. Under the perspective of “intergenerational symbiosis”, this study takes the living space as the research object, using the methods of architectural typology and case study, divides the living space into “complete cohabitation”, “semi-cohabitation” and “complete separation”. This paper summarizes the spatial organization of each type and related practical experiences, with a view to providing reference and inspiration for the design of future living spaces.

## **1. Introduction**

With the development of society and the accelerated pace of life, it has become a common phenomenon that young people work alone for their dreams, middle-aged people go out to work due to family pressure, and elderly people stay alone or take care of left-behind children.

According to the seventh population census data released by the National Bureau of Statistics, China's elderly population over 65 years old has reached 13.5% [1]. According to the United Nations' standard for the division of population aging, China is about to enter an aging society. The aging trend is increasing and the problem of old age is further highlighted. China's National Statistical Yearbook shows that the size of family households has shrunk to 2.62 persons per household, and the proportion of households of one generation has reached 49.5% [2]. There have been obvious changes in the structure of families, with more families living alone.

Nowadays, the term “empty nesters” no longer refers exclusively to the elderly who live alone, but also means the increasing number of young people living alone. Empty nesters often feel lonely because they are unaccompanied. The reduction of the traditional extended family has severed intergenerational ties and reduced intergenerational communication, which affects the harmonious development of society.

This paper takes different forms of living spaces as the object of study, and systematically analyzes the living spaces under the perspective of “intergenerational symbiosis” through the research method of architectural typology. The purpose is to explore the different combinations of living spaces under the “intergenerational symbiosis” model, hoping to provide reference for the design of future living spaces and to provide a variety of shared communication spaces for intergenerational populations.

## 2. The Basic Concept of “Intergenerational Symbiosis”

The term “intergenerational” usually refers to intergenerational relationships between people. The Intergenerational populations refer to people belonging to two or more generations, usually with an age interval of 20 years or more. “Symbiosis” was first proposed in the field of biology, and was defined by the German mycologist De Berry as “the living together of different species.” Since then, symbiosis has been used in a wide variety of fields[3] .

In architecture, “symbiosis” mostly refers to “shared living”. On the premise of ensuring the private living space of residents, the creation of shared space allows residents to connect and communicate with each other, breaking the original living pattern of strange neighbors and creating a warm and comfortable community atmosphere[4] . Shared architecture, with space sharing as its core, aims to explore the sharing of architectural space and, at a deeper level, the exchange value of space[5] . The creation of shared spaces blurs the boundary between private and public spaces, stimulates the possibility of various activities for people in them, and promotes mutual exchange.

The “intergenerational symbiosis” model is based on the theme of “shared living”, which emphasizes the communication and interaction between different generations of people. In the traditional Chinese model, “intergenerational symbiosis” is more often found within the same family members who are related by blood, with the older, middle-aged and younger generations living together, emphasizing their shared space while ensuring their own private space. In many western countries, a new model of “intergenerational symbiosis” has been created, which is no longer limited to blood relations, but rather to different generations living together in a group or community, sharing and helping each other[6] .

## 3. The Classification of Living Space

Through the typological study of typical cases at home and abroad, we can classify the living space under the perspective of “intergenerational symbiosis” into “complete cohabitation”, “semi-cohabitation”, and “complete separation”. In this paper, we select representative cases of different models to help better understand the above three models of intergenerational cohabitation.

### A. Complete cohabitation type

The characteristics of the “complete cohabitation” model can be briefly summarized as “living under the same roof”. Traditionally, “complete cohabitation” refers to intergenerational living in the same family with blood ties. Generations of the same family live together in one suite and communicate with each other through shared spaces such as the living room. Nowadays, the demand for independent space and privacy is getting higher and higher among all generations, the traditional model has also been expressed in a modern way, and more types of living space suites are used, such as duplex apartment, loft, etc.

With the development of society, the complete cohabitation type is no longer limited to the traditional model. Unrelated intergenerational populations also live together under one roof for mutual sharing. This innovative home-sharing model originated in the United States and provides a solution to the needs of both youth and senior populations. Youth need affordable housing, and seniors need emotional companionship and dependence. Youth and seniors are matched with each other as intergenerational roommates. There is now an international organization of home-sharing programs, and more than a dozen countries have joined the home-sharing program. The model is gaining modern acceptance and continues to grow.[7]

## 4. Traditional Model

Traditional Houses - Yunnan “Yikeyin” in China

Most traditional Chinese houses are built in courtyards, which is a typical “complete cohabitation” model. The “Yikeyin” is a traditional residential form in the central Yunnan province. Due to the influence of climate and natural environment, the building covers a small area, has a square plan, thick outer walls and small windows, and looks like a seal on the ground from a distance or from above, thus it is called “Yikeyin”.

The “three rooms and four ears inverted by eight feet” is a typical layout of the “Yikeyin”(Figure 1). “Three rooms” means there are three main rooms, and “four ears” means the four ear rooms on the left and right, and the main room is slightly higher than the ear rooms. The porch opposite the main room is called the inverted seat, and the depth is about eight feet, so it is called “inverted eight feet”[8] .

It is usually a core family that has lived in “Yikeyin” for generations. The bright room at the center of the house is the place for family meetings and commercial proceedings, and serves as a gathering place for intergenerational people of the whole family. The main rooms on the first floor serve as a dining room or a living room, which also carry the function of internal family communication activities; and the main rooms on the second floor are used for the elders because of their overall good conditions. The ear rooms are inferior to the main rooms in terms of status and overall conditions, so they are used for the younger generations, which also reflect the traditional etiquette culture of respecting the elderly and separating the priorities. The ear rooms on the first floor are mostly used as kitchens, storage rooms, livestock pens and other ancillary functional rooms.[9][10]

The main rooms and the ear rooms on the second floor of “Yikeyin” provide a private living space for different generations, while the bright room and the patio provide a space for communication and mutual assistance among the generations (Figure 2). The creation of shared space makes the communication between generations of the family closer and the overall intergenerational relationship more harmonious.

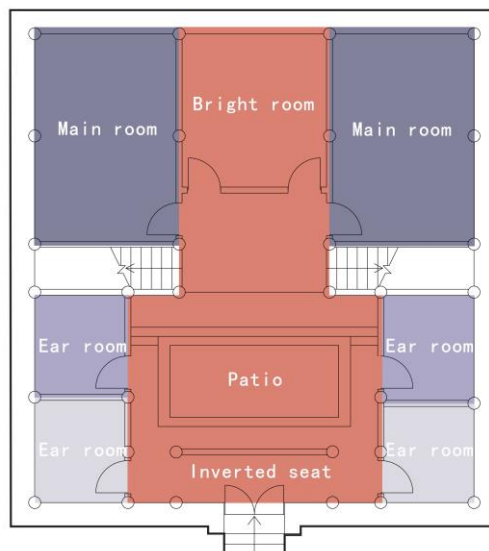


Figure 1: The First Plan Layout of “Yikeyin”



Figure 2: Yunnan “Yikeyin” Patio Space,(Modern Living - Singapore Skyterrace@Dawson block)

With the rapid increase in population, the courtyard type residential buildings can no longer meet the development requirements of high-density society. The “complete cohabitation” living space has gradually evolved into two or three bedrooms in multi-story and high-rise residential buildings. The common “three-bedroom, one-living-room” house type meets the most basic functional requirements of “complete cohabitation”. Different generations of people, such as the old, the middle-aged and the young, live in a more private living space, and communicate with each other through public spaces such as living rooms and dining rooms.

Nowadays, people of all generations are demanding more and more personal space for themselves, and the “complete cohabitation” type has developed into more flexible living spaces such as duplex apartment and loft. In Singapore, the concept of multi-generational living was introduced in the design of the Skyterrace@Dawson. The Skyterrace@Dawson includes 65 pairs of multi-generational double-storey penthouse units, which require a young family with their elderly parent paired up for purchase (Figure 3).

In the treatment of living space, the combination of duplex apartment form makes the independent space of intergenerational people more complete, making people inside have more autonomy of use. Inside the group, the first and second floors are equipped with entrance doors respectively, and each floor is fully functional, which can ensure the independent living needs of each generation and reduce the possibility of conflicts arising from intergenerational people living together, while the existence of a large living room gives the opportunity for sharing and communication between generations. (Figure 4)



Figure 3: Double-Storey Loft Model in Skyterrace@Dawson

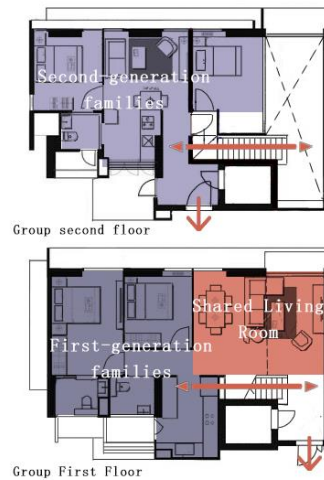


Figure 4: Plan Layout of Skyterrace@Dawson

## 5. Innovation Model

The “Intergenerational Empathy under One Roof” program in Korea

When “complete cohabitation” living space was no longer limited to the existence of blood relations, new “complete cohabitation” spaces were developed with the creation of family sharing programs, one of which is the program of “Intergenerational Empathy under One Roof” in Korea. In this program, an elderly person offers a vacant room in his or her home to a student or young person to live together. Elderly people who live alone without their children often feel lonely and isolated, and even suffer from psychological problems; university students or young people who are starting to live in society are still under great pressure of paying high rent. The program offers a solution to the problems of both groups. Young people can pay low rents to have private living space, while needing to care for and accompany the elderly as compensation[11].

In this innovative model of “complete cohabitation” living space, the composition is similar to the traditional model. The intergenerational populations live in private bedrooms, and connect, communicate through shared spaces such as living and dining rooms. In a specific practice of this program, a 71-year-old woman lived alone in a four-bedroom apartment with three bedrooms unused. The program matched her with three female students. In addition to the bedrooms as their respective private spaces, the living room, dining kitchen, and balcony were all shared intergenerationally (Figure 5).

The elderly and the youth took care of each other. The elderly were willing to cook for the youth, and the youth would take the initiative to help the elderly buy items and teach the elderly how to use their smartphones (Figure 6). The elderly and the youth truly became a family and gained emotional communication.

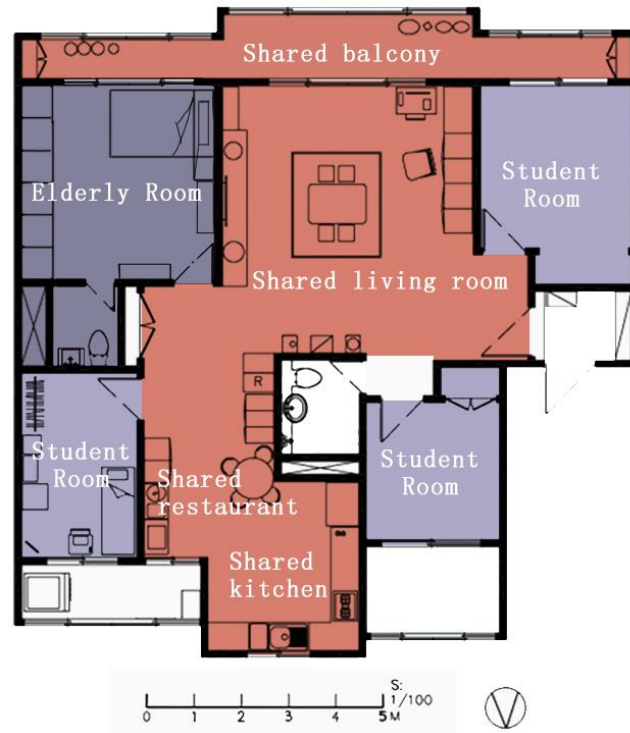


Figure 5: Plan Layout of the Practice Case in “Intergenerational Empathy under One Roof”



Figure 6: Scenes of the Elderly and Youth in “Intergenerational Empathy under One Roof”

### B. Semi-cohabitation type

The “semi-cohabitation” model means that the generations do not live in the same living space, but the living units are in the same building. There are usually various shared spaces in the building that serve as a “shared living room” for intergenerational people to interact with each other throughout the building. In this model, residents have more privacy than in the “complete cohabitation” model, and are not disturbed by group activities. At the same time, intergenerational populations have a higher degree of activity autonomy and freedom of choice.

### C. Generationenkult-Haus in Essen, Germany

The Generationenkult-Haus in Essen, Germany is a typical “semi-cohabitation” living space. Old, middle and young generations live together in the same building, sharing their lives and communicating emotionally.

This intergenerational co-housing residence has seven floors with a clear functional floor plan.

(Figure 7) The first floor has a café and a creative flea market that connects the building to the city; the second to fifth floors are social apartments where all generations can live in; the sixth floor is a shared office area and the seventh floor is a space for intergenerational communication and activities[12].

Unlike typical residential buildings, the GenerationenKult-Haus focuses on shared communication within the house. In addition to satisfying individuals' living conditions, a shared kitchen with a capacity of more than ten people is located on the third and sixth floors of the building, where young people can cook and eat together with older people. This large dining room also serves as a "shared living room" within the group, promoting face-to-face communication between generations and enhancing emotional ties between them. The placement of shared functional areas such as home theater, rooftop terrace and activity room enriches the activities between generations.(Figure 8) Residents can choose to relax in their own private living space, or go to the shared space in the building to chat and have fun with different generations, spreading the family atmosphere throughout the building.

In this "semi-cohabitation" model, each generation has a more independent living space, but outside of the unique living space, there are also spaces for shared activities with the intergenerational populations, which together form a whole group of living space and promote intergenerational integration.

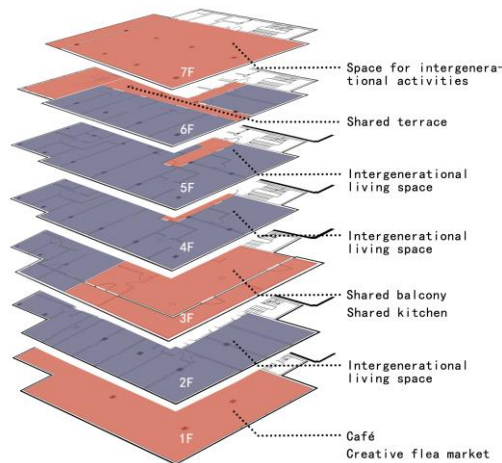


Figure 7: Plan Layout of the Generationenkult-Haus



Figure 8: Shared Terrace in the Generationenkult-Haus

D.Complete separation type

The concept of “complete separation” is essentially a mixed-age community, where different generations live separately. According to the characteristics and special needs of different generations, the community will set up different types of apartments such as senior apartments, youth apartments or family suites for residents to choose. The intergenerational populations inside the group will communicate with each other through the shared living rooms in the interior of the residential buildings, while the intergenerational residents throughout the community will communicate through the community's internal landscape green space, community sharing center, or other services such as book bar, coffee shop, multi-functional room, etc.

In this model, the needs of different generations are taken into account, and facilities and services are allocated accordingly. At the same time, different generations will not be separated, who can still communicate with each other through the shared space in the community.

#### The Future Sønd in Copenhagen, Denmark

As the largest urban healing center in Denmark, the Future Sønd is a typical “completely separate” organization of living space.

The project is located in the Nørrebro district of Copenhagen, adjacent to Lake Sortedam. The Future Sønd consists of three enclosed buildings and one detached building, providing 360 senior care apartments, 150 youth apartments and 20 elderly apartments[13] (Figure 9). The youth apartments are completely separated from the senior apartments by a walkway. Each group is equipped with shared kitchens and shared living rooms to provide interaction between residents of similar ages and to enhance the sense of family belonging. The courtyard enclosed by the three buildings, the Generation’s Square, provides a place for intergenerational communication and activities. The three squares link the public services on the first floor, such as small stores, handicraft workshops, coffee shops, and multifunctional halls. (Figure 10) The elderly and young people may exchange greetings in the garden green; or may pass on their experiences in the shared kitchen (Figure 11).

In this mixed-age community, people are categorized according to their age and live in a “completely separate” manner. The needs of different groups of people are well catered for in the various apartments. The Senior Residences are built with the latest technologies, including indoor temperature control systems to improve the quality of life for the elderly, while the Youth Residences are designed in a loft style for more flexibility and space. The combination of senior apartments and youth apartments forms an all-age mixed community. The public service space and the generation square on the first floor provide the possibility for the intergenerational populations living separately to integrate and communicate with each other, creating a pleasant atmosphere of shared living and giving people a sense of intimacy and family.

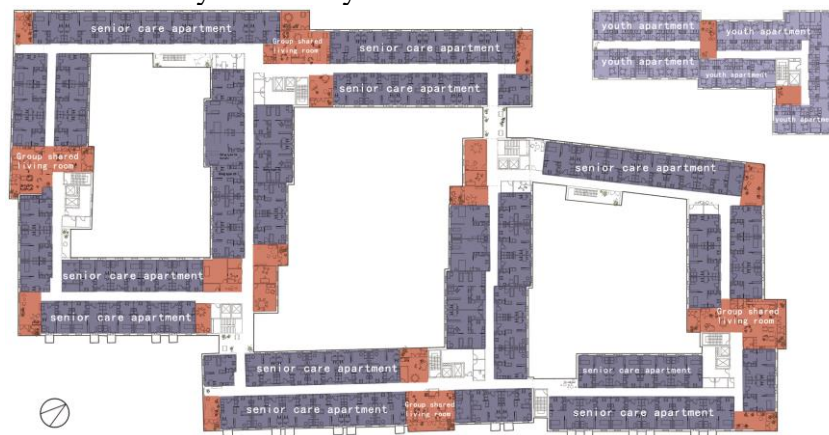


Figure 9: Standard Floor Plan Layout of the Future Sønd





Figure 10: Ground Floor Plan Layout of the Future S ølund

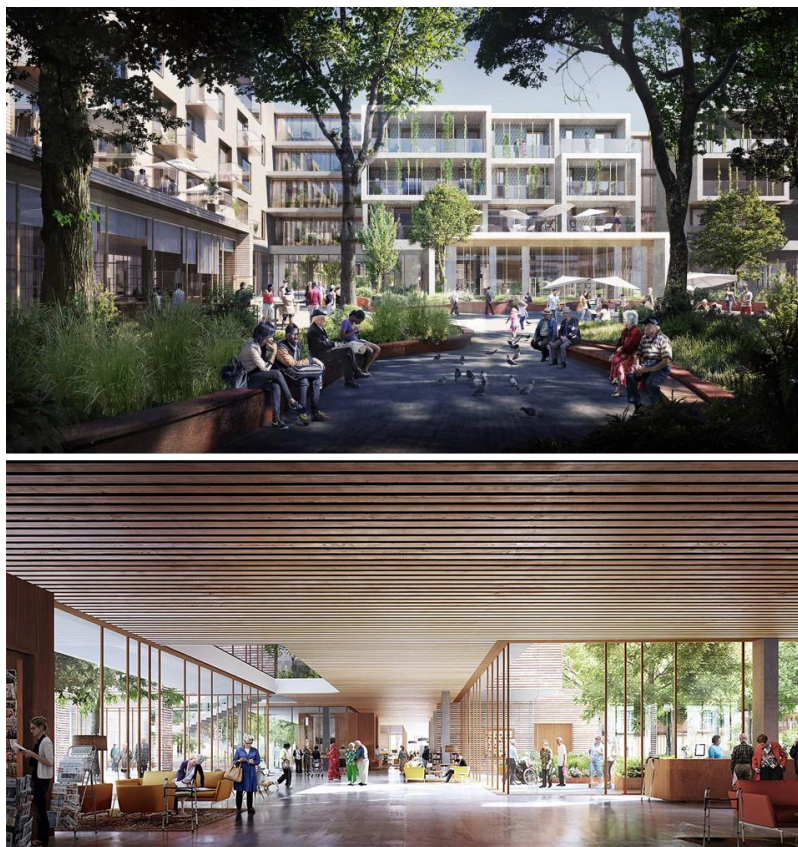


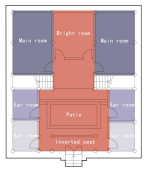
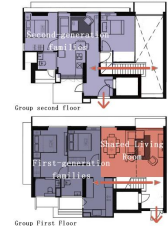

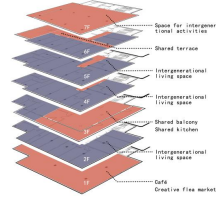

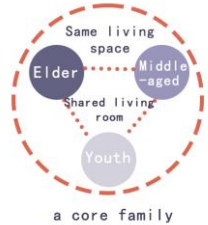
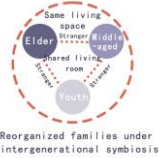
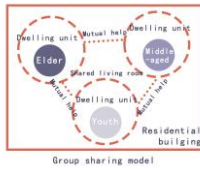
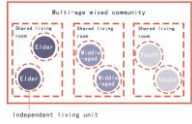
Figure 11: Scenarios of Intergenerational Populations Interaction in the Future S ølund

#### D.Conclusions

The types of living spaces under the perspective of “intergenerational symbiosis” are diverse and have their own characteristics, which are briefly summarized and analyzed in Table 1. Currently, the organization of living space under the “intergenerational cohabitation” model is as follows:①Complete cohabitation type. This type of intergenerational populations is narrower and includes only those who live in the same house. It has evolved from traditional to modern, and the

population is no longer limited by blood relations. The space of intergenerational crowd activities is relatively closed, and communication activities usually take place in the living room, dining room, and other indoor spaces. ②Semi-cohabitation type. This type of intergenerational populations is moderate in scope and includes the residents of a residential building. Intergenerational activities take place in shared living rooms and kitchens throughout the building, and the types of activities are more varied. ③Complete separation type. This type has a wide range of intergenerational populations, including residents of the entire community. The activity space is no longer limited to indoor space, but the courtyard square, public green space, etc. are all places for intergenerational activities, and may even be connected to the outside community.

Table 1: The Classification of Living Spaces in the Perspective of Intergenerational Symbiosis

The classification of living spaces	complete cohabitation type		Semi-cohabitation type	complete separation type	
	Traditional Family Type	Innovative Mutual Aid			
Composition mode	Co-habitation of different generations from the same family	Different generations from different families	Different generations live separately, but in the same building, forming a group of shared space	Different generations live separately but together in the same community, forming an all-age mixed community	
Model Features	1, Narrower range of intergenerational populations 2, The activity space is more closed and introverted		1. Moderate range of intergenerational populations 2. The event space is located in the middle of a building	1. Wide range of intergenerational populations 2. More open and outward-looking activity space	
Main communication space	Shared functional spaces such as living room, dining room and balcony		Group sharing living room, kitchen, etc.	Community centers, public green spaces, etc.	
Case Name	Yunnan “ Yikeyin” in China (traditional)	Singapore skyterrace@dawson block (Modern)	The “Intergenerational Empathy under One Roof” program in Korea	GenerationenKult-Haus in Essen, Germany	Future Sønd in Copenhagen, Denmark
Floor plan					
Space Illustration (Image source: Self-drawn by the author)					

The organization of living space under different types has its own characteristics, and the places for intergenerational people's communication activities are different. In the specific project design,

designers should choose the suitable “intergenerational symbiosis” mode in combination with the specific site environment characteristics, and make coordination and changes to flexibly adapt to the surrounding environment. Different models can also be integrated to develop a more suitable form of space for intergenerational people to communicate and better highlight the theme of “intergenerational coexistence”.

## 6. Conclusion

At the present stage, the study of living space under the perspective of “intergenerational symbiosis” has not yet formed a system, and is still in a stage of continuous exploration. Based on the perspective of “intergenerational symbiosis”, this paper classifies and analyzes different living spaces according to their characteristics, and summarizes the spatial design rules that are conducive to intergenerational communication in each type. We hope that this paper will be a reference and inspiration for future living space design, so as to enhance intergenerational communication and promote the harmonious development of society.

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