Research on Rural Public Space Reconstruction for the aged from the Perspective of Community Endowment—Taking Jinqiao village in Fengyang as an Example

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Abstract. The emergence of urban-rural dual structure and the increasingly serious problem of rural aging are inevitable results in the process of urbanization. It will play a very important role to improve pension infrastructure to meet the new demand for rural aging. Taking Jinqiao Village, Fengyang County, Anhui Province of P. R. of China as an example, the importance of communication space, cultural space and healthcare space as the main activity areas for the aged has been explored according to their family status, psychological characteristics, residence and behavior habits. The design and analysis of the public pension activity space and facilities of the village are carried out from the angle of “convenience”, “culture” and “security”. The strategy of improving and optimizing the reconstruction of rural pension space is put forward.

1. Introduction
Since the 20th century, aging population has gradually become an important feature of social development. By the end of 2017, China had 241 million people aged 60 or above, accounting for 17.3% of the total population. For the first time, the number of elderly people has increased by more than 10 million[1]. Around 2050, the number of elderly population in China will reach 487 million, accounting for 34.8% of the total population[2]. The severe aging trend makes the elderly people get the attention of all sectors of society. In view of the social situation of aging, Germany, France, Japan and other developed countries have studied the concentrated buildings of “multi-generation houses”[3], “day-care homes for the elderly people”[4] and “care homes for the elderly people” residential buildings[5]. However, the development of urban and rural economy in China is polarized, and the social environment of rural and urban areas is very different. Most of the buildings for the elderly community in similar developed countries can only provide reference experience for the urban elderly space in China, but cannot satisfy the social needs of rural areas.

With the advancement of new rural construction, the aging of rural society has given rise to an increasing demand for diversified old-age care. At present, rural pension mainly consists of three basic modes: family pension, land pension and social security pension. The land as the security resource are gradually weakening in the security function of farmers' pension[6]. Therefore, improving the social status of rural areas and rationally transforming public spaces for the elderly in rural areas have become an important part of China’s new rural construction. The aims of this paper are improving the
rationality of rural old-age care environment planning by analyzing the behavior and needs of the elderly population, studying the transformation strategy of public space in rural old-age care communities, and combining with regional culture.

2. The existing problems in the research of "community endowment" in China

China's rural areas of the traditional concept of old-age care is strong, the spiritual comfort of the family plays an indispensable role in the process of old-age care. However, due to the outflow of rural population, the family pension function that originally relies on children is gradually weakened, which can only be supplemented and supported by social forces. In 2016, the “China's 13th five-year plan” put forward the policy of “establishing a multi-level pension service system based on the home, supported by communities and supplemented by institutions”, which clearly defined the status of community pension in China[3]. China's rural social relations and structure is simple, most of the building functions are estate, residential and management, lacking of social public service functions, especially education, medical care and culture. Therefore, the construction of old-age care community should not only comply with the majority of the elderly people's home intention, keep the existing housing as the main living function space, but also provide an important guarantee for community old-age care by improving the public function of the community.

On this basis, China's rural pension policy gradually to the community pension change. At present, the main rural old-age community studies in social research[7-8] and theoretical study[9] is given priority to. Carver Lisa F., Beamish Rob etc.[10] discussed the relationship between the rural elderly people health, social activity and social participation. Strommen, Sander[11] summed up the rural community's social, sexual life, local, and the lack of family sence is to reduce the main factors of the elderly people mental health and happiness through the interview for the elderly. Ma Jingjing and Zeng Juxin[12] studied the relationship between the phenomenon of old people's longevity and the rural living environment, and made it clear that the construction of a harmonious humanistic society and a comfortable living environment played a positive role in promoting the behavior and health of the elderly people. Chen Lingxiao[13] demonstrated the feasibility of the new community pension model in rural areas of China, and believed that capital investment and service improvement are the necessary prerequisites for the construction of the community. Thus, it can be seen that the present stage of China's rural community endowment patterns while got the promotion, but a lack of practicality, retirement community construction of rural community space restructuring and transformation of research in-depth. On the one hand, the rural population structure and the change of the social relations in rural villages hollowing out and the trend of marginalization, appear a large number of abandoned buildings and encroach on the phenomenon of land, land utilization. On the other hand, the elderly people in rural areas live in simple buildings with low comfort and lack of companionship and care. Moreover, at the present stage, the social relations and structure of rural areas in China are simple. Most of the building functions are industry, residence and management, and there is a lack of public service function. There is still a great contradiction between the rural pension demand and the construction of community pension service facilities and the investment of funds. Therefore, the construction of new rural old-age community should not only comply with the most old people occupy the willingness to keep both the housing as the main function of living space, by perfecting the community public function, import the social service elements, outdoor public space and public buildings of village described modification and update. In this way, it can relieve the financial pressure needed in the construction of old-age care services and facilities in rural areas of China, and build a new model of diversified community home-based old-age care.

3. Age-appropriate analysis based on the current aging situation

This paper selects Jinqiao village in Fengyang county, Anhui province as the research object. The village is located in the east of Fengyang county, Anhui province, which is located in the transition zone of north subtropical zone and warm temperate zone. However, the economic development of the village is backward due to the traffic blockage, which leads to the large outflow of the young and
middle-aged population and a large number of vacant and abandoned buildings. It is a typical “aging” village. The structure of the whole village is simple, and the building texture presents the characteristics of natural distribution as shown in Fig. 1, which is typical in the planning practice of the elderly people community. Moreover, according to “The Record of Ming Taizu”, Jinqiao village (also known as Zhong Lidong village[14]) is the birthplace of Zhu Yuanzhang, the founder of Ming taizu, and also the birthplace of Fengyang Huagu opera, which also provides opportunities and advantages for the establishment of old-age care community. In view of the public activity mode, leisure behavior characteristics and health status of the elderly people, this paper conducts a specific investigation and age-appropriate analysis on the village public space through field investigation and interview.

Figure 1. Function and texture characteristics of the village and abandoned buildings.

Figure 2. Distribution of leisure space in the village and actual pictures of elderly people chat.

Figure 3. Main leisure activities of the elderly people in the village.

Figure 4. Activity frequency of elderly people in village.

3.1 The status of public activity space for elderly care in villages
The spatial structure of the village is simple and clear. As shown in Fig. 1, the road is composed of two main roads in the east-west direction and six auxiliary roads in the north-south direction, forming a simple grid structure. The buildings in the village are mainly residential buildings. The only public building is Jinqiao primary school on the east side of the village, which is currently vacant. In addition, the main road to the south of the village used to be used as a commercial street, with fairs and Huagu opera shows on festivals. However, due to backward economic development, traditional festivals and commercial activities are not held in the village, and cultural and artistic performances are gradually transferred to the populous urban areas. At the present stage, the entire regional space has a single
function, lacks infrastructure such as medical services and old-age care, and the social and recreational activities of the elderly people in the village are single, and there is a lack of public activity space.

3.2 Behavioral characteristics and characteristics of the elderly

Different from the young people, the old people's daily behaviors tend to be fixed and repetitive, and the choice of behavior place and behavior time have certain regularity. Due to the lack of public activity space in villages, the daily life of the elderly people is mainly dominated by farm work and simple leisure communication activities. Among them, gossiping, chatting and walking are the main leisure behaviors of the elderly people in rural areas as shown Fig. 3 and Fig. 4. It can be seen that the single activity type of the elderly people leads to the low frequency and small activity radius of the elderly people. And their behaviors are generally based on the neighborhood relationship and distributed in points throughout the villages, generally appearing in such places as the shade in front of the door and the courtyard gate in the street as shown in Fig. 2.

3.3 Analysis of physical and psychological characteristics of the elderly

As shown in Table 1 and Table 2, the psychological state of the elderly people in villages is uneven. As most of the children in the family work outside all the year round, and the disappearance of village historical, cultural and folk activities, many elderly people have nothing to do in their daily life, lack of sense of existence, and tend to feel abandoned. Moreover, the average education level of the elderly people in rural areas is low, they lack leisure life and hobbies, they have a poor ability to accept new things such as the Internet. They often have communication barriers with their children, and they feel increasingly lonely. However, the aging brings physical health problems to the elderly people. The decline and weakening of the functions of various parts of the body makes it difficult for the elderly people to concentrate, resulting in a lot of anxiety, sadness and negative emotions, and they are unwilling to communicate with the outside world.

| Physical characteristics | Performance |
|--------------------------|-------------|
| 1 Sensory decline        | Deterioration of appetite, hearing, sight, etc |
| 2 Degeneration of muscle and bone | Slow movement, reduced range of motion, easy to fall |
| 3 Neurodegeneration      | Memory decline, repeated recall nagging, etc |
| 4 Decline of resistance  | Susceptible to a variety of diseases |

| Psychological characteristics | Performance |
|-------------------------------|-------------|
| 1 Loneliness                  | Expect their children to come home, lack of communication and social behavior |
| 2 The sense of belonging      | Unwilling to leave the village to go to the city, etc |
| 3 The sense of loss           | Communication barriers with children, the ability to accept new things is poor |
| 4 Nostalgia, social responsibility | Susceptible to a variety of diseases |

4. Age-appropriate public activity space transformation strategy from the perspective of community pension

Space is not a neutral and objectified place, but a social artifact, which is formed by social and material practices[15]. The elderly activity area of rural communities is naturally formed by the joint action of their long-term behavior and space resources. Due to the restrictions of economy, the current
age-appropriate transformation at the community level is mainly renovation, that is, the existing facilities in the community are treated, or the local construction, reconstruction, expansion, partial demolition, maintenance and maintenance methods are adopted according to the needs[16]. Therefore, the choice of targeted the elderly activity frequency point space and concentration of architectural space of rural public space, satisfy the economy requirements, and can guarantee the old behavior richness, comfort, accessibility and security features, rich and reasonable public function, make amends for their children is not lonely and depressed, have social sense of belonging (as shown in Fig. 5).

Figure 5. Organization of public space in village community. Figure 6. Transformation of dotted communication space in village streets.

4.1 Use streets to enhance accessibility and comfort of communication space
The elderly people are generally in general physical condition and slow in moving, and their travel is generally based on walking. Therefore, the accessibility and convenience of the space must be considered in the transformation of the communication space. In addition to the function of transportation, the street space of the village is the most familiar and safe place for the elderly people to chat and rest. However, most of the existing residences in the village have been simply rebuilt, and the enclosed courtyard-style buildings are the main ones, which leads to the rigid boundary space of streets and lanes, and the lack of interaction and comfort. Therefore, during the process of transformation of street space, it must consider the comfort of old people activities and rest, and safeguard the illicit close sex of the residential space (as shown in Fig. 6). First, it can be in a setting street border fence half open leisure space, let the old man walking in streets can be found in time to rest, play CARDS, or the place of shelter, assembled at rest or appear in the process of the entertainment and communication behavior. Secondly, an open or semi-open landscape belt or planting area is set on the wall of the courtyard, so as to make it possible for the elderly people walking in the streets and alleys to form communication with the elderly in the courtyard. Thirdly, a sales window is set up in the courtyard wall of the street to enhance the relationship between neighbors and the fun of rural life by selling and exchanging melons, fruits and vegetables grown in the yard. Fourthly, a small shop of window type is set at the corner of streets and alleys, which not only complements the commercial function of the village, increases the consumption behavior, but also strengthens the possibility of the flow of people in the whole village.

4.2 Use of the centralized pension space to improve the richness of the elderly people life
The transformation of point-like public space in the village can enhance the daily communication of the elderly people, but to thoroughly solve the medical and health problems of the elderly and increase the opportunities for cultural and artistic activities and learning. It must be completed by transforming centralized public buildings or outdoor areas. Therefore, the abandoned Jinqiao primary school on the east side of the village is transformed into a space (as shown in Fig. 7 and Fig. 8) to build a community-type public service system for the elderly people to meet the material and spiritual needs of the elderly people.
4.2.1 Improve the diversity of pension activities. The collective endowment space of the elderly people community should be equipped with a multi-functional activity center of a certain area, according to the characteristics of the elderly's preferences and behavior, increase the resource allocation of indoor activities, and set up a reasonable multi-functional activity room. Rural seniors not only enjoy playing CARDS, chess and chatting, but for many, the low level of literacy caused by limited educational resources is a lifelong regret. Therefore, in addition to the configuration of the chess and card room and other recreational activities, but also to introduce the function of the “geriatrics” into the community. By holding regular lectures on education or agricultural knowledge to help the elderly people understand advanced national policies and learn professional knowledge. Not only that, regular learning of traditional culture, such as calligraphy, paper cutting and other courses, can also help the elderly to pass the boring time, learn new knowledge and skills. In addition, artistic performances, such as flower-drum opera and musical instruments, can also be learned to form an art team, so as to inherit and carry forward the traditional characteristics of the village. In addition to increasing the interest and diversity of life, the elderly people in the village can be encouraged to “go out” and show their own style. For example, the building on the northwest side of the site was transformed into a multi-functional activity room, with chess and card room, music and multi-functional classroom, etc., and regular teaching and entertainment activities were held, which not only enriched the life of the elderly, but also promoted the spiritual construction of the whole village.

4.2.2 Improve the cultural nature of pension space. As a traditional culture village, there are many cultural landscapes and historical allusions related to Zhu Yuanzhang in the village, which provides an opportunity for the cultural transformation of pension space. However, the economic and cultural level of the village is relatively backward, and in the process of construction, the cultural landscape with Ming culture has been greatly damaged. As the inheritor of village culture and tradition, the elderly people urgently need to construct public cultural space for cultural learning, inheritance, protection and restoration of villages. Therefore, the building on the southwest side of the site was transformed into a library and tea room. On the one hand, it provided the compilation, arrangement and management of cultural and historical books for the village managers and the elderly with a high degree of education, and helped the village to carry out the propaganda of Ming culture. On the other hand, it provides a place for the elderly people to read and learn by themselves. In terms of reading habits, the elderly people prefer to read books or newspapers mainly based on paper. The public library is an important place for the elderly to study and store books and periodicals, as well as a cultural center of the whole community. The old can read in the library on the second floor, also can drink tea in the teahouse on the first floor, or hold collective reading activities, not only can cultivate one's morality, but also improve their own cultural accomplishment.

4.2.3 Improve the artistry and sense of belonging of old-age care space. Opera is the most popular fashion of the older generation and young people, and the most favorite form of artistic expression for the elderly people. As the origin of Huagu opera in Fengyang, Huagu opera is an indispensable program in village festival activities. In addition to learning spaces, the village's art team also has a strong demand for performing venues. Thus, on the east side of the courtyard, a separate art space was constructed, consisting of a traditional wood-framed stage, with a performance area at the front and a preparation area at the rear. To facilitate the festival, a sunken square has been added to the front of the stage, providing viewing space for the audience by means of large steps. In order to accommodate more audiences, a long corridor is built between the multi-function activity room and the tea room, which can not only provide people with a rest, but also play a role of visual guidance as shown in Fig. 9 and Fig. 10.

4.2.4 Improve the security and service of pension space. In addition to the spiritual needs of the elderly people, the physical health of the elderly people is the primary task to be addressed by community public services in the process of providing for the aged, so as to achieve the goal of providing for the
aged and providing for the aged. At present, the number of disabled, half-disabled and sick old people in rural areas is increasing, but the care of families and children is far from meeting the scientific nursing requirements. Therefore, medical facilities must be improved. Through the introduction of medical teams, farmers can be trained in auxiliary nursing work when necessary, and medical and old-age care resources can be integrated to provide continuous care services for the elderly. Therefore, the building on the southeast side of the old-age care center was transformed into a medical room, with the first floor as an outpatient for receiving patients and the second floor as a nursing space for caring for disabled elderly people. At the same time, in the northeast corner of the yard to increase outdoor sports square can help the elderly people through the right amount of exercise, improve physical fitness, reduce the harm of disease.

Figure 7. General plan of endowment activity center.

Figure 8. Plan of endowment activity center.

Figure 9. Aerial view and stage rendering.

Figure 10. Section of endowment activity center.
5. Conclusion
At present, the aging population in China's rural areas is characterized by aging, incapacitation, empty-nest and miniaturization[17]. Under the background of aging, the transformation of rural public activity space into “age-appropriate” is an inevitable requirement for the realization of the rural community old-age care model of “community-based, home-based and institution-based”. At present, the quality of rural community public space is low, and the behavior and demand of the elderly are lack of adaptability and pertinence. So it must be based on the psychological and physiological characteristics of the elderly people and behavior analysis, from aspects of the social, health and cultural space, by the point and the surface modification and optimization of rural public space:

(1) Improve the sociality and participation of rural old-age care space;
(2) Set up communication space for daily life according to the behavior characteristics of the elderly people;
(3) Guide the cultural entertainment life of the elderly people through the centralized endowment space;
(4) Establish professional medical and nursing space to guarantee the life and health of the elderly people;
(5) Improve the social value of the elderly people by making use of the folk culture of different villages.

Through the renewal and transformation of rural communities, the rich behavior of the elderly people is improved, the elderly service facilities are improved, and the overall environment and style of the villages are updated, providing valuable experience for the construction of new rural areas in China.

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