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Elderly architectural design based on humanized concept—Take the design of a nursing home in Yichang, hubei province as an example

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ABSTRACT

This nursing home architectural design is based on a human perspective. The article elaborates on the corresponding design of the building to meet the psychological needs and living habits of the elderly. This is to help to explore how to design a qualified nursing home that meets the physical and mental needs of the elderly in today's social situation.

Keywords: Humanization; Activity space design; Old-age building

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1. Introduction:

China has entered the stage of fast-age aging. According to the sixth national census in 2010, the elderly over 60 years old in China have reached 13.26% of the total population. It is estimated that by 2050, the elderly population will account for one-third of the total population. Old-age buildings will surely become the focus of the construction industry. However, after our research, it is found that today's old-age buildings often have many problems such as a single design idea, and the function streamlines do not meet the living habits of the elderly, and the details are rough and so on. To this end, the author will provide a good design idea for the peers through the design of their own design cases, through the display of space organization, detail design and so on.

2. Project background and design analysis

2.1 Background of the project

The project is located in Wujiagang District, Yichang City, Hubei Province, China (Figure 1), north of the city's main road, Chengdong Avenue, west of the city's main road, Zhongnan Road. It is located near a residential area, close to the bus station, with convenient traffic and large traffic around. After the author's sample survey of a public nursing home in Yichang City, most of the nursing homes in Yichang City have problems such as disconnection between design and actual use and rough details. Therefore, the author hopes to propose a solution to the corresponding problems in the design of nursing homes in Yichang City through the analysis of the design ideas of the nursing homes.

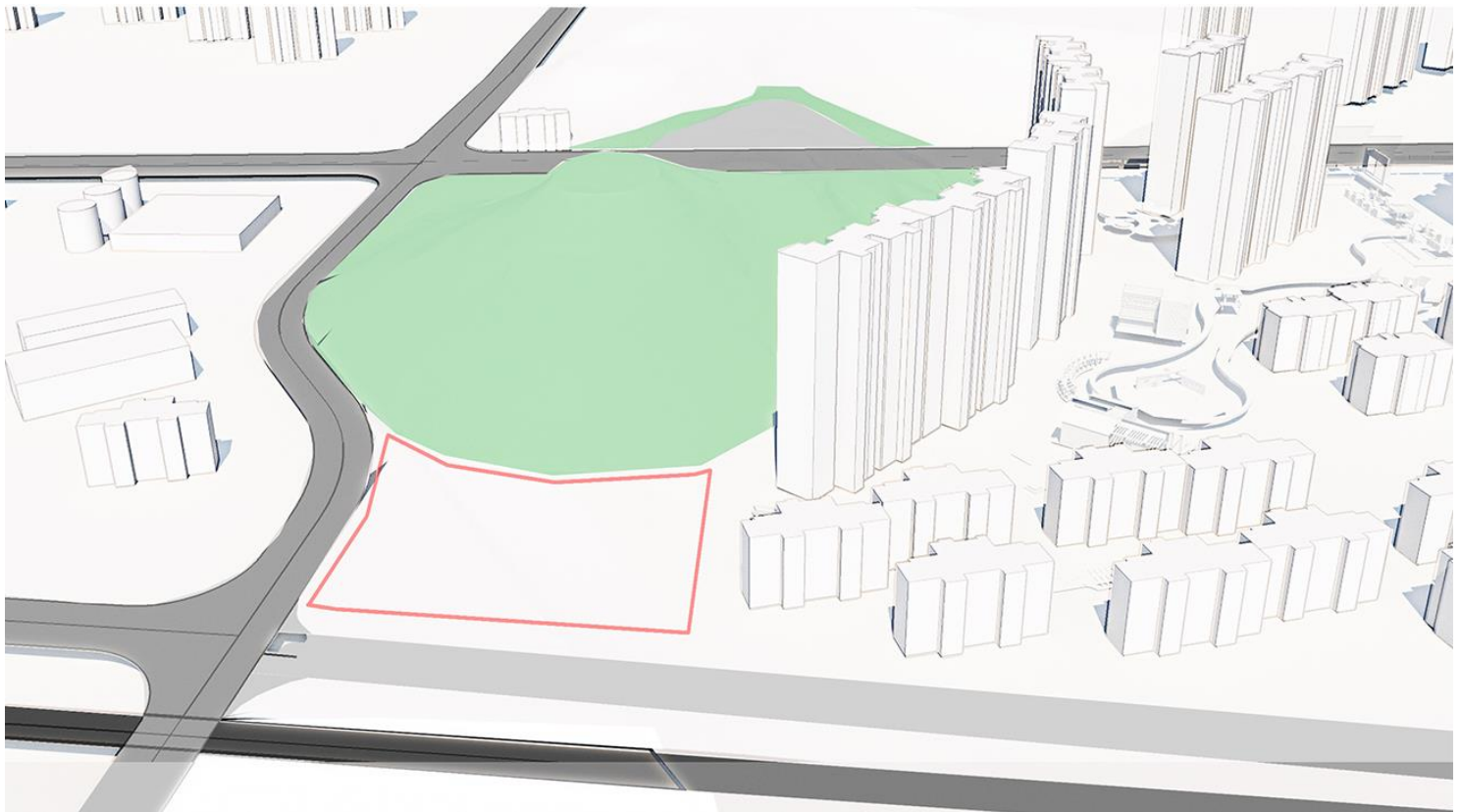


Figure 1 (Aerial view of the base environment)

2.2 Analysis of design ideas

On the basis of satisfying the design of appropriate aging, respecting the psychological characteristics of the elderly, setting up appropriate functional rooms, and promoting active and safe exercise for the elderly are all basic requirements for a good nursing home. There is a new Chinese-style residential area around the base, and there is a large hillside on the north side of the base. Therefore, how to combine this building with the environment around the base has become a key aspect of our consideration.

After analyzing the construction form of Yichang, we found that most of the architectural forms adopt courtyard layout, and most of them are multi-storey buildings. Based on this, we also make the nursing home into a courtyard layout and the number of building layers is 2-3 layer (Figure 2). There are many advantages to this. One is that the building itself can be better integrated with the surrounding buildings. The second is that the multi-level layout is conducive to giving the elderly the maximum possible sunshine, and the third is to facilitate the staff to manage the activities of the elderly through the closed yard. And from the psychological characteristics of the elderly, this form of inner court is also similar to the local architecture, so it is easy to create a family living environment (Figure 3).

Secondly, we design the public space of the building into a form that can be opened to the outside world. As a result of the reflection of the elderly in the previous survey, we found that most of the existing nursing homes in the city lack some basic public facilities. If a child visits an elderly person in a nursing home during the holidays, there is a lack of a suitable resting pl-

ace, and people will feel very inconvenient. The venues of most nursing homes are very boring in design, and the elderly in nursing homes will always be very depressed. Therefore, in summary, we believe that it is very necessary to put some basic activities and functions of the pension building itself, such as chess and card room, fitness room, clinic and other functions into the interior of the building, and open these functions to the outside for the surrounding residents. This will also bring additional income to the nursing home, which will help the elderly communicate with the surrounding residents. At the same time, we set these open functions separately in separate building blocks, which is convenient for management.

Due to the humid weather in Yichang, sunlight has become the main source of natural heating and dehumidification. Therefore, the important activity in the winter of Yichang local old people is to bask in the sun. Therefore, we have specially arranged the living houses for the elderly in the south and designed large-scale floor sliding doors and balconies to help the elderly to bask in the sun. At the same time, many activity rooms (Fig. 4) are set up in the inner courtyard, which makes it easy for the elderly to get in touch with nature and sun in addition to daily activities. Inside the inner courtyard we also set up long walks and rest platforms (Fig. 5), which is convenient for the elderly to walk in the courtyard through the trails when the weather is fine. They can exercise by walking on the walking trails, or watch the scenes inside the courtyard on the trails or watch the activities of people in the activity room to create a rich sense of space.



Figure 2 (Architectural aerial view)



Figure 3 (inside yard space)



Figure 4 (activity room space)



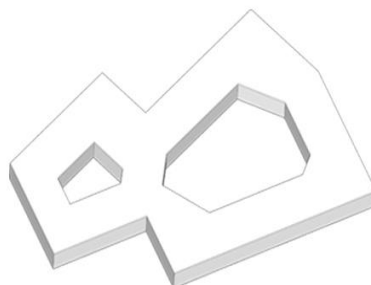
Figure 5 (walking trail in the courtyard)

Finally, in order to respond to the surrounding architectural form and the surrounding terrain, we designed the architectural form as a polygonal line along the terrain (Figure 5). This not only echoes the form of the building surrounding the building, but also combines the terrain of the mountain to design. On the façade, we made the folding roof of the building roof to co-

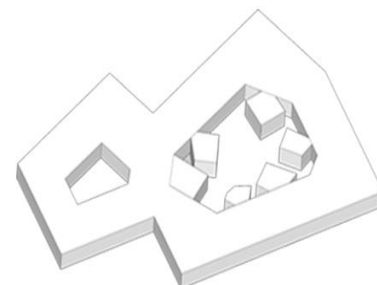
ntinue the idea of this fold line, so that the façade and the plane form can be well combined. Finally, in order to provide the elderly with color material design that meets their psychological needs, the interior of the room is decorated with warm wood to create a good living space and a warm living space.



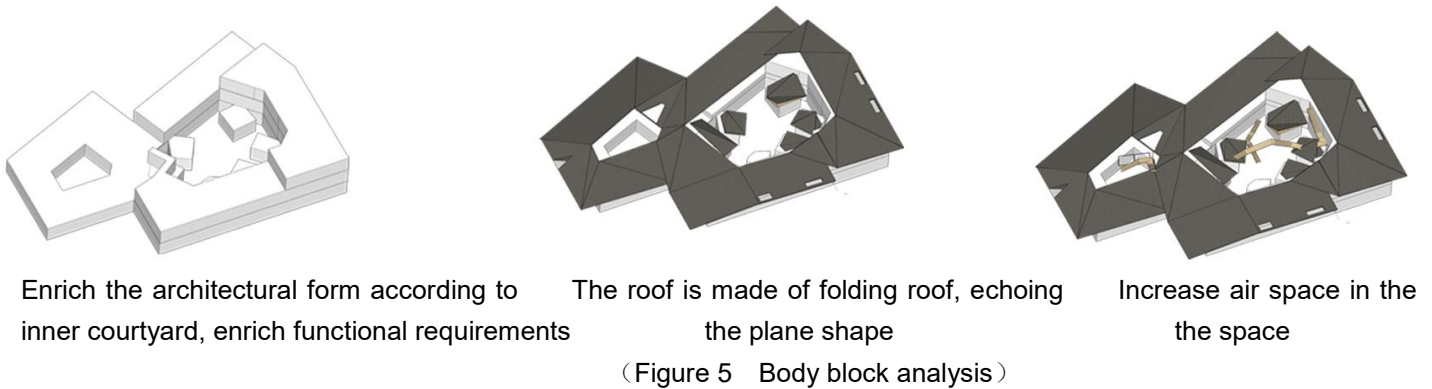
The building edge echoes the site edge



Placed the courtyard in the building for easy daylighting and ventilation



Combine event space with pure interior space



3. Spatial design feature

3.1 Hall space design

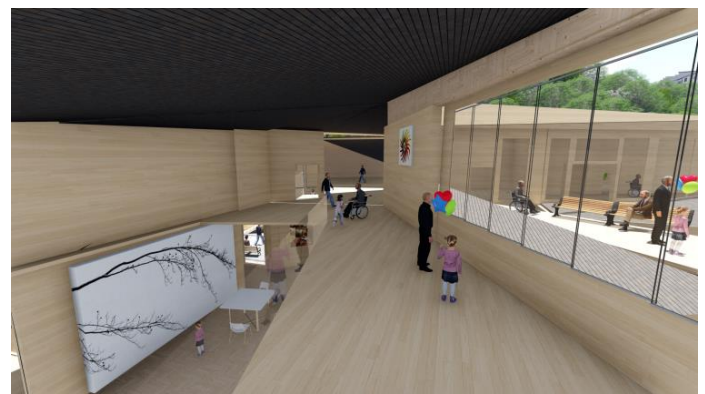
The hallway space of this program (Figure 7) includes functions such as reception, rest, and display. Although its area is not very large, it gives people an open, continuous psychological feeling. The reception desk and rest facilities are located along the wall, leaving a large amount of public rest space in the middle for people to collect and distribute. And from the main entrance location, you can intuitively see the landscape of the atrium space, giving people

a good sense of space. From the second floor space, you can see the layer of personnel activities directly through the hollow part of the atrium, thus eliminating the sense of closure of the space and creating a more interesting space.

Secondly, we also combine the foyer space with the landscape space design (Figure 6). People can see the water landscape behind the landscape wall after simulating the mountain shape, which will naturally form a sense of space.



(Figure 6 Entrance landscape)



(Figure 7 Hall space)

3.2 Fun space design

Most domestic nursing homes are limited to providing sufficient space for public activities for the elderly, but they have major defects in humanized design. As a nursing home that I was investigating at the time, perhaps because of

the cost, the designer set its venue on a platform that had to be reached through a long steep step. Such an event venue is clearly not available to older people whose physical functions are not as good as those of young people. In this way, not only the design of the event

venue completely lost its meaning, but also limited the daily activities of the elderly. Such a lack of design from the perspective of the elderly is obviously flawed and unsuitable.

Therefore, in this design, the author combines the living space of the old man with the atrium space (Fig. 8), so that it can not only break the boring space feeling of simply setting up a circle of corridors around the atrium, but also combine the activity space commonly used by the elderly with the natural landscape of the courtyard, thus giving them a good sense of space.

At the same time, this kind of activity space can also be combined with the corridor space to form an open space for activities. The author believes that this is very important in the design of nursing homes. Because we know that most elderly people have to do exercises and practice Tai Chi to exercise, we think it is very important to set up activity space in the old-age buildings for the elderly to exercise. This will prevent the elderly from having no place to do ac-

tivities due to weather such as rain and snow.

In the atrium space, we also designed a walkway that leads directly from the upstairs to the courtyard space, designed to provide the elderly with a viewable, playable courtyard space. This will not only facilitate the elderly to carry out the necessary activities under the premise of safety, but also facilitate administrator management. This kind of space feels very rich, the old man is active in the courtyard, and the scenery moves with the steps, forming a good space experience.

At each level we have set up the necessary activity space (Figure 9), such as the Sunshine Activity Hall, the public living room, etc. for each floor of the elderly. At the same time, it also forms a semi-public space outside the public and private attributes, which makes the living space and the external space form a proper excess. In the free time, the elderly can go to the sun in this place, take a nap, or plant flowers on the outdoor terrace, so that their daily activities have more choices.



(Figure 8 Courtyard room)



(Figure 9 Roof event room)

3.3 Accessible space design

Taking into account the particularity of the physical conditions of the elderly, we have paid special attention to the barrier-free design in this design. At the main entrance and exit, we

have set up barrier-free ramps, and indoor barrier-free elevators are also available for the elderly. In the design of barrier-free toilets, we have considered many aspects in order to help the elderly to eliminate psychological barriers.

First of all, we set up handrails at the right height and position to help them complete the separate bath operation. And in the interior (Figure 10) we use warm wood materials to create a warm home for the elderly.

Secondly, we also designed barrier-free elevators. The barrier-free elevator car is also equipped with a mobile folding medical stretcher, which can be extended to a length of 1870mm, which meets the requirements of the general population. When the medical emergency function is used, the medical stretcher can be taken out from the rear of the car and used, so that the stretcher can directly reach the living room after the arrival, which greatly shortens the rescue time.

In some details we also pay special attention to barrier-free design. After all, older people are different from young people, and slight bumps at any time can cause fractures and even more

serious consequences. For example, in some sharp corners of stairs, we have set anti-slip strips, which can be very good to avoid the serious consequences of falling fractures caused by unstable standing when they go up and down the building. This allows the elderly to safely carry out daily activities on the empty corridor inside the courtyard (Figure 11).

Inside the living room space (Figure 10) we use a composite window. The window sash of the window can be opened both inside and outside, and the window opening can be adjusted according to people's needs, so as to adjust the air volume and the wind direction. The elderly can open the window normally during normal rest. When resting, the upper part of the window can be turned upside down, and the indoor airflow can be introduced into a higher place to prevent the elderly from suffering from a cold air blow during a break and infecting a cold.



(Figure 10 bedroom)



(Figure 11 patio)



(Figure 12 Fitness Equipment)



(Figure 13 Turning lines in the courtyard)

4. Site Design

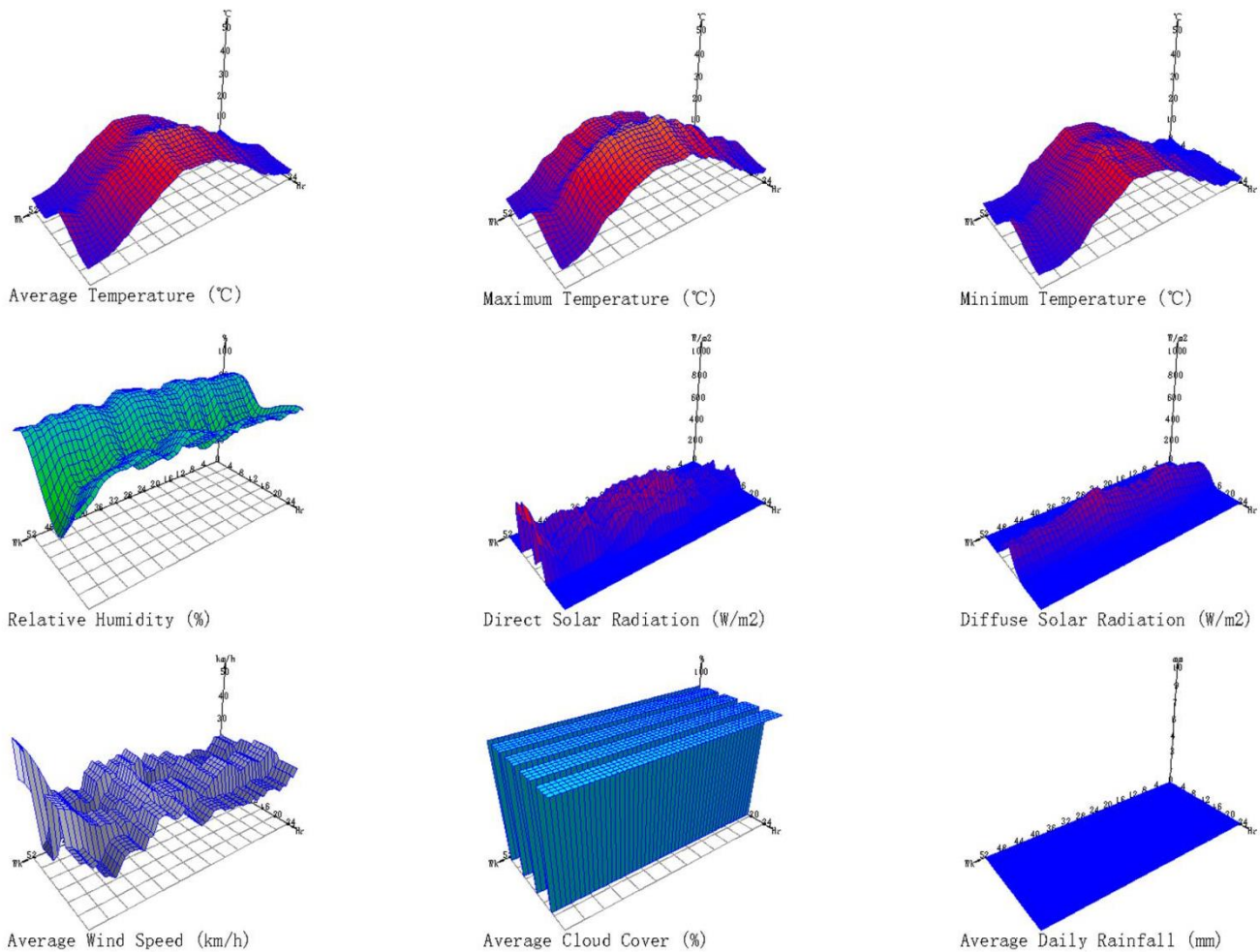
The project is located around a residential area and has a mountain in the north. The air quality is good and the greening landscape conditions are outstanding. It has outstanding conditions for the development of the aged care service industry. Therefore, in the site design, we combine the characteristics of the mountain and the surrounding structure to obtain the form of the fold of the courtyard design (Fig. 13), which fits the surrounding environment. Secondly, in the courtyard, we also call for the form of broken lines, which are designed in the form of fold lines for greening the ground and landscape pools. This is convenient for echoing the architectural form and forming a sense of integration between architecture and the environment. On the other hand, the site itself naturally forms a dynamic sense created by a fold line. In the courtyard, we set up fitness equipment for the elderly (Figure 12), so that they can do outdoor fitness activities after a walk. In some places with good views, we have set up some special architectural sketches, such as umbrella-shaped outdoor seating seats, which can provide a place for the elderly to rest in the hot summer, and this place is conducive to gathering people to form an outdoor Communication space. People can exchange ideas and see the scenery here after a break, and it is easy to form an interesting space for activities.

We use two inner courtyards inside the building to naturally divide the building into two different sections. In the inner courtyard part, we combine the landscape design with the raised living room block design to form an interesting courtyard space. Such a space is not only ornamental, but also has considerable features. People can enjoy the view of the interior of the courtyard in the hallway, or enter the interior of the

courtyard. At the same time, they can also enjoy the fitness activities while enjoying the outside scenery in the activity room.

5. Energy-saving design combined with regional conditions

After analyzing the climatic conditions of Yichang City with ecotec software (Figure 14), Yichang City is a hot summer and cold winter area. The southeast wind prevails in summer and the northwest wind prevails in winter. The annual sunshine hours are 1261-1745 hours, and the air humidity is relatively large. Therefore, in the subsequent design, we consider the use of solar energy combined with geothermal heat pump to energy-saving design of the building itself, which can make good use of solar energy resources and geothermal resources. And this form only needs to be expensive in the early stage, and it is basically all natural and environmentally friendly in the later use, which will be very conducive to building energy-saving design. At the same time, the rainwater recycling system can be used to utilize and recycle water resources in areas with high air humidity. We can use the downpipe to filter and recycle rainwater resources. The filtered water resources can be used for plant irrigation, vehicle washing and the like. This will not only save water resources, but also save domestic and other expenses. Finally, for the problem of western sun in the hot summer and cold winter area, we consider the improvement of the treatment through the form of blinds. When the light is needed, the blinds are adjusted to a larger angle of light. When the sunlight needs to be blocked, the louver angle of the blinds is closed to At a smaller angle, it is possible to regulate the amount of solar radiation during the hot summer months and is also relatively inexpensive in terms of cost.



6. Conclusion

The humanization of old-age buildings has far-reaching significance for such buildings. Unlike young people, they have special physiological and psychological needs. Therefore, in terms of architectural design, we need to integrate from the perspectives of the elderly, family members, care workers and surrounding residents to design a suitable building.

This makes us not only need to consider the architectural design aspects to meet the physical and mental needs of the elderly and the characteristics of the behavioral patterns, but also to realize that for the elderly, it is important not only to get good physical care, but also to support them so that they believe that they have

the ability to be independent in life. Old-age buildings not only need to ensure the safety of the living environment, but also make the elderly feel a sense of accomplishment and confidence in the psychological; maintain the psychological self-esteem of every old person.

This paper hopes to open up ideas for the majority of old-age architectural design workers by providing an excellent design case, and avoiding the relatively empty and simple aspects of the design of aging. Design a truly reasonable and suitable old-age building for the elderly.

References

1. Zhou Yanwei, the elderly demand for room function layout [N] China Real Estate News,2013-10-14

2. Zhou Yanwei, the design of the interior space of the elderly residential housing _ bedroom articles [J] residential area, 2011-06-18

