

Hubei Huanggang Rural Architecture Renovation Design

Yanan Zhang^{1, a}, Jingjie Cheng¹

¹Hubei Business College, Wuhan 430079, China

^azhangyanan@hbc.edu.cn¹

Abstract

With the development of global integration, cultural information from different regions has been fused and gradually evolved into modern culture, and traditional culture has been lost. It is in this environment that the Chinese countryside is gradually assimilated and loses its original rural characteristics. While resisting "globalization", people have paid new attention to the development of "rural architecture". At this stage, the materials and construction of traditional rural architecture are already backward, how to make rural architecture retain its traditional culture and avoid being marginalized by the city and homogenization of architectural forms is a question we should explore. This thesis discusses how to restore the new face of traditional rural architecture and reinterpret the new rural architecture; how to retain and inherit the vernacular elements of traditional rural architecture, adapt them to modern needs, and integrate them into the new rural construction; how to avoid the single type of architecture and create a pleasant living environment with a simple ecological view of nature and a simple approach. In addition, we will reinterpret the value of rural culture.

Keywords

Rural architecture; Vernacular; New rural architecture; Rural culture.

1. Introduction

With the rapid development of China's economy, along with the acceleration of new rural construction and urbanization, the traditional rural model has undergone historic changes, and the rural living environment and lifestyle have also undergone drastic changes. As more and more people go out to the cities and towns, there are many problems that need to be solved in rural construction and transformation. The most prevalent of these is the hollowing out of rural buildings due to population loss, i.e., the abandonment, vacancy and inefficient use of home sites. In recent years, China has increased its support for the construction of new rural areas and villages, and the renovation of rural buildings is an integral part of the rural construction process, so the study has a strong practical significance. The rural construction area is relatively large, so it is necessary to adapt to local conditions in construction planning, reasonably transform the residential area and planning the surrounding and environmental greening issues, and refuse to blindly replicate them, all of which are worth exploring in depth.

Theoretically, the study of the transformation of traditional rural architecture avoids the widespread red-brick houses brought about by the urbanization of rural architecture, and conforms to the trend of new rural construction, restores the original appearance of traditional rural architecture, and protects the development of traditional regional customs and culture[1].

Practically speaking, the transformation of traditional countryside architecture can inject new vitality into the countryside, so that traditional countryside architecture can retain its profound heritage and perpetuate its value. Together with the excavation of local cultural characteristics and the integration of regional cultural characteristics into the architectural space, modern architecture and characteristic culture are combined to retain the most original living

environment, which is conducive to the development of rural characteristics and humanistic style, so that rural architecture can be developed in a sustainable manner.

China's new countryside construction started late, but with the growing acceptance of concepts such as ecological importance by the general public and the side effects of the epidemic, people are increasingly concerned about their environment, and the countryside is no exception, which objectively creates the conditions for the development of new countryside architecture.

2. Related Concepts

2.1. Countryside Architecture

Rural architecture refers to various forms of living places for people in rural areas. Rural buildings are generally located in places with pleasant scenery and fresh air, and are more suitable for people to live in. Since the inhabitants of the countryside are mainly engaged in agricultural production, most of the countryside buildings are built by folk on their own initiative.

In *The World Encyclopedia of Vernacular Architecture*, author Paul Oliver explains: "People's dwellings or other buildings. They are usually built by homeowners and communities, associated with the context of the environment and applicable resources, and using traditional techniques. Any form of vernacular architecture can be built for specific needs and adapted to the values, economy and their way of life within the cultural context that fostered them." This is because vernacular architecture is an essential and important part of the presentation of the characteristic rural landscape [2].

The characteristics of rural architecture are its regional cultural characteristics and the characteristics that are reflected in different regions due to the influence of environment and customs.

2.2. New Rural Architecture

New countryside architecture, also known as new vernacular architecture, "is a tendency to focus on the free conception of architecture combined with local characteristics and adapting to the living habits of people in different region". It has become a product of combining the traditional masonry building shape with the modernist architectural conception. This style is not only distinguished from the historical style, but also familiar to the masses and can gain artistic intimacy [3].

New rural architecture is a unity of modernity and tradition, it is different from the traditional rural architecture with red brick and black tile, it is innovative. In terms of construction, new rural architecture advocates the use of local traditional building materials such as earth, stone, brick and tile, and in terms of construction techniques, it also draws on local traditional skills, thus promoting traditional construction culture and helping to inherit the vernacular and authenticity of traditional rural architecture. Therefore, new rural architecture is also the reuse of old buildings, and seeks new development for old rural buildings, thus extending their architectural life. New rural architecture not only preserves traditional rural texture and rural cultural characteristics but also integrates the advantages of modern architecture.

In the renovation of new rural buildings, emphasis should be placed on the combination of nature, humanity and traditional techniques to maximize architectural renovation. Focused research should be conducted on traditional building structures, practices, and techniques so as to inherit and develop traditional building techniques.

3. Principles and Methods of Rural Architecture Renovation

3.1. Design Principles

First, grasping the local identity of rural architecture. It is necessary to firmly grasp the construction of rural local characteristics, and through the transformation design of the rural surroundings, to carry out effective transformation and renewal design of rural architecture. Therefore, the construction of the local characteristics of rural identity is the basic principle and goal of the creation of new vernacular architecture. In general, the construction of "local identity" should be the primary principle for building rural self-awareness identity.

Second, continuing the vernacular of rural architecture. In the construction of beautiful countryside, the local nature of architecture must be seized. The transformation of countryside architecture should focus on highlighting the characteristics of the countryside, combining with local humanities and customs, and emphasizing the protection and continuation of local cultural traditions.

Third, paying attention to the ecological nature of the natural landscape. When transforming rural architecture, we should protect the natural ecological landscape and carry out reasonable landscape planning. When transforming rural architecture, we should maintain rusticity and uniqueness, but we must also pay attention to the optimization of rural landscape and natural environment and reduce pollution, so as to promote ecological balance.

Fourth, adhere to the principle of people-oriented. Any building renovation should be designed on the principle of people-oriented, grasp the psychological needs of the occupants, combined with their living habits and space needs according to the condition of different spaces and landscape requirements, separate design, reasonable planning space.

3.2. Design Methodology

In the process of renovation and design of rural buildings, on the premise of following the design principles, the original nature of the building site is preserved, so as to retain the uniqueness of rural buildings. Formulate the renovation goals of rural buildings, inherit traditional skills, and get new development in architectural renovation design. Use design methods to maintain the sustainable and healthy development of rural architecture and ecological environment. Maximize building recycling, reduce waste materials and reduce economic costs.

3.2.1. The Original Preservation of The Building Site

In the process of rural building renovation and design, the original preservation of the building site should be respected, and the topography and site planning of the building site should be analyzed to retain the "original nature" of the building, and the renovation design should be carried out around this element to restore the uniqueness of the countryside. And by studying the localized characteristics and humanistic customs of the village, understanding the humanistic characteristics of the village, and integrating the local building materials and original architectural construction techniques to achieve the original preservation of the building site [4].

3.2.2. Formulate Development Goals for Rural Building Renovation

First, in addition to conforming to the relevant construction standards in the construction of rural buildings, the more important thing is to conform to the local characteristics of the countryside. The vernacular architecture should be given a unique cultural heritage according to the human environment and historical culture of the area where the project is located.

Second, as a residential renovation, rural buildings should meet the psychological needs of occupants and fully meet their spatial planning and landscape layout. From small courtyard and

gardens to larger settlements, village, etc., find more representative elements from the characteristics of master plan to inherit and create.

3.2.3. Inheritance and Development of Traditional Skills

China's traditional architectural skills are a very important part of the Chinese cultural connotation. Traditional architectural skills have been passed down from generation to generation by the folk, and have a certain humanistic spirit. The use of the falcon-mou structure used for the beam roof has a strong shock absorption effect, as well as the rammed earth and stone walls used in the old buildings.

In the renovation of rural buildings, we should integrate traditional architectural techniques, add modern architectural elements, and bring forth new ideas, instead of blindly following the trend, which loses the craftsmanship of traditional architectural skills, so that rural architecture also has its rich connotation and beauty in today's era and exist value [5].

4. Design practice: Renovation Design of Rural Buildings in Huanggang, Hubei

4.1. Project Overview

This project is located in Dafo Village, at the foot of Yuchuan Town, Wuxue City, Hubei province. The building is situated halfway up the mountain besides the provincial highway S332, about 180 kilometers from downtown Wuhan and only 4.3 kilometers from the Hubei Xianren Lake tourist resort, about 11 minutes by car. The folk customs of Dafo Village are simple and kind. The villagers are all built on the mountain, and their houses are located on the hillside. The source of income of the villagers mainly depends on the cultivation of rice and other crops, which are cultivated in the terraced fields surrounded by mountains. The climate is subtropical and monsoonal, and fruits such as pears and oranges are grown on the mountains.

With the progress of the times, young villagers in Dafo Village go out to work and rarely go home, which has resulted in the hollowing out of the village. Large areas of rural buildings have been left unused, while the cowshed and firewood house used by the original residents have not been taken care of. It has been abandoned all year round and overgrown with weeds, and the renovation of the homestead is imminent.

4.2. Design Goals

The project mainly uses the design concept of building reuse and sustainable development for renovation. The building utilizes natural light by opening windows toward the light to maintain the air circulation inside the building, so that the building can meet the requirements of energy saving and emission reduction. The materials from old buildings are got reused, and the existing building materials or energy-saving materials are used to transform sustainable performance, so as to restore the texture of traditional buildings and restore the original vernacular nature of vernacular buildings. In the construction of buildings, the maximum use of sunlight and mountain scenery is used to create a sunny living environment for the occupants, and the original surrounding green plants are preserved and restored to the greatest extent during the renovation of the house and the ecology of the original mountain countryside.

4.3. Spatial Layout Design

From the perspective of space layout of the project, the living room on the first floor and the sun room on the second floor are located in the center of the main building, and the dining room and living room at the entrance are in a semi-open space. The semi-open design makes the space more spacious. The large floor-to-ceiling windows in the restaurant can better capture sunlight and integrate into nature. The second floor is designed in a symmetrical style. There

are two bedrooms on both sides of the sun room. Mountain environment, efficient spatial planning on limited land resources, see Figure 1, 2.



Figure 1. First floor plan



Figure 2. Second floor plan

4.4. Detailed Design

The façade of the roof adopts the traditional wooden structure, and the roof cornice adopts the original building structure. The façade of the main building uses red bricks removed from the original building for reuse, and the exterior walls are made of clear-water concrete, which makes the overall building look rough and unmodified and integrates into the surrounding natural environment. The large area of windows on the right side of the main building is to make better use of the local-birth bamboo forest on the right side of the building, so that the residents can feel the pleasure of being close to nature in a country house. The façade of the private cinema uses the effect of the stone wall, and uses the large stones from the demolition of the old building to carry out the "fork flower" method, which is also called the rubble spelling. In this way, the color of the exterior wall of the main building is similar in color. Regarding the doors and windows of the tea room, taking into account the originality of the building, we used the old door panels removed for secondary processing and utilization, so as to achieve "old" but "not poor". As for the production of the windows, they are designed as old-fashioned wooden fence windows, and the exposed rammed earth exterior walls and white walls are used on the interior facade of the tea room to create a sense of impact, so as to enhance the effect of the shabby house hidden in the city, see Figure 3.

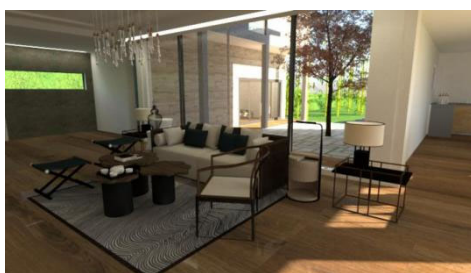


Figure 3. Interior effect



Figure 4. Building renovation effect

4.5. Plant Landscape Design

The climate of Wuxue City is subtropical monsoon, and the common plants are subtropical evergreen broad-leaved forests. Dafozhai Mountain is suitable for large-scale planting of citrus trees, pear trees and other fruit trees, as well as various crops such as rice and rapeseed. In the process of plant landscape design, the author retained a small bamboo forest behind the abandoned house, removed the weeds around the abandoned house, and re-paved the road, and planted citrus and pear trees beside the road, see Fig. 4.

4.6. Vernacular Design

The vernacular nature of traditional architecture is essential in the process of renovation of rural buildings. Traditional countryside buildings are mostly built by folk spontaneously, so when carrying out the renovation of old countryside buildings, we should use the local materials and refer to the traditional construction methods to build. In the project, we retained the traditional wooden structure of the building, using triangular trusses and brick walls together to support the roof beams. The roof continues the local villagers' method of building small green tiles by fixing rafters on the beams and then placing tiles to form a small green tile roof. The cowshed abandoned for many years was designed and transformed into a semi-open space tea room. During the renovation process, we retained the original rammed earth wall, and half of the wall was rammed and exposed in layers.

In short, under the premise of ensuring the reasonable structure of the building, it is renovated and renewed to put in new functional spaces to meet the modern life, avoiding a large number of demolition of old buildings, while saving the energy consumption of new buildings and reducing the pollution to the ecological environment, see Figure 5.



Figure 5. Building renovation effect

5. Conclusion

The renovation of rural buildings is now being emphasized in China, and more and more people are focusing on returning to their roots, thus giving a new development to the old rural farmhouses. By analyzing the impact of the transformation of rural buildings on the recycling of old buildings, this paper deeply studies the guiding role of the theory of architecture in the cycle, organic renewal theory and sustainability theory in the transformation of old buildings, and analyzes in detail the excellent cases of the transformation design of rural buildings in China, summarizes and learns the relevant experience, and tests the feasibility of the theory in combination with the graduation design.

Taking the design of building renovation in Huanggang as a practical case, it is beneficial to extend the life cycle of the old rural stagnant buildings, make efficient use of the surrounding ecological environment for building renovation, maximize the use of space, and integrate the concept of sustainable building renovation into the design, respectively, from the project overview, design objectives, spatial layout, plant landscape design, and vernacular design. Thus, the economic cost brought by the building renovation is reduced, and the reuse of rural building renovation makes the traditional rural architecture get a new development and continuation.

Acknowledgments

Supported by the Hubei Provincial Department of Education Philosophy and Social Science Research Guidance Project (No. 20G116).

References

- [1] Y.D. Chen. A study on architectural renewal based on the protection of traditional village style and appearance: an example of Mangzhangbaozi in Asbestos County. (Southwest University of Science and Technology, China 2019)
- [2] Y.B. Cui. Research on the creation of new vernacular architecture under the vision of constructing. (Xi'an University of Architecture and Technology, China 2015)
- [3] X.J. Liu. The world of architectural art. (Jiangsu Science and Technology Press, China 2015)
- [4] Xiang Lei. Cultural Return of Traditional Architecture (Nanjing University of Technology, China 2013)
- [5] J.T. Zhang. Reflections on New Vernacular Architecture in the Rural Construction Scenario. (China Academy of Art, China 2019)