

Study on the Design of New Houses in Southwest Hunan under the Strategy of Rural Revitalization

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Abstract: with the Continuous Implementation of the Strategy of Rural Revitalization in China, the Design of New Rural Houses Has Been Widely Concerned by the Society. in View of the Shortage of Building Materials, Poor Fire Resistance and Sanitation of Traditional Residential Buildings in Southwest Hunan Province, Scholars Pay Attention to These Problems. At Present, the Types of Building Materials Are Constantly Rich, Providing More Choices for the Design of Residential Buildings in Southwest Hunan. How to Keep the National Culture of Southwest Hunan and Make the New Houses Not Affect the Village Style is the Problem That the Designers Should Solve. This Paper Studies the Selection of New Residential Materials, Residential Design Modeling and Techniques, and Puts Forward Corresponding Suggestions, Hoping to Expand the Design Ideas of New Residential Buildings in Southwest Hunan.

1. Introduction

1.1 Literature Review

The Design of New Residential Buildings in the Southwest of Hunan Province Has Been Widely Concerned by Designers. Based on This, This Paper Studies the Residential Buildings in Southwest Hunan from Various Aspects, Hoping to Explore a New Residential Design Scheme (Song et al., 2017). Guo Jianming and Yu Wanfu Believe That Residential Building Culture is an Important Part of National Culture and Plays an Irreplaceable Role in National Cultural Heritage, So Designers Need to Integrate Residential Building and Cultural Heritage (Guo and Yu, 2019). Zhao Yanxia and Zu Haiqin Believe That the Construction of New Houses Can Improve the Living Environment of Villagers, Improve the Quality of Life, and Promote the Development of Rural Revitalization Strategy (Zhao and Zu, 2013). Cao Zitian and Other Scholars Believe That the Design of New Residential Buildings in Western Hunan Needs to Optimize the Design Scheme of New Residential Buildings with the Theme of Low Cost and Low Energy Consumption (Cao et al., 2019). According to Yang Junlin and Liu Jun, the Characteristics of Western Hunan Dwellings Are the Cultural Embodiment of Western Hunan for Thousands of Years, Reflecting the Aesthetic, Wisdom and Belief of Western Hunan. Therefore, the Design Scheme of New Dwellings Needs to Integrate the Local Culture to Make the New Dwellings Reflect the Local Cultural Characteristics (Yang and Liu, 2015).

1.2 Purpose of Research

How to ensure that under the premise of highlighting the national cultural characteristics of Southwest Hunan, the optimization of residential design has been the focus of many designers (Zhang and Li, 2017). In view of the shortage of building materials, poor fire protection and sanitation in traditional residential buildings in Southwest Hunan, designers need to combine modern design techniques with local residential styles to solve these problems and design new residential buildings that are more humanized and suitable for living (Chu, 2010). At present, there are still many problems in the construction of residential buildings, which leads to the lack of villagers' participation and enthusiasm in the construction of residential buildings (Jiang, 2018). How to solve these problems needs to be considered by designers. Based on this, this paper studies the design of new houses in Southwest Hunan.

2. The Current Situation of the Development of New Houses in Southwest Hunan

2.1 “Small Western-Style Villa “Appears in the Villages of Western Hunan

With the implementation of the strategy of rural revitalization, the rural construction and economy in the southwest of Hunan Province have developed rapidly. Some well-to-do villagers in the countryside demolish old houses and build new ones. “Small foreign buildings” began to prevail in the village, and continue to increase, as shown in Figure 1. With the rise of “small foreign buildings”, the number of houses with traditional ethnic characteristics in villages in Southwest Hunan is decreasing, which not only destroys the original style of villages, but also causes the lack of traditional ethnic culture in villages, and destroys the historical culture and ethnic characteristics of villages.



Fig.1 New Small Western Buildings in the Village

2.2 Shortage of Building Materials

Because of the abundant forestry resources in the west of Hunan Province, most of the houses in the villages are made of wood. With the over exploitation of trees and the lack of corresponding planting behavior, the forestry resources in the Western Hunan Province are decreasing. In view of the lack of forestry resources in Western Hunan, the state protects the established resources in Western Hunan to prevent serious damage to the forestry resources in this area. Due to the high requirements of wood for building construction, the length, diameter and wood of trees need to be screened, and there are not enough qualified wood, which leads to numerous cases of building stoppage in the construction process, which not only wastes the forestry resources but also wastes human resources.

2.3 Poor Fire Resistance of the House

Because most of the buildings in Western Hunan are made of wood, the fire resistance of these wood is very poor, once a fire occurs, it can not protect people. There is no awareness of the maintenance of power lines in the village. Due to the long service life of the lines and the serious aging of the lines, it is extremely easy to cause fire after the aging of the lines. At the same time, in rural areas, open fire is widely used in daily life such as cooking, which is also the main cause of fire. In the village, due to the close distance between houses, the fire is not easy to be controlled when it occurs, as shown in Figure 2. Because the roads in the village are narrow and remote, after the fire, the fire trucks can't arrive in time, which makes the fire overflowing.



Fig.2. A fire in a village in Western Hunan

2.4 Village Health Environment to Be Improved

Affected by the climate in Western Hunan, there are many snakes and insects in Western Hunan. Therefore, the houses in the local villages are mainly in the form of dry fence buildings, feeding livestock and poultry in the lower layer, and living place in the upper layer. This architectural style of mixed human and animal can not guarantee the health environment, and the living environment of residents is not healthy.

3. Difficulties in the Design of New Houses in Southwest Hunan

Since the central government implemented the new rural construction policy in 2006, all levels in Western Hunan have responded to the central government, formulated relevant policies, implemented the strategy of rural revitalization, and promoted rural development. On the one hand, all government departments need to improve the rural infrastructure first, and then, the village needs to be transformed. For example, roads between villages will be hardened, and water and electricity, toilets and livestock breeding circles will be rebuilt. On the other hand, make plans for the construction of each village.

In the actual implementation of the program, some aspects are unsatisfactory. Through the summary, the following four reasons are obtained. First, in the process of village construction, the participation of villagers is low. When making the construction plan, each department ignored the local villagers' opinions, resulting in the lack of villagers' participation in the construction process. Secondly, the publicity of traditional culture and ecological environment in rural areas is not enough, which leads to the lack of relevant knowledge of villagers. Third, there is a lack of construction funds. In view of the low level of economic development in Western Hunan, the income level of local villagers is relatively low. Therefore, in the construction of rural facilities, it is impossible to invest enough funds, but more in the form of labor force to participate in rural construction. Fourth, most villagers lack enthusiasm for rural construction. In the process of rural construction, only a small number of villages have some understanding of the country's strategic policy of rural revitalization, and all work contents have been actively carried out, while most villages have encountered various obstacles in carrying out all work, and lack of enthusiasm for the Rural Revitalization Strategy.

4. The Way out for the Design and Development of New Houses in Southwest Hunan

4.1 Develop People-Oriented Development Strategy

Traditional villages are not only the individuals to be protected, but also the villagers' life and spiritual home. Compared with the city, the elements of traditional villages are much simpler. Because most of the villagers have kinship, the influence of consanguineous clans on the villages accounts for an important proportion. The village management is more through village rules or oral

agreements between the villagers. The protection of villages in China should be developed in the direction of residents and building forms, and meet the villagers' yearning for life based on their actual needs. In view of the fact that the current strategy of Rural Revitalization in China belongs to the government decision-making, and all departments cooperate with each other. The importance of the neglected villagers in it leads to the lack of enthusiasm of the villagers, and it is difficult to participate in it. This problem causes the villagers to have a negative impact on the local traditional cultural identity, and limits the future development path of the village. Therefore, in the formulation of the strategic plan of rural revitalization, we should determine the development strategy of the villagers. The specific strategies are: to protect the original ecological environment from damage; to protect the villagers' living habits from impact; to solve the basic living problems of the villagers; to maintain the original order of the village; to cultivate the villagers' sense of identity with traditional culture.

4.2 Material Selection of New Residence

In order to ensure the traditional style of residential buildings in Western Hunan, the building materials should conform to the characteristics of traditional culture and select local materials. In the construction of residential buildings, the factors of energy conservation, green and environmental protection should be fully considered, and the characteristics of green and environmental protection of residential buildings should be guaranteed on the premise of retaining the national characteristics of Western Hunan. There are three recommended materials for residential construction: first, wood. In the construction of traditional houses in Western Hunan, wood is the main construction material. Due to its advantages of environmental protection, earthquake resistance, moisture-proof, convenient maintenance and short construction period, wood has always been the most ideal building material for the people in Western Hunan. Second, bamboo construction materials. In recent years, due to the advantages of bamboo materials, it is widely used in the construction of residential buildings. Bamboo decoration and bamboo wood-based panel are commonly used bamboo products in the current residential construction. At present, the bamboo materials developed in China can be used for wall materials and bearing capacity of houses with a span of more than 6 meters. At the same time, with the continuous development of new bamboo materials such as formaldehyde free bamboo materials and bamboo decorative boards, the types of bamboo materials have been expanded. The wide application of bamboo materials increases the diversity of building materials. With the development of more and more new bamboo materials, bamboo materials are loved and used by the majority of people. Therefore, bamboo products can be used in the construction of residential buildings in Western Hunan. Third, plant fiber wall. Plant fiber wall material is a kind of building material with plant fiber as raw material, which has the advantages of energy saving and waste utilization. Plant fiber is very common in villages, and the source of plant fiber material is very wide. The common fibers in the village include cotton fiber, hemp fiber, wood fiber and bamboo fiber. The raw materials used for fiber wall materials include corncob, straw, bamboo materials, wood, etc. Plant fiber cement board, paper straw board and wheat straw wood-based board are common fiber walls in the current market.

4.3 Modeling Design and Design Techniques of New Residential Buildings

For the residential design in Western Hunan, we should first highlight the traditional characteristics of Western Hunan. In the traditional houses of Western Hunan, stilts, leaky windows and capitals all contain the characteristics of Western Hunan national culture. Due to the differences of ethnic cultures in different regions, the local residential style factors should be included in the reference factors in the design of residential buildings. Combined with the local environment, the architectural scheme of residential buildings that conforms to the local cultural characteristics and can be combined with the environment should be designed. Secondly, the color of residential buildings should be coordinated with the environment to highlight the local cultural characteristics. Finally, the traditional residential style and modern design style are combined. The traditional residential elements in Western Hunan are refined, combined with modern design methods, and modern building materials are added to the design scheme to highlight the residential style in

Western Hunan.

In the design of residential buildings, the characteristics of Western Hunan residential buildings are highlighted from four aspects: culture, space, form and order. During the design, the characteristics of building elements should be modified to ensure the continuity of the characteristics. Through two dimensions, cultural interaction and digestion, space assimilation and alienation, form harmony and contrast, order continuation and reconstruction.

Table 1 Protective Design Method

Classification	Design techniques	Characteristic
Culture	Cultural interaction	Exchange concept and culture to form a whole
	Cultural digestion	The conflict between concept and culture is in the opposite state
Space	Spatial assimilation	Combine new elements with traditional elements on the premise of retaining the original historical elements
	Spatial alienation	Fully integrate traditional architectural elements into the new building, or only retain some elements of the old building
Form	Form harmony	Covering the concept of historical elements
	Formal contrast	Compare new and old buildings through different forms of combination
Order	Continuity of order	To sort out architectural vocabulary by means of hierarchy and sequence
	Reconstruction of order	Looking for elements of the same nature in new and old buildings

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