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Research on Implanting the Sustainable Design in Rural Revitalization

Taking the Qianyang Village in Jin'an District, Fuzhou City as an Example

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ABSTRACT

Aiming to explore the study on revitalizing the village of Qianyang village in Jin'an District of Fuzhou City, this paper attempts to put forward a new design strategy for Qianyang Village with the concept of sustainable design and planning. Many traditional dwellings in China's rural areas are abandoned due to the outflow of population. As the traditional rural dwellings have been unable to adapt to the increasing production and living needs and aesthetic concepts of villagers, the rural regional cultural characteristics of ancient dwellings are gradually disappearing in the absence of scientific guidance and systematic planning. Therefore, it is hoped that sustainable design strategies can be proposed for rural reconstruction of Qianyang Village.

Keywords: *research on rural revitalization, sustainable design, rural regional culture*

I. INTRODUCTION

With the diversified development of global economy and culture, the exchanges between regions are increasingly frequent, and the cultural differences between cities and villages are narrowing. As the material carrier of culture, this change appears more prominent in architecture. However, due to the increasing number of traditional rural dwellings in the wave of urban migration, many characteristic ancient dwellings have been left unused, which seriously affect the overall rural style. Therefore, taking Qianyang Village, Jin'an district, Fuzhou City as an example, this paper, on the basis of analyzing the characteristic architecture of traditional dwellings, tries to put forward the idea of taking rural regional culture as the main line and sustainable design as the concept, so as to provide new guidelines for the transformation design and planning of traditional dwellings in Qianyang Village.

This paper is mainly divided into three parts to illustrate how sustainable design can be applied in the transformation design of traditional dwellings in Qianyang Village. The first part introduces the historical context and development status of Qianyang Village; the second part presents several cases of transformation and design of ancient dwellings; and the third part puts forward several directions and makes discussion over them under the theory of maintaining the traditional residential cultural value development. Finally, the author tries to put forward the possible strategies to maintain the cultural value of traditional dwellings and implant sustainable design and transformation techniques in Qianyang Village through induction and summary.

II. CURRENT SITUATION OF QIANYANG VILLAGE IN JIN'AN DISTRICT, FUZHOU CITY

The Jin'an District of Fuzhou (ancient Minxian County and Houhuan County of Fuzhou Prefecture) is located around the urban area of Fuzhou: the inner ring intersects with the Gulou District, Taijiang District and Cangshan of Fuzhou from north to south; the outer ring is adjacent to the east China sea in the east, facing Changle District across the river in the southeast, bordering Minhou County in the south and west, Luoyuan County in the north and Lianjiang County in the northeast. Located in the north of Fuzhou City, the Qianyang Village of Shoushan Township surrounded by mountains is a secluded village with beautiful environment ("Fig. 1").

Fig. 1. Current situation of Qianyang Village.

[a.] Photographed by the author.

This village, hidden in the north peak mountain area, is known as the "backyard garden" of Fuzhou City. In 2017, the village was selected as one of the model villages of rural living environment and beautiful village.

III. SEVERAL TRANSFORMATION CASES OF THE FACADE OF ANCIENT RESIDENTIAL BUILDINGS

A. *Current status of ancient residential buildings renovation*

The ancient residential buildings to be transformed are located in Qianyang Village. Among them, Q329, Q330, Q332, Q333, Q337 and Q338 are reform cases. Due to the age of the construction of many ancient residential building materials appear damaged ("Fig. 2"). The building materials are mainly made of red brick, grey brick and mixed earth, plus part of the wall is weaved by bamboo and rammed by earth. After the long years when it hasn't been renovated since it was built, the structure of the beam is broken due to dislocation and the rammed earth wall suffers from a serious shedding problem. And the support wooden pillars began to rot ("Fig. 3").

Fig. 2. Status of ancient dwellings Q329-Q332 before renovation.

[a.] Photographed by the author.

Fig. 3. Elevation of the ancient residence Q329-Q332 after renovation.

In light of this, in addition to repairing the damaged building materials, sustainable design materials and techniques were introduced into the renovation design. The transformation scope is divided into interior and main body of the building, in which the building skin is mainly made of steel, and the outer layer is made of bamboo, trying to decorate the cement facade with some of nature's strongest plants. Some of the ancient residential buildings demolished the original earthen and concrete structures and built brick houses in the buildings. The original brick buildings continue their design with the brick structure, which shows respect for the original architectural design concept.

B. *Renovation design of ancient dwellings Q329-Q332*

The building materials of ancient residential buildings Q329- Q332[1] located in the entrance of the Qianyang Village are mainly made of brick structure and mixed soil. Since the brick made ancient dwellings are temporary architectural design techniques, efforts are made to remodel the outer wall, retaining the original red brick as the basic element, innovating on the basis of the old house's shape, and remaking the appearance of the brick building. After the overall transformation, the modern design building is composed of simple geometric lines. The original mixed earth building is painted with pure white, creating a unique tranquil atmosphere of the site. Under the premise of retaining the brick structure design, attempts are made to use regular block faces for irregular arrangement to form a unique geometric relationship with the surrounding area. At the same time, the window reconstruction is also carried out, which enlarges the original openings and repositions the harmonious relationship between the building facade and the windows.

Invented by the Chaldaic and spread to the world, red brick is a commonly used material in traditional architecture. Yet with the promotion of new building materials such as modern mixed earth and tempered glass, this building material is gradually eliminated. The red brick material is pressed into shape manually or mechanically after shale, and the coal fiber is crushed, mixed and kneaded, and becomes sintered brick after

[1] This is the number of "Cross-straits Creative Highlights of Rural Home Stay Design Competition".

being dried and fired in an oxide flame at a temperature of about 900 ℃. The beauty of red brick lies in its simplicity and absence of decoration. With rustic and rough appearance, it gives a sense of cheapness, but has solid and durable texture. And because of ventilation and heat dissipation effect thanks to the porous structure, it is widely used in old buildings. In light of the red brick's feature of uniformity in size and volume in this case, irregular intersperse is made to rearrange it, so as to form a building with characteristic facade.

C. Renovation design of the ancient residence Q337-Q338

In the renovation of ancient residential buildings Q337- Q338[2], the clothe wrapping around the human body is taken as the concept. Fabric has the function of stretching and opening with the structure of a surface interlacement, which provides reference for the structural surface of architectural exterior where people live. Steel are used as the main structure and the outer layer of bamboo as the building exterior. Attempts are made to decorate the facade with the strongest plants in nature ("Fig. 4"), and integrate the ancient residential buildings into the surrounding environment. In addition, in view of the replaceability of bamboo ("Fig. 5"), the iron structure is combined with bamboo in the building facade, which is designed for the convenience of bamboo replacement. As a representative plant of China, bamboo is also one of its symbols. The design technique used in this case is extremely to that in the bamboo house designed by Kengo Kuma[3], a Japanese architect; according to him, accuracy adjustment is a core issue of the "building method"; buildings located in cities and in the mountains face different environments of precision. In mountains, layered mountains, irregular spreading trees, naturally twisted branches, rugged paths all compose a low-precision nature environment. In the city, the broad straight road, soaring skyscrapers, glittering boutique window, all belong to the high-precision artificial environment.

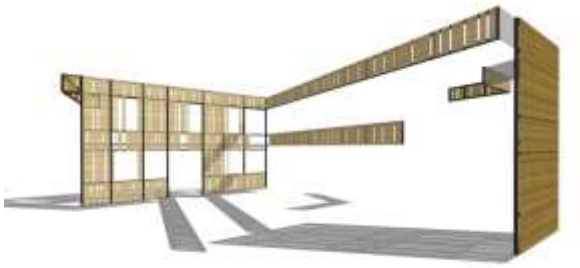

Fig. 4. Schematic diagram of the architectural exterior structure.

Fig. 5. Lighting diagram of architectural exterior and bamboo.

For Kengo Kuma, the roughness (low precision) of the landscape around the Great Wall's bamboo house was very attractive, and he did not want to destroy it with the construction of the house. Instead, he roughened the building based on the precision of the surrounding environment, thus harmonizing the two. As for the materials, Kengo Kuma found that bamboo, which is often used in China as a scaffold, was suitable for the building because of its roughness (low precision) and thus got the conception of a bamboo house.

"Site accuracy" is an important basis for dealing with the relationship between architecture and environment — through the material of bamboo the building is made rough, so that the charm of rugged environmental (low precision) is not destroyed by the construction site. Therefore, the low precision of uneven bamboo makes the building integrated with the natural environment, producing a refreshing effect. At the same time, the existence of bamboo gap is similar to the blank space in Chinese landscape painting, and the artistic treatment techniques such as overbleaching in

[2] This is the number of "Cross-straits Creative Highlights of Rural Home Stay Design Competition".

[3] Kengo Kuma, a famous Japanese architect, has won architecture awards in Japan, Italy, Finland and other countries. His architectural works exude Japanese style and the oriental zen and are known as "negative architecture" and "Kengo Kuma Style" in the industry.

the classical architectural complex, which exudes the charm of oriental speculative style — the closed interface of the building is broken down by creating gaps, which shows the diversity of the building outline and filters the surrounding environment into the interior of the building in a vivid and intense way.

IV. DESIGN STRATEGY BY USE OF SUSTAINABLE DEVELOPMENT CONCEPT

Since Qianyang Village has rich cultural tourism potential, sustainable design is a feasible direction without damaging nature and culture tourism. Accordingly, several plans are proposed for discussion of this argument:

A. The sustainability of integrated development of rural tourism and cultural and creative industries

Tourism is an experience economy as well as a creative and aesthetic economy. The development of rural tourism relies on rich and varied cultural resources and emphasizes outstanding creativity and characteristics. There is a need to explore, integrate and stimulate the soul of the cultural tourism resources of ancient towns for cultural and creative industry, so as to stimulate its core competitiveness and implement the development of cultural and creative products, and create better products to meet the needs of consumers. Therefore, the sustainable development of tourism in ancient towns must be integrated with the interactive development of cultural and creative cultural environment, technology, division of labor, etc., to form its own distinctive industrial layout and avoid being similar to other ancient towns.

B. The sustainability of ecological culture

Ecological culture is an extension and innovation of culture in a specific environment. It mainly advocates harmonious coexistence between man and nature, a green way of life and civilized human morality, so as to make people really understand, worship, protect and enjoy nature. As a rising new culture, ecological culture is a concept system that advocates harmonious coexistence between man and nature.

Providing the theoretical basis for sustainable development and applying the ecological culture of scientific theory contribute to the coordinated development of tourists and the environment. However, rural tourism itself is actually a carrier of ecological culture. Like Qianyang Village, it contains rich cultural flavor and fully demonstrates the harmonious coexistence of human and nature.

Village is a special resource that can be used. It is irreplaceable, non-renewal, and public and cannot be manufactured. Regardless of who created and preserved them, the villages are essentially a cultural heritage and are therefore regarded as the wealth created and shared by mankind. Therefore, in the development of rural tourism, each tourist and tourism developer should establish ecological and cultural concepts, so as to make rural tourism resources and promote the sustainable development of tourism.

C. The sustainability of community construction

Community construction [4] is a comprehensive design system of architecture, planning, landscape design and other disciplines.

The community needs to do a good job to coordinate the cooperation and common management. The role of local governments in this strategy is very important, because development planning and mobilization of funds, technology, talent, implementation of preferential policies are all of great significance. And how to guide it to participate in the community construction, and operation management is also an important subject.

In addition, artists should be introduced to the community so as to let artists meet the neighborhood association because of the plan. Under the establishment of consensus, the two are the subject of each other and then support each other. The art action strategy of the community is "the team replaces the individual", in which the community group plays the communication role and the art specialists act as the cooperator of resource and creation. The community art project includes three aspects: "goal", "community" and "art". In the initial stage, the community and the artist should establish a partnership and develop a common concept for the project — constructing a "conforming concept".

V. CONCLUSION

To sum up, it is suggested to enhance the cognitive direction of rural tourism development, and then cooperate with the government to promote the development and construction plan, in order to build a sustainable activation of the region. In the study of ecological tourism strategy, it is suggested to develop in the form of art space, and excessive development of public facilities will affect the comfort of the original space. Only when the strategy is operated in the method of subtraction can the village return to the originally simple and unique style. In addition, in terms of the design strategy of ancient residential buildings, it is hoped that the original facade can be integrated, so as to

[4] Residents living in the same geographical area continue to act collectively to address the issues of life facing their communities together, and common benefits are created when they solve problems. Gradually, residents establish close social ties with each other and with the community environment. This process is called "community construction" namely.

present the residential architectural features of Qianyang Village. At the same time, Qianyang Village will be shaped into a community ecological museum.

This study also suggests that Qianyang Village can integrate cultural resources with local activities, and promote local cultural legend through festivals or cultural activities, so as to make local characteristic management and economic industry present a win-win situation and thus enhance the unity local residents. In the process, the concept of ecological cultural tourism and local organizations can be combined to create jobs for grassroots people, so as to improve the added value of ecological tourism industry. It is also suggested to integrate the special landscape and folk activities in Qianyang Village to form a sustainable ecological community museum strategy and concept, so as to enhance the awareness of local culture and living environment. It is expected to integrate "industry, government, universities and research institutions" and local residents to participate in the construction, so as to improve the quality of local "living" environment, attract more tourists interested in ecological tourism, and further improve the quality of ecological tourism "production" and residents' income. The concept blueprint of "cultural and ecological museum of the community" should be taken as the cold steel for Qianyang Village to promote cultural and ecological tourism and local development.

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