

# Study on “Eco-Wisdom” Construction Planning of the Traditional Rural Settlement in Sichuan Mountain Area

Fan Ding

Leshan Normal University, Leshan, Sichuan 614000, China

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**Abstract:** The settlement space of traditional rural villages in Sichuan features the characteristics of a typical mountain landscape, which is also the main feature of the terrain and land forms in Sichuan province. These traditional villages are scattered among them. Sichuan province enjoys rich plant and animal resources as well as endowed with comfortable climate conditions. The space combines with simple and distinguishable local cultural and characteristics, which created a beautiful village with the characteristics of the mountain landscapes. We can introduce the ancient “ecological wisdom” and make plans for existing resources and traditional villages, so as to further carry out rural tourism and tap the potential advantages of resources, environment and geographical, to contribute to the revitalization of rural areas in Sichuan.

## 1. Introduction

Judging from the arrangement of the traditional rural settlements in Sichuan, those rural settlements have shown a “building on the mountain” situation, which is different from the rural settlements in the central plain or the middle and lower reaches of the Yangtze River. From that perspective, three issues need to be considered: (1) how to highlight the characteristics of regional culture, and reflect the characteristics of traditional residential buildings and the places. (2) “Eco-wisdom” does not mean to negate traditional culture and rely solely on technology and hardware; how to inherit the essence of residential houses to improve the traditional rural living environment is an important way. (3) To achieve balanced development from three aspects: culture, new socialist countryside and smart countryside [1].

## 2. Traditional Rural Settlements Are an Important Part of Architectural Cultural Heritage

### 2.1 Architectural Cultural History of Traditional Rural Settlements

As the traditional rural settlement space reflects the local geographical environment as well as folk customs, it shows the relationship between architecture and society and also the unique architecture of traditional village of the mountain landscape type in Sichuan. Against the backdrop of rapid urbanization in China, the appearance of traditional settlement space has been greatly changed and affected, which can be reflected in two aspects: the village loses its characteristics and becomes an accessory of the city. On the one hand, urban culture prevails in the countryside and on the other hand, the rural settlement space has been damaged by the “urbanization” construction, which also reflects the fragility of the traditional village. (It) can be explained by economic development, which caused a large number of spatial forms with regional cultural characteristics gone. Compared to the sky crappers in cities, the traditional countryside can show well-preserved natural ecology and architectural culture, which can be dated back to over thousands of years.

### 2.2 “Ecological Wisdom” is an Important Content of Modern Architectural Culture

From the point of view of “ecological wisdom”, first of all, the understanding of ecological wisdom is based on the science and technology, environmental protection, culture and livability of

modern architectural culture. The analysis of traditional rural settlement patterns and people-centered design concept reflected by ecological wisdom, which injects traditional village into new blood. Ecological wisdom reflects high content and high pursuit in the pattern, style, infrastructure, and artificial environment. What is the most important is that the creation of “ecological wisdom” is to address the weaknesses of traditional settlements. By keeping inheritance and retention, rational development and reasonable use, non-damage in mind, we can strengthen the livability and functionality of the space, which is also one of the characteristics of ecological wisdom. For example, rural farmers still regard agriculture as their main business. Fields are as important as children for farmers, making the buildings preserve or even improve the observation site for farmland water conservancy and poultry in the settlements. In addition, we must pay close attention to optimizing the spatial pattern and form of rural traditional settlements: (1) define objects that should be protected first. (2)The creation of “ecological wisdom” settlement will not only decrease life quality of villagers, but also help to achieve the evolution of rural traditional settlements.

### **3. The Status Quo of the Traditional Village Construction in Sichuan**

#### **3.1 The Scattered Space Layout and Poor Living Conditions**

Due to the geographic characteristics of Sichuan province, traditional villages have formed a sporadic non-polymers featuring self-centered, randomly constructed, scattered layouts in the long-term evolution without overall planning and functional zoning, which not only brought difficulties in the transformation but also caused wasting land and environmental pollution. Despite the fact that Sichuan is developing rapidly and has access to convenient transportation and internet, updated information and colorful life, there are still many deficiencies in the modern concept of “ecological wisdom” and livable conditions. For example, insufficient medical outlets and rural welfare, low education level and few schools, and delivery cannot be reached some places and severe environmental pollution, and the treatment of sewage and garbage is relatively basic, together with the backward construction of some roads, greening, hydro power and other infrastructure. All that problems need to be solved by planning and designing of “ecological wisdom” [2].

#### **3.2 The Unobvious Regional Characteristics and Non-Cultural Traceability of the Aggregation Space**

The rural architecture of Sichuan has been greatly influenced by the city and foreign culture these years. Many people have built grand buildings after returning from working in the city and a two- or three-story reinforced concrete new house can be seen everywhere. And some of them may even want to have “urbanized decoration”, which has also affected the overall development of the village. For example, there are more cement roads in the countryside rather than the soil mud. As mud road is not suitable for rainy days, we need to create a better space with some new technology. These foreign newly built dwellings are so luxurious, spacious and bright that they ignore the thousand-years old folk culture and regional characteristics. “The development of society has never missed any corner. However, people in the corner cannot see their own beauty.” said Yu Zhenhua, awakened everyone. How to better realize the creation and reuse of traditional rural aggregation space in the new era is a big issue in the countryside. What's more, the construction of the new countryside in the current village brings a phenomenon that I do not know “Who am I” and 'where do I come from'. That is certainly not a philosophical issue but a question about “I am a peasant and the thinking of rural development.” Not knowing where our ancestors came from and when our village was built is a disrespect for history. What is particularly distressing is the blind demolition and construction, which has destroyed the architectural heritage and ancient trees with historical value. It violates the principle of sustainable development in building a new rural area with socialist features.

## **4. “Planning Strategy for Aggregation Space in Eco-Wisdom” New Rural Area**

### **4.1 Layout Design Guided by the Natural Environment**

Taking the status quo of the aggregation space of traditional villages in the Sichuan into consideration, we may make plans as the following aspects :

1) The relationship between the natural environment and water: In Sichuan , as the water conservancy irrigation network system and water resources are relatively abundant. The traditional villages are often backed by mountains and water, and we need a new relationship between natural environment and water, which includes the relationship between mountains and water, forests and water, people and water, as well as water and water. Developing around the “water form” is also an important part of our traditional architectural culture.

2) The relationship between landscapes and fields: The fields in the Sichuan are closely related to people's lives, which shows that a harmony relationship between nature and man. It has formed between the landscapes and the fields, traditional villages. The great integration has been achieved in the history of China. All that need us to consider well and the space should be field-centered and meanwhile the design should be tailored to the needs of the water shape, landscape, and farming culture.

### **4.2 Carry out “Ecological Wisdom”Rural Residential Layout on the Basis of Traditional Rural Layout**

The traditional rural layout is the child of the natural ecology and farming culture of people's long-term life. It is based on the naturalness of the village and the traceability of culture, which will not change traditional customs and will not try to design the layout that the villagers and culture of the territories can't bear. So from this perspective, we believe that “ecological wisdom” new rural residents means an upgrade and transformation.

1) Centralized layout: The residential area adopts the layout of group separation. The farmland is retained between the layout groups to ease the impact of large-scale residential land on the current environment while continuing the dependency relationship between farmers and farmland.

2) Scale Presentation: the Size of Each Group is Controlled within the Range of 4.5ha, and the Number of Resettled Persons Per Group Does Not Exceed 1,000 People.

3) Characteristic design: Divide the functional area of the village (using natural colors, which must have a high degree of integration with the environment) into guest houses, residential areas, activity areas, and agricultural cultural areas by using different colors .

4) Setting the boundary: For mountain land forms of Sichuan, we will use the forest disk to plan the boundary. Based on the existing forest disk range, we will use the current water system as a boundary to form a new forest boundary through deformation, expansion, and reduction, which can better reflect the relationship of living and the different ways of grouping. It can better maintain the normal state of trees and natural ecology in the original forest plate, and the integrity of the existing irrigation system and their stability [3].

### **4.3 The Refinement of Rural Building Space and Application of Digital Technology**

The local dwelling space should maintain its original spatial structure, like the courtyard complete the refinement of its space structure by refining. At the same time, they must achieve the diversity and scientificity of the main functional space on the main body of its building, including the connection of the house, bedroom, kitchen, eaves and courtyard space. How to achieve that? On the one hand, it is the connection in the architectural relationship, and on the other hand, it is the application of the Internet of Things. Realize the management of the space through the computer, and further analyzes the internality through big data. The digital technology transformation of commercial and residential buildings in the village's home stays, including other residential functional spaces outside the courtyard space, must meet the basic requirements of modern human settlements. For example, design and transformation in patios and shops should highlight the comfortableness space and the function of leisure. Integrating the traditional functional spaces into modern architecture instead of merely remodeling and reconstruction means we must improve and

use modern architectural aesthetics to refine the space and apply digital technology in the context of respecting the original spatial structure. [4].

#### **4.4 Establish Intensive Space Management Methods of “Ecological Wisdom”**

While satisfying the basic living functional space requirements of halls, bedrooms, kitchens, etc., we can position the space scattered around, such as developing the courtyard on the first floor as a showroom for farm tools and farming conditions, and developing the terrace on the second floor as a casual tea bar to meet the social and agricultural functions that should be in the original courtyard. In terms of space management, there are several important aspects: (1) Residential units: Adopt the form of a independent house, the first floor can be arranged for agricultural production courtyards, and the second floor can be arranged as a terrace for leisure activities. The units are located from north to south, ensuring good ventilation and lighting. (2) Homestay type: The front can be store and the back can be house. Set up small activity leisure area and business service area on the first floor, and at the same time guarantee the drying space on the second floor terrace. Taking into account the diversity of the homestay, the unit uses small rooms with multiple terraces, and by using windows to achieve the sense of oppression and solve the problem of lighting and ventilation.

#### **5. Conclusion**

Considering the natural ecological environment of the traditional rural settlement space in the Sichuan and taking the new socialist countryside as standard, we can introduce digital technology to realize the construction of new countryside and the optimization of living environment and living quality by optimizing the relationship between the layout of traditional villages and the structure of the space.

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#### **References**

- [1] Lin Lin, Lu Qi.(2019).Ecological wisdom and simulation analysis of the traditional settlement space in Lingnan region.New Architecture, no.1,pp.135-139.
- [2] Sichuan Provincial Construction Committee.(2016). Sichuan residential, Sichuan People's Publishing House.
- [3] Wang Ying.(2014).Protection and Utilization of Traditional Volcanic Villages in Hainan: A Case Study of Boxue Village in Haikou .Southern Architecture,no.05,pp.77-81.
- [4] Pan Ying, Zhuo Xiaolan.(2014).A Comparative Study on the Forms of Guangfu Traditional Settlements and Chaoshan Traditional Settlements. Southern Architecture,no.3,pp.79-85.