



Research Article

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The planning pattern research on mountain rural settlements in Qinba regions

Xu Juan* and Liu Dan

School of Arch, Changan University, Xi'an, China

ABSTRACT

With the speed up of urbanization and improvement of people's living standard, more and more mountain village residents are under the impact of the town culture. For mountain village settlement fragile ecological environment, scattered layout problem, take the rural settlements in Qinba border regions as the research object, through the status quo of the research, applying the viewpoints of ecological settlements and planning, summarizes the mountain village settlement layout mode of development, put forward the layout strategy and planning method, realize ecological, regional, scientific, harmonious coexistence of rural settlements. They are pay attention to the development and plan of ecological villages.

Key words: Mountain rural settlements, planning pattern, Qinba Mountain Regions

INTRODUCTION

For a long time, vernacular architecture has been in its own devices, designed and construction by local people, in addition most of the traditional features of the structure is concentrated in remote mountain areas, So little concern by the majority of city plan Professionals, especially in mountainous rural eco-village, if uncontrolled development continues, would undermine the mountain rural landscape can lead to increased energy consumption.

II. THE DEVELOPMENT OF ECOLOGICAL THEORY OF ECOLOGY RURAL VILLAGE

Before 1949, research about rural village more than the city's. China on rural village systematic research began in the 20th century 30's. In particular by J. Brunhes' "La géographie humaine" after being translated into Chinese, a few scholars began to pay attention of rural villages. 40's, Mr. Fei Xiaotong published "Peasant Life in China" and "local Chinese" as the study of rural village also made a great contribution. Since 1949, the reform and opening up previously, the relative decline of rural villages, the rise of urban studies. After reform and opening up, major changes have taken place in rural villages, a number of ecological thinking blend into research of rural villages and the emergence of eco-villages, rural village ecosystems, rural living environment and so on. The "rural garden ecology" of Yun Zhengming, Wang Zhi-Ping and An Ping, the village presented the concept of ecology, the main form of villages, structure, behavior and environment. Subsequently, Chen Yong, Chen Guojie so further propose the concept of rural village ecosystems that the scope of village ecology in addition to village itself, there should be some hinterland, the villages within the population, an important part of ecology is human ecology of rural village. Since then, Liu shaoquan "rural settlement ecology - theory and practice" use of ecological theory and methods to rural villages as a social, economic, and natural ecosystem, then research on its structural, functional and process of succession. Chen Guojie "Chinese mountain village study" and Shen Maoying "Mountain rural village development theory and practice" also use China Mountain (Chang Jiang River) as the research object, from the ecological environment, ecosystem, ecosystem theory in the mountains of rural village research [1].

III. FEATURES OF ECOLOGY RURAL VILLAGES IN QINBA MOUNTAINOUS REGION

Geographical environment

Qinba border area located in the Qin Ling Mountains, cross the Jialing River and Han River two river systems, Han Zhong in Shaanxi, Long Nan in Gansu and Sichuan Guang Yuan area three blocks composed mainly mountainous terrain. There are many small basins between mountains and have some Ba zi regions distributed in it. It is a special geographical unit. It has the integrity and natural geographical environment (Fig1), fertile land (Fig2).The ecological environment are more vulnerable. Its natural and human features have been relatively backward, economy in a very backward state, not only to bring the local people's lives very difficult, and not conducive to regional planning and development. Climatic conditions in the north to the warm sub-tropical climate zone with the transition. There were many small basin and the mountain valley, fertile land, mild climate, the important grain production areas in southern Shaanxi. And it is important ecological barrier of the upper Chang jiang river, extremely rich mineral resources. This region is integrating ecology culture and region of the junction of Ba shu culture from the perspective of the history.



Fig.1 Natural environment



Fig.2 Fertile land

Ecology rural villages characteristics

Mountain is a special geographic environment and characteristics of complex ecological systems, determine the uniqueness of mountain resources and biological diversity, and thus form the mountainous rural village more scattered layout, the Qinba mountain area also formed a particular patterns of mountain ecology rural village. First of all, most village site limited to specific morphological positions, help to carry out agricultural production activities. Mountainous ecology rural village on the mountain environment to adapt not only in elevation, but also on the slope and aspect have a choice. There are significant differences in the sunny and shady. Mountain ecology rural villagers generally choose to sunny as natural construction conditions ideally. Dry and sunny leeward is conducive to the development of ecology rural village. Second, the size of ecology rural village is generally small, loose internal structure. Generally, mountain ecology rural village have scattered village pattern dominated type and village reunion of linear form. Disorder within the domestic distribution of scattered villages, no levels to speak of space, the scattered layout of expression not only messy, but also the performance of its distance between households and large families, can not form a roadway, convenient link between the villagers(Fig3).

The characteristics of residential buildings

Mountain is a special geographic environment and characteristics of complex ecological systems, determine the uniqueness of mountain resources and biological diversity, and thus form the mountainous rural village more scattered layout.

The Qinba mountain area has spacious flat rarely available for social, because of the mountain, ravines horizon. Since ancient times, besides formed one of the few town residents groups, the villagers are more scattered, dotted, these scattered ornament in Qin ba mountains brickwork, presents the Qin ba mountains unique regional architectural features (figure 1). Qinba mountains generates local-style dwelling houses building is different from the Guan zhong region and Shan bei region of Shaanxi. The Guan zhong plain courtyard group formed a village, Shan bei chisel soil holes generated the cave dwellings, however, Qinba mountains residences has less group number. And it have various building materials, architectural form in accordance with the regional characteristics. There are many differences in tradition building of them. It is reflect the Qinba mountain residences settling and does not dare the status quo of complicated mentality.

IV. THE CURRENT PROBLEMS OF ECOLOGY RURAL VILLAGES

A. The decline of traditional villages

Many traditional architectural styles was often disregarded, because the urbanization impact the Village Construction,

the mountain ecology rural villages extend in the process of construction continuously and original house have gone out of use gradually(Fig4). Space structures of residence extend continuously and separate from the traditional basic function and basic layout of the mountain rural village. Or uniform row of new houses be built and all the building types be same in the rural village, they come from the construction of the new socialist countryside, and spurn the characteristic of mountain ecology rural village. This phenomenon led to the decline of traditional village characteristics, the formation of loose disordered ecology rural villages.



Fig.3 Rural village characteristics

B. The backward infrastructure

The Qinba mountain areas' ecology rural village junction infrastructure and public service facilities are very backward, because of small settlement, spatial distribution of scattered independent and strong backward economic conditions, roads, telecommunications service and other public service facilities using low, causing duplication of resources(Fig.5). On the other hand as solar energy, technology utilization low levels of suitability, with mountain villagers to used wood, straw as fuel and pollute the environment, waste of resources. Villagers living in the relative spread of infrastructure and energy use caused by low, with the standard of living, increase the demand of villagers comfortable, it will inevitably to increase large energy consumption.



Fig.4 The decline of traditional rural building

C. The chaos of building ordered

The Basic characteristics of ecology rural villages include scattered sites, layout disorder in the The Qinba mountain areas. Following the rapid economic development and the impact of modern lifestyles, many villagers follow the urban residential buildings blindly, this actions wrecked the traditional architectural styles and loss characteristics and advantages of local-style dwelling houses. The current ecology rural villages residential construction is still in

disorder, fundamental architecture units is a single home, which to some extent the confusion caused by the housing, and even new buildings do not effect traditional building insulation is good, even in winter spend a lot of firewood for heating, resulting in substantial waste of resources and energy consumption.



Fig.5 Backward infrastructure

Damage to the ecological environment

Mountain ecology villages have the special geographical environment, including the rich in forest resources, tree species diversity, a variety of diverse biological resources. The regions have the rich ecological resources. It is the ecological security barrier Qinba Mountains, but is still a relatively fragile eco-system area. In process of promoting economic development, tremendous environmental damage appear(Fig.6), severe population size over the growing capacity of the natural environment, and the villagers lack of environmental awareness, free garbage disposal, sewage, causing sewage, garbage accumulation, not only pollute the river near the spring, but also caused serious pollution of groundwater, which caused serious damage to the ecological environment. Mountainous ecology rural villages have large land area, idle land be exist in the villages, and many village residents at random, spontaneous blind transfer, or they building new houses, causing a large number of houses abandoned, the land have not reclaimed, the action of waste arable land is a serious phenomenon will solicitation in scarcity of arable land had become more a shortage of resources.



Fig.6 Destroy of ecological

V. PLAN DESIGN STRATEGY OF MOUNTAIN ECOLOGY RURAL VILLAGES

A. Planning level to control rule

1) *Planning and construction guide.* It should formulate the guidelines of rural renovation construction planning. At meantime guide and control the direction of ecology rural villages and including the degree of planning and construction. Change the disorder state of the current rural village planning and construction. Finally determine the development mode of mountainous ecology rural villages and settlement layout pattern, and the ecological capacity of the entire village. Avoiding over-exploitation of natural resources and leading to deterioration of ecological environment. It should reference to principles and methods of urban planning, rural reality, the view of settlements, production, life and ecological. We can plan regional characteristics of the mountain for ecology rural villages[2].

2) *The understanding of the villagers.* Mountainous ecology rural villages during the process of planning and design have always been top-down preparation. The course comprise research field conducted with the villagers communicate hardly, actually not meet the needs of villagers. Understanding the local natural resources, effective use of energy, mountain inappropriate planning of ecology rural villages will be brought to the village and indirect economic losses more than constraints development of mountainous rural villages in the future. Geological hazards for the entire region will have increased and ecological possibilities.

B. Ecological distribution of villages

In Shaanxi-Gansu-Sichuan border area, the mountain ecology village should layout conform to the landscape features, scattered small-scale structure of rural villages in the region is the main features of mountain. Through the small gathering, large decentralized model for planning and construction of mountainous rural villages. To settle the building in a line through various means such as planning and design. In the case of the full conservation of natural resources, mountainous rural villages should intertwined elements of fusion, to create a clear hierarchy of space level, using of new energy and maximize energy use as much as possible the construction of village[3]. Consider using the most perfect and most basic function of the surrounding towns of living, production and economic function, ecological environmental functions.

Characteristics of mountain ecology rural villages under the new rural construction have not been well inherited and carried forward. In economic development, attention should be paid. Protecting traditional layout features, promoting traditional culture, to become an important part of geographical features. Meanwhile, the formation of rural villages is the product of time and space, mountain and water, green mountain landscape are all natural. A lot of planning and construction neglect to conform natural, starting from the natural environment, dealing with the relationship of the villagers in the mountainous rural villages, buildings, landscape, ecological and other elements. Respect for nature, strengthening the role of ecology, creating regional characteristics in the mountain villages.

C. Appropriate settlement pattern

Qinba mountains area form the inherent law of rural settlements mountainous rural settlement location and settlement distribution has obvious geographical adaptability, adapt to the nature, adjust measures to local conditions, and the villagers spontaneously in settlement construction in the process of construction and imitating the improved gathered as a result, the use of traditional techniques and local materials, comply with the topography and geomorphology, building his own house, to resist the threat of climate conditions, the formation of banded settlement layout (figure 7), the group settlement layout (figure 8), and tree settlement layout (figure 9), small assembling type layout mode[4].

At the same time in order to meet the need of modern life, the planning of the original space hierarchy refactoring, joined in the whole space sequence public space node (figure 10), and with the original residents node boot space and space together to form the linear space of the progressive sequence. Public space nodes to a public activity center and small square as the center of gravity, the architecture and landscape environment space of the communion, whole space sequence according to the linear progressive, song according to the natural landscape, the mountain settlement landscape in natural space fully release and presentation.

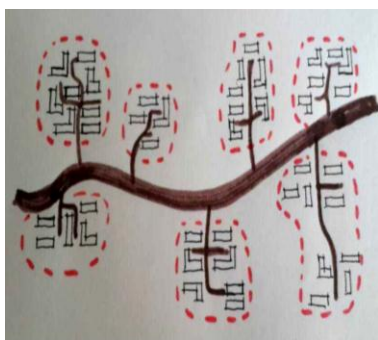


Fig7 banded settlement

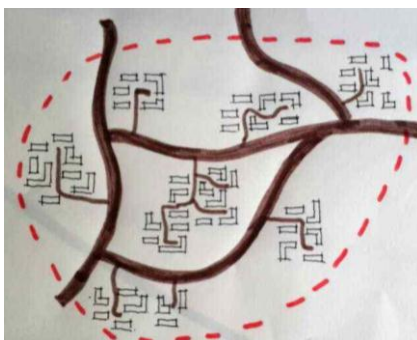


Fig8 Group settlement

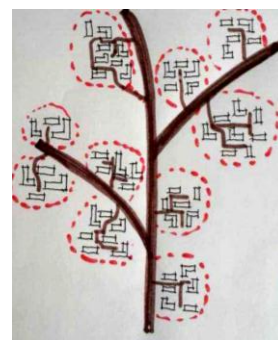
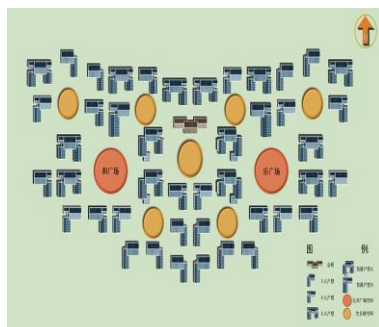


Fig9 Tree settlement

D. Eco-residential buildings

1) *Reflecting the traditional characteristics.* In the The Qinba mountain area ecology rural villages of ecological design process is to maintain regional architectural features. Including traditional culture-related things, such as the layout of villages, construction of the spatial form, decoration and color, through the traditional elements to integrate and restructure. More a reflection on the technical features of the building and external symbol, and even cultural identity is reflected in the hell on. Including traditional local customs, lifestyle, language, religion, etc, which are mountainous ecology rural villages an important manifestation of regional ecological design.

2) *Climate suitability.* Rural village patterns and climate is close. Layout and construction groups into the streets need to consider a major factor which it is the weather in the region. Meanwhile, climate and soil are the embodiment of architectural regionalism. Architecture adapt to the terrain and natural environment of the ecological architecture of the buildings retain the traditional characteristics of the region have far-reaching significance.



**Fig10 The spatial structure
growth mechanism**

3) *Use of new technologies.* The building materials and construction methods of mountainous ecology rural villages should to comply with the local style and reflects the local geographical features, local materials, and good thermal insulation, more than low cost, but not damage the environment at cost(Fig 11). The architecture design, should consider building its own energy, integrated energy system generates, so as to achieve the purpose of efficient use of energy. As the mountain is relatively dispersed rural living, considering the use of small villages gather to achieve passive solar technology and rain water collection, solar thermal collection room, fees and other heat recovery systems by intensive building. The use of efficient energy makes it more effective and energy saving ecological and environmental benefits.



Fig11 Eco-residential

CONCLUSION

Mountainous ecology rural villages include the ecological design of wide-ranging, highly systematic and general. It has some guidance on ecological planning of other regions rural villages. This thesis use ecological planning and design as a starting point, analysis and discussion on mountain eco-village planning and implementation of strategy. From overall village layout and construction of single building, mountain eco-ecological planning of rural villages to analysis application methods of ecology in Architecture, Urban Design and construction of technical disciplines. Concerned about the ecology of mountainous rural villages planning and designing study is based on ecological and technical point to seek the development of ecology rural villages planning laws for create a new planning approach.

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