

*A Study on the Principle of Practicability in the Evolution of Chinese Traditional Rural buildings in the Background of Urbanization*

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**Abstract**

With the rapid urbanization of China, the isolation of Chinese villages has been broken, and modern buildings and materials have quickly flowed into the villages, and imposed a greater impact on traditional Chinese rural buildings. As a result, contemporary rural buildings have begun to evolve. So, what types, laws and deeper modes of thinking are there in this seemingly complicated evolution? These are the issues that this article intends to explore. This article believes that the current evolution of Chinese rural buildings is a hybrid of traditional buildings and modern ones. This hybridization is based on traditional buildings, through the partial introduction of modern buildings, or materials and structures, and shows a gradual way of change. The location and sequence of such changes are directly related to the functional and practical intensity of the location, the more functional parts of buildings are more likely to change, and the less functional and more symbolic parts are more difficult to change. The deep mechanism that determines this sequence of change is the principle of practicability of Chinese rural buildings, which is mainly to maximize the utility of the available resources at hand. This principle not only plays a role in the modern evolution of rural buildings, but also in traditional rural buildings all the time. Going further, the deeper foundation behind this practical principle is the mode of thinking in traditional Chinese rural buildings, a kind of wild thinking that Strauss called "the tinker".

Keywords: Chinese, Rural Building, Principle of Practicability, Urbanization

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## Characteristics of Chinese rural buildings

Confined to a closed regional environment for a long time, and a relatively low economic level<sup>1</sup>, Chinese rural traditional building has gradually formed its own inherent characteristics, and the motive for its construction is largely to satisfy basic residential function. The construction of the building is mainly achieved by using all available resources around. The buildings in one village are constructed on the basis of the same type of building after being adjusted according to the actual terrain conditions, family size and economic conditions. This makes the rural buildings not only have a distinct unity, but also a rich diversity, which forms China's unique rural landscapes.

It is precisely because of the feature of functional priority that the traditional Chinese rural building is more like a practical appliance, an object built for residential use, rather than a modern architectural art. Its construction is mainly based on a practical, not aesthetic principle. In this process, the economics and functionality of construction have become the main considerations, and the aesthetics of the form is the second. This is where traditional Chinese rural building is completely different from modern urban architecture. At the same time, traditional Chinese rural building is the main place of execution and important carrier of family order and religious belief in traditional Chinese culture, so it is full of various symbolic meanings (Figure 1). Therefore, the utility of traditional Chinese rural building as an appliance and the symbolism as a venue for family system and religious belief have become two important dimensions, one is concrete and functional, and the other is abstract and spiritual. Together, they constitute the two endpoints of traditional Chinese rural building. All rural buildings and their components can find their place under this scale. The stronger the utility is, the weaker the symbolism, and on the contrary, the stronger the symbolism is, the weaker the function, both dimensions interact each other, which also largely determines the evolution of traditional Chinese rural building under the influence of modern architecture.

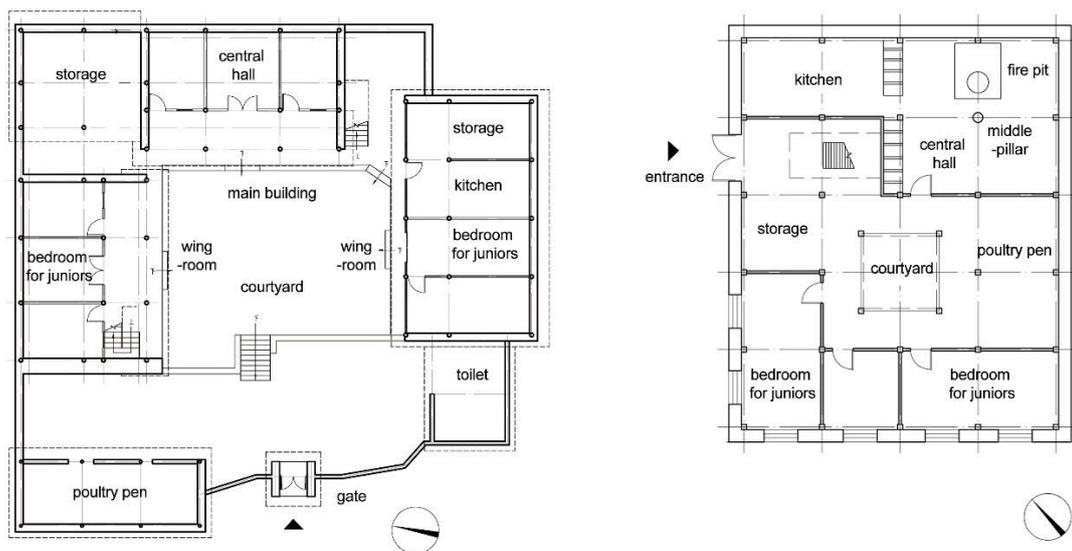


Figure 1. The Plans of Typical Traditional Rural Buildings (Left, a Dwelling of Bai in Yunnan; Right, a Tibetan Dwelling) Drawing by Author

<sup>1</sup> Fei Xiaotong, *native china*, Beijing: Beijing publishing house, 2005.

However, in the past decade, with the rapid development of urbanization, through the connection between the countryside and the city, accompanied by a large number of people traveling between the two, the engineering technology and materials of modern buildings have continuously flowed from the city to the countryside. As a representative of "advanced", and by virtue of its own economic advantages, Urban modern architecture entered the countryside and be accepted largely by villagers, which resulted in a huge change and make the originally homogeneous rural buildings become extremely complex and diverse. The purpose of this article is to try to find the internal laws behind this seemingly complex evolution.

### **Contemporary evolution of Chinese rural buildings**

With the rapid progress of China's urbanization, modern urban construction technology and materials have entered the countryside in a large amount, and traditional buildings face a challenge. The originally homogeneous traditional rural building has evolved complex and diverse forms. These changes are not a complete replacement of traditional buildings by modern ones, but the coexistence and hybridization between the two.

The reason for the hybridization of both lies in the advantages and disadvantages of modern buildings and traditional rural ones. With the shortage and increasing price of wood largely used in traditional construction, modern buildings have gained a lot of development due to their rapid construction and relatively economical cost. Nevertheless, traditional houses still have their own advantages. In the field survey, many interviewed villagers believed that the modern brick-concrete houses were damp and cold in winter, poorly ventilated, and poor in comfort. The traditional old houses are warmer in winter and cooler in summer, and more comfortable to live in. And at a deeper level, traditional houses have a dual role. Firstly, for Chinese villagers with ancestor worship, traditional buildings have important symbolic meaning, especially the main house, which can connect themselves with their ancestors spiritually through traditional form, could make them get psychological confirmation of their own family identity. Secondly, traditional buildings could be a symbolic "boundary"<sup>2</sup> that can identify the villagers' ethnic and local characteristics.

Because of this, a dilemma was formed: the contradiction between comfort, safety, ethnic self-identity, and economic cost. The resolution of this contradiction is through the hybridization of both buildings to adopt their respective advantages. And this gave birth to two evolutionary ways of rural buildings: one is the mix between the primary and secondary buildings, the main houses use traditional buildings, the secondary houses use modern ones; the other is the mixture inside the same one building, where modern building or its components coexist with traditional ones, the former can be called juxtaposed type, the latter can be called mixed type.

Juxtaposed type refers to the coexistence of modern buildings and traditional houses in the same courtyard, it is a compromise based on their respective advantages (Figure 2). Usually, the main house symbolizing the core and identity of the family follows the traditional building form mainly characterized by sloping roof, while the wing-

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<sup>2</sup> Fredrik Barth. *Ethnic Groups and Boundaries: The Social Organization of Culture Difference*, IL: Waveland Press, 1998

houses with auxiliary functions adopt modern building and material, which has become the most common model of new-built houses in the country. The popularity of this model is also due to the emergence and popularization of urban lifestyles. For example, the improvement of sanitary habits has led to the massive use of solar water heaters, the flat roof of the wing-house not only solves the problem of its placement and maintenance, but also provides outdoor spaces increasingly insufficient due to the increase in family members. The traditional building as the main house not only has the advantages mentioned above, but also satisfies the needs of maintaining the spiritual relationship with the ancestors and the ethnic "self-identification" through its wooden sloping roof. The auxiliary buildings with weaker symbolic meaning and stronger functionality adopt a modern building based on the cost. However, for buildings of some ethnic minority, their sloping roofs contain so few symbolic meanings that instead they have become the earliest building element replaced by modern materials. Taking the "shingle house" in Shangri-La, Yunnan for an example, because traditional shingles are easy to decay and need to be replaced regularly, now more durable colored steel plates have been used instead of shingles (Figure 3).



Figure 2: Juxtaposed Type. Photograph by Author



Figure 3: Sloping Roof Made of Colored Steel Tiles in Newly Built Tibetan Houses. Photograph by Author

Mixed type mainly refers to the mixing of modern building or its elements and traditional one in the same building, most of them use traditional structural systems, while some elements of building use modern materials or components (Figure 4). With the continuous advancement of urbanization, a large number of modern materials, such as steel, red brick, and plastic, have begun to enter the rural areas and are widely used due to the good performance and price advantages compared to traditional materials. Actually, lots of houses seemingly traditional in the rural areas around Lhasa are not completely traditional. In some newly built traditional Tibetan buildings, the original wooden beams have been replaced by steel I-beams in some rooms, where the strong practicality displayed by the modern material forms a sharply contrast with the strong symbolic colors on the wooden rafters (Figure 5). The material properties of the two are strengthened by their juxtaposition, and achieved a dramatic effect of defamiliarization with a dualistic contradiction.



Figure 4: Mixed Type. Photograph by Author



Figure 5: A Steel Beam in an Auxiliary Room. Photograph by Author

these two basic types of evolution, especially the mixed type, seem random and irregular, but essentially, behind them lies the principle of practicability rooted in traditional Chinese rural buildings. Together with the symbolism of building, which is

another endpoint of Chinese rural buildings, the practical principle influences the evolution of Chinese rural buildings.

### **Practical principle in the contemporary evolution**

The principle of practicality of traditional Chinese rural buildings is, in simple terms, to maximize the use of resources available around and the effectiveness of buildings based on relatively low economic costs. Judging from the above two basic types of evolution, no matter which type, the introduction of modern structures and materials is related to this practical principle. Generally, the more functional the building or its element is, the easier it is to change, and the less functional and more symbolic it is, the harder to change, this can be reflected in the following spatial hierarchy of three different scales:

#### 1) Changes in different types of buildings in the same village

In the same village, the more functional the building type is, the more easily it accepts modern building, and the more symbolic the type is, the more it inherits the tradition. Residential buildings are more inclined to the practicality of technical systems, compared to religious temples which are more inclined to the symbolism of ideological systems. Therefore, the difference between the houses in Lhasa and in Shigatse is much larger than the difference between the respective temples<sup>3</sup>. Once the building is connected to the more abstract religious beliefs belonging to the ideological system, then its change is far slower than the residential building more practical. Compared with public buildings, traditional houses have a relatively stronger symbolism, so the first modern buildings introduced into countryside are generally those types that tend to be practical and functional, such as schools, government offices, hospitals, banks, etc., it is relatively later to applicate modern buildings and materials to residential houses.

#### 2) Changes in different buildings within the same courtyard

Within the same courtyard of a family, taking the most typical courtyard house<sup>4</sup> in the countryside as an example, the first to adopt the modern structural system and style are often functional rooms such as storage, kitchen, toilet, etc., the second is wing-room for the juniors. The most difficult to change and continue to use the traditional structure and style is the main house where the family symbol and spiritual sustenance are located, in which the most sacred space is arranged: the central hall or living room for the ancestor worship. Similarly, in Tibetan rural buildings, the core spaces with strong symbolic meanings such as Buddhist hall, central living room and some elements have always been built in accordance with the traditional constructional system, while auxiliary spaces more technical and practical such as storage and livestock pens, are the first to change and adopt modern structure and materials (Figure 1).

#### 3) Changes of different components in the same building

From the perspective of the same building on a smaller scale, the changes in building components still follow the same order: the more functional and practical parts change earlier, and the more symbolic parts are more difficult to change. In the

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3 Chen Yaodong, *Chinese Tibetan Architecture*, Beijing: China Architecture & Building Press, 2007.

4 Liu Dunzhen, *An Overview of Chinese traditional Dwellings*, Tianjin: Baihua Wenyi Press, 2004.

Chinese Han villages, the sloped roof has a strong traditional meaning and is one of the important signs of ethnic and local identification. Therefore, even if the building structure and wall are made of modern concrete structures, the roof still maintains the traditional wooden frame, on which traditional pottery tiles are paved. In the rural buildings around Lhasa, Tibet, the most sacred middle-pillar and the beam on it are traditionally made of wood and exquisitely hand-carved, while because of its weak symbolic significance and strong practicability, the auxiliary room next door adopt steel beams instead of traditional wooden ones. (Figure 5, Figure 6)



Figure 6: A Tibetans Shrine Traditionally Constructed. Photograph by Author

The practical principle of buildings is not only reflected in the process of absorption of modern buildings by rural ones, in fact, it has always been an important principle of traditional Chinese rural buildings, this principle can be strongly demonstrated by the way how rural buildings exploit the site and construction materials.

Due to the limitation of topographical conditions, the site of rural traditional building is often not as regular as that of modern urban building with a unified planning, and it is usually shaped by the natural terrain or the boundary of roads formed spontaneously. There are often many contradictions between complex site conditions and traditional building types, especially when the site is seriously insufficient. For these actual conditions of the site, modern architecture will use them as an opportunity for design. Under this modern aesthetic principle that focuses on the clarity, clearness and unity of form, usually, the contradictions between irregularity of site and the regularity of architecture will be finally resolved through a complex composition of several basic regular geometric elements, at this time, the irregularity of site are just an opportunity and reason to play architectural forms. But for the same site conditions, rural buildings have a completely different approach, it is the principle of maximizing the exploitation of site. For example, because the orientation of the main building of the courtyard are determined by Chinese Fengshui, they are often not parallel to the boundary and the enclosing wall of site. When the site is sufficient, the buildings can be disconnected with the enclosing wall, and completely maintain and follow the regular integrity of the traditional type; but when the site is relatively insufficient, there will be conflicts between the building and the site boundary. In order to adapt to the traditional house layout and strive to maximize the available

interior space, the building had to cling to the site boundary. The final result was that the regular traditional building form was cut off by the site boundary, and the oblique intersection make the lateral facade present a complex cross-cutting form, where the cut sloped roof, the intersection of the wall, the transition of details, etc. have formed a series of intriguing transformation(Figure 7).

On the use of construction materials, the practical principle of traditional Chinese rural buildings has created a rich diversity. In order to save costs, so various materials available at hand, including waste materials, always are reused during the construction of the house, that a variety of new and old materials with different purposes are creatively put together. This "forceless" operation leads to an unexpected "complexity and contradiction", and finally the original familiar materials are "defamiliarized". Under this principle, red clay bricks and grey ones of different specifications could be naturally mixed with roof tiles, and all of them together are used as masonry materials for walls, and the juxtaposition of various materials makes each present a distinctly different appearance and meaning from their original properties. The new added houses often use the existing rammed wall as the enclosure structure, which not only save land, but also materials and costs, this result in an anomalous operation that the more pressure-resistant clay bricks were reversely placed on rammed earth wall with relatively less pressure-resistant capacity, and then, both materials were defamiliarized. The red bricks were juxtaposed in accordance with the outline of the existing rammed earth wall, and the information of the original wall and subsequent addition were truly recorded (Figure 8).



Figure 7: The Boundary Cuts the Building in the Maximum Use of the Site.  
Photograph by Author



Figure 8: The Added Red Brick Wall Juxtaposes the Original Rammed Earth Wall.  
Photograph by Author

### **The Thinking Basis of the Practical Principle**

The deeper reason under this practical principle is the thinking mode rooted in the collective unconsciousness of traditional Chinese villages.

Chinese rural thinking, as Levi Strauss said, is a concrete science. This science determines the differences and similarities of things based on their surface phenomena and use value, and builds a classification system and knowledge accordingly<sup>5</sup>. Claude Levi-Strauss likened this primitive thinking to tinkers' repair. Significantly different from architects, tinkerers obtain the suitable materials and mechanical tools to complete his work without any pre-planned scheme, and what he did was improvise in a relatively closed and limited world of tools with what is available at hand. The materials of the tinker are not determined intentionally, but are collected according to their practical value, and used creatively in the field.

Chinese traditional rural buildings were developed under this tinker's thinking mode. Not only from the perspective of traditional buildings, but also from the variation of the new ones, they still follow the basic thought pattern. Just like Strauss's tinkers' repair, villagers build their houses with practicality as the starting point, and decide how to use materials available at hand according their use value, it is completely different from architects who determine the choice of materials by incorporating them into a predesigned form shaped by aesthetic visual effects. So, for being more durable, economical, and easily available, the clay brick wall replaces the adobe wall, and the iron prayer flag replaces the cloth one (Figure 9). In some temporary or additional buildings in rural areas, this practical way of material use becomes more typical. The kitchen wall of a house was constructed just by piling up the remaining materials. The space between construction columns of the grey brick are filled with pebbles of different sizes, and on which, the adobe bricks and the grey tiles are laid. On this wall, materials with different properties such as artificial and natural, regular and irregular, hard and fragile, were logically mixed and matched together according to their physical property, just like a "symphony" of materials (Figure 10).

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<sup>5</sup> Levi Strauss, Claude, *The Savage Mind*, Chicago: University of Chicago Press, 1966.



Figure 9: The Tibetans Prayer Flags on a Porch. Photograph by Author

The practical principle like tinkers, whether it is in the use of site or materials, will inadvertently bring great creativity, but this principle may conduct a result that only the purpose of materials could be seen and utilized only as constructional elements. This way to view and treat materials may result in the neglect of the expressive characteristics of the materials themselves. Therefore, the roughness of materials processing and construction are ubiquitous in traditional Chinese rural buildings, especially those places invisible or secondary. In Tibetan dwellings, the ground floor is used as livestock pen or storage with a frame made of barely processed logs. Even those relatively important places are not manifested in importance by precise processing and the presentation of the material itself, but more by strong colors and complicated patterns. Here, the material is only a carrier for expressing the symbols and thoughts. The expressive value of the material itself seems to be fully valued and excavated in the modern design.



Figure 10: A Collage of Diverse Materials. Photograph by Author

### **The inspiration of the principle of practicality**

In the spontaneous and seemingly disorderly evolution of Chinese rural buildings, practicality as a potential principle incorporates modern building and its elements into

traditional rural buildings, thus completing the integration of tradition and modernity in a self-organized manner. However, this integration is full of uncertainties. And in practice, only through continuous adjustment between modern and tradition, when a new general type being suitable and approbatory for the local comes into being, it can be said that the evolution of rural buildings be truly completed. Fortunately, this process has begun to appear, and now it can be seen that a certain type of new building in the same village has begun to take up an increasing proportion, and gradually formed a stable type adopted popularly by villagers.

At the same time, this principle of practicability has, as always, bring diversity to the uniformity of rural buildings stemming from the same type. Under the dominance of the principle of practicability, various materials, including modern ones, have been woven into the construction of Chinese rural buildings in various ways, avoiding monotony, and forming individuality and difference. To a certain extent, these result in the contradiction and complexity Venturi have said: "I like the mix of basic elements instead of 'pureness', compromises instead of 'clean', twists instead of 'straightness', ambiguity instead of 'clear'", "I advocate chaos and vitality over obvious unity"<sup>6</sup>.

This principle of practicability still has important enlightenment for modern architects. The practical principle of design requires architects to take architecture as a practical objects, that is, to remove the formal aesthetic centralism in architectural design, to reexamine the building from the perspective of the "object" as a practical appliance, making full use of existing realistic conditions such as limited site, existing traditional and modern materials. Perhaps it is a way to get rid of the dominance of the modern architectural systemization and abstraction based on aesthetic formal principle. In this regard, the current emphasis on construction in modern architectural design is regarded as a return to practicability, and has already yielded results, and architectures by Chinese architect Wang Shu using waste materials and works by American Rural Studios using ready-made objects can be regarded as a successful exploration.

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6 Robert Venturi, *complexity and contradiction in architecture*, New York: The Museum of Modern Art, 1992.

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