

The application of the platform design strategy in rural construction

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Abstract

By introducing the Platform based design strategy, on the premise of the government macro control and the Professional architect, the rural Combined with the practice of rural housing construction in Inner-Mongolia, The application of platform based design strategy in rural construction is summarized. Combined with the practice of rural housing construction in Inner-Mongolia, the application of platform based design strategy in rural construction is summarized.

Keywords

Platform Based, Rural Construction, Dominated By Villagers, Independent Choice.

1. New Design Needs For Rural camping

The modern design system for the design of rural buildings is mostly through the established design of drawings to achieve control over construction, but the diverse and complex individual needs of farmers simply cannot be realised through uniform drawings, and the one-to-one design for individual needs adds a great burden to the construction costs of farmers, resulting in a huge waste of social resources, and, at the same time, for the overall uniform morphological order of rural buildings There is also the potential for a loss of control. Although farmers can reduce the operating costs of rural construction and give full play to the villagers' autonomy as the main body of construction, the blindness and unprofessionalism of farmers in building design and construction can easily lead to chaotic rural appearance and worrying building quality. Therefore, the government and the professional and technical departments need to intervene to control and guide the design behaviour of the farmers in order to ensure the uniformity and scientific nature of the construction activities. In other words, the main actors involved in the construction of the countryside have become diversified, and the programmatic, static design system is no longer fundamentally appropriate for the construction of the countryside. The new design approach needs to respond to the new requirements of the multi-layered needs of rural architecture as a result of the participation of multiple subjects in the construction.

2. The solution to the problem of platform-based design strategies

After continuous construction practice, it has become increasingly clear that a platform-based design system is the most appropriate strategy to address this need.

By integrating various architectural issues into the various levels of the platform according to their importance and professionalism, all parties can express their own demands at different levels and finally complete the design of rural architecture together.

In the design process of rural construction, a scientific and reasonable design platform can enable all parties involved in the construction to form an effective alignment relationship with the construction system, so that all parties can clarify their specific role in the construction system, directly reflecting the intention of rural architectural control and guidance, while

integrating the views of all parties involved, maintaining the unity and integrity of the entire construction system.

In the process of building a platform for rural construction, the core task is to implement the elements of control and guidance into the specific construction process, through an open, controllable and hierarchical construction operation platform, to realise the construction demands of all parties, forming the control and guidance of rural construction.

3. Feasibility analysis of platform-based design

Platform design is not a design for a single building, but a system design that meets the requirements of many different users at the same time. Therefore, in order to achieve architectural diversity through a systemic design, a basic premise is that this diversity of variation is based on a relatively fixed building type. An analysis of the basic conditions of rural construction practice at this stage shows that the type of rural architecture is basically a homogeneous architectural feature within a certain geographical area. The reasons for this can be summarised in two main points: 1) Homogenisation of lifestyles: whether in traditional rural societies or modern ones, the production and lifestyle and economic consumption levels of the inhabitants within the countryside during a specific historical period and within a specific geographical area basically belong to a homogenised type of characteristics, which leads to a macroscopic uniformity of construction requirements, thus forming a fixed form of architectural prototype. The main reason for the relative fixity of rural building types is the same mode of living. 2) Homogenisation of the building environment: Under certain geographical and social conditions, farmers have the same range of options for building techniques, building materials and other elements, and it is this homogenised building environment that makes building techniques with specific advantages gradually become the common choice of farmers within a certain geographical area. The homogeneity of the building environment has led to a stabilisation of the building techniques within a certain geographical area, which to a certain extent has contributed to the similarity of rural building forms. Therefore, there is a wide homogeneity of rural building types within a certain geographical area, which satisfies the most basic design conditions for the platform design of rural buildings. In addition, platform design needs to extend the prototype of the building to different possibilities for different participating subjects and users, forming a wide range of adaptability, which requires the building to have a homogeneous and heterogeneous constructive performance. The unique construction system of traditional rural architecture allows the building to respond flexibly to the various problems brought about by different construction environments through prototype + commissioning, while under the modern industrial system, the flexibility of construction is enhanced, and we can guide villagers to reasonably express their architectural aspirations through platform-based operation, while at the same time realising the government's control over the countryside as a whole to achieve homogeneous and heterogeneous rural architecture. We can also achieve control and guidance of construction through the platform.

Therefore, the basic conditions for solving the dilemma at the level of rural camp design are in place through platform design.

4. The process and approach to platform-based design construction

In the construction of a platform design for the rural construction process, we need to actively intervene and construct a platform design system from the perspective of the construction system, in order to complete the control and guidance of the rural construction. There are several design stages in the process of construction.

Firstly, at the beginning of the design process, through detailed vernacular research and by combining the basic demands of the villagers, the basic construction prototype of a village house was summarised and refined.

Secondly, on this basis, a systematic decomposition is carried out. The decomposed parts of the building elements need to ensure their relative independence and integrity in terms of form, space and function, as well as their diversity and feasibility in terms of the way they are combined. At the same time, the range of variation in the diverse design of each part of the architectural elements should be based on the characteristics of the architectural prototype, so that the final integrated building retains some common qualities in its diverse morphological variations, thus forming a harmonious and unified rural appearance.

After that, the degree of influence of each part of the building elements on the overall appearance of the village and the closeness to the farmers' own life are evaluated comprehensively, and the interests of the government and farmers are weighed. The final classification of the building elements into three levels: high, medium and low. Building elements that have a greater impact on the whole and have a higher level of safety are generally classified into the higher control level, which is the main object of control by the government and gives villagers less choice. The building elements at the lower control level are those that have less impact on the overall environment of the village, are closely related to the farmers' own life and require less professional and technical skills. Building elements with a moderate level of control offer a number of forms of building elements that meet the government's control requirements for farmers to choose from, thus satisfying to a certain extent the diverse individual needs of farmers. The various types of building elements reflect, to varying degrees, the scope of authority and responsibility between government control and farmers' independent design. On this basis, the rich and reasonable building elements are combined in a variety of ways to ensure that the government's macro-control and guidance, while maximising the satisfaction of farmers' complex and diverse individual needs, also makes the rural landscape more rich and diverse.

Finally, in collaboration with the architects, the villagers completed the re-integration of their own house design, and with it the evolution of the prototype building, resulting in a prototype of their own house design (Figure 1).

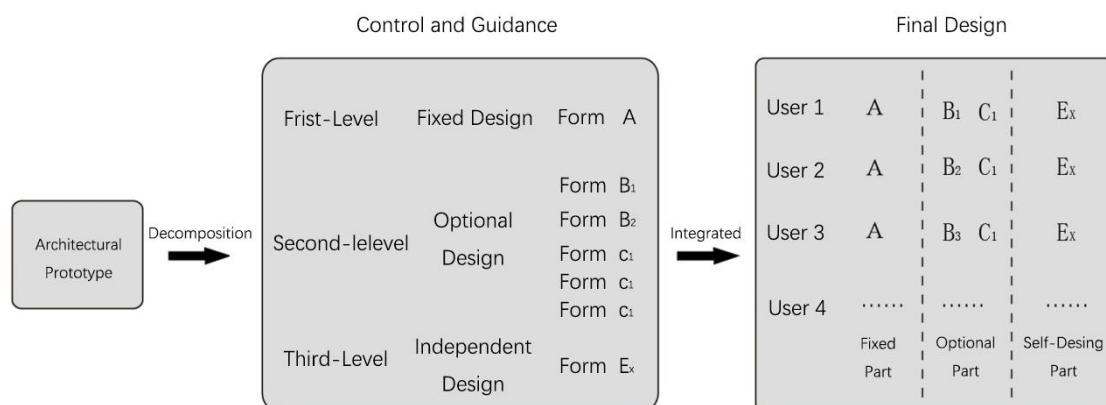


Figure 1 The process of constructing a platform-based design

Through the above measures, the architects use their professional knowledge to divide the construction system into tiers and limit the range of choices and styles within the tiers, with the higher levels of control following the design intent or the designer providing fewer alternative types for villagers to choose from. At the lower levels of control, the villagers are more likely to build according to their own ideas or to choose their own model from among the multiple models provided by the designer. The decomposition and reorganisation of architectural prototypes has resulted in a rich variety of elements and combinations based on the prototypes,

meeting the complex and changing individual needs of villagers. The control of the government and the architect is guided by the design of the basic building elements and the limitation of the principles of combination.

Ultimately, through such a platform-based approach, control and guidance are brought to a concrete and implementable operational level, improving the autonomous design system and forming a platform-based operational system that can interact with villagers. The government's macro-control and the architect's professional guidance are smoothly integrated into the design platform, and the villagers realise their demand for autonomous construction through the relatively wide operating range within the platform. The architects, on the other hand, set the width of the operating zones to achieve a hierarchy of control. In this way, the design and construction of village houses becomes a village social activity that is autonomous by the villagers, controllable by the government, technically feasible, architecturally diverse and uniform, and easy to implement. The villagers' right to have a say in the construction of the village is maximised, while ensuring that the style and quality of the village houses are good. Ultimately, this is a way to guide the ongoing construction of the village, so that it gradually develops a harmonious and different character.

In concrete practice, the key point of the platform design approach is the scientific and reasonable division of the construction system. The key point is the division of the constructive system of form composition, i.e. according to the logic of architectural form composition, through the means of homogeneous and heterogeneous composition, the elements of its composition are enriched, in order to achieve the purpose of unchanged architectural style characteristics and diverse architectural forms.

Due to the lack of control for a long time, the villagers' construction methods are relatively arbitrary and lack of attention to the construction techniques, which leads to the weakening or deviation of the style characteristics of most of the dwellings and the overall chaotic and disorderly appearance of the village. Through research and collation, it was found that the logic of the form composition of most of the buildings in the village is still basically unified, but the elements of each part of the building composition under the overall form are not standardised, therefore, the design uses the more unified building form composition as the basis for division, and the elements of each part of the building composition are standardised and enriched. At the same time, the scope of modular variation is divided into three levels: fixed, selective and free modules, according to the degree of influence on the overall Jin-style residential style characteristics, thus reflecting the government's control and guidance role (Figure 2). In this case, the villagers simply determine the style of their houses through a menu of choices according to their own wishes (Fig. 3), but inadvertently, they complete the overall unified and diverse style design of the village (Fig. 4).

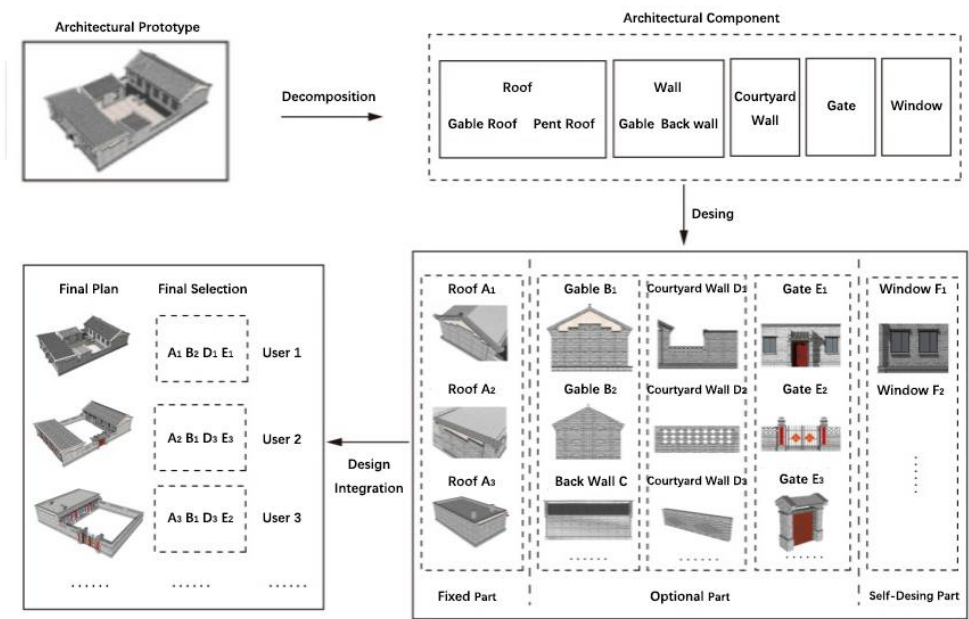


Fig. 2 Platform-based design system based on formal composition

FINAL ACCEPTANCE OF THT PROJECE					
NO.	NAME	NAME	FLOOR AREA	Technical Requirement	
Site Plan		Effect Drawing			
Final selection					
Roof A1	Roof B1	Gable B1	Window F1		
				Working Drawings	
Guttr C1	Guttr C1	footing of wall W1	Courtyard Wall1		
Gable B1	Gate E1	Bathroom G1	Kitchen H1		
Final Plan					
Signature		Customer		Government Representatives	
		Architectural Design Institute		Date	
Customer's Confirmation <input type="checkbox"/> YES <input type="checkbox"/> NO					

Fig. 3 Agreement with villagers through retrofit confirmation form



Fig. 4 Simulation of the effect of village appearance after autonomous selection

5. Characteristics of the platform-based design strategy for rural camping

5.1. The platform design strategy is more concerned with the impact of rural society on architecture

It can be said that rural architecture is a physical representation of rural society. The unified and diverse morphological features of rural architecture are not entirely based on construction techniques and formal aesthetics, but are a profound reflection of the complex internal order of rural society, which is why the platform design strategy rejects the design approach of imitating rural morphological space, and by lowering the technical threshold of rural construction, the architectural design is integrated into the social activities of the countryside, thus enhancing the social attributes of rural architecture.

5.2. Reasonable platforming design is predicated on a fair communication environment

The design of the platform is based on the agreement of many parties, and the design of the division and integration principle of the construction system involves the interests of many parties. Therefore, in the design process of the platform, apart from considering the scientific organisation of the construction system in terms of technology, we should also focus on establishing a fair communication environment to balance the interests of many parties. It can be said that the design process of the platform is mainly to establish a communication platform for the demands of multiple parties, and the design outcome of the platform is the final result of balancing the interests of multiple parties.

5.3. There is still a need to improve the application of platform-based design systems

The above case studies show that the platform strategy is generally well adapted to rural camping design, but also shows some limitations at the implementation level. Rural construction is a continuous and long-running activity. As people's mindsets change, there is a possibility that previously agreed architectural intentions may be broken by individual villagers, so the platform design system needs to be combined with more institutional safeguards in order to operate effectively.

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