



Looking into the Changing Rural Vernacular Dwellings with a Sustainable View: A Case Study on Bingzhongluo Township in Southwest China

LI Kehan

School of Architecture, The Chinese University of Hong Kong

Edward NG

School of Architecture, The Chinese University of Hong Kong

CHI Xinan

School of Architecture, The Chinese University of Hong Kong

ABSTRACT The valuable pristine nature, multi-ethnic, religious culture, and bio-diversity of Bingzhongluo Township have contribute to its reputation as a “Primitive Paradise”. Bingzhongluo Township is located in the upper region of Salween in the mountainous and needy rural area of Southwest China. The representative log-construction vernacular architecture and unsophisticated settlements fully translate local harmonious social relationships and folk culture into physical space forms. However, the majority of studies on vernacular architecture in Bingzhongluo typically focus on the traditional aspect, ignoring the silent but dynamic changes influenced by corresponding economic, social, and environmental development. Moreover, Chinese government has invested a substantial amount of manpower, capitals and material resources in rural development, with strong policies that aiming at sustainability and selecting modernization model as general strategy. Impelling political instruments induces the mass destruction of traditional villages and the large-scale construction of New Socialist Countryside. Inadequate and off-subject research outputs on Bingzhongluo could not build interactions and application links with governance. Therefore, regional-scale vernacular architecture research and adaptability of policy should be reconsidered. The endogenous development paradigm is operable in constructing sustainable villages in rural Southwest China, according to its specifically complicated topography and poor development. Rural Built Environmental Sustainability Assessment System has been established for this region based on theories of endogenous development and sustainability. This study used RBESAS to qualitatively evaluate self-reliance and development capacity of built environment in Bingzhongluo. Furthermore, questionnaires on vernacular architecture were distributed to conduct “bottom-up” intensive studies in a typical area in Qiunatong Village of Bingzhongluo. This study performed a sustainability-oriented analysis on built environment and vernacular architecture to give significant responses to Bingzhongluo renewal.

KEYWORDS: Vernacular Architecture; Dynamic Changing Process; Endogenous; Bottom-up; Policy.

Introduction

In Southwest China, vast log structures are dispersed in the dense woodland of the Three Parallel Rivers Property regions in Yunnan Province, where the vigorous biodiversity and multi-ethnic settlement culture are highly recommended at international level. Bingzhongluo Township is a valued area in miniature. However, relentless modernization in this small town will soon bring more destruction rather than contribution to the environment, society, and culture before research on local vernacular architecture becomes mature. This paper provides an overall picture through sustainability-oriented studies that consider the changing process and dwellers to determine meaningful research approaches, and then ultimately enhance the sustainable development of vernacular architecture in Bingzhongluo.

Background and problems

Bingzhongluo Township, an area of 823 km² with beautiful natural scenery and typical vernacular settlements (Wu 2013), is located at the northern Salween riverside in Gongshan County of Nujiang Lisu Autonomous Prefecture. It is an important core zone of the Three Parallel Rivers Property in Yunnan Province, Southwest China. Human settlements in these regions are divided by steep gorges and glaciated peaks (UNESCO 2015). In Bingzhongluo, log-construction villages are typically located in the stable alluvial fans beside Salween, or at the bottom and middle of the mountains around the river. Infrastructure, sclerotic roads, electricity, running water, and broadcast had not been constructed in numerous remote village groups until 2010. More than five different minority groups live in this region, believe in more than five religions, and show multiple and porous social relationships (Wu 2013). All of these characteristics highlight the value of vernacular architecture research in those regions. However, a systematic investigation on this dimension is scarce.

Vernacular architecture constantly changes. Environment and affordability are the most influential factors, while people who are under rapid developing circumstances prioritize economic benefits and mainstream culture when starting construction. Villagers' concern on space requirements and building technique are also changing (Ronald 2000). The transition of social relationship is reflected on vernacular architecture. However, domestic research continues to treat Bingzhongluo vernacular architecture as a standstill from the past, with loose generalizations on ancient minority life history (Wang, Chen 1993; Jiang 1997; Shan, Wu 2012; Wu, Shan 2013). Interactions with the modern world are inevitable although daily living and production in Bingzhongluo are only slightly influenced by the growing economy. Dynamic changing processes of vernacular architecture are led by the changing society. These changing processes should be studied systematically that "... beyond mere



observation and compilation is critical collation, a nuanced consideration of many variables within an interdisciplinary and comparative framework” (Ronald 2000, p.4).

Policy is another powerful method of changing rural living conditions. The New Countryside Construction policies implemented in 2005 emphasized urban-rural integration as the fundamental solution to rural issues in China (Ye 2014). Modernization development has become the most important consensus as a series of top-down strategies for governance. Government of the Yunnan Province strives to achieve leapfrog development and reduce the gaps between minority groups and other more advanced regions (People's Government of Yunnan Province 2011). Bingzhongluo region is currently involved in a massive promotion of rural development. However, most domestic researchers ignore the analysis of the locals' actual needs from a bottom-up perspective. Supposition from Ronald (2000, p.332) on development of Chinese vernacular architecture is now become true that “for the most part, Chinese seem to be unsentimental about the loss of traditional architecture, viewing demolition — perhaps even the disintegration of traditional culture in general — as the necessary, if unfortunate, accompaniment of modernization”.

Studies have more broadly proved that the modernization development model promoted in poor mountainous regions of Southwest China is unsuitable. Instead, endogenous development model is reasonable and sustainable. “First, this paradigm shifted the development from ‘inward investment’ to ‘endogenous development’. Second, the mode of delivery for rural development has shifted from a ‘top-down approach’ to a ‘bottom-up’ model. Third, the structure of rural development policy has moved from ‘sectorial modernization’ to ‘territorially based integrated rural development’” (Wan, Ng 2014, p.388). These aspects would significantly affect the vernacular architecture. However, further studies on policies promotion for sustainable rural reformation and optimization in Southwest China have not gained sufficient attention.

Practice and analysis

Analysis of the Rural Built Environmental Sustainability Assessment System (RBESAS)

To investigate the dynamic changing processes in Bingzhongluo, RBESAS is used as a qualitative assessment tool for evaluating the extent of built environmental development in the entire village groups there. This system is an endogenous development-oriented assessment tool that considers both environmental protection and development needs based on human being in the rural regions of Southwest China (Wan 2013).

Villages in Bingzhongluo can be categorized into three types based on the major driving factors of development concluded from overall field investigations. The first type is

spontaneous-development village, which is at the primary development level. It has poor communications, so it is slightly influenced by external factors. This type of villages has a traditional lifestyle, and mostly relies on local resources. The next two types evolved from the first one and exhibit different stages of development. The second type is the village influenced by multiple external factors such as particularly intensive policies, enhanced transportation, growing economy, rising tourism, and aggressive external culture. The third type is strongly influenced by a single external factor — powerful policy, such as the New Countryside Construction. This type of villages can usually be found in newly built areas that are designated as governmental demonstration projects. The old villages where people used to live are often abandoned. These three types of villages’ development phases simultaneously exist in Bingzhongluo. The RBESAS analysis entirely focuses on them.

The framework on issues and indicators of RBESAS is shown in Fig.1.



Fig.1 Framework of RBESAS issues and indicators (Wan 2013, p.116)



Given that the scoring and weighting system of RBESAS has not been established (Wan 2013), the ideal states reaching the highest standard of each indicator in RBESAS are set as the benchmarks for this assessment. Meanwhile, the worst states are set as the opposite to integrate the development progress. Next, actual development in villages can be assessed under each sub-issue with three criteria: positive tendency, showing condition towards the ideal state; negative tendency, on the contrary, indicating situation towards worst state; and not applicable, pointing out that there is no intervention or practice on this aspect by now. Development degree in each tendency can be described with mild, moderate or severe. The average development level of each village type in Bingzhongluo is qualitatively evaluated to present a general comparative analysis on developing gaps between current and ideal state within each sub-issue, as well as the amount of effort that is required respectively (see Fig.2).

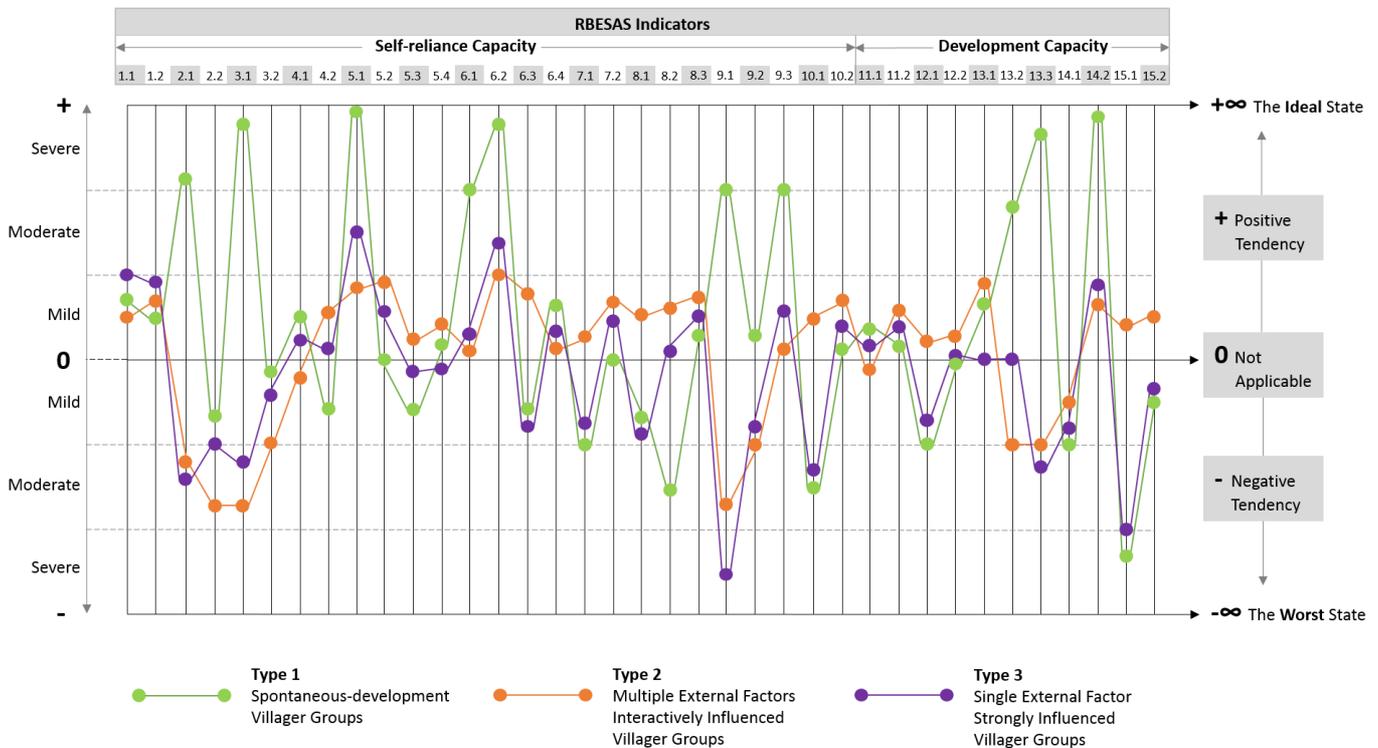


Fig.2 RBESAS analysis on three village types in Bingzhongluo

The spontaneous-development village groups are relatively closer to the ideal standard of RBESAS. The modernization development model implemented in Types 2 and 3 has induced diminution on village capacities of self-reliance and development, primarily in the environmental and social dimensions. The most urgent issues in the Bingzhongluo region are waste management, pollution control, energy self-reliance, and education. A thorough analysis is performed in two directions, namely, amplitude and distribution.

Type 1: The violent swings proved that the spontaneous-development type of village exhibits very poor development integrity and high vulnerability. Changes in the local

environment and resources extensively interfere with residential life. The positive tendencies in this type of village group are more than the negative ones. Given that RBESAS is based on endogenous development, the results indicate that this type of village demonstrates highly benign conditions in promoting the endogenous development as a model with high applicability and low resistance.

Type 2: Given the market-oriented economy, development is more coherent but also extensive in the village type influenced by multiple external factors. Energy and resources cannot be used efficiently and sustainably while pollution and waste will soon become serious problems due to the intensified development. For this type of village group, most of the positive tendencies are at a mild level. On the other hand, although the number of negative tendencies is relatively small, a part of them is at a moderate level. Therefore, the systematic integration of the development will be holistically improved if the endogenous development model could be conducted in these areas.

Type 3: The resistance of vulnerability has a small bump in the village type that strongly influenced by single external factor. Nevertheless, the living level seems to evolve into another type of poor condition. Most negative tendencies are very similar to Type 1, which means problems most in need have not been solved, or been improved mildly. Besides, a majority of positive tendencies are close to Type 2, proving that policy-oriented approach has no obvious advantage compared with market-oriented development. Furthermore, the important positive tendencies in the past such as pollution-free construction, water quality and public engagement, have now been weakened. This phenomenon is a general result of the highly intensive modernization in local villages. That is to say, the policy-guided modernization model is indeed inappropriate for this area.

Intensive study

Further study continues in Chugang, Gongka, Gagantang, and Qingnatong village groups in Qiunatong because they represent the typical Type 1 village in Bingzhongluo. Another vital factor conducive to endogenous development in this area is that, "...the collective labor provides channels through which people of different villages and religious groups collaborate and cooperate peacefully" (Wu 2013, p.66). Questionnaires on villagers' attitudes and demands on conventional buildings and public facilities have been distributed to more than 60% of the villagers living in this area.

Researchers and government officials often consider the antiquated and rough dwellings as the largest obstacle to poverty alleviation. However, the judgment on traditional dwellings should be based on local circumstances. The results of the questionnaires indicate that local people are more concerned about environmental hygiene and family income (see Fig.3). Most of the physical performances of log-construction houses are accepted and even



appreciated by local people. Therefore, an effective method is to perform sustainable renovation work on these houses using advanced but low-cost techniques, instead of opting to demolish or abandon the old houses. The renovation techniques should also be easy for villagers to learn, practice, and inherit.

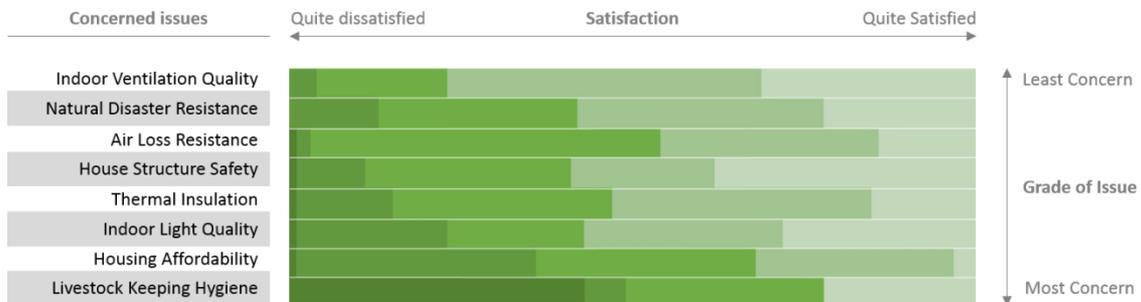


Fig.3 Results of the Vernacular House Performance Questionnaire

Public facilities in the study site are ill equipped (see Fig.4). More amicable public spaces are necessary. Basic education and sanitation facilities are also urgent requirements for current and future generations. User-oriented design at community scale demands building strategies that takes into account close-to-people hardware facilities. Software enhancements can be well engaged with well-considered community construction, leading a more vigorous village life.

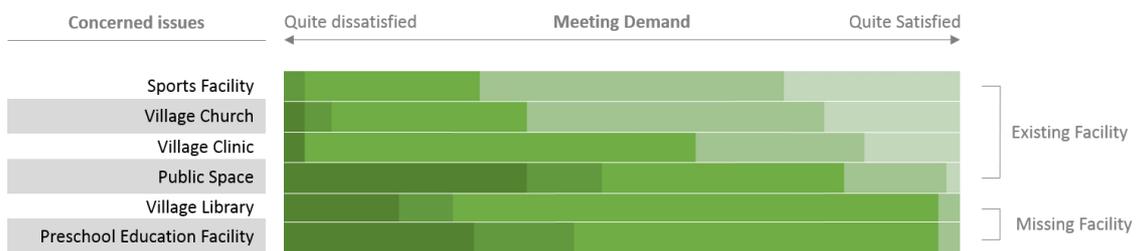


Fig.4 Results of the Village Facility Questionnaire

Conclusion

Chinese traditional rural architecture provides meaning to the dynamic relationship between people and environment while resonates other aspects of society such as valuable folk tradition, as well as sociocultural elements that link up individuals, family, and society (Ronald 1986). The dynamic changing processes of vernacular architecture should be investigated comprehensively and systematically. Determining sustainable means for vernacular architecture renewal is highly significant under rapid social development.

The mainstream guiding theory and methodology should be introspected. The endogenous development model is more reliable than the modernization model in rural Southwest China. The RBESAS framework in this region is a sustainable and applicable

assessment tool for evaluating the development of rural built environment. The RBESAS can be a powerful research approach although a concrete application method to RBESAS has not been set. Research on regional-scale vernacular architecture should show respect to and support local residents. The bottom-up mode can spur more practical and beneficial research outputs and prompt governmental interventions.

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