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# Theoretical Construction of Adaptive Regeneration for Shrinking Traditional Villages

**Caiyu Zhang[1], Xuan Wang[1,*]**

*[1]School of Construction Engineering, Guangdong Technology College, Zhaoqing, 526000, Guangdong Province, China*

***Abstract:*** *Traditional Chinese villages are vital heritage of agricultural civilization, embodying historical memories, life wisdom, and cultural genes. However, with the accelerating urbanization and industrialization, traditional villages have gradually lost their advantages in population, industry, and space, exhibiting distinct shrinking characteristics. A large number of villages are gradually declining without effective protection and renewal; some even renovated villages have fallen into the dilemma of "cultural emptiness". Statistics show that nearly 900,000 natural villages in China have disappeared in the past decade, and the protection of traditional villages is extremely urgent [12]. How to explore a sustainable, low-cost renewal model that respects local characteristics under the condition of limited resources has become a common concern of the academic and practical circles. This paper proposes a renewal path based on the theory of "adaptive regeneration", advocating that on the premise of acknowledging that the problems of villages are difficult to be completely solved, the concept of "surviving with problems" should be adopted. Through subtle and precise interventions, the decline process can be delayed, and the cultural and social vitality of villages can be maintained.*

***Keywords:*** *Shrinking Traditional Villages; Adaptive Regeneration; Modernization and Retrofit*

## 1. Introduction

In the process of the rapid advancement of urbanization in China, cities, leveraging their advantages in resource agglomeration, have continuously compressed the development space of villages. A large number of traditional villages have fallen into the "shrinking" dilemma characterized by population loss, land idleness, and functional decline. Relevant studies on "hollow villages" point out that the spatial shrinkage and population loss of villages form a mutually reinforcing vicious circle, which is a common problem faced by traditional villages in the process of urbanization [8]. As a typical representative among them, shrinking traditional villages face not only external problems such as limitations of natural conditions and insufficient policy support, but also internal contradictions including cultural inheritance discontinuity and a single industrial structure.

The current mainstream village renewal and reconstruction models, such as the government-led model and the enterprise-developed model, are mostly designed for villages around cities or those with favorable natural conditions. These models ignore the reality that shrinking traditional villages have a weak foundation and lack funds and technologies. Blindly applying them not only makes it difficult to solve problems, but may also increase their development burden. Some studies regard villages as organic entities, providing new ideas for solving problems. On this basis, this paper further draws on the idea of palliative care in traditional Chinese medicine (TCM) that "coexists with diseases" when treating terminal illnesses, and proposes the theory of adaptive regeneration for shrinking traditional villages. It aims to achieve the sustainable development of such villages through the core logic of "surviving with problems" combined with phased and targeted improvement measures, thus opening up a new path for their renewal and reconstruction.

## 2. Current Issues in the Development of Shrinking Traditional Villages

### *2.1 Comparison of Different Renewal and Reconstruction Models for Shrinking Traditional Villages*

Based on differences in implementation entities, the current renewal and reconstruction models for shrinking traditional villages are mainly categorized into four types. Each type of model has distinct advantages and disadvantages, yet all share the issue of insufficient adaptability to shrinking villages.

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Details are presented in the table 1:

*Table 1: The merits and demerits of different shrinking traditional village reconstruction model*

| Renewal and Reconstruction Model | Implementation Entity | Village Characteristics | Advantages | Disadvantages |
|---|---|---|---|---|
| Government-led Model | Village collectives and villagers' organizations as the main entities | Have basic conditions for development, with high historical and cultural value and complete style | Villagers can engage in operation directly, promoting professionalism and stimulating the vitality of the village | Lack of experts who provide guidance throughout the process of village protection and development, lack of scientific protection methods, and lack of characteristic development models |
| Enterprise Development Model | Government-led in the early stage, with developers involved in the middle and later stages | Protection requirements are not very high, with good market positioning or unique resources | Bring in external funds to support village construction, and gains can be obtained in a short term; both operational and management capabilities have great advantages | It is difficult to deeply explore the historical and cultural connotations of the village, and it is easy to be excessively commercialized, thus losing the uniqueness of the village; income is distributed to the company, and it is difficult for villagers and collectives to win benefits |
| Social Participation Model | Third-party social organizations involved | Under the guidance of social organizations, villagers develop independently, making the village gradually renew from external changes to internal ones | Village collectives focus on exploring the cultural characteristics of the village, and cultural institutions can be hired in the village for planning | Insufficient funds, slow development, unprofessional operational experience, poor tourism innovation and tourist organization capabilities, and slow results |
| Mixed Development Model | Government + enterprise + farmer; the government is responsible for development planning, enterprises are responsible for investment and construction, and farmers participate in operation[10] | Better resources and complete management system | Sound operational system, taking into account both economic and social comprehensive benefits | Multi-headed management, great difficulty in operational coordination, and unbalanced income distribution |

(Source: Drawn by the Authors)

Each of the above-mentioned renewal and reconstruction models has its own characteristics. These models may play a role in developing the economy of villages around cities or villages with relatively good natural conditions, but they all neglect the adaptability to shrinking villages with extremely poor basic conditions and insufficient funds and technologies. For example, in the practice of village renewal in southern Shaanxi, it was found that rigidly applying the enterprise development model to

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shrinking villages with weak cultural and natural resources not only failed to improve the village economy but also increased the debt burden of village collectives [1].If these renewal and reconstruction measures are rigidly applied to shrinking traditional villages without careful consideration, it will not only fail to achieve the goal of developing the villages, but may also aggravate the fiscal deficit of the village collectives, resulting in the opposite of the desired effect. Therefore, it is particularly important to analyze the existing problems before renewal and reconstruction.

### *2.2 Problems Faced in the Development of Shrinking Traditional Villages*

#### *2.2.1 External Issues*

Spatial shrinkage: With the incremental expansion of cities and towns, a large amount of non-construction land (such as ecological and agricultural land) has been converted into urban construction land, leading to the "absolute compression" of the construction space of traditional villages. Meanwhile, the emergence of "hollow villages" and the idleness of agricultural land have caused the "relative shrinkage" of the actual usable area of villages, forming a vicious circle of "spatial shrinkage → population loss → village decline". The transformation practice of "hollow villages" in many regions shows that unordered land idleness will further worsen the spatial shrinkage of villages.

Shrinkage of carrying functions: Affected by land management systems, traditional villages have long been dominated by residential functions and traditional agriculture, with limited functional expansion. Although new formats such as eco-tourism and health and wellness have attempted to inject vitality into villages, restricted by land use, most villages still focus on a single residential function, which is difficult to meet the needs of modern development. In the governance practice of urban villages in Xiamen, it was found that optimizing functional allocation based on village characteristics is the key to breaking the functional shrinkage dilemma [4].

Shrinkage of style and characteristics: The unorganized self-construction by villagers, the phenomenon of illegal and rush construction, and the "one-size-fits-all" village construction campaign have damaged the traditional style. The demolition of ancient dwellings and the homogenization of public facilities have further interrupted cultural inheritance, leading to the loss of village uniqueness. A study on traditional villages in Henan pointed out that the loss of style characteristics is one of the main reasons for the decline of village cultural vitality [9].

Shrinkage of population structure: Urbanization has attracted a large number of young and middle-aged laborers to migrate out, resulting in the collapse of the village employment structure and leaving middle-aged and elderly people as the main labor force. Moreover, the effect of population return is weak, and villagers often participate in village construction as employees. In addition, the concentration of education and medical resources in cities has forced villagers to relocate to access high-quality resources, further exacerbating population loss. In the study of spatial adaptive reconstruction of traditional rural settlements in ethnic areas, it was emphasized that ecological protection should be integrated into the whole process of village renewal [8].

Ecological environment damage: Geographical conditions have led to the scattered distribution of residential buildings in some villages; population loss has caused land abandonment, deactivating the ecological system. Under the "museum-style" protection model, villagers have relocated to build new houses, resulting in the unordered expansion of villages, occupation of cultivated land, and damage to the ecology. Factors such as urban expansion and backward water conservancy facilities have further aggravated ecological problems.

Harsh climatic environment: Unplanned village construction has destroyed the original spatial texture and pattern, affecting natural ventilation and shading effects, leading to poor thermal environment in summer. Trees have been cut down for construction materials or fuel, weakening wind protection capabilities in winter. Concrete-paved public squares lack greenery, which is inconvenient for villagers' neighborhood communication.

Backward infrastructure: Village buildings have many functional defects and poor living conditions; some buildings are in disrepair and cannot meet the needs of modern life. Narrow roads prevent fire trucks from entering, posing safety hazards. Common problems such as poor drainage, lack of sanitation facilities, and no street lights affect the quality of villagers' lives and the village image.

Lack of funds and technologies: Although national agricultural support funds have increased year by year, their proportion in total fiscal expenditure is low; moreover, a large amount of funds are used for infrastructure construction, diluting investment in non-infrastructure projects. The outflow of

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village talents has led to a shortage of practical talents proficient in technology, markets, and agriculture, restricting industrial upgrading and cultural development.

Inadequate policy management: The agricultural subsidy policy system is incomplete and provides single services, making it difficult to stimulate villagers' enthusiasm for production. The government has neglected agricultural technology guidance, preventing villagers from improving production efficiency with new technologies. The shortage of village cadres and the outflow of talents have resulted in inadequate management capacity.

#### *2.2.2 Internal Issues*

Lack of spatial vitality: The development of urbanization and tourism has weakened the village culture and local sentiments, resulting in indifferent neighborhood connections. Open communication spaces are squeezed by buildings, and traditional public buildings (such as ancestral halls and stages) are either left idle or renovated. Folk cultural activities have disappeared due to the lack of venues, gradually draining the vitality of villages.

Loss of traditional culture: Impacted by "dominant culture" and coupled with the outflow of young and middle-aged populations, traditional buildings are left unmaintained, leading to a break in the inheritance of intangible cultural heritage. The protection and construction of some villages are inconsistent with their original styles, further damaging the cultural foundation. The research on the regeneration of Dong minority settlements points out that cultural inheritance is the core of maintaining the long-term vitality of traditional villages [7].

Single industrial structure: The village economy still relies mainly on traditional planting and breeding industries, featuring outdated production models, low efficiency, and meager income. Restricted by climate and market factors, the sales channels for agricultural products are narrow. Insufficient labor and low land utilization rate further exacerbate industrial backwardness, making it difficult to meet the needs of modern life.

Through the analysis of the above-mentioned internal and external problems faced by shrinking traditional villages, it is found that the development of these villages is constrained by these issues. However, it is quite difficult for shrinking traditional villages to completely solve these problems. To address the aforementioned issues, we need to start from the essence of the problems, recognize that some existing traditional protection and reconstruction methods cannot adapt to the actual situation of current traditional villages, and thus change traditional concepts to explore alternative approaches for village transformation. Therefore, the authors believe that introducing the concept and principles of adaptive regeneration into shrinking traditional villages to attempt to solve and improve these problems will help sustain the existence of such villages.

## 3. Concepts and Principles of Adaptive Regeneration

### *3.1 Concepts of Adaptive Regeneration*

The problems of shrinking traditional villages are characterized by periodicity and difficulty in complete resolution. Additionally, these villages inherently lack sufficient funds, technologies, and talents, and will eventually decline if no intervention is implemented. Based on this, the concept of adaptive regeneration mainly includes three aspects:

First, recognizing the difficulty of completely solving the problems. The problems of shrinking traditional villages involve multiple dimensions such as nature, economy, and society, with complex attributes. It is unrealistic to completely solve all problems, so this premise must be clarified before renewal and reconstruction to avoid falling into the misunderstanding of "complete eradication".

Second, adapting to problems and coexisting with them. Drawing on the concept of "surviving with tumors" in Traditional Chinese Medicine (TCM), village problems are compared to terminal illnesses. Instead of pursuing the complete elimination of problems, the goal is to achieve a balance with them by regulating the overall "functions" of the village. Just as TCM adjusts treatment strategies according to the patient’s physical condition—focusing on attacking tumors when the body is strong and on nourishing and conditioning when the body is weak—for villages, it is also necessary to balance the relationship between the "organism" (village system) and problems[6]. With "surviving with problems" as the core, targeted measures are applied in stages to improve the situation (see Figure 1).

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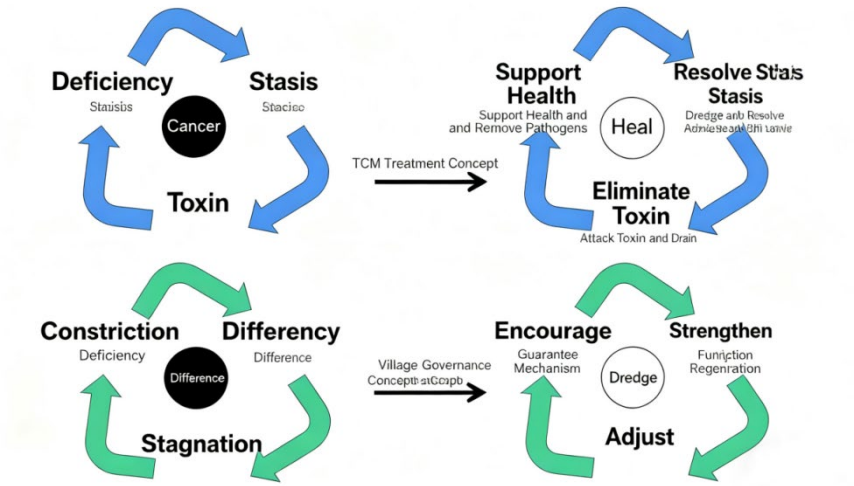


*Figure 1: Concept of TCM treatment and rural governance*

(Source: Drawn by the Authors)

Third, organic renewal and rational utilization. Taking Wufang Village in Shanghai as an example, the original architectural style of "white walls and gray tiles" was maintained throughout the reconstruction process, and only detailed parts such as doors and windows were adaptively renewed to avoid large-scale demolition and reconstruction. Traditional materials such as cobblestones and old slates were used to pave footpaths, and natural water systems were dredged. On the basis of preserving the village's characteristics, organic renewal was realized, which successfully stimulated the village's vitality and provided a reference model for shrinking traditional villages. This practice is consistent with the "beyond smart shrinkage" rural planning concept proposed by scholars, which emphasizes the importance of organic renewal [5].

### *3.2 Principles of Adaptive Regeneration*

Principle of law-based practice: Current legislation on village environmental governance in China is general, lacking flexibility and clear punitive measures, which leads to difficulties in implementation. Legislation needs to be improved from three aspects: in terms of legislative concept, the concept of environmental equity should be implemented; in terms of system design, it should focus on prominent village problems; in terms of legal revision, governance regulations conforming to the actual situation of villages should be formulated to provide legal guarantees for adaptive regeneration [11].

Principle of sustainable development: Drawing on the TCM concept of "symbiotic treatment for diseases", renewal strategies are formulated according to the status of the village "organism". When the village "organism" (e.g., economic foundation, population structure) is in good condition, the focus is on solving partial problems (e.g., style restoration); when the "organism" is weak, basic conditions (e.g., improving infrastructure) are first enhanced before addressing core issues. This ensures the integrity and sustainable development of the village, achieving the goal of "treating problems while preserving the village".

Principle of adaptation among industry, function, and spatial form: Renewal and reconstruction are people-oriented, with villagers' needs placed at the forefront. On the premise of protecting culture and ecology and developing the economy, village tourism and other formats are rationally developed to realize villagers' local employment and income increase. The interest linkage mechanism is used to stimulate villagers' enthusiasm for participating in village protection, forming a virtuous cycle of "protection → development → benefit". In the development of traditional villages in Henan, this principle has been applied to achieve a balance between cultural protection and economic development [9].

Principle of multi-level adaptive technology matching: Drawing on the TCM thought of "syndrome differentiation and treatment", strategies of "treating different diseases with the same method" or "treating the same disease with different methods" are adopted for different village problems. For example, regarding the same problem of style damage, villages with abundant resources can introduce professional teams for restoration, while villages lacking funds can use local materials for simple repairs. At the same time, the blind construction of facilities inconsistent with the village style (e.g.,

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luxury hotels, asphalt roads) should be avoided; under the condition of limited funds, priority should be given to the protection of cultural and natural landscapes.

## 4. Specific Approaches and Methods of Adaptive Regeneration

Establishment of adaptive evaluation: The project team systematically collects basic village data (such as population structure and building conditions) and development needs (such as villagers' employment and public services) through questionnaires and on-site surveys; meanwhile, it conducts in-depth analysis of the village's current situation from dimensions including location, natural resources, historical culture, and modern needs, summarizes core problems, and lays a practical foundation for subsequent renewal and reconstruction. This evaluation method is widely used in the research of rural settlement reconstruction, and has been verified to be effective in identifying village problems [3].

Environmental and ecological adaptation & functional activation and utilization: On the basis of protecting the original ecological environment of the village (e.g., terraced fields, water systems), the planning working group activates and inherits traditional culture (e.g., restoring workshops for traditional crafts, organizing folk-custom activities); synchronously implants business formats with low investment and high adaptability (e.g., farm-style catering, handcraft experience); adopts low-cost landscape design (e.g., creating small landscape features with local materials, planting native plants); and configures public service facilities (e.g., small-scale health stations, cultural activity rooms) in accordance with villagers' living circles, so as to avoid resource waste and stimulate the vitality of the village.

Establishment of a sustainable growth mechanism: The special working group formulates differentiated strategies for the specific problems of the village: on the one hand, it builds small-scale public buildings (e.g., tourist service centers, parking lots) on the periphery of the village by virtue of administrative resources to make up for the functional gaps in the border areas; on the other hand, it adds service-oriented infrastructure (e.g., street lamps, drainage pipelines) inside the village to optimize the spatial structure; meanwhile, it dynamically adjusts the strategies in light of the village's development and constructs a sustainable growth mechanism featuring "assessment - adjustment - optimization". Relevant studies on biological organism regeneration frameworks point out that dynamic adjustment is the key to ensuring the sustainability of the mechanism [2].

Establishment of an adaptive guarantee mechanism: The overall management team improves institutional guarantees, promotes the co-governance of multiple subjects including the government, villagers, and social organizations, and forms a "top-middle-bottom" integrated management model characterized by "superior policy guidance - village-level organization implementation - villager participation in supervision"; it further clarifies the rights, responsibilities and benefit distribution of each subject, ensures the effective implementation of village planning, and meets the needs of villagers as well as the sustainable development of the village.

## 5. Conclusion

By systematically analyzing the external and internal problems of shrinking traditional villages, this study finds that traditional renewal and reconstruction models lack adaptability and fail to promote sustainable development, as they ignore the reality of these villages' weak foundational conditions. Based on this, drawing on the concept of "surviving with tumors" from Traditional Chinese Medicine (TCM), this paper proposes the theory of adaptive regeneration centered on "surviving with problems". It clarifies the theory's core concepts of "recognizing problems, adapting to coexistence, and achieving organic renewal", as well as its guiding principles, including law-based practice, sustainable development, adaptation among industry, function, and space, and multi-level technology matching.

In the future, it is necessary to further enrich practical cases of the adaptive regeneration theory, optimize specific implementation methods, and improve relevant policies and regulations. This will provide more precise theoretical support and practical guidance for the sustainable development of more shrinking traditional villages, and contribute to the effective implementation of the rural revitalization strategy.

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