

# Micro-Intervention Rural Planning Based on Cultural Heritage

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**Abstract:** For a long time, rural planning has been following the system of urban planning and design, and the results of rural planning are expressed in general maps or aerial views. Many local governments have implemented several rounds of planning, but only little improvement has been made on the rural landscape. This is because of the neglect of the inherent cultural heritage of villages and the inherent role of cultural values. Urban planning and design methods cannot be used directly to demarcate rural areas. Therefore, we need to form a new planning and design theory that considers rural culture heritage. The micro-intervention planning theory is a culture-guided planning strategy for rural revival, where rural areas are transformed and revived using a progressive approach. This strategy is more suited to rural planning than the large-scale demolitions and reforms being conducted in the new rural planning process in China.

**Keywords:** rural planning; micro-intervention planning; consequentia; fault-tolerant; rural culture; rural revival

## 1 Micro-intervention planning strategy in line with the inheritance of rural culture

The inheritance and restoration of culture is a process that is long and slow. Therefore, the planning and design method guided by culture is also a long-term process that requires patience. This process is not only a single material transformation, but also includes conditioning of the spiritual outlook. Through an investigation of a country's rural style, it is not difficult to find that a large number of rapid construction methods from the past are obviously unacceptable in rural construction now. The reason is that humanity has neglected the "more and faster" method; so we need a "less and slower" planning method that can establish reasonable information feedback and correction in order to achieve the true meaning of "people oriented," which is the basic concept of the "micro-intervention" planning strategy.

### 1.1 What is the micro-intervention planning method?

The micro-intervention planning method takes as its basis the theoretical method of acupuncture in traditional Chinese medicine. It believes that a village is like an organic living body. The various substances in the village exist like the meridians of the body. Through the repair and transformation of the "acupoints" of the village body, which is called intervention, it is possible to cause the entire rural meridian and body to react. Through the analysis and judgment of the reaction generated by the intervention, one can judge the effectiveness of the intervention and thereby stimulate further rural development. Because this intervention has certain tentative features, the points or acupoints involved should be as small and slight as possible, just like a small point during acupuncture; therefore, it is called a "micro-intervention." The micro-intervention planning method involves selecting the intervention point (which may be a house, or a landscape, or even a small project such as a certain facility), and then analyzing and

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deducing the series of reactions that may be brought about after the transformation or reconstruction of the intervention point. If most of the possibilities of the deduction will be beneficial to rural development, the design plan should be implemented for the intervention point, and follow-up observations should be carried out. If the effect is as expected, it would be best to continue to strengthen or expand the intervention of the selected point. If the effect does not reach the expected level, the input of the intervention point should be terminated and other intervention points selected. The process includes selection, deduction, implementation or repair, fault tolerance, correction, and open design. The framework system of the micro-intervention planning strategy is shown in Fig. 1.

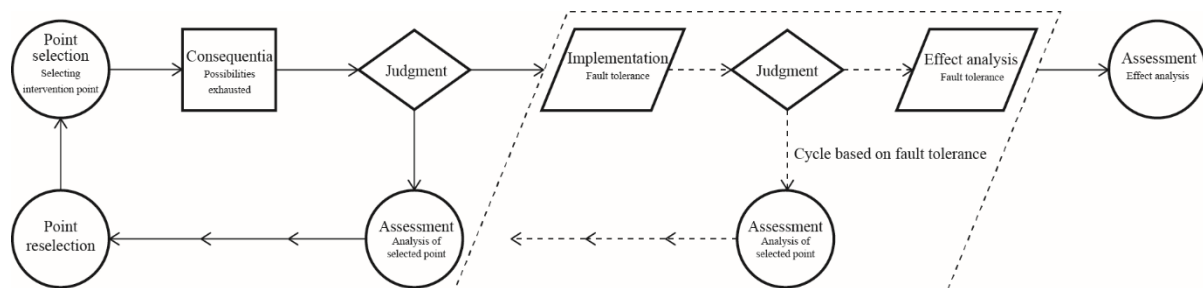


Fig. 1. The framework system of micro-intervention planning strategy.

### 1.2 Similarities and differences between progressive planning theory and the micro-intervention planning method

In the 1950s and 1960s, American political scholar Charles Lindblom proposed a progressive decision-making model that subverted the previous “rational decision-making model” (the rational decision-making model refers to a question based on the proposed problem. Actual scientific analysis and judgment is used to arrive at a decision to solve the problem) and directly promoted the theory of progressive planning. This inspired the method of progressive planning; its key point is not to determine ambitious goals—it is necessary to make partial marginal changes to the current policy based on past experience, and then move from small improvements to a general harmony [1].

In the field of urban and rural planning, progressive planning has been recognized by more and more designers and researchers. This method avoids the problem of traditional theoretical decision-making neglecting uncertain factors in the development process and can continuously correct and improve the planning in the course of practice, thereby leading to the best results. Compared with progressive planning, the micro-intervention method emphasizes the designer’s position and attitude; that is, the starting point must be very small and have the possibility of tolerance. In recent years, progressive planning theory has been developed and perfected [2]. Some scholars have proposed a “small-scale, gradual-way” approach to historical districts and old city reconstructions. However, compared with the “small scale” aimed at urban problems, it still seems too big for the countryside. So, we put more emphasis on “micro-intervention” for the countryside. The method does not care about how small the intervention point is; it can be as small as a building or even so small as to have no buildings, such as a landscape or pavilion.

Progressive planning emphasizes the partial marginal modification and gradually promotes the implementation of the plan, while micro-intrusion planning aims to generate a spontaneous benign cycle through a point of intervention. They have different objectives, scales, and strategies. Moreover, progressive planning theory is more suited to urban, old city reconstruction and historical block renewal, while the “micro-intervention method” is more tailored to rural planning and has better practicality.

### 1.3 The relationship between participatory planning theory and the micro-intervention planning method

Participatory planning theory also emerged in the 1950s and 1960s. In 1969, Sherry Arnstein published the article *A Ladder of Citizen Participation* in the Journal of the American Planners Association and proposed eight levels of public participation models. According to the degree of participation, the eight levels are manipulation, guidance, notification, consultation, persuasion, cooperation, authorization, and public control. In 1977, the *Machu Picchu Charter* proposed urban planning for public participation: “Urban planning must be based on systematic and continuous collaboration between professional designers, public, and government leaders.” In 1981, Jürgen Habermas published the book *The Theory of Communicative Behavior*, and provided the study of the “destination of behavior and communication” [3] as a theoretical basis for participatory planning.

With the development of public participation in Europe and America, and the subsequent community building campaign, the participatory planning approach has gradually become the main form of community building. In

Taiwan, the community building movement has reached an unprecedented level. The rural practices of Taiwan architects basically fall under the category of participatory planning practices inspired by community culture. Participatory planning brings the main body into the main process of planning and design, strengthens the sense of responsibility and common understanding of community members, and plays a positive role in rural planning.

Compared with the “micro-intervention” approach, participatory planning emphasizes the main role of planning behavior and has a process orientation, while micro-intervention emphasizes the choice of object and has a results orientation. There is no concept dispute between the two methods, but the entry points are different. Participatory planning is more suited to the intervention of sociology and planning, while “micro-intervention” is more suited to the practices of architecture and landscape. They can complement each other, thus covering the overall improvement from subjective cognition to objective improvement.

#### 1.4 The relationship between anti-planning theory and the micro-intervention concept

The concept of anti-planning was also first valued by scholars in the field of planning. It reverses the thinking on urban planning and puts forward the importance of maintaining natural ecology. In 1969, Ian McHarg, an important British garden designer, published the book *Design with Nature*, pointing out that “Nowadays, natural environment is under siege in rural area, and rare in cities, so it becomes very precious.” The concept of anti-planning should start from the establishment of a harmonious relationship between people and land and protect the natural ecological environment by prioritizing the control of non-construction areas [4] before planning.

The anti-planning concept embodies great attention to the natural environment and full respect for the geographical landscape pattern. Also, when it comes to the implementation of rural planning, it focuses on protecting and cherishing rural landscapes. Some people agree with the design concept of micro-intervention, but when they choose a point they always create a new “construction land” and engage in a new implant. This is not to say that we cannot build new construction, but we should consider the natural pattern of the countryside and give priority to the existing points, like old or abandoned buildings and landscapes as intervention points, rather than taking a large piece of land for new planning.

Anti-planning theory is of much significance to the selection of micro-intervention, and it is also useful for the selection of resettlement sites in traditional villages. Many traditional villages currently have residential sites for the purpose of protection and have placed large-scale determinants next to traditional villages. When large determinant rural communities appear beside traditional villages, the geomancy pattern of the original villages can be destroyed. For example, the new and ancient villages in Peita, Liancheng County, Fujian Province, are close at hand, but the style and layout are not suitable or coordinated.

#### 1.5 Applicability of micro-intervention methods in rural areas

The core of the micro-intervention method is “micro,” which is a very small intervention. Micro-intervention has three direct benefits for villages: less investment, quick results, and fewer side effects. It is easy to understand that when the selected projects are small, the investment will not be large and the construction will naturally be faster. At the same time, if the selection is wrong, it will involve the lowest price, but this does not mean that there is no cost. Therefore, the selection is very important. Therefore, in the first step, it is usually necessary to repeatedly scrutinize and judge the selected points to find the best “intervention point.” This process is a “deduction” for the selected points. A comparison of relevant planning theories is shown in Table 1.

## 2 The analysis and deduction of the “intervention point”

One must select an “intervention point” and then carefully analyze the point and deduct the different possibilities. The higher the number of deductions, the more comprehensive the factors considered and the higher the success rate of the deduction. Although the deduction is a virtual process, it is based on the most objective conditions of reality.

### 2.1 The concept of deduction

“Consequentia” refers to the relationship between a premise and a conclusion [5]. In this paper, the deduction is the possibility derivation caused by the selection according to the existing objective conditions after the selection is established. Because various objective conditions have different effects on a project, and there may also be other restrictions, there are many possibilities for deduction. It can be not only A-B but also A-C, A-E, etc. Therefore, it is necessary to make as many detailed deductions as possible.

**Table 1.** Comparison of relevant planning theories.

Category/ contrast	Aims	Entry point	Organizational discipline	Application category	Method of implementation
Progressive planning	Planning area tends to be harmonious overall	Local marginal modification	Government Planner	Urban design Old city update Historic district	Partial design → feedback from all parties → expand design
Participator y planning	Emphasize public participation and build community culture	Interpersonal relationships	Sociologist Planner	Community member Community environment Community culture	Community organization → public participation → emotional community
Anti- planning	Protecting the landscape of nature and ecology	Relationship between humans and land	Landscape architect Planner	Urban design Old city update New village design	Non-construction area control → construction area
Micro- intervention planning	Intervene and stimulate self-renewal in the countryside	Intervention point: a house or landscape	Architect Planner Landscape architect	Rural style Rural culture Rural industry	Intervention point selection → architecture or landscape implementation → stimulate rural revival

## 2.2 The role of deduction

The deduction in this paper is actually a process of moving from a hypothetical premise to a real condition, and then to a hypothetical conclusion. You may wonder, since the beginning and ending are fictitious, what is the role of deduction? In fact, the role of deduction is very important, mainly in the following aspects:

First, deduction can rationally verify the correctness of the chosen points. On the basis of a certain hypothesis, we can reach many possibilities through the analysis of realistic conditions, and the more positive results of these possibilities there are, the greater the value of the selection.

Second, the best results of the deduction can be used as a planning guide. Suppose we can exhaust the results of the deduction (of course, this is unlikely in reality), then the best result is actually the result we want. The result can be easier to find; then after the selection, it can be guided by a planning guide, society guide, and other methods to this result.

Finally, the deduction can foresee some unfavorable factors in the practice process. Each of the positively oriented clues may be interrupted by some unsatisfactory objective conditions. Through pre-judgment, we can minimize the occurrence of unfavorable factors and reduce harmfulness after emergence.

## 2.3 Method of deduction

The foregoing stated three important aspects of the deduction: hypothetical premises, real conditions, and hypothetical conclusions. Therefore, the reliability of the deduction is based on the accuracy of these three links.

First, one assumes the premise through cultural genes. Culture is a very important premise for a village to continue its healthy development, which has already been discussed in the previous chapters. Therefore, the intervention point must be one of great significance based on the premise of profound cultural background, and it must stimulate traditional culture and community culture. This requires carefully exploring the history of the country and the culture, forms, and industry of each period to find the most suitable entry point. Therefore, a comprehensive review of the village's history is the first step.

Second, the deduction is based on the actual conditions of objective reality. The real conditions are not only the best touches of the three links but are also the most difficult and comprehensive part. The investigation of real conditions can only be done through a large number of field investigations and interviews to collect the most comprehensive information. In the micro-intervention method, one should identify some possible intervention points before starting the investigation. In the process of investigation, understanding the wishes of the villagers not only allows verification of the intervention points but also provides strong support for the conclusions.

Third, the deduction is based on positively guided hypothetical conclusions. When designers derive their preconditions and conditions through self-experience or drawing on others' experiences, they should take a positive stance as much as possible. The micro-intervention method involves not only the improvement of intervention points but also the positive guidance of rural development; otherwise, it would be only a point improvement without follow-up guidance and would not achieve good returns. Therefore, we can expect that the real conditions can be improved, and even in the process of deduction we can propose an improvement method.

### 3 Fault tolerance and verifying the results

With the most probable and positive deductive conclusions, we can carry out the transformation and construction of the intervention point. After a long period of construction, we must continue to observe and further guide the effectiveness of the project. The process cannot be rushed, but one should be patient and allow for the temporary existence of certain errors—that is, fault tolerance.

#### 3.1 The concept of fault tolerance

The term “fault tolerance” was borrowed from the computing field. Fault-tolerant technology is a method and technique that guarantees uninterrupted service delivery when a system is activated with errors [6]. Fault tolerance, specifically, relates to faults, not errors. It can be seen from this conceptual explanation that the premise of fault tolerance is that the whole system cannot be compromised; that is, a “fault” does not lead to the failure of the entire micro-intervention plan, but only to staged and temporary non-satisfaction with the requirements. In essence, it can be corrected, and we do not artificially force its correction, but use self-consciousness to encourage repair. This process is called a fault-tolerant process. The goal of micro-intervention planning is to achieve the self-activation and rejuvenation of a village; therefore, it is necessary to maintain a fault-tolerant attitude to ensure that the village continues to move toward the discovery of corrections.

#### 3.2 Importance of fault tolerance: fault tolerance leads to cultural consciousness

Fault tolerance is an important part of cultural restoration; we need to use fault tolerance as a means to consciously re-recognize culture. Through a survey of Shaxi Ancient Town in Dali, Yunnan Province, it was found that many farmers have refurbished their homes with bauxite technology. Some of the “modern white tile houses” that have been covered for several years have been demolished. When asked why, the villagers responded that tourists do not want to stay in these houses, as they like houses made of soil. This is the important meaning of fault tolerance. If the villagers were forced to build adobe houses at the beginning, they would have developed feelings of resistance. Only through the guidance of the market and mainstream culture could they consciously recognize the importance of traditional culture and be able to exert their wisdom and make construction more passionate and innovative.

#### 3.3 Timeliness of fault tolerance: from fault tolerance to fault correction

First, fault tolerance is not equal to *laissez-faire*. Fault tolerance must be in a controllable range, and the fault must be solved within a certain period of time. Second, the object of fault tolerance is the original villagers. In other words, fault tolerance is just being tolerant of the faults of others, such as the joint object, but not tolerant of the faults of the plan designers and government decision makers. The mistakes of the decision-makers and designers must be corrected from the beginning. Finally, faults must be corrected. Error correction may occur more than once; it may occur many times, and there may even be long-term error correction. This is why rural planning must have a “sustainable open design.”

### 4 Establishing a sustainable open design system

In 1941, Sigfried Giedion published an important architectural review book called *Space, Time and Architecture*, where he criticized the industry and technology for focusing on function but not emotional satisfaction. He stated that there is a need to establish a new concept of “time-space” to reach emotional satisfaction [7]; that is, companionship in the time dimension. Many architects such as Peter Zumtho, Snowz, and Huang Shengyuan have been pursuing this for more than 20 years, and that companionship has appeared.

Micro-intervention planning is an open system design. The process of derivation and fault tolerance is a process of continuous adjustment. Designers such as Mr. Huang Shengyuan go to the villages from time to time to find out if anything is wrong.

#### 4.1 Importance of open design

Open design draws on the concept of an open ending in a movie, which means that no uniquely determined results are provided. In other words, it is a design result that can be continuously expanded by the villagers, owners, and users. Because the size of the countryside is often small, buildings in the countryside often change functions

according to the characteristics of the times. We can often see the transformation of functions in some rural areas. For example, a primary school was changed into a village committee, a warehouse was changed into a small supermarket, and a drying field became a square dance venue. As public buildings and spaces are rare in the countryside, this scarcity has contributed to the transformation of these functions with the times. Therefore, rural public buildings should be open enough to be freely converted.

Living architecture requires an open design. It is not difficult to see that residential houses are constantly accumulating. One year, the eldest son gets married and builds a house next door. The next year, the second son gets married and finds a place to build a house. Rural houses are always evolving and changing. Their scale is small, property rights are independent, and the state is different from those in cities. Its flexibility and adaptability can fully reflect the wisdom of the people and keep pace with the times in terms of development.

#### **4.2 Establishing a continuous design system of “micro-intervention, deduction, fault tolerance, and correction”**

So far, this chapter has discussed the whole process from the micro-intervention point selection to the deduction of fault tolerance until the test is revised. Establishing such a set of methods is crucial to the planning and development of a village. The core idea is to start from the small practical things and try to slowly change the village. One should not finish the plan all at once, but rather constantly update and develop it as needed.

### **5 Case practice and theoretical verification of micro-intervention planning**

#### **5.1 Before the intervention: Zhujiadian Village in 2014**

During the first survey of Zhujiadian Village, the research team lived in Zhouzhuang, which is five miles away from the south of the village. There was no hotel or guest room in Zhudian Village, although there were many vacant houses in the surroundings. Walking in the village, the research team occasionally came across villagers; when they asked whether there was a house to rent, the villagers showed only incomprehension and doubt. In the second survey procedure, the research team conducted a comprehensive survey of Zhujiadian Village on a case-by-case basis. As of June 12, 2014, 142 of the 242 houses in the village were in use, which is less than 60%; only 1 owner was foreign, and 52 were owned by residents who were left-behind.

Although it is only 7 miles away from Zhouzhuang Ancient Town, 5 kilometers away from Jinxi Ancient Town, and less than 20 kilometers away from Tongli Ancient Town, Zhujiadian Village has a quiet atmosphere. Both as the origin of Jinzhuan (a type of high-quality brick), Jinxi Chen's tomb is rarely known by people, compared with the Gusu Lu's tomb. Among the young people interviewed, no one was willing to inherit this craft because they felt it would be too dirty and tiring. According to our research, there are currently more than 30 people who are still baking bricks in the village, but only 2 people can be left at the kiln. Revitalizing such a long-established and beautiful village, passing on this precious traditional culture, and determining how to help more villagers and outsiders understand the value of this village and the charm of the brick-making culture were the primary problems for planners. The good cultural genes and geographical environment of the village make it a practical case for the way that rural traditional culture can guide rural development.

#### **5.2 Starting to intervene: choosing the most appropriate intervention point**

In Zhujiadian Village, there is a brick factory built by the villagers in the 1980s. It is abandoned, partially collapsed, dangerous, and surrounded by overgrown grass. From the north side of the collapsed stairway, you can see the words “Dianxi Brick and Tile Factory” along the top of the wall, which brings back memories. This run-down brick factory was the best choice for an intervention.

First of all, the brick factory is located at the entrance of the village, between the external road and the village. From the same road on the north side of the village, the chimney of the brick factory can be seen. Therefore, the factory is a good location for contacting the outside world and the village. If the brick factory is used as the starting point of the village, the external road network and the countryside can be connected, and the interior of the factory can become the “village entrance hall,” seen before entering the village. Second, it is a very common but large-scale Hoffman brick kiln; thus it is possible to find similar design plans and fully grasp the interior space. The upper space of the brick factory has strong plasticity, which can provide a flexible and large space for different functions. Finally, this brick factory is the product of the village's own traditional culture. Because many people in this village use bricks as an industry and the factory is part of the shared memory of the brick industry in this era, it has become a

very good carrier of the brick culture. Based on such considerations, the possibility of deduction after the intervention for the brick factory was the next step.

### **5.3 Analysis and deduction: from the brick factory to the opposite brick kiln**

The brick factory is on the west side of the village, and the brick kiln, which has provincial-level cultural protection, is on the east side. If you visit the ancient kiln in the east and the brick kiln in the west, you can form many paths through the village, which creates many business opportunities and possibilities for village development. The basis of these possibilities lies in the situation in the village. Therefore, the project team conducted interviews and investigations on a house-to-house basis in the village to understand the status of each occupant; their family situation; their willingness to carry out the transformation; and their understanding of the local traditional culture, craft process, and other things. Then, they analyzed what might happen during the process.

### **5.4 Deduction of the establishment: implementation of the transformation of the intervention point**

The brick factory built by the villagers in the 1980s was mostly based on the standards and the experience of the craftsmen. The structure was not professionally designed. Its retention and transformation required a lot of determination and commitment. After the inspection report by the domestic authoritative test unit, the old factory was basically defined as a dangerous building. Demolition would have meant less investment and consumption; however, if the factory was demolished, many memories would have been destroyed: Childhood memories for young people who left the village, memories for middle-aged people who worked there and started their business there in the prime of their lives, or memories for old men who expended their youthful sweat there. If we had destroyed the factory, they would have been left with mere traces of those memories. More importantly, dismantling is irreversible; therefore, the final decision was to preserve the building.

In the factory, the team built an exhibition hall, brick workshop, and casual coffee shop to attract people; they retained all of the intervention points. The project team began to try to attract people through this small point transformation so that the sight of the village would bring new hope to the countryside.

The budget for the upper level of the brick factory was not very high. The unilateral cost was less than 3000 yuan. The scale was not large, as the total area was 1200 m<sup>2</sup>; hence, the local government quickly agreed to the plan and began to implement it.

### **5.5 Fault tolerance mechanism: allowing the villagers to create**

Time has proven that the point intervention of Zhujiadian was successful. Two years later in the village, there have been many changes. About one-third of the villagers are renovating their own houses. The rental price of vacant houses has doubled since someone started renting a year ago. The enthusiasm of the villagers about improving their homes has increased. From the various decorative components, it can be seen that they are not simply building houses but are implementing passionate designs.

Many people are worried that the appearance of the village will become messy and out of control, but we are not worried about this, because the evolution process triggered by a good starting point is generally good, and some mistakes in the middle can be tolerated. These small faults will gradually adjust under the main positive trend. At the beginning of the design process, the style and values of the village were determined, and the subsequent test will be the test of all of the facts. People will always learn to walk with their own shackles.

Thanks to the brick factory and the homestay school, we have gradually influenced the villagers' viewpoint, and helped them slowly realize that they should respect the past, respect the memory of Jiangnan, integrate architecture and the environment, and make certain innovations and improvements. Perhaps they will understand these things soon, maybe they will not understand for a while, or maybe there are some different ideas, but as long as they build on this kind of thinking, the results will be tested by the society and market, and then they will correct themselves and satisfy the development of society and the needs of the market. They will gradually correct themselves. This is not a one-step process, and there is no absolute standard answer. We need a long-term, fault-tolerant, and self-adjusting process, from the initial light intervention and deduction to the final development and fault tolerance. I hope that our attempts can bring new methods and approaches to the country's rural planning.

### **5.6 Design is not limited: upstairs to downstairs, village entrance to the village itself**

The continuation of the brick factory renovation includes two aspects: on the one hand, there is the continuation

of its own transformation. The original design task covered only the upper part of the building, and we hope that the interior of the kiln body will also be utilized and reinforced, so that we can strengthen the steel arch of the unit design. The frame was transformed into a thick and exquisite brick arch, and the brick arch technology of the Pangu kiln was tested and verified dozens of times here. Next, the owner proposed using the space under the cornice. We designed a method of adding glass to the brick column and conducted maintenance to repair the original broken batch. In addition to the transformation of the brick factory itself, an extended project will follow. The brick factory is still somewhat far away from the village; therefore, the new project is going to establish a connection between the brick factory and the village. This will take the form of a B & B school. The school will not only teach the villagers how to run B & B, but more importantly, it will introduce more villagers into the countryside, thus driving change in the village. The structure of the B & B features a thin-walled light steel frame system by Taiwan's famous rural architect Xie Yingjun. We invited the successful domestic Moganshan original house management team to start a school there. All of this is intended to stimulate the villagers themselves to awaken and recognize the beauty and value of their hometown, thus triggering the self-renewal and development of the village.

### 5.7 Analysis of the effect of the practice cases

At the beginning of 2017 (data as of January 1st), 19 of the 242 households had begun to rebuild their own houses. At the beginning of 2018 (data as of January 1st), the number was 62 out of 242 households. At the same time, two new public buildings were added, plus two new venues. The villagers spontaneously built more than 10 landscape pieces. Moreover, the village signed contracts with foreigners to occupy more than 20 houses, compared with 0 before 2014. It can be seen that the micro-intervention strategy has had a very significant impact on Zhujadian Village, and the villagers' relocation and service industries have obviously begun to develop. The effect of this strategy should be continuous; therefore, we look forward to more long-term observations and testing.

## 6 Conclusion

Urban planning methods are clearly not applicable in rural areas; therefore, it is essential to establish a planning method that is appropriate for these areas. The micro-intervention method is one such method. Unlike urban planning, we should understand that human-land relationships, interpersonal relationships, and human relationships in villages are far more complicated than in the city. A rural area is more like an all-in-one living collective. It should be designed with a cautious attitude and undergo constant minor repairs. Over-emphasis or excessively strong interventions in rural development can lead to distortions and even death in rural communities.

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