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Principles for Reading Structure, Morphology and Landscape as a Unity

The Investigation of the "Chinese Traditional Village"
of Zhangdaicun Village, Hancheng

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Abstract

Reading and analysis of spatial form is an important content of the study of urban and rural settlements. As an important manifestation of the rural landscape, the traditional village morphology embodies the process and results of human beings adapting to the environment and transforming the environment for a long time. It contains all aspects related to traditional social life, traditional cultural concepts, and traditional construction methods, etc. Therefore, from the perspective of tangible heritage, the decoding and protection of settlement morphological characteristics is of great significance to the overall conservation of Traditional Villages. The spatial morphological characteristics of the villages investigated in this study include both overt features and invisible features that need to be interpreted. A comprehensive understanding of the morphological characteristics of Traditional Villages is the basic prerequisite for the protection and development of Traditional Villages facing the future.

This research focuses on Zhangdaicun Village, a traditional Chinese village in Hancheng (county-level city) in Shaanxi Province, China. The author first discusses the problems of destruction and decline faced by Traditional Villages in Hancheng, takes morphological investigation as the starting point, combs the research methods of urban morphology and building typology, finds a methodological tool suitable for the re-research of Traditional Village spatial form, and then describes and evaluates the spatial form of Zhangdaicun village from the perspective of "Typo-morphological process".

In this thesis, the author always regards the Structure, Morphology and Landscape of the Traditional Village as a unity, combining the morphological characteristics with the heritage value evaluation, and formulating strategies for the conservation and design enhancement of the Traditional Village architectural heritage and the traditional village space method.

In the first chapter, the author first introduces the research problems, objects and goals; secondly, he explains and discusses the basic concepts involved in the research on the conservation of Traditional Villages and historical rural landscapes. Then the author analyzed the distribution of traditional Chinese villages and the special opportunities and challenges faced by Traditional Villages in Guanzhong area of Shaanxi, determined Zhangdaicun Village in Hancheng City as the survey object, and introduced the methodology of the research in this thesis.

In the second chapter, the author discusses the research related to the traditional built environment of Chinese villages in four stages and focuses on the analysis of re-research and policies related to the protection

of Chinese historical villages since 1980. Through research authors found that, in current policies for Traditional Villages, regulations and strategies limit the core objects of conservation to built heritage only (especially traditional buildings) and to intangible cultural heritage (similarly to the preservation of specimens), while ignoring their interrelations with rural landscape's structure. Through the inductive review of the literature, the study aims at comparing Western and Chinese conservation theories and suggest a new approach to Chinese rural heritage protection methodologies and policies.

In Chapter 3, based on direct field investigations, the author conducted Typo-morphology analysis on the heritage identities of the Traditional Villages in Hancheng. The survey combines Italian urban studies methods such as historical-structural studies, urban morphology and building typology, with Chinese culture such as the "big historical view", and traditional Chinese planning concepts such as Feng Shui and etiquette as well as sustainable landscape studies, econometrics analysis, as well as anthropology and anthropology analysis forms an effective key to support rural form studies on Traditional Villages. Thus, formed a set of hierarchical research methods under different observation scales. The research on the morphological characteristics of these different levels serves as the basis for the formulation of the classification protection strategy in Chapter 4.

In Chapter 4, the author proposes a way of thinking about the integrity conservation of Traditional Villages. By introducing the survey method of the historical landscape persistence of Traditional Villages and rural landscapes, it has laid the foundation for a qualitative and quantitative management and control method of the surrounding historical environment of Traditional Villages. Based on the typo-morphological structure, the author can treat the new and the old issues dialectically and proposes a conservation strategy that uses design enhancement-led positive interventions as a means.

1. Introduction: the Issue of problem of "Traditional Villages" in China

1.1 Research question and aims

- 1.1.1 *Traditionality crushed by modernity*
- 1.1.2 *Phenomena & urgent issues*
- 1.1.3 *The research questions*
- 1.1.4 *The research aim*
- 1.1.5 *Hypothesis and argument*

1.2 Reasons for Choosing Investigation Case

- 1.2.1 *Traditional Villages and the threat of urbanization: Central Shaanxi Plane area*
- 1.2.2 *Traditional Villages densely distributed in Hancheng*
- 1.2.3 *The special dilemma brought by the ecological environment*
- 1.2.4 *The special dilemma brought by the ecological environment*
- 1.2.5 *The issues about design enhancement (valorizzazione progettuale)*

1.3 Research Methodology

- 1.3.1 *Literature and records research*
- 1.3.2 *Related concepts*
- 1.3.3 *Field investigation*
- 1.3.4 *Morphological and typological analysis*
- 1.3.5 *Statistical induction*

1.1 Research question and aims

1.1.1 Traditionality crushed by modernity

Rural revitalization is an important goal of China's national development in recent years. In other words, in the past few decades, China's cities have developed rapidly, while the countryside has declined in general. The important reason is the one-way flow of people from rural to urban areas. For the heritage protection cause, the worthiest of our attention is the decline of the traditional Chinese countryside. What is tradition in China and what is the tradition in Chinese villages? These questions have become priority issues that need to be explained before the start of this study.

The occurrence of social changes has been continuous in history. In the past half century, the social changes in rural China have undoubtedly been rapid and dramatic. Along with the transformation of the political system and the rapid development of the economy, the social structure has changed, the traditionality has been impacted by modernity in all aspects. Many "traditions" in Chinese rural areas have also been abandoned in the tide of social change. As Jürgen Habermas believes, modernity consciousness is a kind of opposition to classical and traditional and is the current nature of the spirit of the times⁰¹. In the past four decades in rural China, conscious or unconscious discarding of tradition has become a "necessary" choice for people to face reality. Mr. Hsiao-táung Fei, a famous Chinese sociologist and anthropologist, was sensitive to such changes more than 60 years ago, he wrote in 1947:

"Social changes often occur when the old structure can no longer cope with new circumstances...People will not give up the old methods before they find them clearly inadequate. The old ways of life have their inertia. But if old methods no longer meet people's needs, people will eventually begin to distrust them."⁰²

Traditional Villages and their residential buildings, as means of livelihood, are an important part of the rural material environment. This can be proved by the data below. Since 2003, after more than ten years of investigation and selection, the Chinese government has so far selected 6819 historical villages at the national level (the preservation of traditional dwellings is an important part of the investigation), which accounts for only 1.22% of the total number of administrative villages in the country.

This phenomenon shows that the traditional built environment of most villages is no longer suitable for contemporary life and has been abandoned by peasants. Modern brick-concrete-structured houses have

01. Jürgen Habermas, "Modernity: An unfinished project" in *Habermas and the unfinished project of modernity: critical essays on the philosophical discourse of modernity*, ed. Maurizio Passerin d'Entrèves and Seyla Benhabib (Cambridge, Mass.: MIT Press, 1997), 38-55.

02. Hsiao-táung Fei, Gary G. Hamilton, Zheng Wang, From the Soil, *the Foundations of Chinese Society: A Translation of Fei Xiaotong's Xiangtu Zhongguo, With an Introduction and Epilogue* (1947, repr., Oakland: University of California Press, 1992), 129.



Figure 1-1 Declining villages on the banks of the Yellow River in Hancheng County, Shaanxi.

replaced traditional houses with wood, brick and raw soil as the main building materials. At the same time, the traditional physical environment and landscape of the villages have also been changed.

Traditional Villages need to be protected because "traditionality" is valuable, which is the consensus of all people who protect cultural heritage and those who care about cultural heritage. Therefore, on the one hand, we must use research to clarify the protection objects that need to be supplemented in the Conservation work, as well as the parts of the work methods that need to be optimized and improved. These are the primary concerns of this research. On the other hand, the research aims at explore "new methods" to continue the vitality of "traditionality" in contemporary villages. We believe that design is an effective tool to improve the quality of life. Therefore, under the premise of protecting "traditionality", the second issue of this research is how to improve the quality of life as well as social and economic vitality of people in Traditional Villages through design tools.

1.1.2 Phenomena & urgent issues

1.1.2.1 Rural migrant workers working in cities & decaying villages

In the 1990s, China began to promote the practice of villager self-government. At that time, the large-scale migration of farmers to cities had just happened. After 2010, almost all young people in rural areas of China's central and western regions went out to work or do business, and rural society has undergone tremendous changes⁰³. Population loss is an important reason for the rapid decline of rural areas in the western region. At the same time, another phenomenon occurred accordingly. In the central and western regions of China due to the high maintenance cost and poor living quality of traditional dwellings, many traditional houses are abandoned, and even some villages are disused.

1.1.2.2 The rural urbanization process that destroys the organic form

Through a survey of rural areas in western China, Pezzetti emphasized the definition of the term "rurban", which is used to describe a hybrid and specific spatial and landscape condition experienced in rural and mountainous contexts where former villages are increasingly co-penetrating with urban-like features, and developing extensively horizontally on farmland, thereby becoming the fulcrum of a territorial system, whereas the fringe areas of that system tend to depopulate⁰⁴. Indeed, in the Chinese countryside, during the process of urbanization & rurbanisation, the conflict between "traditional" and "modern" is prominent. The cultural heritage of many villages has devoured in the rapid development of the city, and also in the process of rural development. However, no matter for the city or the country, rurbanisation should not be a derogatory term. Because rurbanisation can be also defined as the process of increasing the presence of green space and or agriculture in towns and cities: a ruralisation of the urban. In the development of the

03.Xuefeng He, *Zhi Cun* (Beijing: Peking University Press, 2017), 233. 贺雪峰, 治村 (北京: 北京大学出版社, 2017), 233.

04.Laura A. Pezzetti, *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rurban Landscape*. (Tongji University Press, 2019), 7.

countryside, we need to embrace an attitude, that is, to try a coevolutionary approach⁰⁵ of the new and the old, rather than letting go of the crisis of civilization⁰⁶.

1.1.2.3 Forged historical buildings and environment

In order to develop tourism rapidly, some historical villages and towns forged historical buildings and environment after receiving development funds. This phenomenon has caused a negative demonstration effect and threats on other Traditional Villages. Listed villages and towns⁰⁷ attract tourism-commercial development projects based on standardised models that erase the deep-seated morphological order of whole settlements together with the authentic character of unique buildings and rural landscapes⁰⁸. For example, Dangjia Village in Hancheng, Shaanxi, and Yanjing Village in Wanrong County, Shanxi Province, have seen rapid development in tourism after being rated as a famous historical and cultural village in China. These Traditional Villages have become enclosed scenic areas and at the entrance of the scenic area, a large number of antique-style buildings used as tourist service facilities have been built in the past decade. These simulacra constructions have become part of the false context and seriously challenge the issue of authenticity.

1.1.3 The research questions

This research project studies the Traditional Villages around Hancheng city in north-western China. Hancheng city, county-level administrative unit in Shaanxi Province, has 11 national-level Traditional Villages which also called China Traditional Villages (CTV) by 2019. The preservation of these Traditional Villages is not optimistic, and most villages do not have specific measures to resist decay and enhance the sustainability of heritage. However, as important rural heritages, the protection and development of these villages are facing severe challenges from the economy, conservation methods, development strategies and management. Meanwhile, in 2015, Hancheng was listed as the Second Batch of National Comprehensive Pilot Areas of New-type Urbanization. According to the urban development plan, by 2020 the urbanization rate of resident population in Hancheng will be increased from 68% in 2015 to 79% by 2020. The clear urbanization indicators will also pose challenges to rural heritage protection.

Therefore, this study has positive and practical significance for strengthening the conservation of rural heritage in the region. At the methodological level, the research results also have certain reference value for the protection of Traditional Villages in other regions in China.

However, the reality is that current policies, regulations and strategies tend to limit the built heritage and

05.Cf. Stefano Della Torre, "A Coevolutionary Approach to the Reuse of Built Cultural Heritage." *Il Patrimonio Culturale in mutamento. Le sfide dell'uso*. Arcadia Ricerche, 2019.

06.Cf. Saverio Muratori, *Architettura e Civiltà in Crisi*. (Roma : Centro studi di storia urbanistica, 1963).

07. Refers the designation as "Famous Historical and Cultural Towns and Villages" or "China Traditional Village" awarded by the Chinese government.

08. Laura A., Pezzetti. *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rurban Landscape*. (Tongji University Press, 2019),8.

intangible cultural heritage in Traditional Villages as the core objects of conservation (like preservation of specimens) while ignoring the protection of the overall rural landscape. In terms of development, there is no emphasis on dialectic relationship between conservation and transformation.

In the study, I believe that there are four important elements to realize the sustainable development of Traditional Villages:

First, what are the challenges facing Chinese Traditional Villages's conservation? Secondly, it is necessary to clarify what should be included in the Traditional Village protection work. To answer this question, we need to review the existing research, principles and policies, review their successes and shortcomings, and put forward the contents that need to be supplemented. Third, on the premise of clarifying the "object of protection", discuss the methodological principles for the protection of each content. Finally, based on protection, I will discuss how to resolve the contradiction between Traditional Villages and modern life through the intervention of design. The design here is not only architectural design, but from the perspective of holistic, it proposes methodological principles and strategies at various levels, such as historical environments, settlements' space structure, buildings, etc., when discussing these issues, I will fully consider the economic life in rural areas and the human relations in the local society. In other words, the study also intended to explore how design enhancement can be used as an intervention to achieve its positive significance in the conservation and development of Traditional Villages.

1.1.4 The research aim

a) Exploring the principles and methodologies for the conservation and design enhancement of built heritage in Traditional Villages based on morphological research

The concept of "fragile heritage" will be proposed in view of the built environment of Traditional Villages, in which the traditional dwellings with "earth-timber" structure are the main material elements. Excavate the "construction concept" of traditional Chinese architecture, fully discuss the concepts of "old/new", "memory/nostalgia", "eternal/ change", and find the balance between "protection" and "utilization" of traditional buildings, in order to propose a design improvement strategy.

That is, for the restoration and transformation work, based on morphological research, a contribution of "Chinese architectural thinking" to the promotion the collaborative reuse of contemporary traditional dwellings will be explored, rather than the repetition and reproduction of "Chinese architectural style".

b) Spatial strategy for the development of Traditional Villages

Based on the current dynamics' principle framework of rural rurbanization, the existing protection planning tools and methods will be analysed and discussed, thus revealing the new threats brought about by the

paradoxical threats and the development of model tourism lurking in the title of "Traditional Villages"⁰⁹.

With morphological as the basic methodology, the spatial structure of Traditional Villages will be studied, the essential connection between "type" and "morphological structure" will be explored, and the hidden order and laws under apparent disorder will be revealed. As Pezzetti shown in the case study of Fenguang (Shaanxi), the combination of apparent and potential morphological structures provides a clear explanation for the historical development of Traditional Villages.

This basic form structure also provides a multi-scale combination analysis tool that makes it easy to distinguish between different landscape units and identify those parts that can be "properly adjusted." The tools and strategies for reading and designing historical landscapes derived from elements such as "protection", "architectural-urban relationship" and "landscape" will be integrated in a systematic way.

c) Preliminary exploration of evaluation methods for the historical environmental integrity of Traditional Villages

Facing the reality and trend of the protection and development of Traditional Villages, this study will analyse the historical environmental protection works and problems faced by Traditional Villages, summarize the specific content of the historical environment's overall protection and the inadequacies of the current historical environmental integrity assessment.

This study attempts to establish a concept and method of historical environmental assessment for the protection and utilization of historic villages in terms of the identification and determination of the scope of historical environmental protection, the analysis of historical environmental land use, the comparison and calculation of evaluation indicators of historical environmental landscape, etc.

It is hoped that the above results will promote the optimization of regional Traditional Village protection development planning techniques, enhance the intensive development performance of Traditional Villages and towns, and guide the effective inheritance of rural heritage. Provide a basis for decision-making and policy development related to Traditional Village and town spatial planning, land management and development.

1.1.5 Hypothesis and argument

Pezzetti proposed that present reading methods and studies appear insufficient to read and decode, along with style, construction techniques and vernacular traditions, also the settlements facts in the relationship between type and topos, the principles that constitute the urban-rural form and even more their underlying formal structures. Went further, she thought that on the basis of Milan tradition, based on the reality of built facts, it is feasible to defining a project of knowledge by reading the continuity through buildings, urban form and landscape structure, that is, through the two-fold dimension of urban-rural organism and formal

09. Pezzetti, L. A., and Li K. (2018) "Exploring a Regenerative Structure Integrating Conservation, Remodelling, and Development for Fenghuang Historic Rurban Landscape", *Urbanistica Informazioni*, special issue, 68-79.

structure¹⁰.

To continuing the views above, this thesis will demonstrate the role of morphological research in the protection of Traditional Villages, emphasizing that the continuation of the characteristics of Traditional Villages is the main content of tradition-al village protection. At the same time, those elements that affect the morphological characteristics of the village should also be discussed.

1.2 Reasons for choosing investigation case

The research area selected in this thesis is CTV (Chinese Traditional Villages) in Hancheng City (Shaanxi Province), and Zhangdaicun Village is the specific research village. Hancheng City, located in the easternmost part of central Shaanxi Province in China, is a National Historical and Cultural City and an important energy industrial city. The following are the reasons for choosing the Traditional Villages in this area as the research object.

1.2.1 Traditional Villages and the threat of urbanization: Central Shaanxi Plane area

In China, the overall economy of the northwestern region is relatively backward. Compared with the eastern region, the ecological environment in the western region is fragile and there are more vulnerable groups. As can be seen from fig. 1-6, the number of CTV in the Northwest is scarce.

Shaanxi Province is the most economically developed province in the five northwestern provinces. In some areas far from the city, due to people's cognitive and economic conditions, many rural heritages have also not been valued and maintained. Coupled with issues such as economic support, policy implementation, and the activeness of the tourism market, it has made it more difficult to protect Traditional Villages, which has brought huge challenges to conservation.

As explained in previous reports, since the 2012 election, up to now, there are 313 national Traditional Villages in Northwest China. As the most developed province in five provinces of Northwest China, Shaanxi has 113 national-level Traditional Villages. Shaanxi province could be divided into northern Shaanxi Loess Hilly and gully region, Guanzhong(Central Shaanxi)Plain and mountainous area and basin dominated Southern Shaanxi Province. There are 44 national-level Traditional Villages in Guanzhong Plain, which are close to 40% of the total number of Traditional Villages in Shaanxi province.

Guanzhong area, located in the Wei River plain of central Shaanxi Province, has a total area of about 55 thousand square kilometers. It is one of the important birthplaces of the Chinese nation. Many

10. Cf. Laura A., Pezzetti. *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rurban Landscape*. (Tongji University Press, 2019).

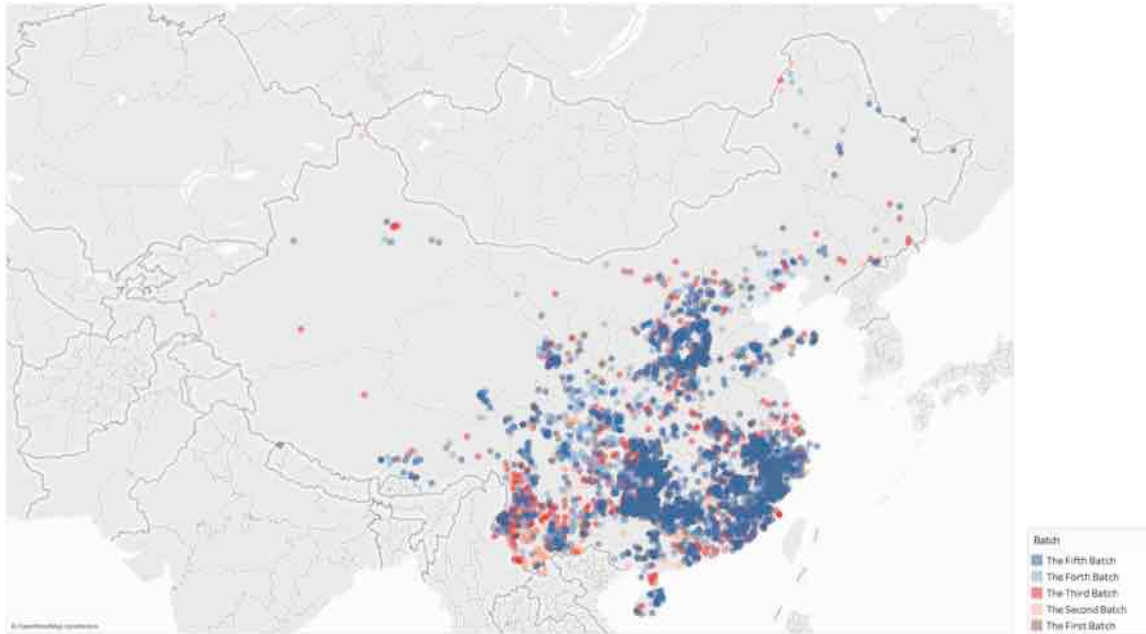


Figure 1-2 Distribution of Chinese Traditional Village(CTV) in batches. Source: elaborated by the author.

Figure 1-3 Distribution of Famous Historical and Cultural Cities, Towns and Villages. Source: elaborated by the author.

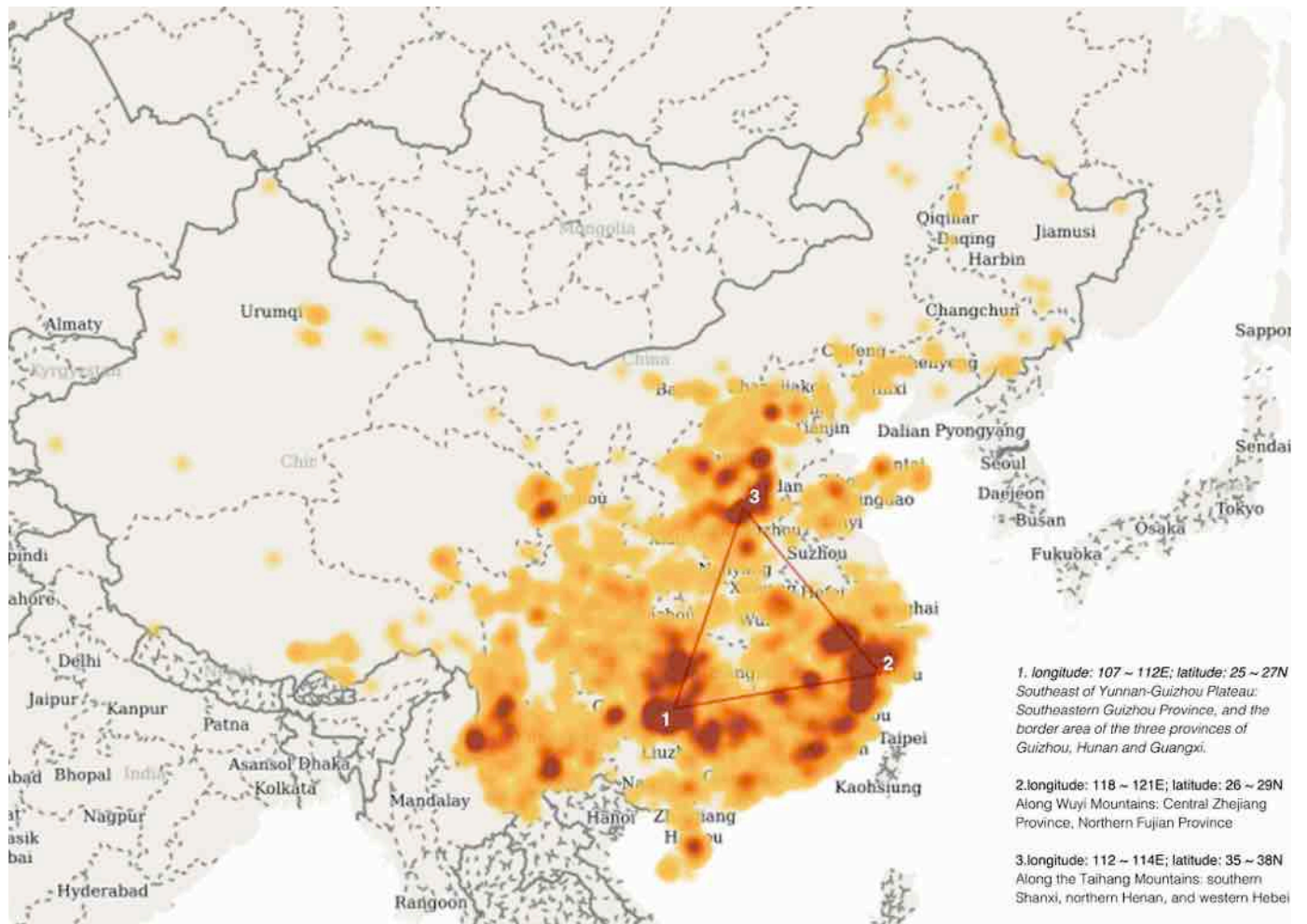


Figure 1-4 Figure 1 5 Distribution density of China Traditional Village. Source: elaborated by the author.

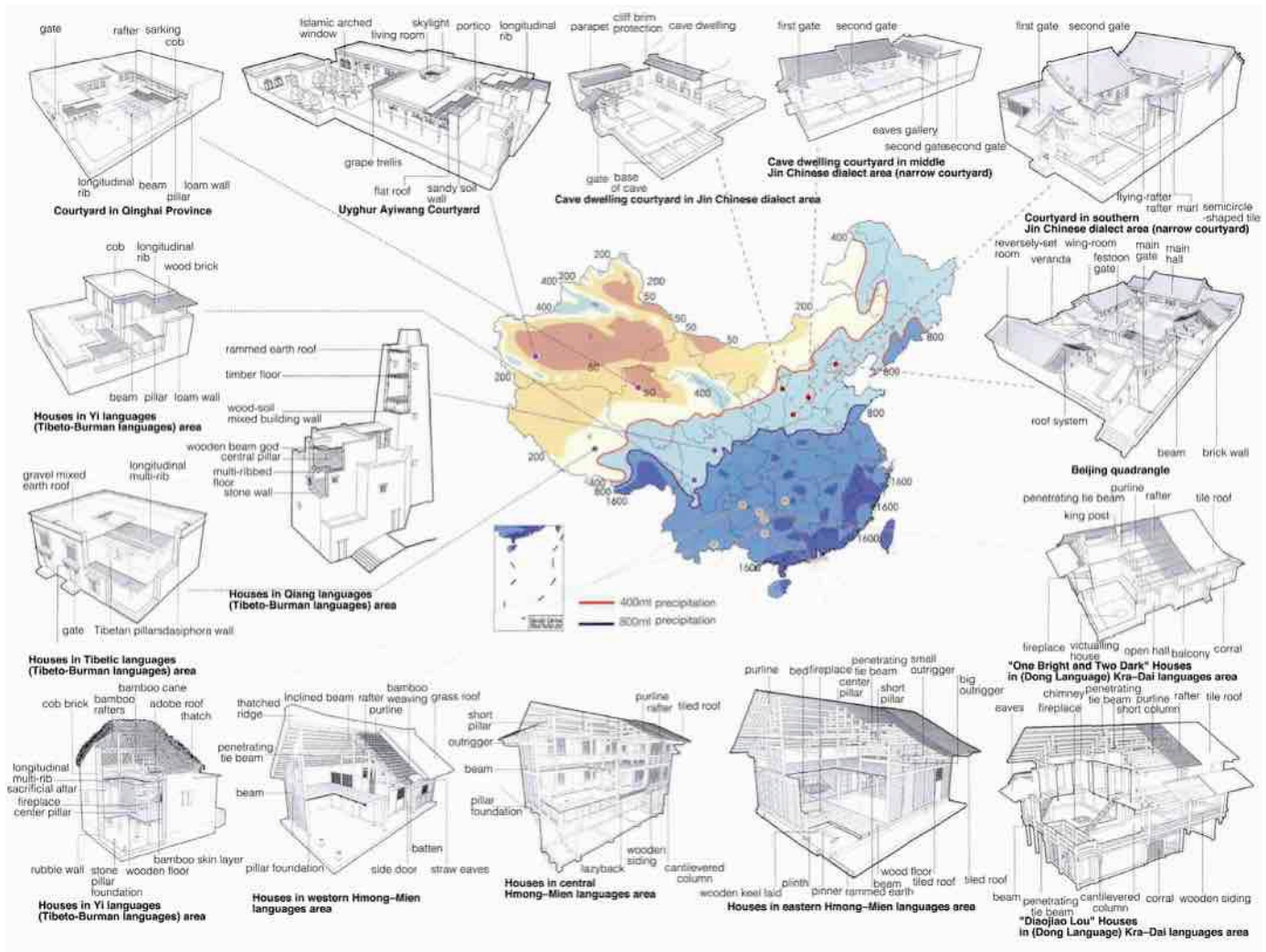


Figure 1-5 Figure 1 6 Classification and distribution of Chinese Vernacular Architectural Pedigrees in northern, western and southwestern China. Source: elaborated by the author. Source: *Structure and Prospective of Chinese Vernacular: Architectural Pedigrees, An Objective Based on a Systematic Study of Sample Preservation and Holistic Regeneration*, [J]. *Architecture Journal*, 2016, 10: 1-9. (redrawing by Chang Qing studio based on illustration in *Types and Structure of Chinese Traditional Architecture* by LIU Zhiping, 1957).

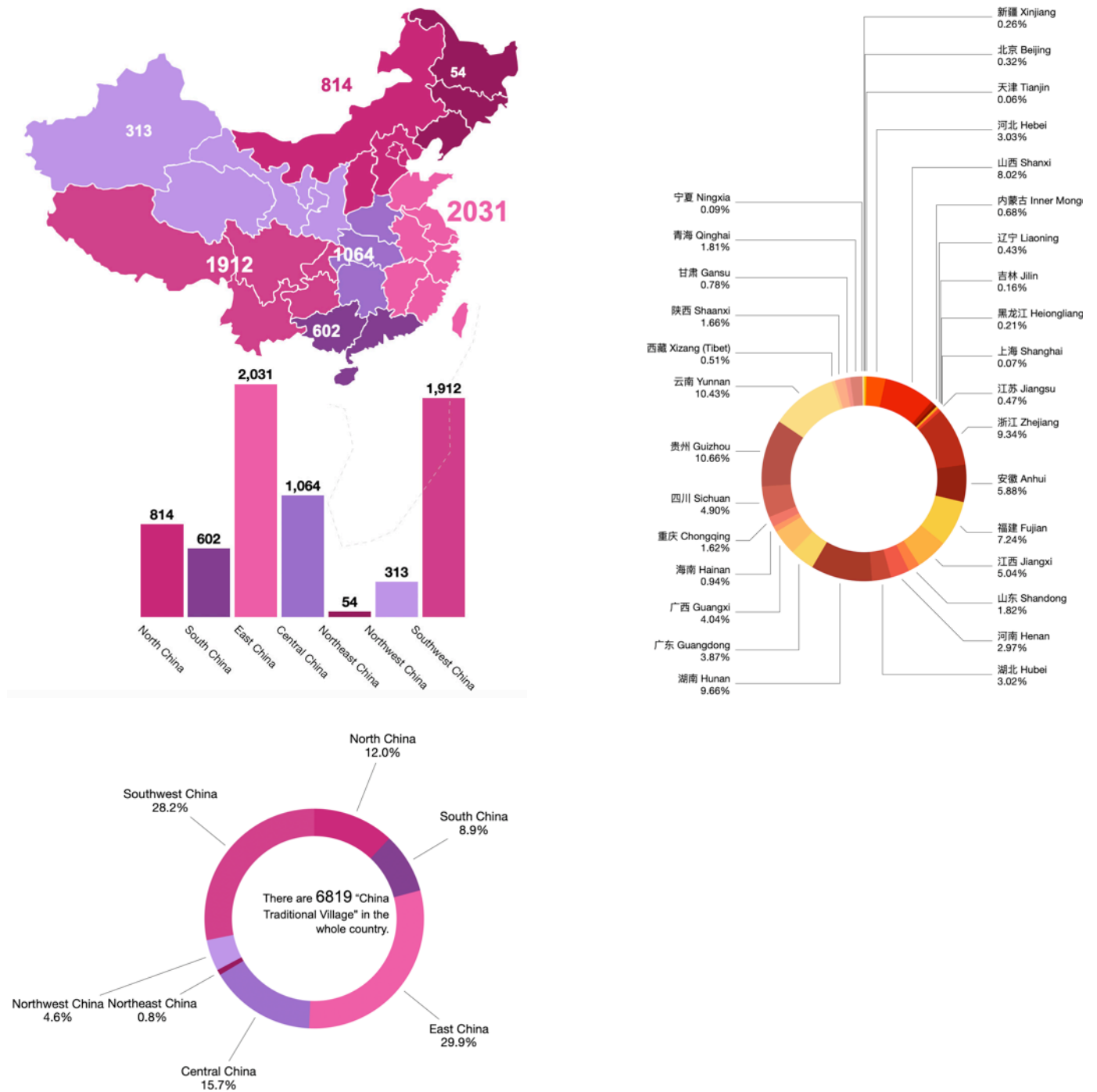


Figure 1-6 Distribution of CTV in Different Region. Source: elaborated by the author.

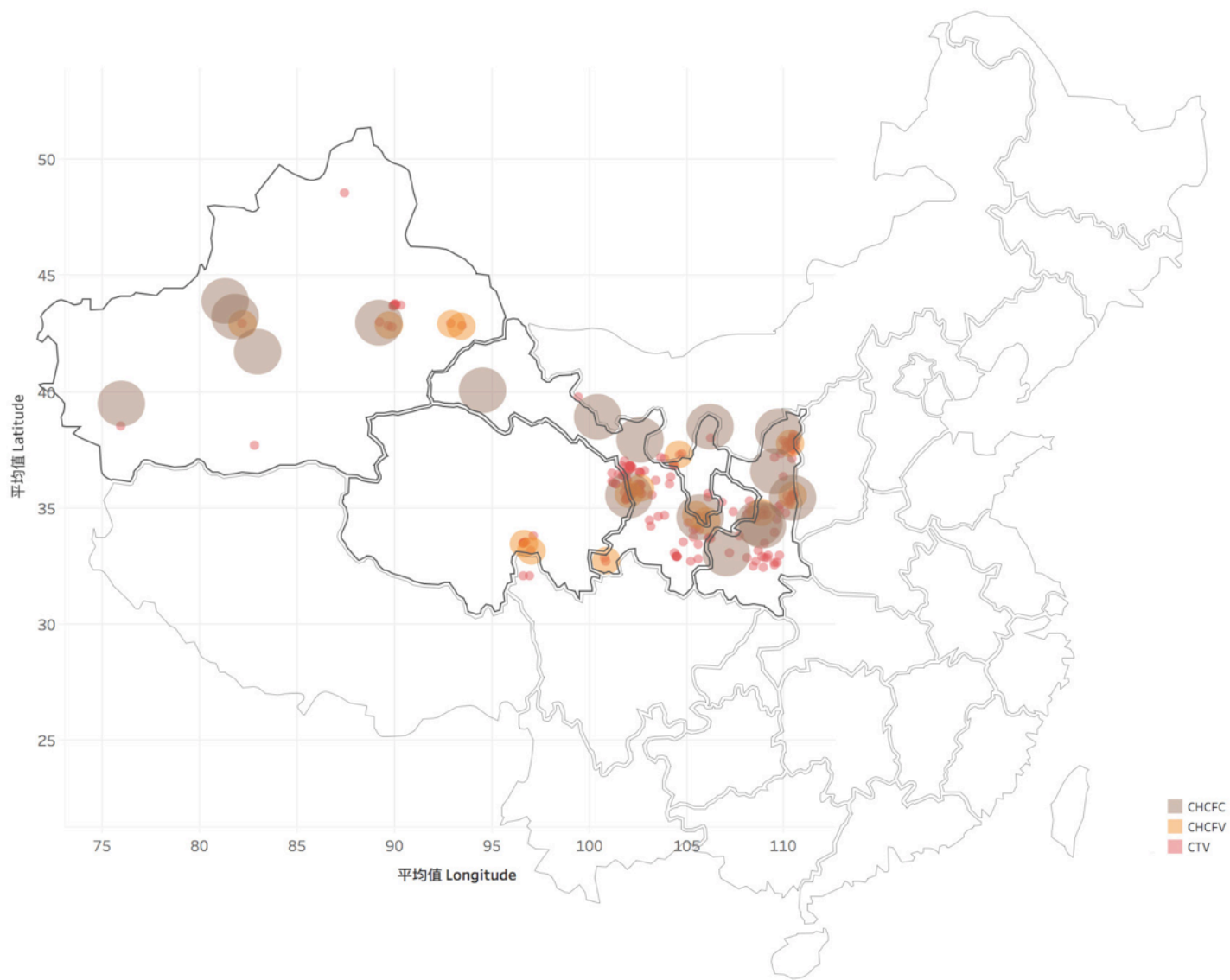


Figure 1-7 Distribution of CHCFC / CHCFV / CTV in Northwest China. Source: elaborated by the author.

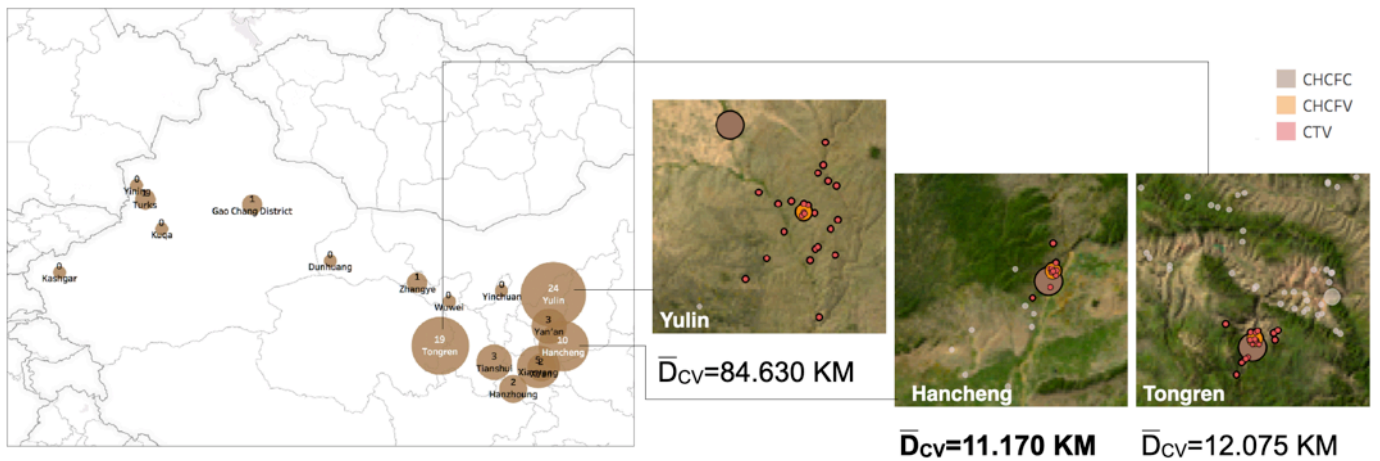


Figure 1-8 Quantity of CTV belong to the CHCFC's administrative division in Northwest China. Source: elaborated by the author. \bar{D}_{CV} = distance between CHCFC and CTVS within the jurisdiction. Yulin, Tongren and Hancheng have the most CTV in Northwest China. The analysis shows that the distribution of CTVs is the most concentrated in the administrative region of Hancheng (county-level city), and the average distance between CTVs and the central city is the closest.

dynasties' capital in ancient times have been built here. Because of the flat terrain, fertile soil, convenient transportation and the development of culture and education, the Guanzhong area has been a more developed area in Northwest China since ancient times. Because of its unique natural geographical conditions and cultural accumulation, it has created a unique residential culture in Guanzhong area, and has been fully reflected in its housing type, structure type, decoration technology and taboo. The traditional dwellings in Guanzhong area, wood frame, brick, adobe wall as the main material of single slope roof construction. In the tableland intermittent distribution also have a small amount of earth cave dwellings. The existing residences in Traditional Villages in Guanzhong are generally characterized by compact layout, economical land use, strict quality of material selection and construction, flexible indoor and outdoor space, and high level of decoration art. They are the precious heritages of China's architectural culture.

Up to now, a total of 28 ancient villages in Guanzhong area have been selected into the list of Chinese Traditional Villages (including 2 National Historical and Cultural Villages), which account for 4% of the total number of administrative villages in the region.

Although the right to use houses and their homestead is still owned by local farmers or individuals, most of the villagers live in the new villages which are outside the old villages or have been modernized or reconstructed locally. Although some empty and discarding traditional houses are rarely listed in the cultural relics protection units, they belong to the general traditional architecture. As the core elements of Traditional Villages, they contain valuable cultural values and traditional characteristics, carrying rich historical information and regional architectural genes. On the other hand, due to the vulnerability of its material structure, and the northwest region's weather, and failed to timely implementation of the intervention effectively, because the building materials are mainly wood and adobe bricks, if there is no timely maintenance, once the roof of a traditional house leaks, the damage will gradually expand, and the building will quickly collapse. Therefore, traditional houses have disappeared rapidly.

Hancheng is a city in Shaanxi Province, People's Republic of China, about 125 miles northeast of Xi'an, at the point where the south-flowing Yellow River enters the Guanzhong Plain. It is a renowned historic city, containing numerous historic mansions and streets as well as over 140 protected historical sites that range from the Tang to the Qing dynasties. In 1983, Hancheng County became Hancheng City. In 1986, the city was named a National Historic and Cultural City and, in 2007, was added to the list of Prime Tourist Cities of China. The famed Chinese historian Sima Qian, the author of Records of the Grand Historian, also known by its Chinese name Shiji, was born in Hancheng in the Han Dynasty and buried nearby.

The total area of the Hancheng city is 1,621 square kilometers. In 2018, the household registration population was 379,020, including 117,047 agricultural population and 279,973 urban population¹¹. Over the past 50 years, Hancheng's population has tripled (fig. 1-8), and the proportion of rural population is declining. Meanwhile, the average area of rural residential construction land has increased by about 3 times.

Hancheng were included in the comprehensive pilot cities of new-type urbanization in 2015 by the

11. Statistical Communique of National Economy and Social Development of Hancheng City in 2018. <http://hancheng.gov.cn/gk/gk13/gk1302/96808.htm>

Chinese government¹². The goal of the plan is that by 2020, the urbanization rate of Hancheng's resident population will reach 79%, and the urbanization rate of household registration population will reach 75%. The improvement of urbanization indicators has not only promoted the loss of agricultural population, but the area of arable land has also decreased year by year. As shown in fig. 1-12, most of the country-level municipality is mountainous, and only a small part of the east is relatively flat (although divided by many gullies). This flat area is also a concentrated area of cities and Traditional Villages. Over the past few decades, urban development has taken away large amounts of rural land (fig. 1-13 & fig.1-14). One of the challenges to the protection of Traditional Villages in Hancheng is more severe than anywhere else, and that is that urbanization threatens the integrity of Traditional Villages and their historical environment, and in fact negative results have already occurred.

Table 1-1 Basic economic data of Hancheng and Yulin in 2017.

	Hancheng	Tongren
population	402,393	98,827
GDP	34.90 billion (rmb)	2.53 billion (rmb)
PGDP	86,731	25,600
three-industry structure	4.5:71.7:23.8	25.8:33.7:40.5

Data sources: Statistical yearbook of Hancheng and Yulin Municipal Governments in 2017.

Hancheng in Shaanxi Province and Tongren in Qinghai Province are the two county-level cities with the most dense CTVs spatial distribution in Northwest China. Compared with Tongren, Hancheng has a huge population, and the proportion of the primary industry in the industrial structure is very small. In Hancheng City, which is dominated by industry, the transformation of agricultural modernization has not been completed, and the landscape and economic recession in rural areas are serious. Therefore, the protection work of CTVs in Hancheng is facing greater challenges.

Shaanxi Province is where I grew up and lived. I have never left there long before coming to Italy. My

12. In order to implement the National New Urbanization Plan (2014-2020) (in Chinese: 国家新型城镇化规划), the Chinese government has listed 246 cities (towns) as national comprehensive new urbanization pilot areas. Its main tasks are: establishing a mechanism for sharing the cost of civicization of agricultural transfers; establishing a diversified and sustainable urbanization investment and financing mechanism; reforming and improving the rural homestead system; exploring the establishment of a new management model of administrative innovation and reduction of administrative costs; Institutional mechanism reform and innovation. Cfr. "Notice on Printing and Distributing the National Comprehensive New Urbanization Pilot Program," NDRC, accessed December 29, 2014, http://www.gov.cn/xinwen/2015-02/04/content_2814341.htm "关于印发国家新型城镇化综合试点方案的通知," 发展改革委员会. "Highlights of the Second Batch of National New Urbanization Comprehensive Pilot Work Programs," NDRC, accessed November 27, 2015, http://www.gov.cn/foot/2015-11/27/content_5017599.htm "第二批国家新型城镇化综合试点工作方案要点," 发展改革委.



Heyi village, Suide
County, Yulin



Baishe Village,
Sanyuan County,
Xianyang

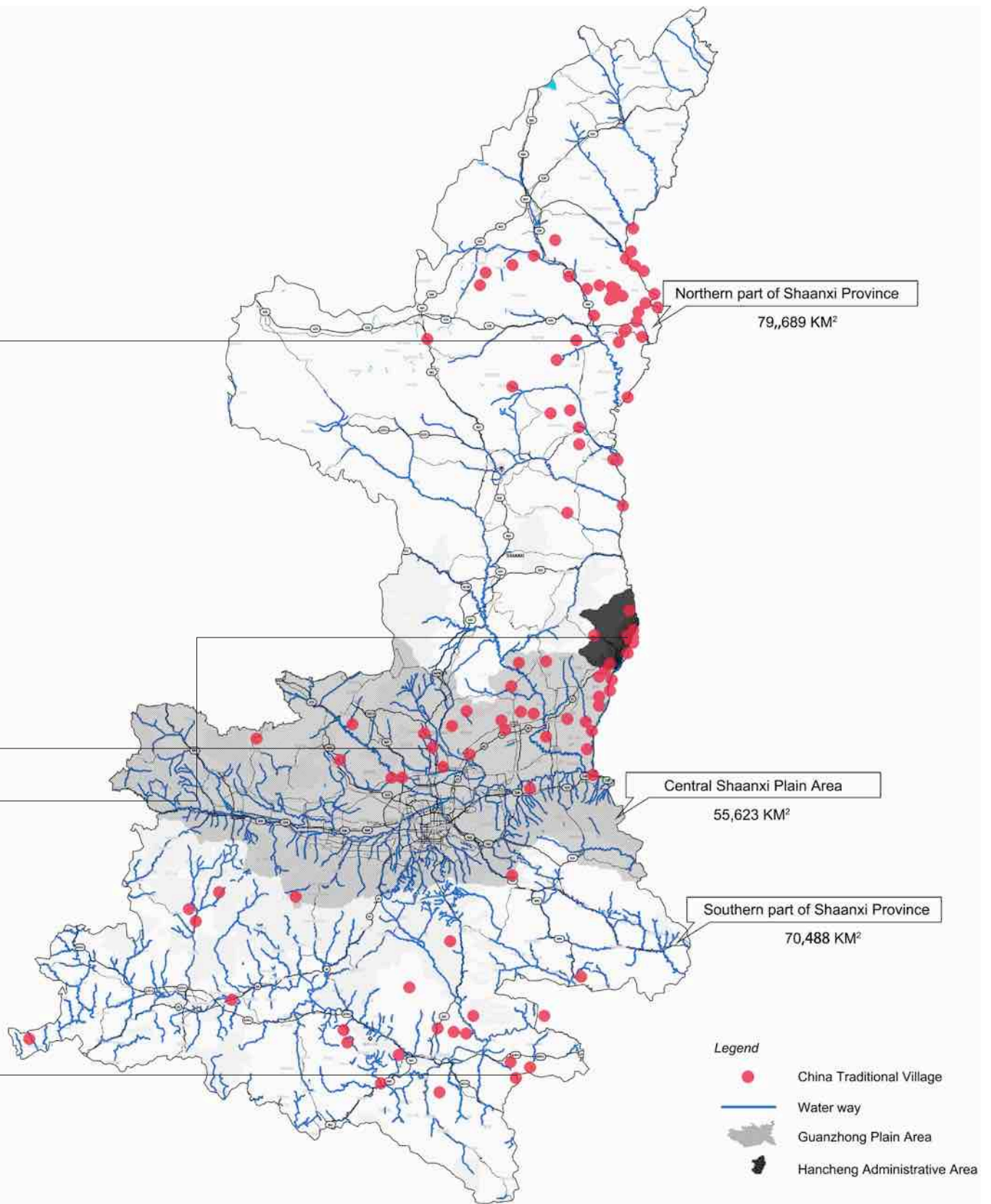


Dangjia Village,
Hancheng



Zhanjiawan
Village, Xunyang
County, Ankang

Figure 1-9 Distribution of Chinese
Traditional Village in Shaanxi
Province and typical villages.
Source: elaborated by the author.



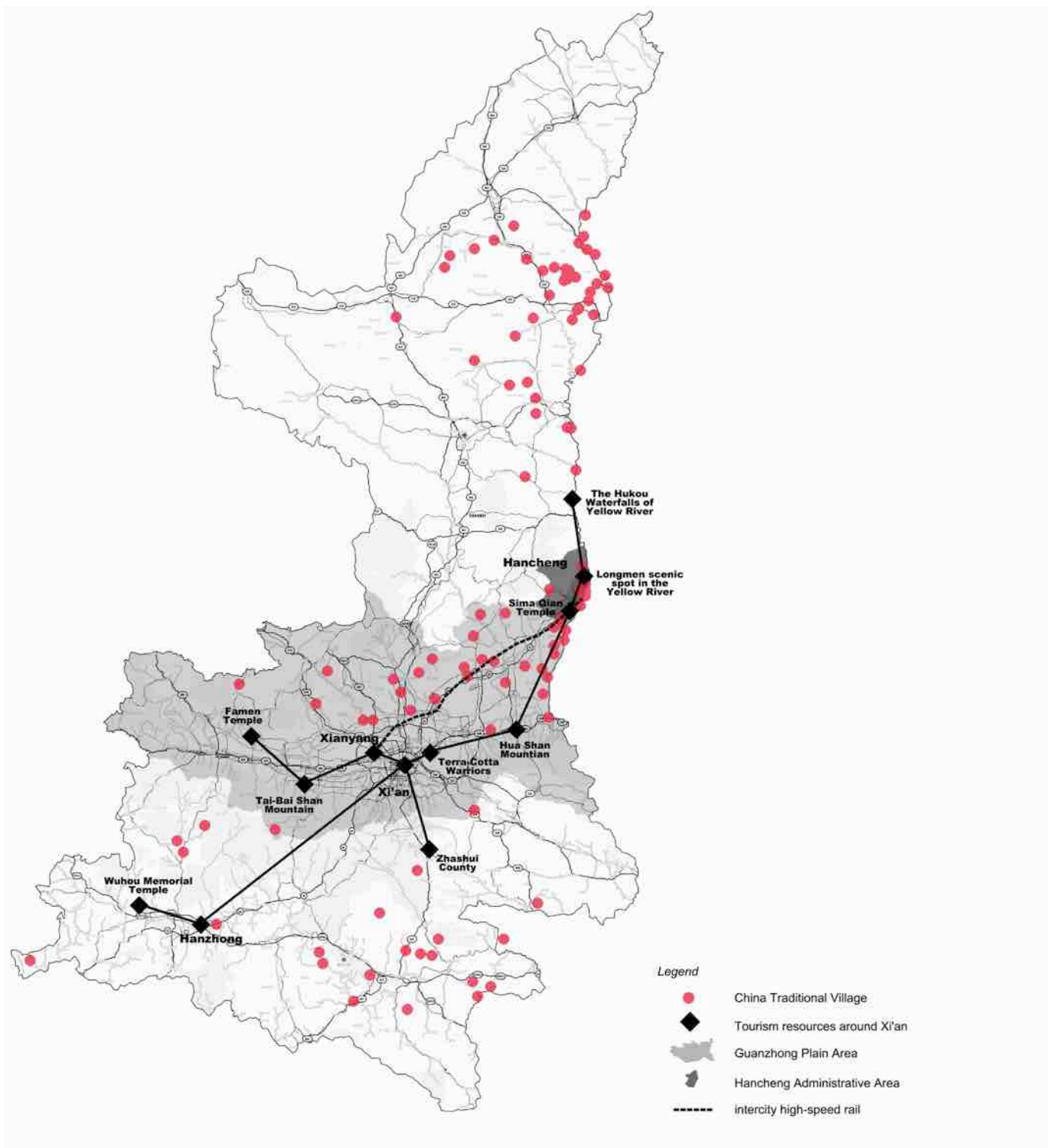


Figure 1-10 Distribution of Chinese Traditional Villages in different regions in Shaanxi Province and tourism resources.

Source: elaborated by the author.

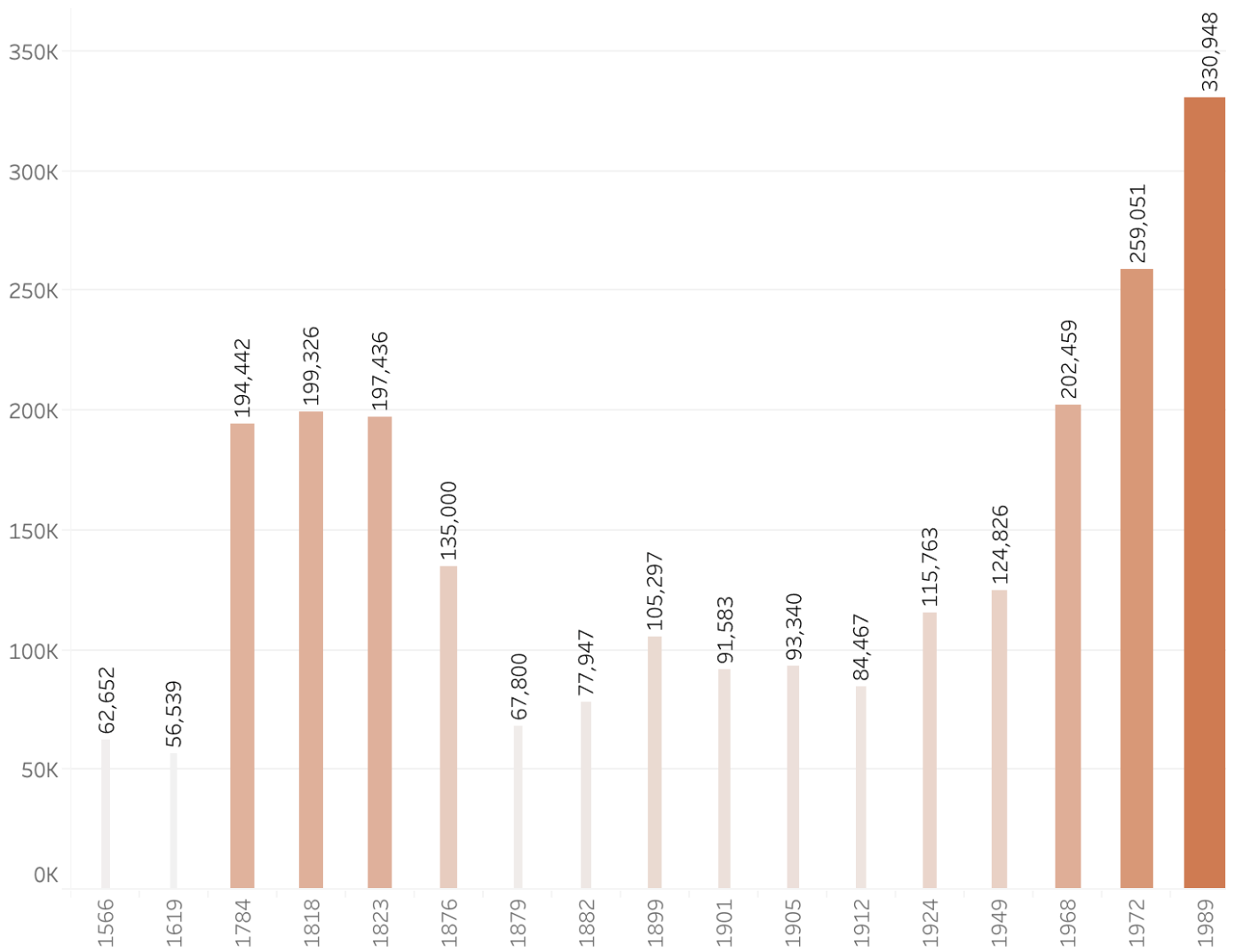


Figure 1-II Demographics of Hancheng. Source: elaborated by the author. Data Sources: Zhou, Ruoqi, and Guang Zhang. 1999. *Ramparts, Villages and Vernacular Dwellings of Dang-Jia-Cun Village of Han-Cheng*. Xi'an: Shaanxi Science & Technology Press. *Distribution of Chinese Traditional Villages in Hancheng*. Source: elaborated by the author.

father grew up in the countryside. I also had experience living in the countryside during some periods of my childhood. I have experienced rural life in the Guanzhong region of Shaanxi and have a good understanding of the rural dialects there. These have for me the advantages of investigation and research.

On the last day of 2019, my father's hometown, Xizhai Village, built in the Ming Dynasty and located in the outskirts of Xi'an, was demolished. Over the past 20 years, urban development has gradually surrounded that village. Modern residential quarters will be built there in the next few years, and traces of history will disappear. Who can guarantee that the earth-shaking changes of Xizhai Village and its environment will not happen in Zhangdaicun Village and other villages in Hancheng in the future. This is not an isolated incident, but it is happening in all parts of China. The disappearance of "hometown" has further stimulated the interest in studying Traditional Villages. Perhaps only in the helplessness after the loss, people can realize the importance of protection more deeply. In addition, the staff of the Hancheng city planning office and the residential construction department have given me great help and provided the necessary basic information for me.

1.2.2 Traditional Villages densely distributed in Hancheng

This is a very important point among many reasons. Hancheng is the county-level administrative unit with the densest distribution of CTV in Shaanxi Province. In the Qing Dynasty, the rural areas of the Hancheng area were the more economically developed areas in the Guanzhong area. There were many people in Hancheng who are doing business in the other field and in the court official , which gathered a large number of private wealth, and also introduced the culture of places outside to Hancheng, so buildings in Hancheng have a high level of construction, and their preservation conditions are much better than in other areas.

In the Guanzhong area, the number of Traditional Villages around Hancheng is the most concentrated. From the following distribution density map, we can see at a glance that there are 11 CTV in the administrative region of Hancheng, about 10% of the total number of CTV in Shaanxi Province, and most of them are within 20 minutes' range of driving from the downtown of Hancheng.

The centralized distribution of villages is convenient for investigation, and it is also convenient for me to carry out a comparative study between villages in the study and find common features among them, and to think about the protection methods of Traditional Village clusters. Most of these villages are typical cluster villages in northern China. Many traditional quadrangle courtyards are preserved in these villages. They are exquisite in materials and beautifully constructed. Compared to most dwellings in other parts of northern China, it is no exaggeration to call these courtyards luxury. The following information can support this view. In a social survey of two typical villages in the suburbs of Beijing in 1926, Franklin C. H. Lee found that the average number of residential rooms owned by each family in the two villages was 2.46 and 6.83. In Hancheng Traditional Villages, almost every family lives in a courtyard, and each courtyard has more than 10 rooms. It can be seen from this that Hancheng's traditional residential buildings are much larger than most villages in northern China.

In addition, Hancheng is a famous historical and cultural city in China. In addition to Traditional Villages, there are many historical and cultural resources. However, in recent years, local governments have not achieved outstanding results in cultural heritage protection. Hancheng City of Shaanxi Province is

one of the 5 cities with poor historical and cultural protections that were criticized by the Ministry of Housing and Urban-Rural Development and the State Administration of Cultural Heritage in 2019. The report pointed out that the outstanding problem in Hancheng is that the landscape pattern of the ancient city has been destroyed¹³. Like the other four criticized cities, the industrial structure of Hancheng itself has shortcomings, which has caused long-term local financial constraints. In this context, the long-term perspective of protecting cultural heritage can easily be blinded by the open-minded thinking of getting quick money in the short term. The lack of overall protection thinking, and the efficiency of the government's protection work have made Traditional Village protection difficult.

1.2.3 The special dilemma brought by the ecological environment

Most of these villages are located on the Loess Plateau along the Small North reach of the Yellow River¹⁴. According to historical records, the loess on both sides of the Small North reach of the Yellow River collapsed along the river bank every time it encountered a flood¹⁵, and sometimes villages along the river collapsed along with the riverbank. According to villagers in Zhangdaicun Village, even in non-extreme situations, the edge of the Loess Plateau gradually collapses at an average speed of about 1 meter per year. In the past century, two natural villages around Zhangdaicun Village have disappeared due to bank collapse. At present, the buildings in Zhangdaicun Village are only 200 meters away from the nearest edge of the platform.

In addition, Hancheng is rich in coal resources. In the past 50 years, Hancheng has developed into a heavy industrial base focusing on coal, machine coke, steel industry, and electricity. Obviously, Hancheng's industrial development and historical cultural resources formed a confrontation rather than a win-win situation, otherwise it would not be criticized by the Chinese government for "poor protection". The development of industry has not only brought environmental pollution, the destruction of natural and

13. "Circular on Some National Historical and Cultural Cities with Poor Protection," MOHURD, SACH, accessed March 14, 2019, http://www.mohurd.gov.cn/wjfb/201903/t20190321_239850.html "关于部分保护不力国家历史文化名城的通报,"住房和城乡建设部,国家文物局.

14. The Small North reach of the Yellow River (in Chinese: 黄河小北干流) refers to the middle reaches of the Yellow River from Longmen-Yumenkou to Tongguan in Shaanxi and Sanmenxia in Henan. The banks of the Yellow River in this section, which are more than 130 kilometers long, are loess plateau in the north of Weinan and south of Shanxi. The main tributaries of the Yellow River, such as Fen, Luo, Luan, and Wei rivers, have been successively accepted along the way, and these tributaries have also become the main source of the Yellow River sediment. The channel characteristics of the Small North reach are similar to those of the lower Yellow River. Here the erosion and sedimentation changes drastically, the river swings from side to side is very unstable, forming "wide, shallow, chaotic" river features, and large and small river beaches. These catastrophic and particularly fertile soils were scrambled by farmers in Shanxi and Shaanxi, and the subsequent disputes over land rights became a historical norm. Cf. Qiwen Chen, *The fate of the Yellow River*, (Hefei: Anhui Literature and Art Publishing House, 2016), 205-206. 陈启文, *大河上下: 黄河的命运*, (合肥: 安徽文艺出版社, 2016), 205-206.

15. Yingze Hu, *Flowing Land: A Social Study of the Small North reach of the Yellow River Since the Ming and Qing Dynasties*, (Beijing: Peking University Press, 2012), 77. 胡英泽, *流动的土地: 明清以来黄河小北干流区域社会研究*, (北京: 北京大学出版社 2012), 77.

cultural landscapes, but also profoundly affected the changes in the local rural social structure. Therefore, the typical nature of the Traditional Villages along the Yellow River in the Hancheng area is not only reflected in the value of the heritage itself, but also in many threats and challenges they are facing.

Hancheng is a national historic and cultural city with many tourist resources around it. Hancheng and Xi'an, Zhengzhou, Yanan, Taiyuan (provincial capitals) and other surrounding counties and cities can share tourists in the tourism industry. The regional cooperation advantage of tourism is obvious.

The traffic will be convenient. Xi'an, the capital of Shaanxi Province, is a tourist center city in conjunction with the national traffic hub city. At present, the car drive from Hancheng to Xi'an is 2.5 hours and the train is 3 hours.

In 1987 and 1989, the scholars of China and Japan formed a joint investigation group and carried out an in-depth investigation of some villages in Hancheng. The survey includes the village overall situation, village composition, public facilities, residential, residential style, construction concept and idea, furniture and new rural house etc.. Following the investigation of Dangjia Village, Sino Japanese joint research team in 1993 and 1994 and launched a cooperative research about "relations between normal and stockaded village", and publish two books "Ramparts, Villages and Vernacular Dwellings of Dang-Jia-Cun Village of Hancheng", "Dang-Jia-Cun Village, A Traditional Settlement in the North of China", and academic papers such as "The Stockade Villages in Hancheng, China". The research results accumulated by these predecessors are an important reference for my study.

1.2.4 The issues about design enhancement (valorizzazione progettuale)

The enhancement of a cultural asset, be it a building, a landscape or a tradition, gives it the recognition of its importance in a community's value system. The definition of enhancement in code of cultural heritage, is intended as "exercise of the functions and disciplines of the activity aimed at promoting the knowledge of the cultural heritage and ensuring the best conditions of use and public use of the heritage in order to promote the development of culture¹⁶". From this point it is easy to see that enhancement is strongly close to the concept of protection and conservation but cannot be synonymous with it¹⁷. Enhancement, as a series of actions that lead to translating the cultural heritage into a historical narrative capable of reaching the great masses, must be a tool for knowledge, not a threat to conservation.

An almost accepted fact is that the liveability of most Traditional Villages in China is getting worse and worse, which is why the number of Traditional Villages is scarce. This lack of liveability is mainly reflected in three aspects: First, traditional dwellings are generally not well maintained and there is extensive material decay, thus losing its original performance. Second, the compatibility of traditional dwellings with modern life is poor, and modern living facilities are difficult to integrate. For example, the most basic toilets, bathrooms, and modern kitchens (as frankfurter küche) are difficult to be used in traditional Chinese "earth-wood" structures. Third, the decline of public space in Traditional Villages, population loss is the

16.A. Predieri, voce Paesaggio, in Enc. Dir., vol XXXI, Milano 1981, 502.

17.Samuele Briatore, Valorizzazione dei borghi storici minori. Strategie di intervento (Reggio Emilia: Diabasis, 2011), 21.

main cause of this problem. Forth, lack of public facilities and service facilities. For example, when in May 2018 my supervisor, Professor Pezzetti and I visited some Traditional Villages distributed along the Yellow River in Hancheng, we found that a large amount of domestic waste was directly piled up by the villagers on the farmland or in the ditches along the Yellow River without any treatment (fig.1-17). This phenomenon shows that there is no good garbage collection mechanism in the village. On the other hand, it also shows that unnecessary garbage disposal and recycling in traditional life has been subverted by modern life in the modern era.

Design enhancement is not only related only to economic and generic cultural valorisation by reuse, but implies the responsibility that our time has to add new legitimate layers on historic palimpsest in a perspective of a coevolutionary architecture, two concepts proposed by Pezzetti¹⁸.

It is the architect's responsibility to use the tools of analysis, interpretative reading and design to contribute to the improvement of the liveability of villages on the premise of preserving the meaning of built heritage. Besides, the task of architects is not limited to protect and enhance only buildings, but to understand, protect and enhance their relationship with their associated historic landscapes. In order to face complexity and avoid generic analysis, we need to read and reorganize the complex relationship between history, site and design¹⁹.

The prerequisite for any cultural heritage improvement and refurbishment process is the recognition of new values and meanings as legitimate and not necessarily in contrast with the old ones.

In the conservation of Traditional Villages, the significance of this improvement and refurbishment is first how to improve the liveability in both residential and environmental design. At the methodological level, the most effective tool is the design method, that is, how to make Traditional Villages improve local identity, environmental quality, and socio-economic aspects in a wide range of scenarios through rural and architectural design research. Thereby enhancing the cultural and landscape values of these villages, the ecological and ecosystem values, and the economic income of local people.

Here we need to discuss the preservation of Traditional Villages from the perspective of historical building restoration ideas.

In the investigation, we find that the Traditional Villages in Hancheng are in two typical states, one is the natural decay, and the protection measures are very limited (most of them are spontaneous actions of villagers); the other is the static protection mode represented by the Dangjiacun Village: the whole village has closed management boundaries, and all ancient dwellings are maintained or restored in accordance with the style of the period in which they were built. The former state is like "let the monuments die peacefully" proposed by Ruskin, while the latter shows the characteristics of the style restoration advocated by Viollet-le-Duc. However, can we find a different way which can not only consolidate the ravages

18.Laura A., Pezzetti. *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rural Landscape*. (Tongji University Press, 2019),9-10.

19.Laura A. Pezzetti, "Overwriting the Urban Palimpsest: A Regenerative Structure for Historic Public Spaces and Buildings" *New Architecture*, 02(2019): 5-14.

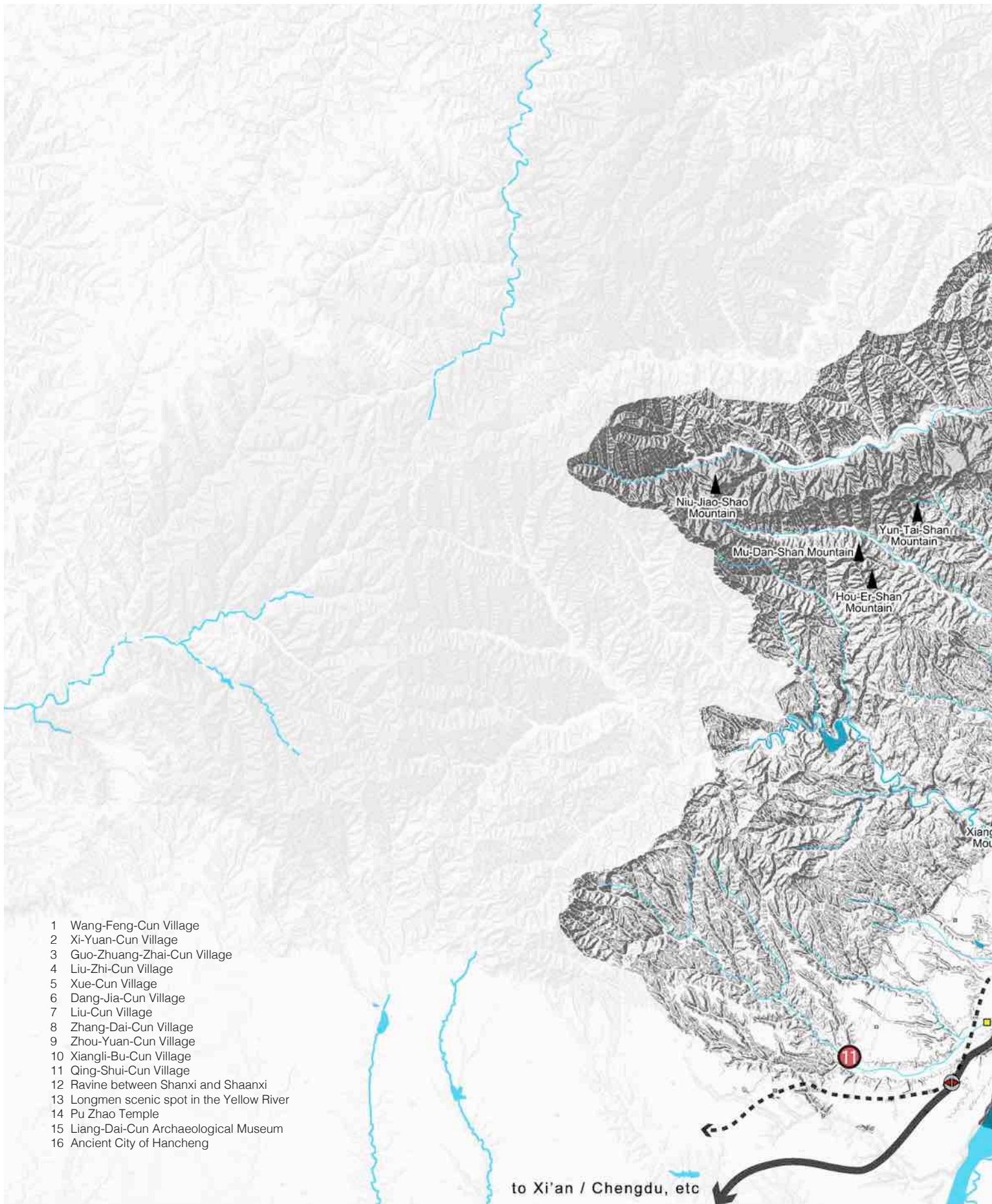
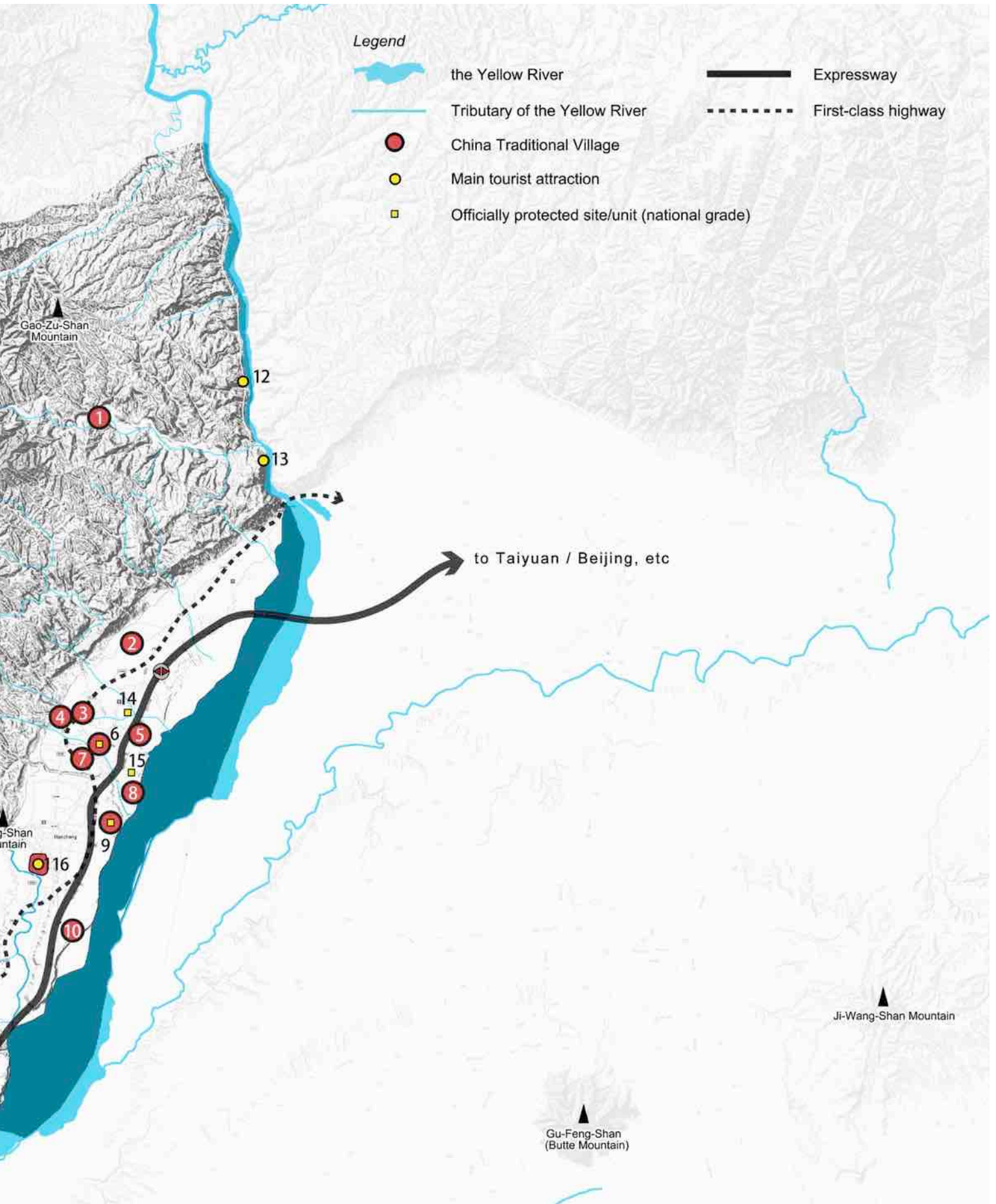


Figure 1-12 Distribution of Chinese Traditional Village in Hancheng. Source: elaborated by the author.



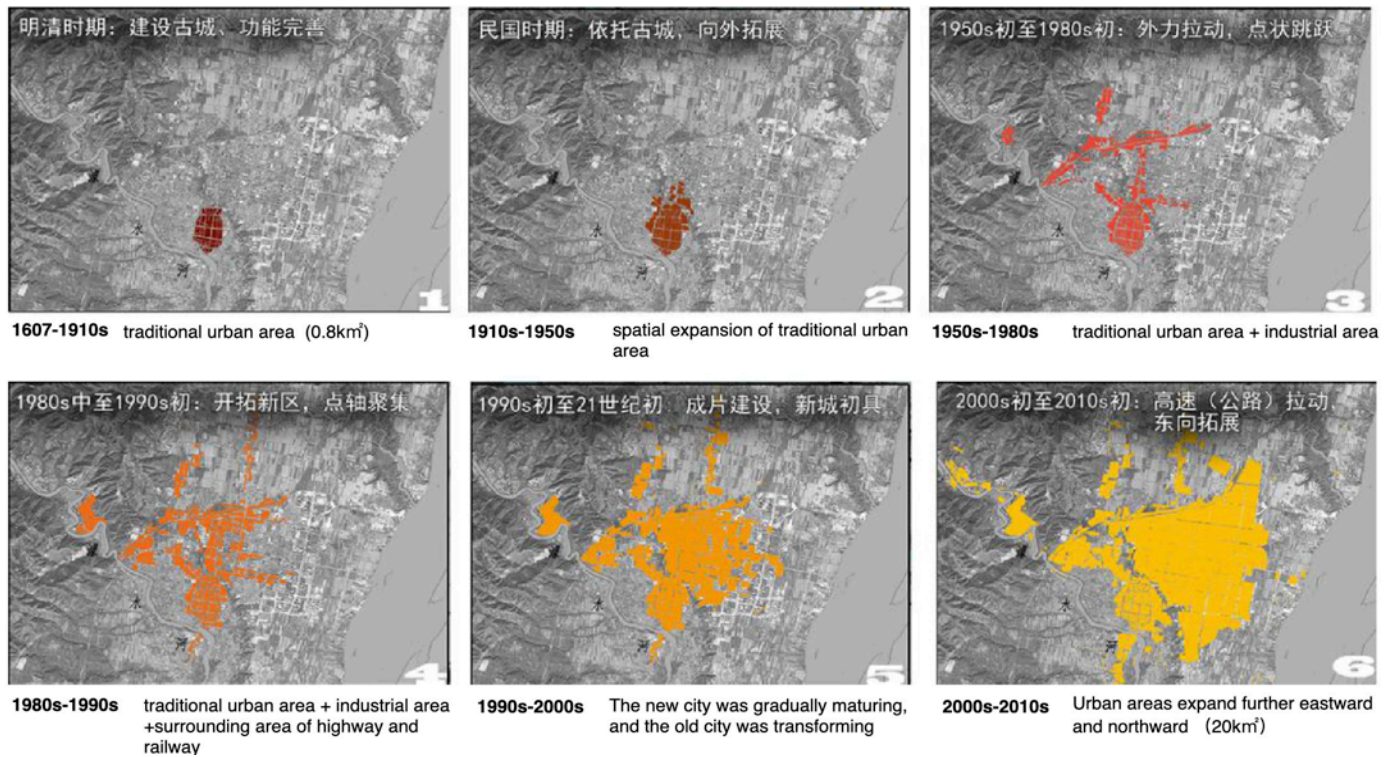


Figure 1-13 Changes in urban area of Hancheng from 17th century to now. Source: Hancheng City Master Plan (2013-2030) Hancheng People's Government ,China Academy of Urban Planning and Design, 2014.

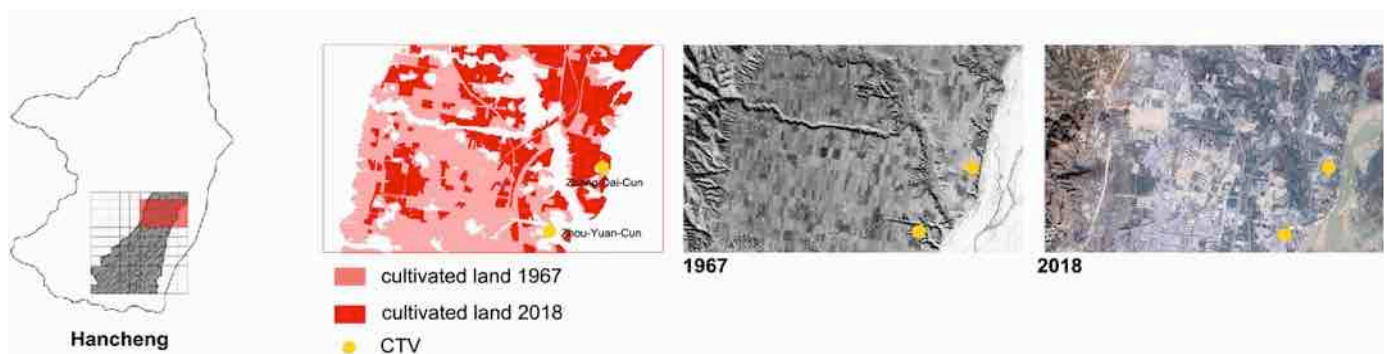


Figure 1-14 Change of cultivated land area in the eastern part of Hancheng. Source: elaborated by the author base on USGS and Google satellite maps.

caused by time, but also restore them to a new function in life²⁰. Just like the "intermediate route (teoria intermedia)" proposed by Boito and Giovannoni²¹. In fact, some cases in recent years show the potential of the "intermediate route". In the second chapter of this thesis, the author will introduce these cases and make analysis and discussion.

In addition, it needs to be recognized that, on the one hand, enhancement is a key factor in the competitiveness and quality of life of rural territory; on the other hand, inappropriate enhancement actions will also expose heritage to the risk of losing its historical memory and territorial uniqueness. Therefore, one of the objectives of this study is to explore the basic principles of design enhancement in order to prevent its being degraded and abused as a knowledge tool.

20. Gustavo Giovannoni - Pietro TOESCA - Carlo ALBIZZATI - Umberto CIALDEA - Gino TESTI - - Enciclopedia Italiana (1936).

21. Andrea Pane (2009) "Da Boito a Giovannoni: una difficile eredità", *Ananke* (57): 144-154.

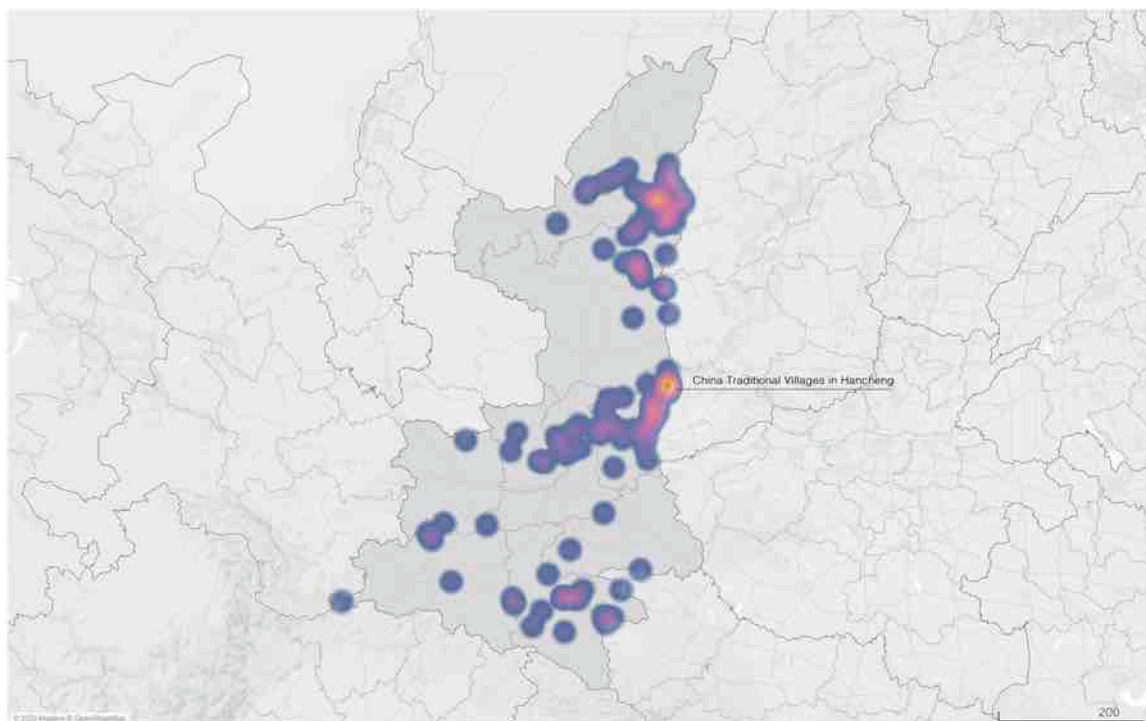


Figure 1-15 Distribution density of China Traditional Villages in Shaanxi Province. Source: elaborated by the author.



- 1 abandoned traditional dwellings
- 2 gully
- 3 modern houses
- 4 traditional dwellings
- 5 traditional dwellings demolished
- 6 collapsed temple
- 7 loess cliffs and precipices
- 8 riverbed of the Yellow River

Figure 1-16 3D-Model of Zhangdaicun Village based on using oblique images. Source: elaborated by the author.



Figure 1-17 Zhangdaicun village (up) and Shidai village (down): villagers dump rubbish near the cliff on the Bank of the Yellow River.

1.3 Research Methodology

1.3.1 Literature and records research

Through reading and analysing relevant literature, this thesis summarises and collates the theoretical and empirical research on traditional settlements.

The scope of literature research includes heritage conservation theory and method, space research theory and method, settlement development history, research methods of geography, anthropology, sociology and other related disciplines, local gazetteers, local chronicles of village cases, genealogy, stele inscriptions and other local literature.

This section briefly summarizes the local gazetteers, and the other types of literature are classified in Chapter 2. Existing local gazetteers in Hancheng include historical county gazetteers in the official history books written in biographical style, gazetteers of historical geography and local textbooks of the early 20th century. *Shaanxi Chorography (Shaan Xi Tong Zhi)*²² during the Jiajing Period of the Ming Dynasty, *Shaanxi Chorography (Shaan Xi Tong Zhi)*²³ during the Yongzheng Period of the Qing Dynasty, *Approximate Description of the Territory of Shaanxi (Qin Jiang Zhi Lue)*²⁴ and *Compendium of Shaanxi Chorography (Shaan Xi Zhi Ji Yao)*²⁵ during the Daoguang Period of Qing Dynasty, from the macro perspective of the provincial capital, these local gazetteers introduce the organizational history, the boundaries, mountains and rivers, the demographic data, and the distribution of cities and towns. There are five editions of Hancheng County Chronicles that can be retrieved at present²⁶, and the date of writing is 1607, 1703, 1784, 1818, 1924. These local records recorded the land system, hukou, servitude, warehouse, taxation, accounting, history, geography, customs, figures, culture, education, and property of Hancheng, and provided important historical materials for understanding the economic policies of the Hancheng government and the socio-economic situation at the time. In addition, these local gazetteers are

22. Tingrui Zhao, Li Ma, Nan Lyu, *Shaan Xi Tong Zhi*, (1542, repr., Beijing: National Library of China Publishing House, 2017). 赵廷瑞, 马理, 吕柟明, (1542, repr., 北京: 国家图书馆出版社, 2017).

23. Yuyi Liu et al., *Shaan Xi Tong Zhi*, (1735, repr., Xi'an: Xi'an Sanqin Publishing House, 2014). 刘於义等修, 沈青崖等纂, 敕修陕西通志, (1735, repr., 西安: 三秦出版社, 2014).

24. Kun Lu, *Qin Jiang Zhi Lue*, (1850, repr., Taipei: Cheng Wen Publishing Co., Ltd., 1970). 卢坤, 秦疆治略, (1850, repr., 台北: 成文出版社, 1970).

25. Zhiyi Wang, *Shann Xi Zhi Ji Yao*, (1827, repr., Taipei: Cheng Wen Publishing Co., Ltd., 1970). 王志沂, 陕西志辑要, (1827, repr., 台北: 成文出版社, 1970).

26. Shiwei Zhang, Jin Su, *Han Cheng Xian Zhi*, (1607, repr., Beijing: National Library of China Publishing House, 2017). 张士佩, 苏进, 韩城县志, (1607, repr., 北京: 国家图书馆出版社, 2017); Xingxian Kang, Naixin Kang, *Han Cheng Xian Xu Zhi*, (1703). 康行佃, 康乃心, 韩城县续志, (1703); Yingkui Fu, Dian Qian, *Han Cheng Xian Zhi*, (1784, repr., Nanjing: Jiangsu Phoenix House, 2007). 傅应奎, 钱站, 韩城县志, (1784, repr., 南京: 凤凰出版社, 2007); Lantai Ji, Yaoyu Lu, *Han Cheng Xian Xu Zhi*, (1818, repr., Nanjing: Jiangsu Phoenix House, 2007). 冀兰泰, 陆耀通, 韩城县续志, (1818, repr., 南京: 凤凰出版社, 2007); Zhongzhao Cheng et al., *Han Cheng Xian Xu Zhi*, (1924, repr., Nanjing: Jiangsu Phoenix House, 2007). 程仲昭等, 韩城县续志, (1924, repr., 南京: 凤凰出版社, 2007).



Figure 1-18 The Genealogy of the Zhang Dai Village. Source: provided by villagers in Zhangdaicun Village.

also equipped with maps, which provide important evidence for us to inspect the landscape pattern and landscape changes in Hancheng. However, these maps mainly indicate the locations of mountains and rivers and settlements, and lack specific information on settlements. In 1906, Hancheng's magistrate Zhang Ruiji compiled Hancheng County Local Records (in Chinese: 韩城县乡土志), which records the history, geography, and customs of Hancheng, and is equipped with six color maps, which are of high historical value.

In the field survey, the author found The Genealogy of the Zhang Dai Village²⁷ in the villager's home (non-public publication), which recorded the approximate age of the village, the time of temple construction and restoration, the source of funds for temple construction, The number of male population since the Ming Dynasty. The valuable thing is that on the cover of the genealogical print, there is a photo of Zhang Dai village's Guandi Temple before it collapses.

27. Source of information: Zhang's family Zhang's genealogy (in Chinese: 张带村张氏家谱), 2005 edition, revised by Zhang Mingchu, Zhang Tianyou, etc. Revised according to the 1599, 1833, 1865, 1884, and 1909 editions.

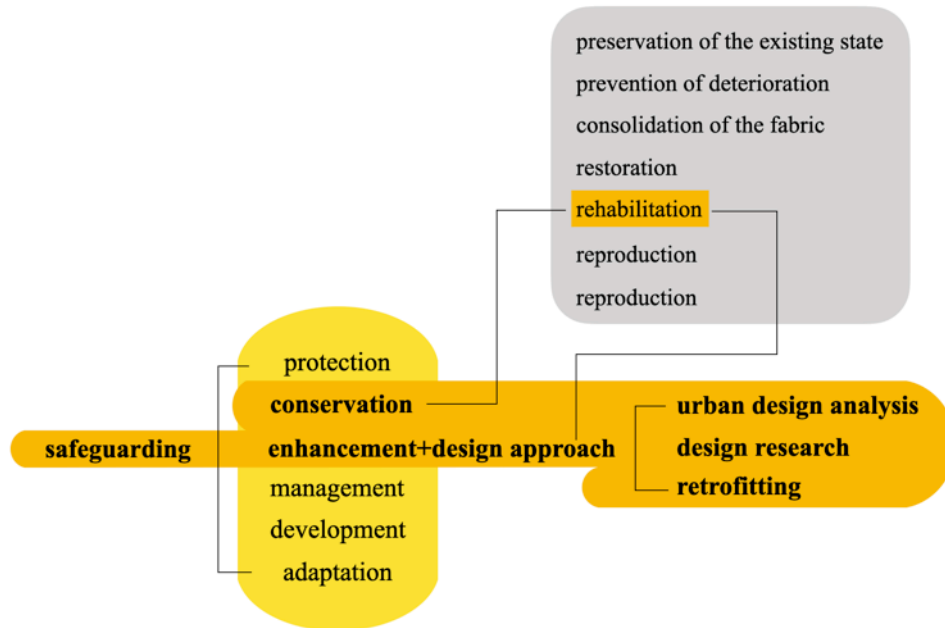


Figure 1-19 The content of the safeguarding involved in this thesis

1.3.2 Related concepts

1.3.2.1 Discussion on some basic definitions: conservation, preservation and safeguarding

In the book "A History of Architectural Conservation", Jukka Jokilehto pointed out that "conservation" refers to the whole subject of the care and treatment of both movable and immovable valuable artefacts²⁸. In Bernard M. Feilden's view, generalized conservation involves intervening at various scales and intensity levels and preservation is included in the concept of conservation. It can also be understood as all actions taken to extend the life of the heritage (including natural and cultural heritage). The treatment or action taken for the conservation of the heritage requires three characteristics: first, minimal intervention; second, reversibility; and third, it does not have a negative impact on possible future interventions²⁹.

28. Jukka Jokilehto, *A History of Architectural Conservation* (Oxford: Butterworth-Heinemann, 2002), xi.

29. Bernard M. Feilden, *Conservation of Historic Buildings*, 3rd ed. (Elsevier, 2003), 3.

Feilden proposed seven degrees of intervention, "preservation of the existing state" is one of them³⁰. Conservation, in the opinion from Jokilehto, is distinct from restoration, used in the specialized sense has two aspects: first, the control of the environment to minimize the decay of artefacts and materials; second, their treatment to arrest decay and to stabilize them where possible against further deterioration³¹. For the intervention of conservation, reversibility in restoration is an ambiguous concept, since time is not reversible. The intervention on the buildings is a responsibly produced intervention and a historical act too. According to Marco. Dezzi Bardeschi, the type of conservation works can be divided into two parts. The first is restoration works, that is, a series of non-destructive technical measures are taken to stop or delay the decay process of components; the second is transformation or renewal. Every completion work, as well as any addition, or new intervention and material and structural contribution is unequivocally architectural design³². The issues of history and design can be combined. The restoration work is essentially a design practice, in which different periods are juxtaposed in its retention, that is, the juxtaposition of permanence and mutation. Without permanence there would be no transmission of culture, without mutation there would be no history³³.

For historic buildings, the object of preservation is to keep the cultural property in its existing state. In this process, the object of preservation must be repaired as necessary to prevent further decay. Destruction and damage caused by various forms of water, chemicals and all types of pests and microorganisms must be stopped to preserve the structure. Therefore, compared to preservation, conservation as a comprehensive action, its implementation needs to rely on the cooperation of more related disciplines³⁴. In contrast, the broad meaning of "conservation" includes not only the narrow "preservation" but also the concept of protective interventions such as "prevention of deterioration" (or indirect conservation), "preservation of the existing state", "consolidation of the fabric" (or direct conservation), "restoration", "rehabilitation", "reproduction" and "reconstruction".

The Nara Document on Authenticity (1994) states that conservation is "all operations designed to understand a property" and ensure its material safeguard, its presentation, restoration and enhancement. In the Code of the Cultural and Landscape Heritage promulgated by the Italian government (Ministero per i beni e le attività culturali) in 2004, the concept of "conservation" includes activities of study, **prevention**,

30. The seven degrees of intervention proposed by Feilden include: (1) prevention of deterioration (or indirect conservation); (2) preservation of the existing state; (3) consolidation of the fabric (or direct conservation); (4) restoration; (5) rehabilitation; (6) reproduction; (7) reconstruction.

31. Jukka Jokilehto, *A History of Architectural Conservation* (Oxford: Butterworth-Heinemann, 2002), xi.

32. Cf. M. Dezzi Bardeschi, "15 anni dopo: la Carta di Venezia alle corde (1977)", published with the title *Modi e tecniche della conservazione*, in "Restauro", n. 33-34, 1977.

33. M. Dezzi Bardeschi, "La materia e il tempo, ovvero la permanenza e la mutazione (1982)", in M. Dezzi Bardeschi, *Restauro: punto e da capo. Frammenti per una (impossibile) teoria*. (Angeli, 1991), 27.

34. In the book *Conservation of Historic Buildings*, Feilden proposed that a wide range multi-field cooperation requires the participation of town planner, landscape architect, valuation surveyor/realtor, urban designer, conservation architect, engineers of several specializations, quantity surveyor, building contractor, a craftsman related to each material, archaeologist, art historian and antiquary, supported by the biologist, chemist, physicist, geologist and seismologist and historic buildings officer.

maintenance and restoration. According to Art.29 in the Code, the goal of prevention is to minimize the risks faced by cultural property within its context; maintenance is aimed at integrity, functional efficiency and identity of the property and its parts; restoration refers to the direct intervention in property, aiming at achieving material integrity and property recovery, and ensuring the protection and dissemination of property's cultural values. The above explanation highlights the importance of integrity.

Moreover, according to Art. 2 of *Principles for the Conservation of Heritage Sites in China* (2015), conservation refers to all measures carried out to preserve a site, its setting and associated elements³⁵. The aim of conservation is to preserve and protect the authenticity and integrity of the site, its historic information and values, using both technical and management measures. The table below lists the terms used in the above documents to describe "conservation". The different ways of describing conservations reflect different methodological approaches. Compared with other documents, the Italian law³⁶ emphasizes the importance of investigations, while Nara documents, the Charter of Bara and Chinese documents also emphasize that the promotion of cultural property is an important part of the conservation work.

Table 1-2 Terms used by different documents to describe conservation.

Bernard Feilden	Nara Document (1994)	Burra Chapter (1999)	Art. 29 in Code of the Cultural and Landscape Heritage (Italy, 2004)	Art. 24 in Principles for the Conservation of Heritage Sites in China (2015)
prevention preservation consolidation	material safeguard	maintenance preservation	investigation prevention maintenance	maintenance monitoring strengthening stabilization
restoration rehabilitation	restoration	restoration adaptation conserving use	restoration	repair
reproduction reconstruction		reconstruction		relocation
	enhancement	new work change		protective structures
	presentation	retaining associations and meanings interpretation		treatment of the setting

As a type of settlement heritage, Traditional Villages are comprehensive built environments and places. When we enlarge the field of vision from the individual's artefacts to "place" (or site, land, landscape, building or other work, group of buildings or other works, etc.), the connotations of these concepts also produce corresponding changes. In this category conservation usually means all the processes of looking after a place to retain its cultural significance; and preservation means maintaining all the physical material

35. This definition is closer to the formulation in Burra Charter (1999), "all the processes of looking after a place so as to retain its cultural significance." (Burra Charter Article 1.4)

36. Ministero per i beni e le attività culturali, *Code of the Cultural and Landscape Heritage*, 2004.

of the place (including components, fixtures, contents, and objects) in its existing state and retarding deterioration³⁷.

On the other hand, we need to re-examine the connotation of "setting". In the general understanding of conservative tendencies in the past, "setting" usually refers to "the area around a place, which may include the visual catchment or visual and sensory setting, as well as spiritual and other cultural relationships that contribute to the cultural significance of the place. Whether it is static or dynamic, setting was regarded as a combination of apparent existence and non-material culture."³⁸ Now we should realize that the definition and understanding of setting should not be limited to the above definitions, but to pursue the reasons for the formation of setting and the deeper structure and form connection. Because for architect the key concept is "context" which is not just the visible appearance or homogeneity of sites but something deeper related to structures and forms. That is also the reason for digging into types, morphology and structures of the settlement form before judging what needs to be preserved and how it may coevolve meaningfully with the past but not necessarily in a mechanical continuity or style.

In addition, there is another concept worth emphasizing, that is, safeguarding. Compared with "conservation", "safeguarding" has a broader meaning and has a strong sense of defending³⁹ and the concept of safeguarding contains conservation. In "Recommendation concerning the Safeguarding and Contemporary Role of Historic Areas" (UNESCO, 1976), the term was officially given a definition⁴⁰, and the subsequent "The Valletta Principles for the Safeguarding and Management of Historic Cities, Towns and Urban Areas" (ICOMOS, 2011) supplemented the contents of historic towns, urban areas and their surroundings: the safeguarding "includes the necessary procedures for their protection, conservation, enhancement and management as well as for their coherent development and their harmonious adaptation to contemporary life." Compared with the former Recommendation, the concept explanation in the Valletta Principles emphasizes the enhancement, management and adaptability and coordination of contemporary life. In fact, the content discussed in this thesis belongs to the category of safeguarding.

1.3.2.2 Design enhancement

The object of "Traditional Villages" safeguarding includes the inbuilt environment of building types, traces, the intangible cultural heritage and the historical environment of the structure of their rural form.

If the original building cannot meet and adapt to the needs of the contemporary people, an active intervention is needed to optimize its performance. Design proposals are in fact conceived as an active

37. ICOMOS, Australia. The Burra Charter: The Australia ICOMOS charter for places of cultural significance (Burwood: Australia ICOMOS, 1999), 2.

38. Cf. The Australia ICOMOS Charter for Places of Cultural Significance (The Burra Charter), 1999 and 2013; UNESCO, Recommendation concerning the Safeguarding and Contemporary Role of Historic Areas, 1976; ICOMOS, The Valletta Principles for the Safeguarding and Management of Historic Cities, Towns and Urban Areas, 2011.

39. Di Lu, "The Valletta Principles for the Safeguarding and Management of Historic Cities, Towns and Urban Areas (Adopted by the 17th ICOMOS General Assembly on 28 November, 2011)" *Heritage Architecture*, 03(2017): 104-111

40. "Safeguarding" shall be taken to mean the identification, protection, conservation, restoration, renovation, maintenance and revitalization of historic or traditional areas and their environment.

mirror of society, that not only reflects local identity, but contribute actively to form them, offering space favourable to sharing, to cohesion and to solidarity⁴¹. Enhancement (which called "mise en valeur" in French) combined with modernization with or without adaptive alteration, could be a practice or intervention for the purpose of rehabilitation⁴². The aim of this practice is to keep the traditional dwellings and public buildings in Traditional Villages in use, which is the best way of preserving buildings as opposed to objects.

Since the whole existence of built structures has become the object of conservation, we need to explore a discourse that, while retaining material diachronic authenticity, considers the works of the present time historically as well. Protecting and designing are not necessarily in contradiction – rather, they establish a dialectic⁴³. In the safeguarding actions of Traditional Villages, where alterations or additions are proposed to traditional buildings, or new development in historic areas, it is necessary to design for the specific context. "Design", different from the imitation, is about the specific site. It means specific design, complementing the special interest of the area or building with features or experiences that can often help people better understand, appreciate and enjoy that heritage, as well as benefit from it in other ways⁴⁴. As a research tool in this thesis, design enhancement includes three aspects:

First is typomorphological analysis, includes assessing village space structure and characteristics, which are an important part of defining special interest or significance. This is an essential basis for planning change and development in historic places. The research on the structural characters of a context, in relation to its cultural assets, landscape, and built heritage, provides a layered set of readings which is in itself the forerunner of an urban landscape design action⁴⁵.

Second is design. Design as knowledge is based on a long-duration approach which is culturally, economically, and environmentally sustainable. In the tradition of urban architecture, the design project is another specific tool for knowledge that embodies the set of choices, decisions, critical assessments and formal synthesis required by the appropriate transformation of reality in both city and territory⁴⁶. It can cover new buildings, extensions, alterations and improvements, urban design, landscape, public realm and other changes that have an impact on historic places and buildings. In addition, there is a dialectical relationship between architectural design and conservation-restoration. In order to understand this dialectical relationship, we need to go back to the reasons for construction and restoration, and to the basic concepts based on the construction of architectural language, ideas of the villages with emphasis on layered

41. Sergio Russo Ermolli, "Elena Mussinelli (a cura di): Design, technologies and innovation in cultural heritage enhancement," *TECHNE* 0, no. 13 (2017):363-364.

42. Feilden, Bernard. *Conservation of Historic Buildings*, 3rd ed. (Elsevier, 2003), 10.

43. Laura A., Pezzetti. *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rurban Landscape*. (Tongji University Press, 2019),164.

44. IHBC, *Conservation Professional Practice Principles* (Tisbury, 2017), 16, http://ihbconline.co.uk/newsarchive/wp-content/uploads/2017/06/Conservation-Professional-Practice-Principles_A5-FINAL-May-2017.pdf.

45. Laura A. Pezzetti, "The Old and the New: Designs to Enhance Cesano Maderno Old Town through a Regenerative Structure," *Built Heritage*, 01 (2017): 1, 52–70. <https://doi.org/10.1186/BF03545657>

46. Cfr. Laura A. Pezzetti's lecture "Design overwriting: urban rooms to enhance an introverted urban structure" in Politecnico di Milano, 2018.

morphologies from the context of history⁴⁷. It also requires an understanding of how heritage fits into wider place - making, including how places work, aesthetics, economics, sustainability, use, movement, and other factors.

The design enhancement may also involves the "retrofitting" of building performance. This is about designing and making changes to historic buildings to improve their performance in terms of carbon use. It can include improving insulation, installing more energy efficient heating systems, heat recovery and other measures. The challenge is to upgrade the building, whilst maintaining its heritage value.

1.3.2.3 "Traditional Villages"

The village is a kind of settlement. In the 1940s, the Greek architect and urban scholar Constantinos Apostolou Doxiadis began using Ekistics to refer to scientific research on human settlements⁴⁸. From the perspective of etymology, Ekistics is derived from the Greek language *οικιστικός*, which means the foundation of housing, habitation, city, and settlement. The word *οικιστικός* is derived from *οικιστής*, which refers to the person who settled in a certain place. The *οικιστής* (English: oikistes), often anglicized as oekist or oecist, was the individual chosen by an ancient Greek polis as the leader of any new colonization effort⁴⁹, which reflects the role of human beings in human settlements. *Ekistics not only pays attention to the built environment itself, but also studies the causes and interrelationships of material spaces of different scales*. In the 1980s, Academician Wu Liangyong translated Ekistics into China and combined with Chinese architecture and urban issues to form a theoretical system of "human settlements science"⁵⁰.

The term "historical village" appears in the Chinese law in the 2002 revision of the "Cultural Relics Protection Law," and its definition is "preserved cultural relics that are particularly rich in towns and villages of great historical value or revolutionary memorial significance." In the law, the definition of historical villages is related to "relics" and "revolutionary memorial significance", so it has a certain political significance and not only emphasizes the "traditionality" of villages.

The village is gradually formed along with human inhabit activities, which is the representation of the built environment to the spatial and temporal dimensions. The concept of the village reflects its diachronic characteristics, while the "Traditional Village" is a special type formed during the transition period of different production methods, cultural types and handovers. The Traditional Villages in the contemporary Chinese social context are formed in the agricultural society. They are rich in historical information and can reflect the historical culture, social and economic conditions, and production and lifestyle of the past. The tradition's material carriers are the ancestral halls, the temples, the dwellings, and the inscriptions, ancient

47. Laura A. Pezzetti, "Overwriting the Urban Palimpsest: A Regenerative Structure for Historic Public Spaces and Buildings," *New Architecture*, 02(2019): 5-14

48. Constantinos Apostolou Doxiadis, (2005). The science of ekistics. *Ekistics*, 72(430-435), 32.

49. Matthew Dillon and Lynda Garland, Ancient Greece: Social and Historical Documents from Archaic Times to the Death of Alexander Routledge sourcebooks for the ancient world. (Taylor & Francis, 2010), 50.

50. Liangyong Wu, *Introduction to sciences of human settlements*. (Beijing: China Architecture & Building Press, 2001), 46.

trees, ancient wells, etc. Accompanied by these are humanities such as customs and etiquette culture.

Although called as "Traditional Village", it does not mean that the built environment of the settlements is completely composed of historical buildings and streets. In fact, in the cases involved in this study, many villages have placed modern and contemporary elements in historical elements.

1) The concept of Chinese Traditional Villages

The official concept of Traditional Village in China has both broad and narrow meanings.

a) The Traditional Villages in the broad sense include the villages and towns that have bewitchingly managed to preserve their original architecture and landscape amid rapid modernization. It also includes the villages and towns in the list of China national Historical and Cultural Famous Towns/Villages (CHCFT/V); the villages in the list of Chinese Traditional Village (CTV) announced by the Ministry of Housing and Urban-Rural Development (MOHURD), and the villages in the list of provincial Traditional Village (PTV) published by the Housing and Construction Department of each province.

b) In narrow sense, the Traditional Villages only refer specifically to CTV and PTV.

In 2012, China stepped up its emphasis on the protection and development of "Traditional Villages". An expert committee for the protection and development of Traditional Villages were formed by experts in architecture, planning, heritage, folklore, arts, anthropology, etc., and conducted surveys of Traditional Villages to review the list of "China Traditional Villages" (CTV). In August of the same year, the the Ministry of Housing and Urban-Rural Development (MOHURD), the Ministry of Culture (MOC), the National Cultural Heritage Administration (NCHA), and the Ministry of Finance (MOF) issued the "Traditional Village Evaluation and Identification Index System (Trial)"⁵¹, which quantitatively evaluated and qualitatively evaluated Traditional Villages through three indicator systems, they are, "village traditional building evaluation index system"; "village site selection and pattern evaluation index system"; "intangible cultural heritage evaluation index system.

In the official document, there are two definitions for CTV. The first definition appeared in the "Notice on the Investigation of Traditional Villages"⁵², issued by MOHURD, MOC, NCHA and MOF in April 2012. In this notice, **Traditional Villages refer to those villages which are formed earlier, have rich traditional resources, have certain historical, cultural, scientific, artistic, social and economic values, and should be protected.** At the same time, this notice proposes that the villages selected for CTV must meet one of the following three basic conditions: a) The total amount of historical buildings, local architecture, cultural relics and other buildings exceeds 1/3 of the total number of village buildings; b) The location of villages has traditional characteristics and local representativeness, reflecting the specific historical and

51. "Traditional Village Evaluation and Identification Index System (Trial)," MOHURD, MOC, NCHA, MOF, accessed August 22, 2012. http://www.mohurd.gov.cn/wjfb/201208/t20120831_211267.html

52. "Notice on the Investigation of Traditional Villages," MOHURD, MOC, NCHA, MOF, accessed April 14, 2012, http://www.gov.cn/zwqk/2012-04/24/content_2121340.htm.

cultural background. The village structure clearly reflects the representative traditional culture, traditional production and lifestyle, and the overall structure of the village is well preserved. c) Have rich intangible cultural heritage resources.

Later, the revised definition appeared in the "Guiding Opinions on Strengthening the Protection and Development of Traditional Villages"⁵³ issued by MOHURD, MOC and MOF in December 2012. In this document, **Traditional Villages mean villages with tangible and intangible cultural heritage and high historical, cultural, scientific, artistic, social and economic values.**

From 2012 to 2019, the central government selected totally 5 batches include 6,819 CTVs in mainland China⁵⁴ (fig.1-2), accounting for 1.22% of the total number of administrative villages nationwide⁵⁵.

2) Geographical Distribution characteristics of CTV

As shown in fig. 1-4, the distribution of Traditional Villages in China presents obvious characteristics of spatial agglomeration, generally at three and three distinctly obvious spatial agglomeration centers. According to the degree of aggregation, there are the CTV gathering area of "Southeast of Guizhou Province - Western Hunan ", the CTV gathering area of "Southern Anhui- Western Zhejiang-Northwest Fujian" and the "Shanxi-Shandong-Hebei" CTV gathering area. The villages in these three areas have the following main characteristics. The first type is the clustered villages in the northern plains of China. The residential styles are mainly single-story (some have mezzanine) courtyard-type residential dwellings; the second type is the clustered villages in the southern plains or hilly areas represented by Huizhou residential houses; The third medium type is the mountain settlements inhabited by ethnic minorities in the southwest, and most of the rural dwellings are single wooden buildings. The above three types are just a general summary. From fig. 1-5, we can see the classification and geographical distribution of typical dwellings in various regions of China in more detail.

In addition, the regional urban density and economic development level are closely related to the distribution of CTV. Most CTVs are far away from the central city and have inconvenient transportation. In areas where Traditional Villages are denser (central and southeastern coastal provinces and Shanxi provinces), Traditional Villages are closer to the central city (areas near No. 2 and No. 3 in fig.1-4).The Traditional Villages in the provinces of Guizhou and Yunnan in the southwest are far from the central cities⁵⁶.

53. "Guiding Opinions on Strengthening the Protection and Development of Traditional Villages," MOHURD, MOC, MOF, accessed December 12, 2012, http://www.mohurd.gov.cn/wjfb/201212/t20121219_212337.html

54. Kun Li. 2018. "Big data illustration of five batches of traditional Chinese villages." THE PAPER (澎湃). https://www.thepaper.cn/newsDetail_forward_2734771.

55. Administrative village means formally village-level divisions in China, serve as a fundamental organizational unit for its rural population (census, mail system). By the end of 2016, there were 559,186 administrative villages in China, data source: China National Bureau of statistics.

56. Yuquan Tong, "Research on the Spatial Differentiation of Chinese Traditional Village Based on GIS," *Human Geography* 29, no.4 (2014): 44-51.



Figure 1-20 Fieldwork in Zhangdaicun Village.

1.3.3 Field investigation

In order to grasp the evolution of settlements, it is necessary to do more than just focus on the value and meaning of the literature. The conservation of Traditional Villages is not only a technical issue that targets rural heritage, but also a new issue for social development. We must proceed from reality and solve practical problems. Survey the implementation of case villages and grasp the reality, problems, and opportunities of Traditional Village environments on the basis of first-hand information. Because this article belongs to applied basic research, the research pays great attention to the collection of real survey data, and relies heavily on these primary data, charts, and phenomena to clarify the problem.

Investigation can provide a tool to discover the evolutionary layout of a given village. It means recognizing the internal relationship between building types and urban structure, form, type and architecture, as well as the external relationship between them and the environment and landscape context. This study involves many Traditional Villages in Hancheng, and has carried out field research several times, collecting data from 11 villages. The physical environment characteristics of the settlements are recorded through field investigation, and the contents of building monomer, street space and settlement pattern are surveyed and mapped. In addition, targeted interviews with residents were conducted to record the typical living space and activity sites.

Understanding of buildings and villages as an organism and, in their wider context, in terms of settlement and infrastructure systems, the field survey mainly include geomorphology and hydrography; building types (heritage, historical/traditional, modern) in terms of their typologies and morphologies; vegetation, land use, crops and agricultural landscape; materials and construction system. Though the working methods, mainly include building surveying and mapping; non-structural interviews, and acquisition and processing of UAV tilt photography images, in order to achieve the purpose of understanding the character and materials, patterns, spatial scales, measures and rhythms, shapes and uses of a given context.

1.3.4 Morphological and typological analysis

Today, the rehabilitation of historic villages and sites requires a multi-scale and multi-criterion approach to acquire knowledge in a comprehensive way and to take additional interdisciplinary contributions to solve the complexity of the issues. For Italian scholars urban project is a collective process of construction and restoration of the physical structures that go to make up the urban organism. From 1920s, their work mainly sought a controlling order for the complexity of urban phenomena. Such an order was not only an immanent reality, but also the result of a conceptual operation⁵⁷. Drawing nutrients from the traditional Italian urban territorial research tradition and combining it with the Milan-based conservation and

57. Anna Bruna Menghini, "The city as form and structure: the urban project in Italy from the 1920s to the 1980s," *Urban Morphology* 6.2 (2002): 75-94.

restoration tradition⁵⁸, this research will solve the complexity of the pre-existing historical landscape in an integrated way.

Through the comparative analysis and morphological research of iconographic documents, it is possible not only from the time sequence, but also from the perspective of form structure, to reveal the original and indivisible connection between rural settlements and rural landscapes, and morphological research will become an integral part of the overall preservation and transformation strategy.

The settlement basic research corresponds to the interpretation at the superficial level, including environmental factors, settlement size, and spatial characteristics. However, morphological and genre studies involve the dynamic changes and internal structure of the subject, as well as the potential spatial genes, which are interpreted in the context of the specific characteristics of the case. This study combines typological analysis and morphological illustration to classify the overall morphology and architectural typology based on the topological relationship between the settlement and the environment, to complete the analysis of the diachronic changes of settlement cases and the juxtaposition analysis of multiple cases, and to summarize the settlement forms mode.

The typological analysis is crucial for the dialectical discussion on synchronicity and diachronicity, universality and individuality, models and adaptation, and so on, in order to promote the expansion of settlement patterns.

1.3.5 Statistical induction

This study draws on sociological analysis methods to summarize and classify the overall form, architectural form, and social representation of traditional settlements, and express them through graphical methods. On the one hand, on the basis of literature research and field surveys, the macro laws of settlement patterns are reflected through settlement space diagrams; on the other hand, the laws behind the evolution of performance patterns are explored through the calculation of statistical data such as settlement area and population size.

58. The urban territorial research tradition in Italy mainly started with the urban research of Ernesto N. Rogers, Giuseppe Samonà, Saverio Muratori, and their methodological contributions between history and design, and also the traditions of urban research and urban architecture developed from Milan (Canella, Rossi) and Venice (Aymonino, Semerani) in their subsequent generations. The Milan-based conservation and restoration tradition refers to method pioneered by Camillo Boito, and the subsequent contributions of Marco Dezzi Bardeschi and Amedeo Bellini, ect. The traditions of Italian conservation and restoration and urban study are always integrated with the method of "case by case". Cf. Nicola Marzot, "The study of urban form in Italy," *Urban Morphology* 6.2 (2002): 59-74; Laura A., Pezzetti. *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rurban Landscape*. (Tongji University Press, 2019).

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2. The Development of China's rural heritage conservation: policies and theories

2.1 The four stages of research on traditional rural built environment in China

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2.1 The four stages of research on traditional rural built environment in China

The theoretical achievements of Traditional Villages in China mainly appeared after 1980s⁰¹. Previous studies have hardly touched on the conservation of Traditional Villages, nor on the domain of urban design. The author thinks it is still necessary to summarize the research on rural heritage before 1980s, to make the cognition of rural heritage clearer and understand the content of basic research and the contributions of each era. From a macroscopic perspective, China's rural environmental research has experienced the process of moving from the place to the building and then back to the place from the building. However, the original rural "place" study was done by historians, sociologists, and anthropologists. After 1930s, the village began to enter the vision of the architects.

2.1.1 The first stage (before 1930s): contributions of sociology scholars

At the beginning of the introduction of anthropology into China in the 19th century, rural research became the best choice for its research tradition. Whether they were the studies of China by Western anthropologists at first, or the later studies by Chinese native scholars using sociological theories and methods, they began with rural society. In 1872, American Arthur H. Smith came to China for missionary activities. Smith used a calm eye to analyze the living conditions of the Chinese countryside in the late Qing Dynasty, and assembled these records and analysis in the book *Village Life in China: A study in sociology* published in 1899⁰². Although Smith's work was not strictly academic research, it is a representative work that reflects the transformation of Western ideas about China: at that time, China, which has long since moved away from the center of the world stage, has become a "rural", so grasping the country will naturally grasp the Chinese civilization, in other words "the countryside was the epitome of the Chinese Empire".

Another valuable feature of Smith's book is the basic understanding of the Chinese rural form, which can be summarized as follows. First, the villages have similar internal structures to the cities. Second, the villages are as crowded as the city (the building density is high). Third, there are many villages that have walls like cities, but for the sake of Feng Shui, the shape of the walls is usually designed in an irregular form. Fourth, the private ownership of land leads to the shape of country roads, which are usually wind around. In an earlier work, *Chinese Characteristics*, Smith believes that the village must be regarded as the basic unit of Chinese social life; compared with the city, more people's internal life knowledge can be obtained in the countryside⁰³.

In the same era, through the field survey and the synthesis of ancient texts, the Dutchman Jan Jakob Maria de Groot explored the social and cultural significance of Chinese folk religion. He completed the

01. Congxia Bai and Xiaojian Chen, "Review of the Traditional Villages Protection," *Huazhong Architecture* 34, no. 12 (2016): 15-18.

02. Arthur. H. Smith, *Village life in China: A study in sociology* (New York, Chicago, Toronto: Fleming H. Revell Company, 1899)

03. Arthur H. Smith, *Chinese Characteristics*, (New York, Chicago, Toronto: Fleming H. Revell Company, 1894).

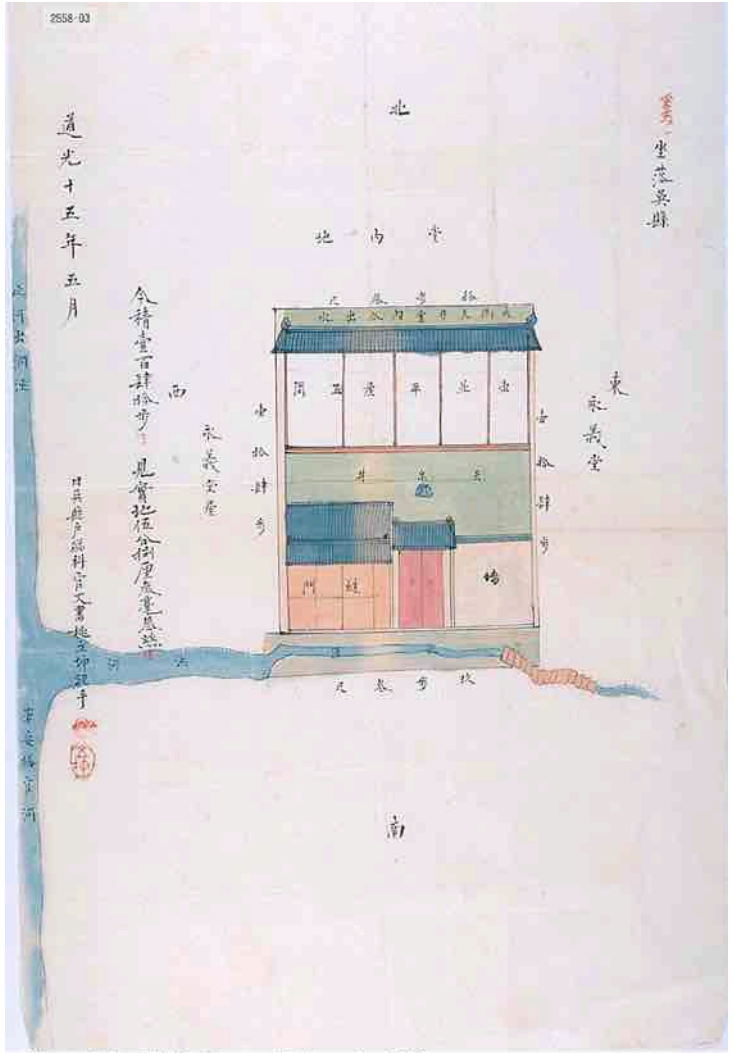
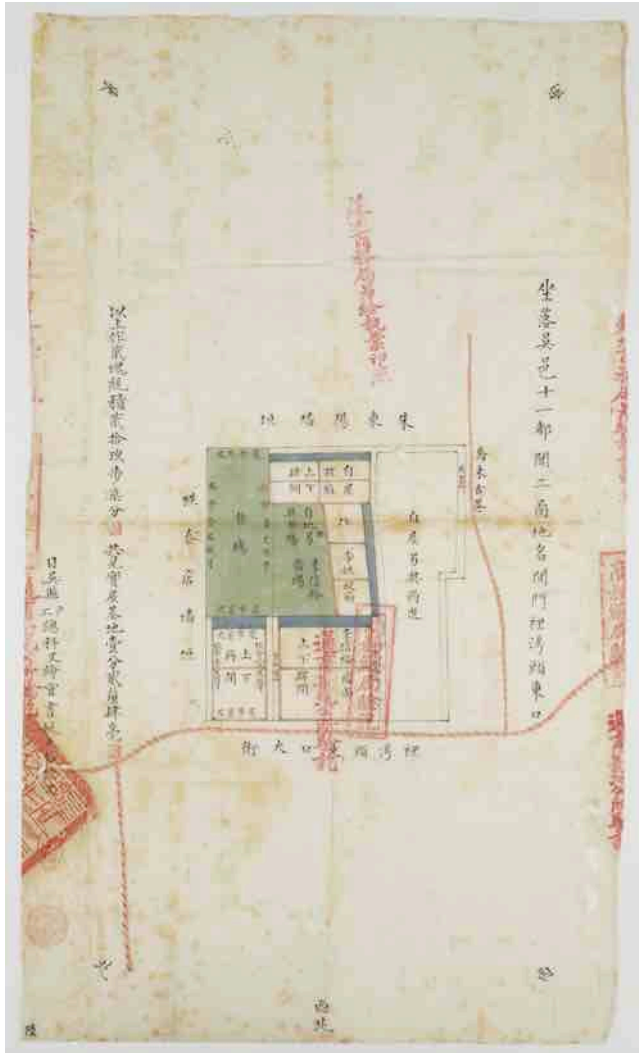


Figure 2-1 The attached elevation of a house title deed in Wu County in 1835. Source: Kyoto University Library.

masterpiece *The Religious System of China: Its Ancient Forms, Evolution, History and Present Aspect, Manners, Customs and Social Institutions* between 1892 and 1910. Groot believes that the foundation of Chinese folk religion is the ancient pan-spirit belief, as well as the social ethics and cosmology of Confucianism and Taoism, reflecting the logic of Chinese people dealing with social relations and their views on the world⁰⁴. From this point of view, the influence of religion on the ancient Chinese society based on the village (and the village as the main body) was far-reaching. This influence was indeed reflected in the spatial structure of the village. Therefore, Groot's research provided an epistemological basis for the subsequent rural research.

Between 1915-1917, Eric Teichman made two in-depth investigations in the inland areas of northwest China. In 1921, he wrote *Travels of a Consular Officer in North-West China*. This book describes his journey and what he saw, heard and felt in the northwestern hinterland from various angles, such as natural landscapes and humanities such as climate, landforms, rivers, animals and plants, towns, villages, religion, transportation, commerce, agriculture, and folklore.

In a book *Country Life in South China: The Sociology of Familism*, which showed some basic situation of Chinese rural society, written in 1925, D.H. Kulp comprehensively described and analysed the population, economy, politics, education, marriage and family, religious beliefs and social control of Phoenix Village in Guangdong Province. Kulp creatively put forward the core concept of "Familis". According to Kulp Familism is a social system, and all behaviors, standards, ideas and concepts are generated or surrounded by social systems based on the interests of blood groups. In China, all other systems of the village, including the political system, the social system, the religious system, and the kinship system, revolve around the core of familyism.

In the Ming and Qing dynasties, the contract documents increasingly penetrated the daily life of the people⁰⁵. During this period, the contract documents related to the land sale and purchase system also attracted the attention of some scholars (especially Japanese scholars). Among them, the representative one was the Japanese scholar Harutaka Yano's *Research on the North China Land Title Deed System*⁰⁶ (1935) which focused on the evolution, type, nature and deed tax system of the land lease in North China.

At the same time, faced with the crisis of Chinese agricultural society under the impact of western modern industrial civilization, Chinese intellectuals realized that the fundamental problem of Chinese society is the rural problem, so they consciously, embarked from the traditional Chinese rural society, explored the road of Chinese modernization through social investigation, homestay culture, rural construction and other aspects. For example, Franklin C. H. Lee's social and economic investigations reports *Rural Families in the Outskirts of Peiping* (1929) and *Ting Hsien: A Social Survey* (1933). In collaboration with American

04. J. J. M. de Groot, *The Religious System of China*. Vol. 4. Book 2. On the Soul and Ancestral Worship, (1901, repr., Taipei: Literature House, Ltd., 1964), 68.

05. Jidong Ren, "Modern Chinese Contract Instruments and Research," *History Teaching (college version)*, no. 7 (2007): 105-107. 任吉东, "近代中国契约文书及其研究," *历史教学(高校版)*, no. 7 (2007): 105-107.

06. Kaoru Niida, "Yano Harutaka "Research on North China Title Deed System"," *Socio-Economic History* 6, no. 6 (1936): 763-769. 仁井田 陞, "矢野春隆氏著「華北地券(契)制度の研究」," *社会経済史学* 6, no. 6 (1936): 763-769. https://doi.org/10.20624/sehs.6.6_763.

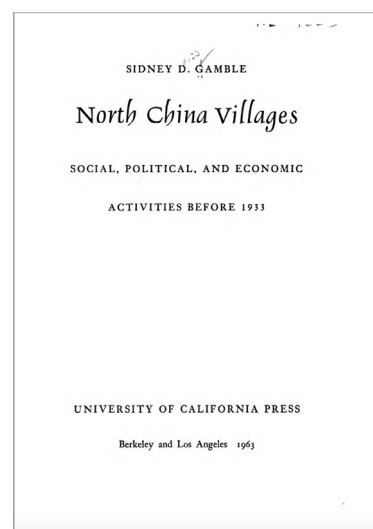
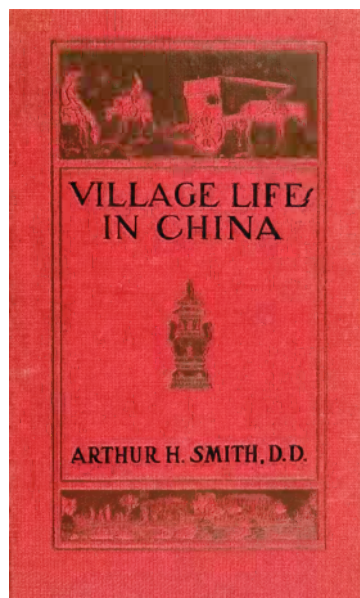
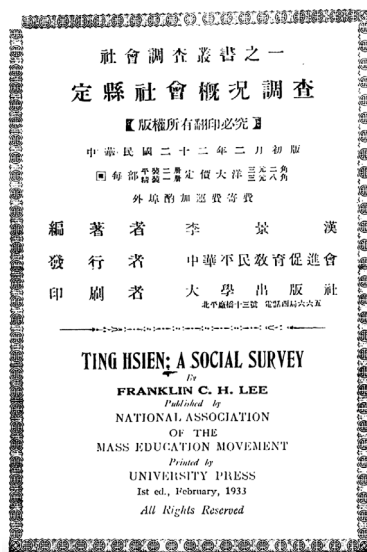
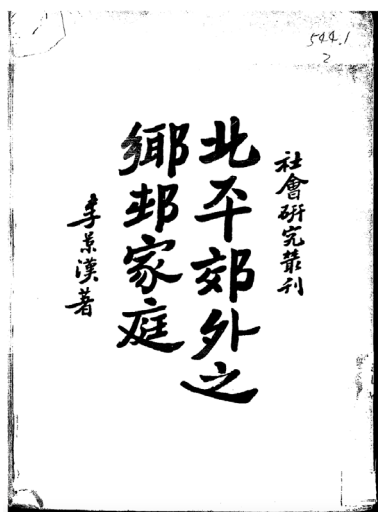
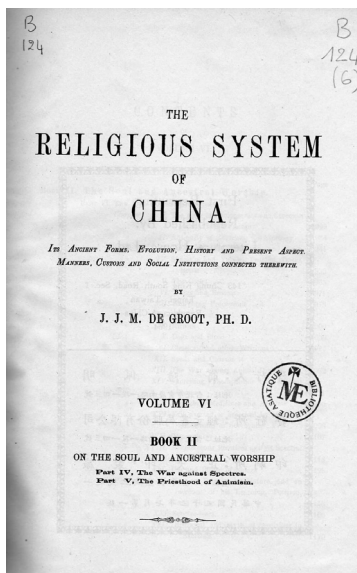


Figure 2-2 Some early anthropological investigations on rural areas in China

sociologist Sidney D. Gamble, Lee's investigations continue the Western positivist social investigation methods, and combine the unique writing structure and format of Chinese Local Gazetteers. Some of these surveys are related to dwellings. For example, through the survey in 1926 and 1933, Li counted the housing information of 4 villages outside Beijing⁰⁷ and 62 villages in Ting Hsien⁰⁸, including the plane size and height, building materials, the number of households owning houses and the number of households renting houses, rent, the number of rooms owned by each family, and the number of people living in each room, etc.

With the political transformation at the beginning of the 20th century, some social elites began to have a deep thinking and understanding of the rural reality of poverty and weakness. Some intellectuals, represented by Yan Yangchu, Liang Shuming and Lu Zuofu, were not satisfied with the dictatorship of Chiang Kai Shek, nor with the violent revolution of the Communist Party. They advocated non radical peaceful means of social reform to save the Chinese society, and various ideas of reform emerged. Rural governance and rural construction have become the focus of their attention. Thus, a large-scale, long-term and wide-ranging rural construction movement aiming at promoting education and relieving the poor came into being⁰⁹. In theory and practice, some focus on relief, some focus on rural education or rural services, some focus on agricultural improvement or technology promotion, some focus on rural self-government or rural self-defenses¹⁰. Therefore, the key point of rural research in this period is not the transformation of the built environment, and almost no architects directly participate in it.

07.Cf. Franklin C. H. Lee, *Rural families on the outskirts of Peiping* (Shanghai: The Commercial Press, 1929), 51-52, 106-107, 122-126. 李景汉, *北平郊外之乡村家庭* (上海: 商务印书馆, 1929), 51-52, 106-107, 122-126.

08.Cf. Franklin C. H. Lee, ed., *Ting Hsien: A Social Survey* (Ting Hsien: National Association of the Mass Education Movement, 1933). 李景汉 编著, *定县社会概况调查* (定县: 中华平民教育促进会, 1933), 272-275.

09.Cf. Jieshun Xu and Bingqing Liu, *Rural Anthropology* (Yinchuan: Ningxia People's Publishing House, 2012), 11. 徐杰舜, 刘冰清, *乡村人类学* (银川: 宁夏人民出版社, 2012), 11.

10.Zhonglai Liu, "Modern Chinese Contract Instruments and Research," *Chongqing Social Sciences*, no. 5 (2006): 74-80. 刘重来, "民国时期乡村建设运动述略," *重庆社会科学*, no. 5 (2006): 74-80.

2.1.2 The second stage (from 1930s to 1980s): architect's investigation of rural architectural heritage

2.1.2.1 From 1930s to 1940s: SRCA's investigation

As mentioned above, although the upsurge of "rural construction" active in the 1920s and 1930s did not involve architects directly, in fact, it does not mean that the first generation of Chinese architects¹¹ did not work in the countryside. Their main work in the countryside was the investigation and record of ancient architecture.

After the 1920s, the first batch of Chinese architects studying abroad returned to China to carry out practice, education, research, etc., and some of their researches also included surveys of historic buildings, including construction surveying, mapping drawing and a small part of type research on rural dwellings. Long Feiliao (龙非了), a historian of architecture, investigated cave dwellings in Henan, Shaanxi and Shanxi provinces¹².

In the 1930s, **Society for Research into Chinese Architecture (SRCA)** began the investigation of ancient Chinese buildings. From 1935 to 1940, Liang Ssu-ch'eng (梁思成), Lin Whei-yin(林徽因), Liu Dunzhen (刘敦桢), Mo Zongjiang and Chen Mingda, who are members of SRCA, successively went to Shanxi, Hebei, Henan, Shaanxi, Yunnan and Sichuan Province to investigate ancient buildings¹³. Although they mainly investigated large-scale ancient buildings and projects (such as temples, pagodas, bridges, cliff statues, etc.), they also recorded a small number of rural houses. For example, in 1935, Liang Ssu-ch'eng and Lin Huiyin investigated some dwellings in Shanxi Province¹⁴, and in 1936, Liu Dunzhen investigated cave dwellings in Henan Province, and concluded that this "semi primitive" way of living is not only

11. China's modern urban development and construction industry began in the early 20th century, and it also produced the first generation of Chinese architects. They received architectural education in the West and returned to China to promote the establishment and development of modern Chinese architectural disciplines and architectural education. Cf. Ming Tong, "The Foundation of Recent Modern Chinese Architecture: First Generation of Chinese Architects Trained at University of Pennsylvania," *Time Architecture*, no. 4 (2018): 164-173.

12. Feiliao Long, "A Study on Cave Dwellings," in *Society for Research into Chinese Architecture Transactions* 5, no.1 (1934): 55-76. 龙非了, "穴居杂考," *中国营造学社集刊* 5, no.1 (1934): 55-76.

13. Some of the contents of these investigations were recorded by Liu Dunzhen in his diary, and the results of these investigations were also published by Liang Ssu-ch'eng and others. Cf. Dunzhen Liu, *The Complete Works of Liu Dunzhen* (Beijing: China Architecture & Building Press, 2007); 刘敦桢, *刘敦桢全集* (北京: 中国建筑工业出版社, 2007); Ssu-ch'eng Liang, *The Complete Works of Liang Ssu-ch'eng* (Beijing: China Architecture & Building Press, 2001); 梁思成, *梁思成全集* (北京: 中国建筑工业出版社, 2001).

14. Whei-yin Lin and Ssu-ch'eng Liang, "A Preliminary Survey of the Ancient Buildings in Jin Fen," *Society for Research into Chinese Architecture Transactions* 5, no.3 (1935): 61-65. 林徽因, 梁思成, "晋汾古建筑预查纪略," *中国营造学社集刊* 5, no.3 (1935):61-65.

simple, but also harmful to health¹⁵. From 1939 to 1940, Liang Ssu-ch'eng and Lin Huiyin investigated some dwellings in Sichuan province¹⁶. The results of these surveys were limited to short text descriptions and photos, without measurement and mapping. Compared to Liang Ssu-ch'eng's work, Liu Dunzhen's investigations and records of residential buildings are more specific. From 1940 to 1941, Liu surveyed rural dwellings in Yunnan and Sichuan Province, and recorded the plane form, building materials and tectonic features of the dwellings¹⁷. Under the leadership of Liu Dunzhen, Liu Zhiping studied the architectural plane and architectural construction of traditional dwellings in Yunnan and Sichuan provinces. The paper *Yu Nan Yi Ke Yin*¹⁸, published in 1944 which focus on the central region of Yunnan Province dwelling by Liu Zhiping was China's first academic paper which detailed study on residential building in the rural area. This article not only introduces the layout, construction style and construction approaches of the "Yi Ke Yin" dwellings, but also deduces the causes of the architectural form from aspects of climate, social environment, production and lifestyle. Later, after investigating the ancient buildings in various parts of Sichuan, Liu Zhiping wrote *Sichuan Residential Buildings*¹⁹. However, it was not published until 1990 because of being in the period of the II World War.

Since the rural dwellings were not sufficiently valued by architects at the time, the field investigation documents left were very limited. Except for a few architects, Chinese society in the first half of the 20th century generally lacked the understanding of architecture as a cultural heritage²⁰. Master Liang Ssu-ch'eng has actively advocated research on Chinese native architecture and pointed out that "to be able to refine the Chinese qualities contained in old buildings, we need to increase our understanding of the old building structure system and layout...regardless of a city or a residential courtyard, its plane layout is the answer to the Chinese people's life thoughts, it is worth our reanalyze"²¹. "However, most Chinese architects have not seriously regarded rural dwellings as an architectural heritage. Due to the lack of extensive and in-depth investigations, even Liang Ssu-ch'eng believes that most of the existing Chinese (middle 20th

15. Dunzhen Liu, "Survey of Ancient Buildings in Northern Henan Province" in *The Complete Works of Liu Dunzhen* (Beijing: China Architecture & Building Press, 2007), 3:46; 刘敦桢, "河南省北部古建筑调查记," *刘敦桢全集* (北京: 中国建筑工业出版社, 2007), 3:46.

16. Ssu-ch'eng Liang, "Illustrations and Descriptions of Southwestern Architecture," in *The Complete Works of Liang Ssu-ch'eng* (Beijing: China Architecture & Building Press, 2001), 3:143; 梁思成, "西南建筑图说," *梁思成全集* (北京: 中国建筑工业出版社, 2001), 3:143, 178, 190.

17. Dunzhen Liu, "Survey of Ancient Buildings in Southwestern China" in *The Complete Works of Liu Dunzhen* (Beijing: China Architecture & Building Press, 2007), 4:8-12, 21-23; 刘敦桢, "西南古建筑调查概况," *刘敦桢全集* (北京: 中国建筑工业出版社, 2007), 4:8-12, 21-23.

18. Zhiping Liu, "Yun Nan Yi Ke Yin," *Society for Research into Chinese Architecture Transactions* 7, no.1 (1944): 63-94. 刘致平, "云南一颗印," *中国营造学社季刊* 7, no.1 (1944): 63-94.

19. Zhiping Liu, "Residential Building in Sichuan" in *Brief history of Chinese residential architecture: City, residence, garden* (Beijing: China Architecture & Building Press, 1990), 248-366. 刘致平, "四川住宅建筑," *中国居住建筑简史—城市、住宅、园林* (北京: 中国建筑工业出版社, 1990).

20. Ssu-ch'eng Liang, "Why study Chinese Architecture," in *The Complete Works of Liang Ssu-ch'eng* (Beijing: China Architecture & Building Press, 2001), 3:377-380. 梁思成, "为什么研究中国建筑," *梁思成全集* (北京: 中国建筑工业出版社, 2001), 3:377-380.

21. *Ibid.*

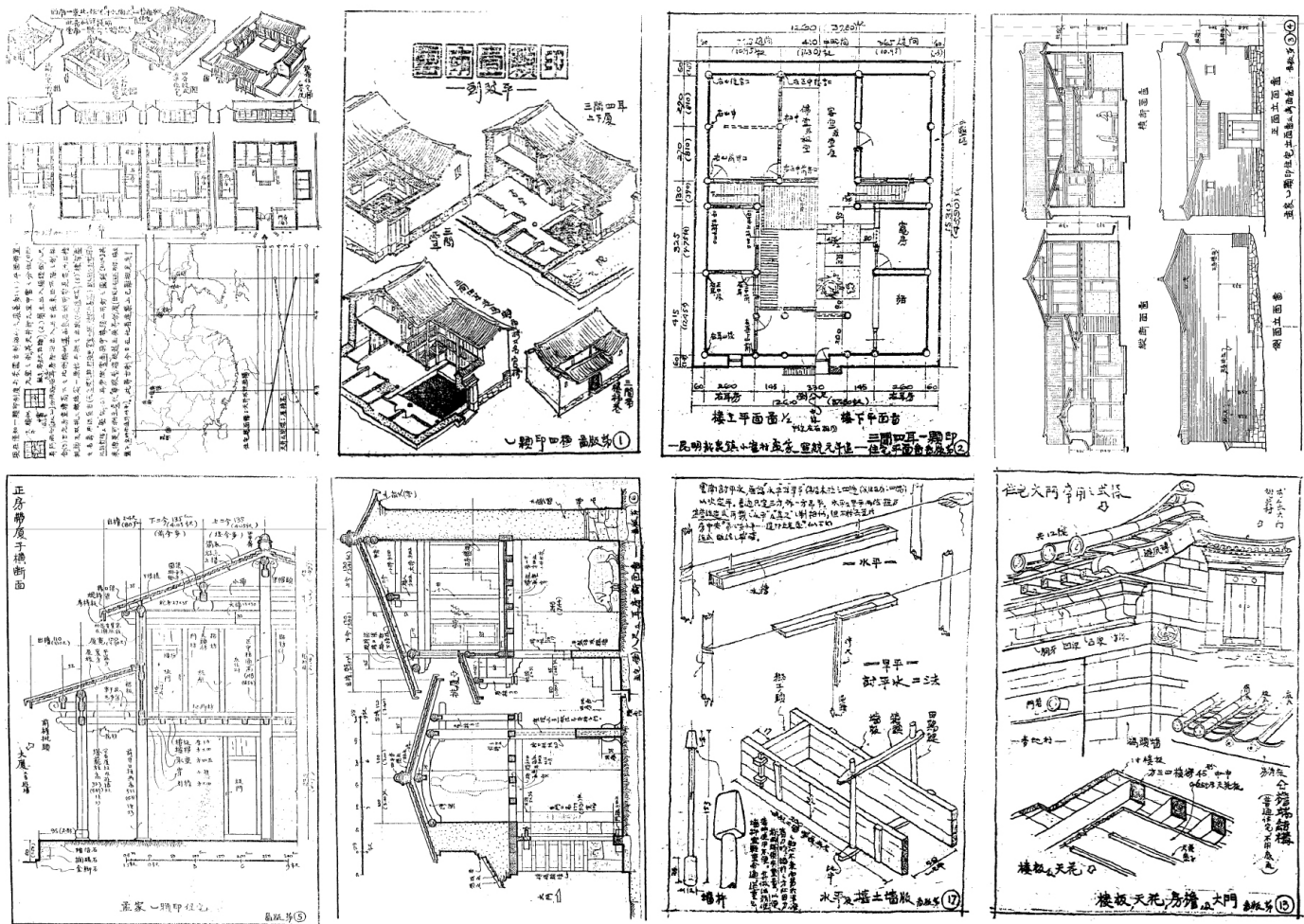


Figure 2-3 Liu Zhiping's study of Yunnan traditional dwellings. Source: Liu Zhiping. "Yun Nan Yi Ke Yin, in Chinese: 云南一颗印." Zhong Guo Ying Zao Xue She Hui Kan, in Chinese: 中国营造学社彙刊 7, no.1 (1944): 63-94.

century) houses were built after the 20th century. He wrote the following words in the *History of Chinese Architecture* published in 1939, "therefore, only the dwellings of the present age or the late Qing Dynasty are the real objects of the dwellings."²² But in fact, the survey conducted by later generations of scholars found that there are still many dwellings in the rural areas built in or even before the middle of the Qing Dynasty.

In addition to the work of SRCA, sociological investigations were continuing. The result was a completely different social structure model between China and the modern society in the West. In 1933, American Sidney D. Gamble and his students completed a survey of the social conditions in rural northern China. The findings were presented in the book *North China Villages: Social, political, and economic activities before 1933* (published in 1963). In this book, the population of the northern countryside, landownership, education, village leadership, cost of village activities, village finance, and so on were discussed. There are also descriptions of village protection systems, streets and courtyards, water supply, landownership, etc.

In 1938, Hsiao-Tung Fei completed his Ph.D. thesis *Peasant Life in China: A Field Study of Country Life in the Yangtze Valley* at the University of London²³. The thesis describes the relationship between the Kaihsienkung Village, as an economy, and the specific geographical environment and the social structure of the community in which it is located. Fei used a neutral tone to discuss all aspects of peasant life. This unbiased attitude makes this book a reference value in all ages and countries. In addition, Lin Yueh-hwa's book *The Golden Wing: The Sociological Study of Chinese Familism*²⁴ (1947) depicted the history of the rise and fall of two country families in the style of the novel. In the book, there are descriptions about the purchase of land and the construction of houses, as well as descriptions about how the owners of land choose the site, how to plan the house style and layout, which to a certain extent reflect the traditional mode of social space growth.

2.1.2.2 1950s to 1970s: before the Cultural Revolution

After the founding of the people's Republic of China, the civil war ended, and the stable political environment provided the conditions for the traditional organized investigation of residential buildings.

In 1957, Liu Dunzhen completed his book *Chinese Housing Overview*²⁵, which was the first systematic study of the traditional dwellings in China through the typology of architectural composition. The book introduces the development of ancient Chinese residential overview and classification introduced since the Ming and Qing dynasties Chinese residential buildings.

In the 1960s and 1970s, China carried out extensive surveying and mapping of rural typical dwellings nationwide, especially in ethnic minority areas. These researches paid more attention to the layout and type

22. Cf. Ssu-ch'eng Liang, *History of Chinese Architecture* (Tianjin: Baihua Edition, 1998), 342. 梁思成, *中国建筑史* (天津:百花文艺出版社, 1998), 342.

23. Hsiao-Tung Fei, *Peasant Life in China: A Field Study of Country Life in the Yangtze Valley* (London: G. Routledge and New York: Dutton, 1939).

24. Yueh-Hwa Lin, *The golden wing: A sociological study of Chinese familism* (Oxford: Oxford University Press, 1947).

25. Dunzhen Liu, *Chinese Housing Overview* (Beijing: Construction Engineering Press, 1957). 刘敦楨, *中国住宅概论* (北京:建筑工程出版社, 1957).

of plan, the method of structural materials, and the internal and external space, image and composition⁶, but few about the historical background, cultural factors, climatic geography and other natural conditions as well as the influence of the living, customs and beliefs of the occupants on the buildings are raised.

In the mid-1950s, Xi'an Institute of Metallurgy and Architecture (now Xi'an University of Architecture and Technology) became the main front for researching traditional dwellings in Northwest China during this period. Nan Shunxun, Li Shutao and Li Fangxia carried out extensive dwelling surveys of Lueyang, Chenggu, Shiquan, Hanyin, Xunyang and Ankang in Shaanxi Province and compiled the *Southern Shaanxi residential survey and Atlas*. In the 1960s, a group of teachers in architectural design courses and art courses continued to lead students in mapping and sketching dwellings throughout Shaanxi Province. Professor Hou Jiyao in the seventies on the southern Shaanxi conducted a survey and dwelling research and wrote the paper *Southern Shaanxi Dwelling*. All these works laid the foundation for further studies on residential houses in Northwest China.

Among the many achievements during this period, the paper *Zhejiang Dwellings Survey* by China Academy of Building Research (written by Liang Ssu-ch'eng and Wang Qiming), published in the Beijing Science Symposium, in 1964 was the most representative one. It comprehensively and systematically summarizes the types, characteristics, and methods and experiences in the fields of materials, structure, space and appearance in representative plain, water and mountain dwelling houses in Zhejiang Province.

2.1.3 The third stage (from 1980s to 2003): the beginning of planning research

Perhaps we can regard the European Charter of the Architectural Heritage adopted by the Committee of Ministers (1975), Recommendation Concerning the Safeguarding and Contemporary Role of Historic Areas (1976) and Burra Charter (1979) adopted by Australia ICOMOS as a prelude to the development of China's historical and cultural village protection work after the 1980s. The documents proposes to preserve the integrity of historic rural communities within their natural setting²⁶. Burra Charter reaffirms the "cultural significance" proposed by the Venice Charter and emphasizes the conservation of "place"²⁷. In the mid 1970s, China underestimated the urgency of protecting traditional rural settlements²⁸. However, as it happens, since the 1980s, China has entered a new era of exploring the comprehensive protection of rural settlement heritage. The researches related to protection of historic villages and towns in the modern sense of China began in the 1980s. The landmark event is the investigation and conservation of the historic water towns in the south of Yangtze River, which was started by Ruan Yisan's in 1982. Another landmark event is that in 2003 the Chinese government selected and published the list of the first batch of "**Famous Historical and Cultural Towns and Villages of China**" (CFHCT& CFHCV). At the same time, the

26. "Recommendation concerning the safeguarding and contemporary role of historic areas", UNESCO, 1976.

27. "The Burra Charter 1979 (The Australia ICOMOS charter for places of cultural significance)", ICOMOS Australia, 1979.

28. Laura A. Pezzetti, *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rurban Landscape*. (Tongji University Press, 2019), 43.

corresponding registration standards were announced. From 1980s to 2003, this was the period in which the conservation works of historical rural settlements began and developed in China.

In the early 1980s, the township enterprises in regions south of the Yangtze River developed greatly. The functions of towns were gradually changing from "exchange" to "production"²⁹. A lot of townships only focused on the development of production, regardless of the protection of the environment. Many townships changed their appearance in a few years. Numerous beautiful and well-constructed ancient towns have rapidly disappeared in the tide of rural economic development³⁰. Tongji University (especially the research team of Ru Yisan) has conducted extensive and in-depth investigations and studies on the historic towns located in the south of the Yangtze River, such as Zhouzhuang, Tongli, Luzhi, Nanxun, Wuzhen and Xitang, and made detailed measurements, records and conservation plans for the ancient towns³¹. At that time, most of these ancient towns were far from the main line of transportation and had not yet been developed, so they had not suffered excessive damage. The formulation of these conservation plans can be regarded as a precaution.

In this context, since 1982, Ruan Yisan presided over the investigation and research of the ancient towns in the south of the Yangtze River and the preparation of protection plans, which pioneered the research on the protection of Chinese historical and cultural villages and towns. In 1984, with team he led, Ruan completed the "*The Nanxun Ancient Town Conservation and Town Master Plan*"(*南浔古镇保护与城镇总体规划*), and proposed the strategy of "protecting the old district, developing new districts, integrated planning, and rational layout"³². The plan was implemented in the following year³³.

In 1986, in the document promulgating the second batch of "**Famous Historical and Cultural Cities of China**" (CFHCC), the State Council also proposed "the districts, buildings, towns, villages, etc. where the distribution of cultural relics and historic sites are relatively concentrated, or which can more fully reflect the traditional features and national characteristics of a certain historical period, should be protected"³⁴. Under the influence of this policy, some local governments have strengthened the protection of ancient

29. Yisan Ruan, "The Characteristic Environment and Conservation of Water Towns South of the Yangtze River," *City*, no.3 (1989):28-30. 阮仪三 "江南水乡城镇特色环境及保护," *城市*, no.3 (1989):28-30.

30. Yisan Ruan, *Records on the Protection of Ancient Cities: Collection of Ruan Yisan's works* (Shanghai: Tongji University Press, 2001), 4. 阮仪三, *护城踪录:阮仪三作品集* (上海: 同济大学出版社, 2001), 4.

31. Yisan Ruan, Yong Shao and Lin Lin, "The Characteristics, Values and the Preservation Planning of the Towns in Jiangnan Water Region," *Urban Planning Forum* 137, no.1 (2002):1-3.

32. The original Chinese text of the strategy is "保护老区, 开发新区, 统一规划, 合理布局".

33. Yisan Ruan, Haichen Huang, and Licong Cheng, "Conservation and Planning of Ancient Water Towns South of the Yangtze River (excerpt)," *Architectural Journal*, no.9 (1996):22-25. 阮仪三, 黄海晨, 程俐聪, "江南水乡古镇保护与规划(摘登)," *建筑学报*, no.9 (1996):22-25.

34. Cf. State Council of the People's Republic of China, "Notice of the State Council Approving the Report of the Ministry of Construction and the Ministry of Culture on the Request for the Publication of the Second Batch Lists of National Famous Historical and Cultural Cities," *State Council Gazette Issue*, no. 35 (1986): 1975. <http://www.gov.cn/gongbao/shuju/1986/gwyb198635.pdf>. 国务院.' 国务院批转建设部、文化部关于请公布第二批国家历史文化名城名单报告的通知," *国务院公报*, no. 35 (1986): 1975.

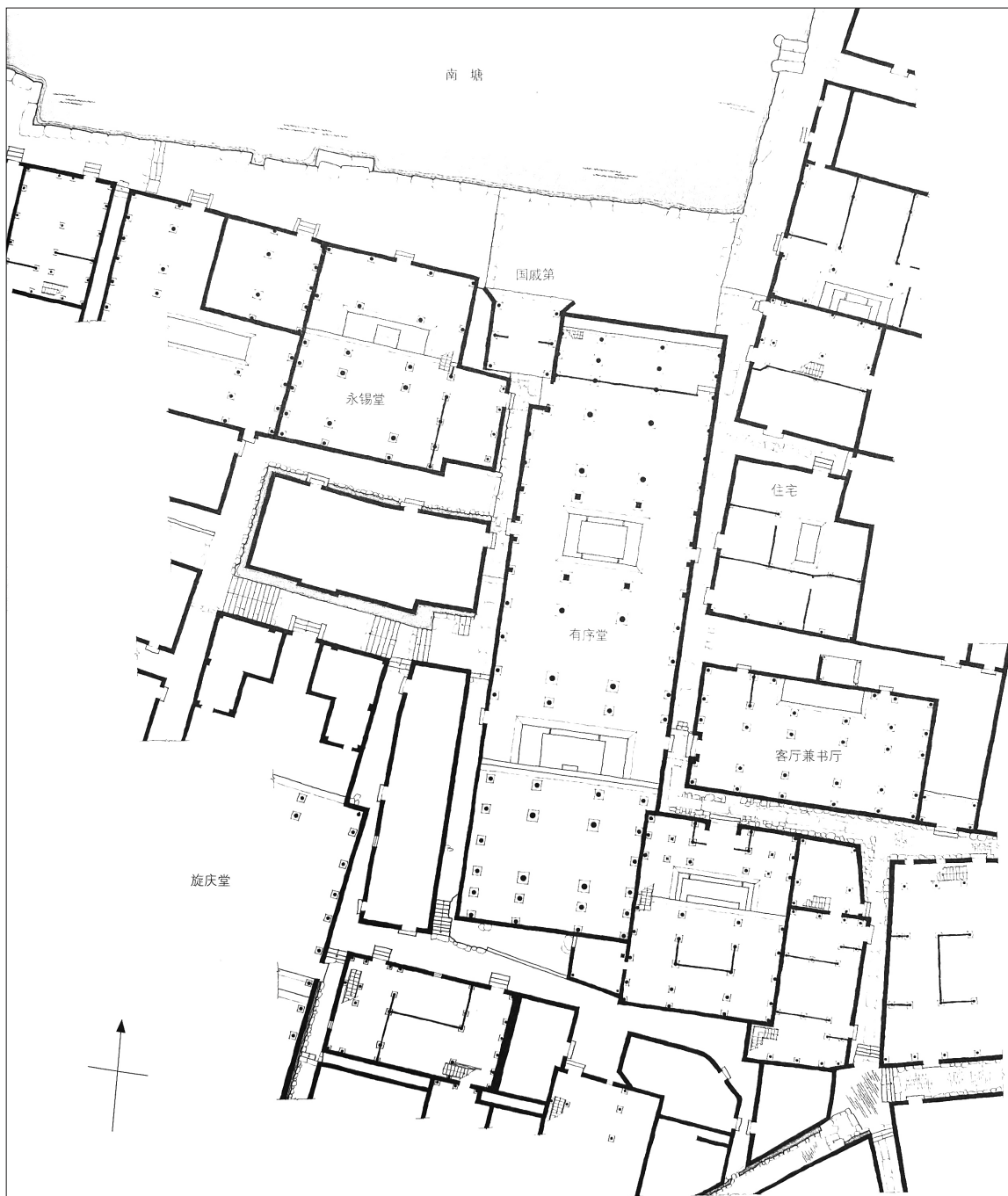


Figure 2-4 A typological map of village settlements in southern China drawn by VARG. Source: Qiuxiang Li, Zhihua Chen, *Chinese Heritage · Vernacular Architecture: Xinye Village*, (Beijing: Tsinghua University Press), 79. 李秋香, 陈志华, *中华遗产·乡土建筑: 新叶村*, (北京: 清华大学出版社, 2011), 79.

towns. However, due to the lack of funds provided by the government, the conservation of some ancient towns was funded by nongovernmental capital. For example, Zhouzhuang and Luzhi's initial general and conservation plans were completed with the support of "Rural Building Development Fund" donated by Great Earth Architects & Engineers International³⁵.

In the 1990s, scholars in the field of architecture realized that the preciousness of Chinese traditional settlements was the values of the people and living environment they embodied, and began to "return" to the countryside. The more representative studies are Peng Yigang's research on the landscape of Traditional Villages and towns³⁶, Shan Deqi's research on the reconstruction of settlements in underdeveloped areas³⁷. In 1989, Chen Zhihua, Lou Qingxi and Li Qiuxiang from the school of architecture of Tsinghua University jointly set up the "Vernacular Architecture Research Group" (VARG), They led the students to investigate the ancient villages in the middle reaches of Nanxi River³⁸, and completed a series of records related to human history and mapping of residential buildings and settlements. The investigation of VARG has been continued to date. In recent years, they have completed the investigation of Zhuge village, gaochair village, Xinye village, Shilipu village, Guoyu village and other villages. A commendable contribution of VARG is that they applied typological map (the first ground building plan of the whole settlement) to the presentation of survey results.

The Ministry of Construction (MOC) initiated the declaration of the historical and cultural towns and villages in 1996, but the process of applying for the selection was slow. Until 2003, the **MOC** and the **State Administration of Cultural Heritage (SACH)** announced the first batch of 10 **Famous Historical and Cultural Towns of China (CFHCT)** and 12 **Famous Historical and Cultural Villages of China (CFHCV)**³⁹. The basic conditions and evaluation criteria for the selection of CFHCT and CFHCV have been published at the same time.

In 1999, the first "China Ancient Village Conservation and Development Seminar(in Chinese: 首届古村落保护发展研讨会)" organized by China Urban Economics Association was held in Yongjia County,

35. Founded in 1985 by Canadian Chinese architect and professor of Tsinghua University, Mr. Peng Peigen, It is the first Chinese foreign joint venture architectural design institution with Grade A building design certification.

36. Yigang Peng and Lansheng Nie, Analysis on the Landscape of Traditional Villages and Towns (Beijing: China Architecture & Building Press, 1992). 彭一刚 聂兰生, *传统村镇聚落景观分析* (北京: 中国建筑工业出版社, 1992).

37. Deqi Shan, "On the transformation of Chinese Traditional Dwellings and Clustered Villages," *Architectural Journal*, no. 4 (1992): 8-1. 单德启. "论中国传统民居村寨集落的改造." *建筑学报*, no. 4 (1992): 8-11; Deqi Shan "Research on the Transformation of Traditional Dwellings and Clustered Villages in Underdeveloped Areas--The Practice and Theoretical Discussion on the Reconstruction of Wooden Buildings of Miao Village in Rongshui, Guangxi," *Architectural Journal*, no. 4 (1993): 15-19. 单德启, "欠发达地区传统民居村落改造的求索 - 广西融水苗寨木楼改建的实践和理论探讨," *建筑学报*, no. 4 (1993): 15-19.

38. Cf. Zhihua Chen, *Ancient Villages in the Middle Reaches of Nanxi River* (Beijing: SDX Joint Publishing Company, 1999). 陈志华, *楠溪江中游古村落* (生活·读书·新知三联书店, 1999).

39. Before 2003, the local governments of some eastern coastal provinces with more developed economy carried out the selection of provincial famous historical and cultural towns and villages in advance. As early as 1991 and 2000, Zhejiang Province announced two groups of provincial famous historical and cultural towns and villages.

Zhejiang Province⁴⁰. Experts in cultural relics protection and ancient architecture, such as Zheng Xiaoxie, Luo Zhewen, Yang Hongxun, and famous scholars from the fields of architecture, planning, history, geography, philosophy and sociology, such as Ruan Yisan, Zhu Guangya and Liu Peilin, etc., attended the seminar. At the third seminar in 2007, the "China Landscape Village Conservation Convention" (in Chinese: *中国景观村落保护公约*) and the "Chinese Ancient Village Protection and Development (Wuyuan) Declaration" (in Chinese: *中国古村落保护与发展(婺源)宣言*) were adopted, and the list of "**China Landscape Village (CLV)**" and "**Classic Village Landscape (CVL)**" were selected⁴¹. Since the selection is organized by NGOs, there is no reliable funding from the central government to support the conservation of selected villages. Therefore, compared with the **selection of CFHCT, CFHCV and CTV**, organized by the MOC (the predecessor of MHURD) and the **SACH**, the **CVL** selected a small number of villages⁴² and the social clout is relatively low.

In the field of traditional dwellings research, up to now, Architectural Society of China has organized and held the 24 Annual Academic Conferences on Chinese Dwelling Architecture. In 1984, the first seminar on traditional dwellings named "Traditional Chinese Architecture Slideshow Meeting" was held in Dali. The meeting decided to compile the information of traditional houses into a book entitled *Traditional Chinese Dwelling Architecture*⁴³. The book introduced China's traditional dwellings by Northeast, Northwest, North China, Southwest, South Africa, East China five regions, contents of the basic characteristics of residential areas and a number of examples of photos and construction mapping. After that, many proceedings and treatises on the study of Chinese dwellings and have been published. In many publications of this period, the content of the *Chinese Traditional Dwelling Series* (organized by China Construction Industry Press and South China University of Technology, jointly compiled by major architectural colleges across the country) are the most systematic and comprehensive. These series of books are divided into 18 volumes, which are classified in regions and provinces.

In 2000, Ancient Villages in Southern Anhui – Xidi and Hongcun were selected for World Cultural Heritage, which further promoted the formulation of protection policies and research interests of researchers in historical villages. Then, in the "Cultural Relics Protection Law of the People's Republic of China" revised in 2002, there were clear regulations on the protection of "historical and cultural villages and towns".

In this period, the characteristics of the study of the dwelling houses were expanded from the previous purely architectural research scope to the comprehensive research with sociology, history, cultural geography, anthropology, archaeology, ethnology, folklore, linguistics, climatology and aesthetics⁴⁴. The

40. Cf. <http://www.zhongguogucunluo.com/yttt/html/?100.html>.

41. Cf. The Third International Symposium on the protection and development of ancient villages in China (*第三届中国古村落保护与发展(国际)研讨会*). <http://www.zhongguogucunluo.com/yttt/html/?103.html>

42. So far, 1 Chinese landscape village group, 100 Chinese landscape villages and 8 classic village landscapes have been selected in the list of CVL.

43. Zhili Wang, ed., *Chinese Traditional Architecture of Residence* (Jinan: Shandong Science & Technology Press, 1994). 汪之力 主编, *中国传统民居建筑* (济南: 山东科学技术出版社, 1994).

44. Yuanding Lu, "Fifty years of research on Folk House," *Architectural Journal*, no. 11 (2007): 66-69. 陆元鼎, "中国民居研究五十年," *建筑学报*, no. 11 (2007): 66-69.

research on the formation, evolution, protection, development and tourism of historical villages and towns has been deep-rooted, and the research on related papers, works and topics has been increasing. Historical villages and towns became the focus of academic circles and social circles.

2.1.4 The fourth stage (from 2003 to now): policies, regulations and academic research continue development

As mentioned above, following the statutory concept of 'historical and cultural villages and towns' proposed in the revised version of the Cultural Relics Protection Law in 2002, in 2003, the MOC and the SACH jointly promulgated "Measures for the Selection of Famous Historical and Cultural Towns (Villages) of China"⁴⁵, the name CFHCT and CFHCV were officially proposed and the list of first batch of selected villages and towns were also published. From this point on, historical and cultural villages and towns gradually separated from the comprehensive study of historical and cultural reserves and became a relatively independent research area. The research on the development and utilization of historical and cultural villages and towns has also entered the stage of systematization. Based on the value refining and processing of historical resources, the relevant development strategies are formulated to cover the topic of tourism development, resettlement, policy support, ecological coordination, and new district construction.

In 2008, the State promulgated *"The Regulations on the Protection of Famous Historical and Cultural Cities, Towns and Villages"*⁴⁶ to guide the protection of historical and cultural villages and towns into a comprehensive legalization and specialization. In 2012, the Ministry of Housing and Urban-Rural Development promulgated *"The Requirements for Famous Historical and Cultural Cities, Towns and Villages Conservation Planning"*⁴⁷, which stipulated the specific technical content of the protection plan and clearly proposed to adopt "new technologies and new methods". In the same year, the MHURD began to organize the selection of CTV, and in 2013 issued the *"The Basic Requirements of Traditional Village Conservation and Development Planning (Trial)"*⁴⁸. On the basis of traditional technical methods, the application of new technologies has been introduced into specific studies, such as the division of protection scope, the judgment of new and old towns and villages, the continuation of traditional street systems, the definition of contour and scale of the space, the darning of new and old cultural landscapes, and classified protection of historical buildings and so on. Such new technology used involves ArcGIS, space syntax, topology models, structural equation models, virtual reality and other technical means.

45. "Selection Measures for China Famous Historical and Cultural Town and Villages", MOC, SACH (October 8, 2003), <http://www.mohurd.gov.cn/wjfb/200611/W020061101546011335085.doc>.

46. According to 'Regulations on the Protection of Famous Historical and Cultural Cities, Towns and Villages', the State Council of the People's Republic of China (22 April 2008), http://www.gov.cn/zwjk/2008-04/29/content_957280.htm.

47. MOHURD, SACH. "Requirements for Famous Historical and Cultural Cities, Towns and Villages Conservation Planning" (16 November 2012). "历史文化名城名镇名村保护规划编制要求".

48. MOHURD. "Requirements for Famous Historical and Cultural Cities, Towns and Villages Conservation Planning" (18 September 2013). "传统村落保护发展规划编制基本要求".

2.2 A review of relevant researches on the protection of Chinese historical villages since the 1980s

2.2.1 About the value of heritage and its evaluation

2.2.1.1 Researches on the value of cultural heritage

In the early 1980s, there was little research on the value of historical villages. Ruan Yisan (1989) first proposed the value of Chinese cultural monuments in historical villages and towns including value in use (functional value, economic value, social value) and cultural value (archeological value, aesthetic value, architectural value)⁴⁹. Later, he proposed historical and cultural values, tourism values and life values (1996, 2010)⁵⁰, as well as philosophical and ideological values, national cultural values, social and economic values and architectural and artistic values (2012)⁵¹ from the overall level of historical villages and towns. Liu Peilin (2003)⁵² referred to the decisive factor of identifying regional cultural characteristics as "landscape gene". On this basis, Zhai Zhouyan (2017)⁵³ proposed six types of characteristics of identifying Traditional Village cultural heritage landscape: 1. Environmental characteristics (site selection and pattern, planar form, spatial layout, street and lane pattern) 2. Architectural characteristics (planar structure, building shape, roof shape, gable shape, roof face form, building materials, local decoration); 3. Custom characteristics (wedding, funerals, festivals, food, entertainment and market trade) 4. Dialect features selection 5. Clan characteristics 6. Faith characteristics.

49. Yisan Ruan, "The Characteristic Environment and Conservation of Water Towns South of the Yangtze River," *City*, no.3 (1989):28-30. 阮仪三 "江南水乡城镇特色环境及保护," *城市*, no.3 (1989):28-30.

50. Yisan Ruan, and Yong Shao, "The Characteristics and Conservation of the Ancient Water Towns in the South of the Yangtze River," *Tongji University Journal(Humanities and Social Science Section)*, no.1 (1996) :21-28. 阮仪三, 邵甬, "江南水乡古镇的特色与保护," *同济大学学报:社会科学版*, no.1(1996) : 21-28; Yisan Ruan, Zhen Li, and Lin Lin, *The Work of Protection for Historical Buildings and Environment of Ancient Towns in Jiangnan* (Shanghai: Shanghai People's Fine Arts Press, 2010). 阮仪三, 李滨, 林林. *江南古镇历史建筑与历史环境的保护* (上海: 上海人民美术出版社, 2010).

51. Yisan Ruan, Fei Yuan, and Wenjing Tao, "On the Historical Value and Conservation Significance of the Historic Water Towns in the South of the Yangtze River" *China Ancient City*, no.6 (2012) :4-8. 阮仪三, 袁菲, 陶文静, "论江南水乡古镇历史价值和保护意义," *中国名城*, no.6 (2012): 4-8.

52. Peilin Liu, "The gene expression and the sight identification of the ancient villages' cultural landscape," *Journal of Hengyang Normal University: Social Science*, no.4 (2003): 1-8. DOI:10.3969/j.issn.16730313.2003.04.001. 刘沛林, "古村落文化景观的基因表达与景观识别," *衡阳师范学院学报:社会科学版*, no.4 (2003): 1-8.

53. Zhouyan Zhai et al., "Genes identification of cultural heritage landscape of Shaanxi Traditional Villages," *Progress In Geography* 36, no.9 (2017): 1067-1080. 翟洲燕, 李同昇, 常芳等, "陕西传统村落文化遗产景观基因识别," *地理科学进展*, no.9 (2017): 1067-1080.

According to Tian Li(2004)⁵⁴ there are three levels of artistic value of historical settlement: 1. The overall form of settlement and natural landscape environment; 2. The overall style of ancient street area and ancient architectural complex; 3. The architectural structure, wood carving, color painting and green configuration in ancient architecture.

Luo Deyin(2014)⁵⁵ used the principle of "cultural significance" as defined by the Burra Charter to set up criteria for the pedigree of Chinese Traditional Villages. Since China is a country consists of a majority Han nationality and 55 minority nationalities, Luo organized the designation geographically--into four areas.

Zhang Song (2017)⁵⁶ regarded Traditional Villages as different "landscape prototypes" and believed that the long-lasting rural landscape has extraordinary vitality and diversity. In the view of ancient literati, the local landscape in a certain area is often summarized into several local literati and local people's native feelings and beautiful visions. These characteristic landscapes are often named after "eight scenes" or "ten scenes", that is, eight or ten iconic landscapes in a certain area. This iconic landscape has the property of "prototype", which influences the location and construction of other settlements.

To sum up, different scholars have different understandings of the value types of Traditional Villages, and many categories of value connotations overlap with each other.

In 2012, the Chinese government (MHURD, MOC, SACH, MOF) issued Notice on The Survey of Traditional Villages. The notice pointed out that the value of CTV is reflected in six aspects, namely history, culture, science, art, society and economy.

In 2015, Principles for the Conservation of Heritage Sites in China jointly released by ICOMOS China and the SACH stated that, the heritage values of a site are its historic, artistic, and scientific values, as well as its social and cultural values. Among them, social value is proposed for "memory, emotion, education, etc"⁵⁷. This value classification method divides cultural values into three parts: history, art, and science, but does not involve economic impact. Traditional Villages are a living heritage, and the economic life of villagers is related to the value of the heritage. Therefore, the heritage value in Traditional Villages not only includes the value connotation with cultural significance (Chinese traditional culture and local local culture) as the main content, but also the relationship between its inherent value and sustainable development from other three aspects: social, environment and economic⁵⁸ since a historic place can be consider as an opportunity space for regeneration.

54.Li Tian, "Practice and Reflection on the Conservation Plan for Ershibadu Township," *Planners*, no.4 (2004): 56-58. 田利, " 廿八都镇保护规划的实践与思考," *规划师*, no.4 (2004): 56-58.

55.Deyin Luo, "The Establishment of Chinese Traditional Villages," *World Architecture*, no.6 (2014):104-107. DOI:10.16414/j.wa.2014.06.022

56.Song Zhang, "A Study of Traditional Villages as a Form of Human Settlement and Their Integrated Conservation," *Urban Planning Forum*, no.2 (2017): 44-49.

57.ICOMOS China, "Principles for the conservation of heritage sites in China." (2015), 61.

58.CHCFE Consortium. "Cultural heritage counts for Europe." CHCFE Consortium: Krakow, Poland (2015), 57.

2.2.1.2 Value evaluation methods in China

The selection criteria of ancient towns (villages) issued by the Chinese government, such as the *Evaluation Index System of Famous Historical and Cultural Towns and Villages of China (Trial)* (see Annex I for details, hereinafter referred to as *Index A*) issued by the MOC in 2004 and *Index system for Evaluation and Identification of Traditional Villages (Trial)* (see Annex II for details, hereinafter referred to as *Index B*) issued by the MHURD in 2012 are relatively mature evaluation methods at present.

Among them, the CFHCT (V) corresponding to the Index A has harsher selection conditions and a smaller number of registered villages; while the CTV corresponding to the Index B has a lower selection criterion and a larger number of registered villages.

The researches on value evaluation content and methods are mostly based on the above two index systems. Zhao Yong (2008)⁵⁹ elaborated the basis for formulating *Index A*, and adopted the Analytical Hierarchy Process (AHP) to determine the weight of each indicator of the historical and cultural village and town evaluation system. The content of *Index A* mainly includes three aspects: 1. "Material and cultural heritage indicators", including "monument buildings", "historical buildings", "street and lane environment"; 2. "Intangible cultural heritage indicators", including "historical impact", "folk culture", "living environment"; 3. "conservation measures", including "protection planning", "repair measures taken", "protection mechanisms". The above three aspects include a total of 24 specific evaluation factors (see Annex I for details). On this basis, Zhang Yanling (2010)⁶⁰ proposed to add three evaluation factors: the "cultural space factor" and the "historical event sequence space factor" (or intangible cultural line) in the "intangible cultural heritage index"; and the "socio-economic measures factor" (or the source and reliability of protection funds). However, Shao Yong (2012)⁶¹ criticized that *Index A* should not consider whether protective measures have been taken as an important part of value evaluation; because historical villages that have not been taken protective measures need to be included in the protection system and supported by funds. She also pointed out other limitations of indicator system A. First, the stringent requirements for the size of villages and towns have left out some small villages with local restrictions; Second, the factor weights in terms of the integrity of the settlements and the natural environment are too small; Third, the weight of intangible cultural heritage is too small; Fourth, the characteristic evaluation index and the authenticity and integrity evaluation index are integrated in a subsystem, and there is no corresponding relationship between them. Shao's framework of a comprehensive evaluation system of historical and

59. Yong Zhao, et al., "Re-examination of the Evaluation Index System of Historical and Cultural Villages and Towns——Taking the Second Batch of Famous Historical and Cultural Towns (Villages) of China," *Architectural Journal*, no. 3 (2008): 64-69. 赵勇, et al., "历史文化村镇评价指标体系的再研究——以第二批中国历史文化名镇(名村)为例," *建筑学报*, no. 3 (2008): 64-69.

60. Yanling Zhang, and Dawei Xiao, "Objective Evaluation System of Historic Cultural Villages and Towns," *Huazhong Architecture*, no.8 (2010): 161-163. 张艳玲, 肖大威, "历史文化名镇名村客观评价体系研究" *华中建筑*, no.8 (2010): 161-163.

61. Yong Shao, and Juan-juan Fu, "Research on Value-Based Integrated Evaluation Framework of Historical and Cultural Towns and Villages in China," *City Planning Review*, no.2 (2012): 82-88. 邵甬, 付娟娟, "以价值为基础的历史文化村镇综合评价研究," *城市规划*, no.2 (2012): 82-88.

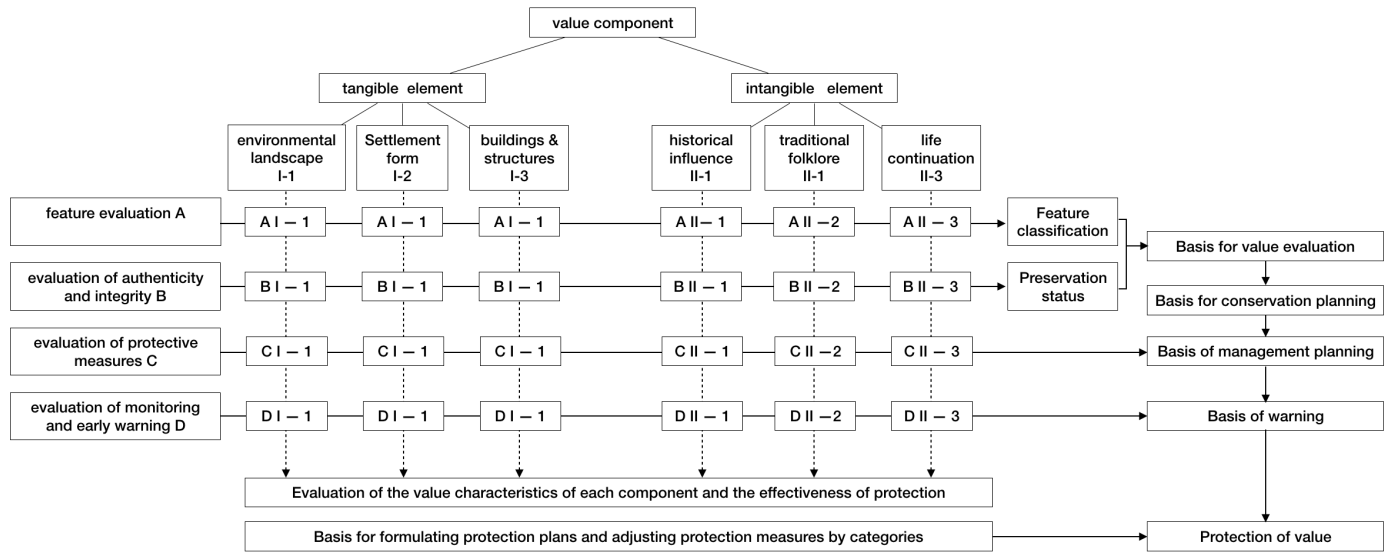


Figure 2-5 Shao's evaluation framework of historical and cultural towns and villages conservation in China. Source: Yongshao, and Juan-juan Fu, "Research on Value-Based Integrated Evaluation Framework of Historical and Cultural Towns and Villages in China," *City Planning Review*, no.2 (2012): 82-88. (Original in Chinese, translated by the author into English.)

cultural villages and towns based on value has completed the transition from the current evaluation system's "tree-like" (*Index A*) to a "network-like" structure (fig.2-5).

Later, Shao proposed her "Criterion of evaluation of historical and cultural towns and villages"⁶². The biggest feature of this Criterion is to expand the factors of the *Index A* from 24 to 40, and refine the material space level. Song Min (2017)⁶³ proposed a series of amendments and supplementary suggestions to *Index A* to form an indicator system composed of 21 factors. After verifying the rationality of the indicator system through SSPS software, according to the three main factors found, a strategy for protecting historical villages by classification was proposed. This taxonomy classifies the villages as "villages featuring ancient architecture", "villages featuring custom and folk customs", and "villages featuring natural ecology".

62. Yongshao, and Juan-juan Fu, "Significance and methods for evaluating historical and cultural towns and villages in China," *Journal of Xi'an University of Architecture & Technology (Natural Science Edition)* 44, no.5 (2012): 644-650. 邵甬, 付娟娟, "历史文化村镇价值评价的意义与方法," *西安建筑科技大学学报:自然科学版* 44, no.5 (2012): 644-650.

63. Min Song, Dekun Song, and Juan-juan Fu, "Exploration on the Preservation and Utilization System Planning for Historic Villages: A Case Study of Jiangshan City, Zhejiang Province," *City Planning Review*, no.5 (2017): 69-77. 宋敏, 仲德崑, 王单珩, "历史文化村落保护与利用的体系规划探析——以浙江省江山市为例," *城市规划*, no.5 (2017): 69-77.

In *Index B*, Traditional Villages are classified into three categories, and each type has its own sub-evaluation index. The first type is the evaluation index system of traditional buildings; the second type is the evaluation index system of village location and pattern; the third type is the evaluation index system of intangible cultural heritage carried by the village. Compared with *Index A*, *Index B* has the following main features: 1. Evaluation of three types of villages; 2. No scoring based on the area of the village and historic buildings, so that small villages can be selected; 3. Do not consider whether protective measures have been taken as the content of value evaluation; 4. In the second type of evaluation index system, the factor weight of the integrity of the settlement and the natural environment accounts for 15%, which is greatly improved compared with the *Index A* (3%). However, for the evaluation of the integrity of the natural environment, regardless of the index *Index A* and *Index B*, the evaluation tools are qualitative, and there is no specific quantitative evaluation method. Therefore, there are certain difficulties in actual operation. In addition, *Index B* also reflects the research results of Shao and Song on *Index A* mentioned above.

2.2.2 Village form and its evolution

2.2.2.1 Researches based on western urban morphology method

1) Reference to the researches of Chinese urban morphology

Chinese Traditional Villages have a similar internal structure to traditional cities, or we can say the Chinese village is always a miniature city⁶⁴ (but distinct from contemporary cities) and the planning and design methods of ancient Chinese villages are consistent with the planning and design of ancient Chinese cities and gardens⁶⁵. On the other hand, China is a rural society⁶⁶, China's urban form is inextricably linked to the rural form, and the prototype of the urban form may be in the countryside⁶⁷. Therefore, the previous research on the form of traditional cities is also worthy of our attention.

Whitehand and Gu used the planning analysis method of the Conzenian School in the ancient city of Pingyao, taking architectural and land planning as the research object, and applying morphological terms such as "fixation lines" to explain the historical geographic structure of urban planning. Gu reviewed the study of Chinese urban form after the Opium War⁶⁸ and pointed out that compared with European and American countries, the disadvantage of China's urban morphology research is that there are few historical documents on urban plots that are preserved, and information resources are scarce. Before 1980s, China

64. Arthur. H. Smith, *Village life in China: A study in sociology* (New York, Chicago, Toronto, Fleming H. Revell Company, 1899), 29.

65. Jie Zhang, Songnan Wu, "Quantitative analysis of the Morphologies of Traditional Chinese Villages," *World Architecture*, no. 1(2010): 118-121.

66. Hsiao-t'ung Fei, *From the Soil, the Foundations of Chinese Society*, trans. Hamilton Gary G. and Zheng Wang (London: University of California Press, 1992), 37.

67. Kecheng Liu, and Li Xiao, "Dynamic Pattern of Town and Village Evolution," *Journal of Xi'an Institute of Metallurgy & Construction Engineering*, no.02 (1994)5-23. 刘克成, 肖莉, "乡镇形态结构演变的动力学原理," *西安建筑科技大学学报*, no.02 (1994)5-23.

68. Whitehand, J. W. R., and Kai Gu. "Research on Chinese urban form: retrospect and prospect." *Progress in Human Geography* 30.3 (2006): 337-355.

did not have a special study of urban morphology. The theory and research on cities were included in architectural history, planning history, cosmology, Feng Shui and cartography.

Given that different, can Western urban morphology views, methods and concepts actively promote the exploration of Chinese cities? They believe that Conzenian and Caniggian Approaches (morphological region, fringe-belt concept, metrological analysis, typological process) are applicative. Many of the concepts and methods that have been developed by the Conzenian and Caniggian schools are intuitively attractive for the task of understanding and planning Chinese urban landscapes.

Whitehand and Gu, et al., conducted a continuous urban morphology study of some Chinese historical cities⁶⁹. These morphological analyses are based primarily on the morphological theory of the Conzenian school, including the analysis of Pingyao's urban plane using the concept of "fixation line" (2007) and the survey of Nanjing using the concept of "fringe belt"⁷⁰(2017), and the horizontal comparison between Pingyao and Como, Italy (2012) which studied by Gianfranco Caniggia in 1960s.

The investigation in plan analysis provides an important part of the basis for a comprehensive morphological analysis leading to the delimitation of morphological regions. The results of the analysis of Pingyao's urban plane include: the gate location and core area in the 14th century; they defined the morphological area according to the degree of deformation of the border of the residential area; and the diachronic changes in the orientation of the residential courtyard and land ownership (between the late 19th century and the early 21st century).

69. Whitehand, J. W. R., and Kai Gu. "Extending the compass of plan analysis: a Chinese exploration." *Urban Morphology* 11.2 (2007): 91-109; Conzen, Michael P., Kai Gu, and J. W. R. Whitehand. "Comparing traditional urban form in China and Europe: A fringe-belt approach." *Urban Geography* 33.1 (2012): 22-45, DOI: 10.2747/0272-3638.33.1.22

70. Fringe-belt concept, which has been the subject of investigation by urban morphologists for over half a century, is rarely referred to by planners, despite the initial recognition of fringe belts as deriving from one of the most obvious products of early European planning: the fortification zones surrounding medieval and Renaissance cities. The term *Stadttrandzone* (in English "urban fringe belt", but commonly shortened to "fringe belt") was first applied by the geographer Herbert Louis (1936) to the zone of extensive land use that developed at the urban fringe during pronounced hiatuses in urban growth, among which those associated with city fortifications were especially obvious. Following renewed urban growth, such lowdensity zones were generally not acquired for housebuilding, but became successively embedded within the urban area, surviving as recognizably distinct zones separating older from younger residential development. Cf. J.W.R Whitehand, and N.J Morton, "Urban morphology and planning: the case of fringe belts," *Cities* 21.4 (2004): 275-289, <https://doi.org/10.1016/j.cities.2004.04.001>.

Michael P. Conzen, Kai Gu & J. W. R. Whitehand (2012)⁷¹ pointed out that the fringe-belt concept⁷² provides a frame of reference for depicting, explaining, and comparing the physical structure and historical development of urban landscapes. The recognition of fringe belts produced by the process of urban growth is crucial to the task of maintaining and reconstructing traditional urban characteristics in an integrated manner. They compared the traditional urban form of two walled cities: Pingyao, China and Como Italy. The study attempts to integrate analytical and illustrative comparisons and provide explanations of particular urban landscapes by recognizing critical differences between similar situations and identifying salient processes that occur in different settings. They believed the recognition by planners of the fringe belt character of such a site would deepen understanding of how genuine urban historical character might be retained instead of just being cast aside. They also analyzed the "land use" and "urban landscape unit" in the edge of Pingyao City, emphasizing the influence of the "**danwei**" as a new type of space on urban form in the past few decades.

In the study of fringe belt and traditional main elements, the morphological process understood only in the bi-dimensional plan and relation to property is always the main line of their concern. However, there are few surveys of traditional Chinese architecture, so the discussion of Pingyao's morphological process mostly stays at the level of blocks and plots, lacking research on the architectural level, especially the architectural elements, and thus does not refine or shade light on the architecture of their plan the local architectural types. The understanding of the type process needs to be further deepened. For example, in the Pingyao residential survey, they generally believe that only the courtyard facing the south is auspicious, and this understanding is not accurate.

Chen (2009) focused on urban blocks, including plots and building-grouping patterns, of Suzhou" old city region⁷³, analysed the historical process of transformation of urban blocks (3 types), plots and building fabrics from the tenth century to the present day (1st stage 960–1850s, 2nd stage 1850s–1948, 3rd stage 1949–present) using a typomorphological approach and offers some design suggestions for urban designers and policy-makers based on the examination of the local context. The study used three existing

71. Conzen, Michael P, Kai Gu, and J. W. R. Whitehand. "Comparing traditional urban form in China and Europe: A fringe-belt approach." *Urban Geography* 33.1 (2012): 22-45, DOI: 10.2747/0272-3638.33.1.22; Whitehand, J. W. R., and Kai Gu. "Urban fringe belts: evidence from China." *Environment and Planning B: Urban Analytics and City Science* 44.1 (2017): 80-99.

72. The fringe-belt concept is important in urban morphological analysis both at the macro-level—concerning the size and shape of entire urban areas, their degrees of fragmentation, and tendencies toward monocentrism or polycentrism—and at the micro-level, focusing on individual plots of land. This concept has also been recognized as a powerful means of understanding the physical organization of urban areas in relation to the process of outward growth and internal change (M. R. G. Conzen, 1960; 1962; Whitehand, 1988; M. P. Conzen, 2009). Fringe belts are signatures of the pulsations of urban growth, and reflect urban space needs beyond those of the residential and retail sectors (M. P. Conzen, 2009, p. 48). Both Louis (1936) and M. R. G. Conzen (1960), who were most responsible for formulating and developing the fringe-belt concept.

73. Chen, Fei, and Ombretta Romice. "Preserving the cultural identity of Chinese cities in urban design through a typomorphological approach." *Urban Design International* 14.1 (2009): 36-54.

fundamental terms, namely "Type", "synchronic type"⁷⁴ and "typological process", in the examination of urban blocks of Suzhou.

The urban form study of Suzhou revealed two advantages of typomorphological approach in the Chinese context. First, the typomorphological approach for urban forms can reveal and summarise the characteristics of urban elements through different periods of development by types. Second, types and typological processes that are deeply rooted in the local culture and people's spontaneous consciousness make the application of the traditional characteristics to new design possible.

Gu (2008) and Tian (2012)⁷⁵ studied the types of residential houses in Guangzhou based on the concept of the typological process proposed by the Caniggian school. They analyzed the evolution of the type of dwellings since 1840 and divided the different morphological periods. They attempted to integrate different types of dwelling buildings into a development framework.

Deng Hao (2013)⁷⁶ pointed out that pursuing the space-time continuity of urban walk in different level of scale of urban space is an important way to enhance publicity and democracy of our cities. Urban tissue is able to show the morphological problems of the current urban walkable space construction hierarchically by way of graphic mode, and can also help us to analyze and solve them progressively.

Tang Liang and Ding Wowo (2016)⁷⁷ believe that urban morphology provides scientific and systematic knowledge and methods for the understanding and renewal of urban tissues in the historical regions of Chinese cities. A fundamental problem in urban form is the role of plot in the formation of physical building forms, as it relates to customs, social systems, and architectural techniques. By studying the relationship between the types of buildings and the indicators of the plots in the local urban areas of Nanjing, the validity or ineffectiveness of the types of buildings and the role of the parcels in the process of organizational transformation are discussed. They try to propose an effective method for the transformation of traditional tissues, namely follow the consistency and richness of urban texture. The study puts forward two questions: "what are the morphological characteristics of traditional organizations" and "how to describe morphological characteristics"? The answer is to emphasize the role of parcel contours and architectural types in describing the morphological features of the organization. Analyze traditional city tissue by abstracting individual buildings that make up the organization into blocks (area, depth, face

74. Particular synchronic types are defined by size, height, location, proportion, density, volume of physical forms and their relationship with the surrounding environment, such as orientation and connection with access routes.

75. Kai, G., et al. "Residential building types as an evolutionary process: The Guangzhou area, China." *Urban Morphology* 12.2(2008):97-115. Yinsheng Tian, Jian Zhang, and Kai Gu, "Analysis on the evolution of dwellings form and its influencing factors in Guangzhou," *Traditional Chinese Architecture and Gardens* 3 (2012): 68-71 田银生, 张健, and 谷凯. "广府民居形态演变及其影响因素分析." *古建园林技术* 3 (2012): 68-71.

76. Hao Deng, Feng Song, and Haiying Cai, "Urban Tissue and Walkability: Morphological Analysis on the Essential Characteristics of Urban Walkable Space," *Architectural Journal* 6 (2013): 8-13. 邓浩, 宋峰, and 蔡海英. "城市肌理与可步行性——城市步行空间基本特征的形态学解读." *建筑学报* 6 (2013): 8-13

77. Tang, Lian & Xu, Yan & Ding, Wowo. (2016). 'Plots and Building Types: case studies in historical area in Nanjing, China.' ISUF 2016 XXIII International Conference: Urban Morphology and the Resilient City, 43-54.

width), sequences (lengths of gable lines and roof lines of the courtyard complex), and contours (courtyards). And emphasize the relationship between plot size and building type, and finally determine the key quantitative indicators of traditional organizational physical form.

Dong Yinan and Han Dongqing (2018)⁷⁸ used the Italian typological map as a tool to study the 'Little West Lake' traditional area in Nanjing. They emphasized that typological maps are a kind of interpretive research. This method does not demand absolute accuracy in drawings, but pays more attention to spatial relationships. Compared with the West, the main disadvantage of conducting urban morphology research in China lies in the lack of historical maps and documents and the rapid changes in urban morphology caused by the sudden changes in urban land property rights since the 1950s.

2) Western urban morphology methods in the researches of Chinese rural areas

As mentioned above, mainly inspired by Italian scholars⁷⁹ and Conzenian school, some Chinese scholars have used the methods from the western for reference in the study of settlement morphology.

Ding Wowo and Li Qian (2013)⁸⁰ summarized the morphological laws and their variability, spatial characteristics and visual characteristics through the investigation and comparison of natural villages in southern Jiangsu. According to the theory of urban morphology, the basic units of urban form are roads - blocks, plots and buildings. The elements of the village form are summarized. By analyzing the types of road intersections, the number of different types of road intersections and their proportion of total road

78. Yinan Dong et al., "The Making and Application of Typological Map Adaptive to Conservation and Regeneration of Historic Districts in China: A Case Study of the Xiaoxihu Area in Nanjing," *Architectural Journal*, no. 2 (2018):81-87.

79. Since the 1930s, especially after the World War II, the researches on urban form in Italy has its own distinct characteristics, that is, instead of focusing on urban form as the complex result of specific historical constraints, each clearly identifiable in intentions and formal results, Italian architects and urbanists have attempted to interpret urban form in its entirety from a unique point of view. A common cultural background shared by all Italian architects and urbanists' contributing to the field is the concept of 'type' and the assertion of a close connection between urban morphology and building typology. Firstly, Giovannoni, considered to be the father of the Italian urbanistic tradition, in the face of the development of metropolitan areas and the increasing pressure imposed by the construction market on the historical center, proposed a strategy of complementarity between new and old. According to Giovannoni, tradition and modernity could continue to cooperate within a new concept of 'organicity'. Then in the 1950s and 1960s, Ernesto Rogers put forward the concept of "Pro existing environmental continuations", which gives theoretical dignity to the dialogue between design and history; Giuseppe Samonà pays attention to the material dimension of residential area in the unity of architecture and urbanity; Saverio Muratori advocated the analysis and research on the relationship between urban fabric and building types. They all thought that the relationship between history and design should be defined in methodology. They jointly laid the foundation of "urban science" and "urban significance" in Italian architecture. Cf. Nicola Marzot, "The study of urban form in Italy." *Urban Morphology* 6.2 (2002): 59-74. Laura A. Pezzetti, *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rural Landscape*. (Tongji University Press, 2019).

80. Wowo Ding and Qian Li, "Study on the Morphological Identities and Its Elements of Southern Jiangsu Village," *Architecture Journal*, 2013(12):64-68. 丁沃沃, 李倩. "苏南村落形态特征及其要素研究," *建筑学报*, 2013(12):64-68.

intersections are counted to describe the richness of village road space changes.

In response to the phenomenon of the growth of Traditional Village space, Dingwowo advocated that under the premise of protecting the village's original morphological structure, scattered sites should be established instead of planning new residential communities. She refutes the argument that the layout of the new village housing construction can save land resources.

Guo Pengyu and Ding Wowo (2017) applied the typomorphology method to the study of village morphology⁸¹. Based on typomorphology, they proposed the concept of "Collective Architectural Type", which reflects the collective experience of society. Combining typomorphology based on space and structure type with 'building plan (ground floor)', 'lot', 'street' and 'ownership' to reflect the degree of change in morphological characteristics. They took Shangzhuang Village, Yangcheng, Shanxi as a research case, and classified the village building types as 'Traditional Collective Architectural Type', 'Mutation of Traditional Collective Architectural Type', and 'New Type'. Furthermore, they studied the diachronic evolution of the village form from the aspects of building type, land tenure, and parcel land relations. They believed that "Traditional Collective Architectural Type" played a leading role in the evolution of village morphology and structure. In addition, Guo Heding proposed that 'family structure' is the characteristic source of 'Traditional Collective Architectural Type'. However, the author believes that the source of the characteristics of the residential type is not limited to 'family structure'. In rural China, the relationship between the traditional collective type and 'family structure' is a correspondence relationship, not a subordinate relationship.

In the 1970s, Samonà's proposal of "*morphological systems*" and "*semantic unities*" provided conceptual and operational tools for reading urban facts and landscapes for the first time, and influenced the urban research between Milan and Venice. Based on Samonà's theory, Pezzetti (2019) proposed another term related to *morphological area* in her latest research on the ancient town of Fenghuang in Shaanxi, namely "*morphological semantic units*"⁸². The concept roved to be able to recognize units of meaning in which also the diachronic and apparently chaotic recent construction followed the ancient trace and rites. She demonstrated that by combining the historical structure research of the generative matrix with the type and form analysis of the fabric development, the latent structure of the landscape and its subdivision of different morphological units of meaning can be identified. At the same time, the "morphological units" can be understood as "structuring morphological units" and "morphological semantic units". This understanding inherits the attention paid by Italian architects Muratori and Samonà, to the physical characteristics of settlements in the middle of the last century, especially the *semantic unities* proposed by Samonà. The "structuring morphological units" established by the synchronic layering of the historical sections feature, indeed, not just a particular urban landscape but also a social component and use patterns. The morphological semantic units that make up the urban form constitute complex morphotypes, and these morphotypes constitute complex landscape units and redefine recognize character protected areas in

81. Pengyu Guo, and Wowo Ding, "A Study on a Collective Architectural Type and the Morphology of a Village: A Case Study of Shangzhuang Village in Yangcheng, Shanxi Province," *Architecture Journal*, 5(2017): 80-86.

82. Cf. Laura A. Pezzetti, *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rural Landscape*. (Tongji University Press, 2019).

future conservation planning. However the study of the structure proved to be able to integrate and give a physical evidence to Feng Shui principles⁸³. Pezzetti's research incorporates a reading of urban form and architecture as a layered palimpsest resulting from the transformation and evolution of use and meaning based on a combination of memory and design.

A totally different research direction is based on the perspective of mathematics and graph theory, the overall view of Rurban form and rural life, and mainly use the Space Syntax method created by Bill Hillier.

In terms of quantitative morphological research, Wang Haofeng (2008)⁸⁴ analyzed the distribution characteristics of ancestral hall buildings in the layout of Traditional Villages in Huizhou, and used "space syntax" to analyse the interrelationships between the ancestral hall and other public buildings, such as shops, markets, temples, academies, and other public buildings, as well as the relevance of this distribution relationship to the village's social structure and economic activities. Wang's research shows that with the increase of the clan population, public buildings such as ancestral hall and shops have gathered in specific areas in the village. Yuan Sinan (2011)⁸⁵ proposed spatial road network surface density and line density, combined with spatial syntax analysis tools, and established a quantitative research framework for street network space morphology composed of geometric morphology analysis and topological structure analysis. And on this basis, he proposed a set of street grid geometry analysis methods based on road network density parameters. Pu Xincheng (2013)⁸⁶ quantified the directional order characteristics of the planar form of the rural settlements by calculating and counting the angles of each building axis in the village. This method uses the long axis (take the ridge line of the roof of the building) to pass through the centroid of the building plane to characterize its directional angle. By analyzing the difference of the axis angles between two buildings within a certain distance, the direction disorder of the settlement buildings can be judged. However, Pu's research lacks an investigation into the natural and cultural drivers behind morphological disorders (morphological complexity). Tong Lei (2016)⁸⁷ used the CityEngine software to study the technical methods of parametric analysis and reconstruction of road space texture, plot space texture, and building space texture in the village. This method realizes the entire process from 'spatial texture' to 'parameters and rules', and then to recalculation of 'spatial texture' through computer calculation. Tong's research analyzes the quantitative characteristics of the existence of village space texture, and extracts

83. Cf. Kun Li, 'Sheet 1: Interpretation of the Location and Pattern of Fenghuang Town from the Perspective of Fengshui,' in *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rurban Landscape*, Laura Anna Pezzetti. (Tongji University Press, 2019), 34

84. Haofeng Wang, "The Dynamic Relationship between Social Functions and Space and the Evolution of Traditional Villages in Huizhou," *Architect* no.4(2008): 23-30. 王浩锋, "社会功能和空间的动态关系与徽州传统村落的形态演变" *建筑师* no.4(2008): 23-30.

85. Sinan Yuan, "Quantitative analysis on street network in urban environment" (doctoral thesis, Tianjin University, 2011). 苑思楠, "城市街道网络空间形态定量分析" (博士论文, 天津大学, 2011).

86. Xincheng Pu, et al., "Study on the Ordinal Value of Directionality of the House Plane Figure in Rural Settlement," *Architecture Journal*, no.5(2013):111-115.

87. Lei Tong, "Parametric Analysis and Reconstruction of Villages" Spatial Texture and Its Planning Application Research," (doctoral thesis, Zhejiang University, 2016). 童磊, "村落空间肌理的参数化解析与重构及其规划应用研究," (博士论文, 浙江大学, 2016).

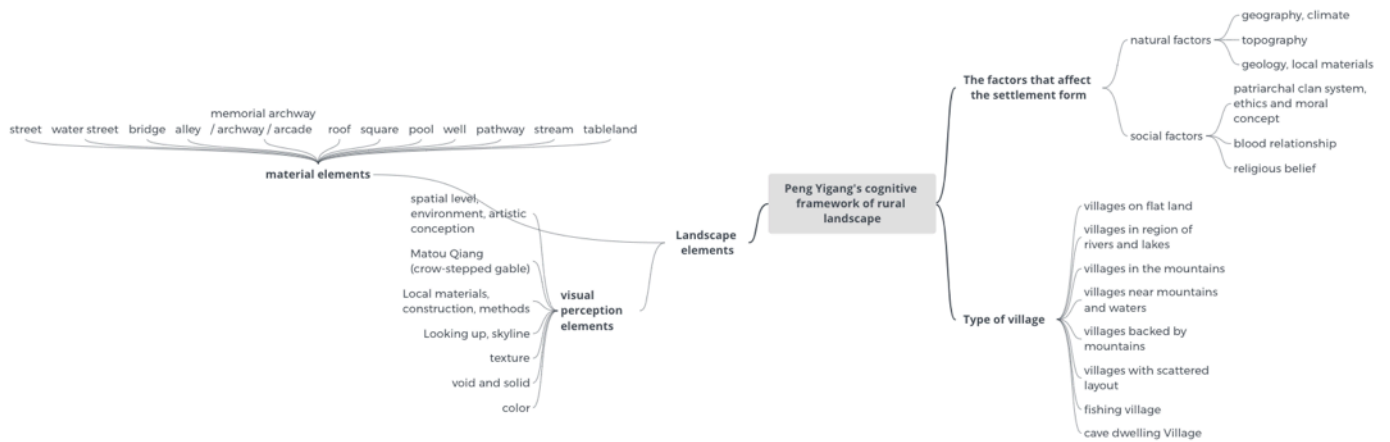


Figure 2-6 Peng Yigang's cognitive framework of rural landscape. Source: Elaborated by the author based on Yigang Peng, and Lansheng Nie, *Analysis on the Landscape of Traditional Villages and Towns* (Beijing: China Architecture & Building Press, 1992)

parameters that can describe and control the generation of village space texture, parameter extraction rules, and reconstruction rules.

2.2.2.2 Researches based on Chinese indigenous methods

1) Morphological characteristics of rural settlements

In China, Peng Yigang was an earlier scholar of rural settlement landscapes. In the early 1990s, he proposed the types of village shapes and the classification of landscape elements, forming a cognitive approach to village landscapes. The author summarizes this cognitive method and draws a basic framework (fig.2-5). He also analyzed the natural and social factors that affect settlement patterns, but lacked case analysis of specific villages Peng views the skyline as an important element of the rural landscape⁸⁸ (in 2011, 'Skyline' as a tangible element appeared in the definition of Historic towns and urban in Valletta Principles). However, Peng did not include 'view-lines' and the viewing corridor between villages and landmark sites into the landscape elements, which were later considered by some scholars⁸⁹ to be the most important landscape features in traditional Chinese settlements.

Zhang Jie et al.(2010) proposed four elements of the study of village morphology ("site selection", "axis",

88. Yigang Peng, and Lansheng Nie, *Analysis on the Landscape of Traditional Villages and Towns* (Beijing: China Architecture & Building Press, 1992), 111. 彭一刚, 聂兰生, *传统村镇聚落景观分析* (北京: 中国建筑工业出版社, 1992), 111.

89. Cf. Shusheng Wang, Lu Shi, and Xiaolong Li, "A Distant Object of a Region: A Planning Model by Worship Mountain and water," *City Planning Review*, no. 4 (2017): insert 1-2. 王树声, 石璐, 李小龙, "一方之望: 一种朝暮山水的规划模式," *城市规划*, no. 4 (2017): insert 1-2; Jie Zhang, Songnan Wu, "Quantitative analysis of the Morphologies of Traditional Chinese Villages" *World Architecture*, no. 1(2010): 118-121.

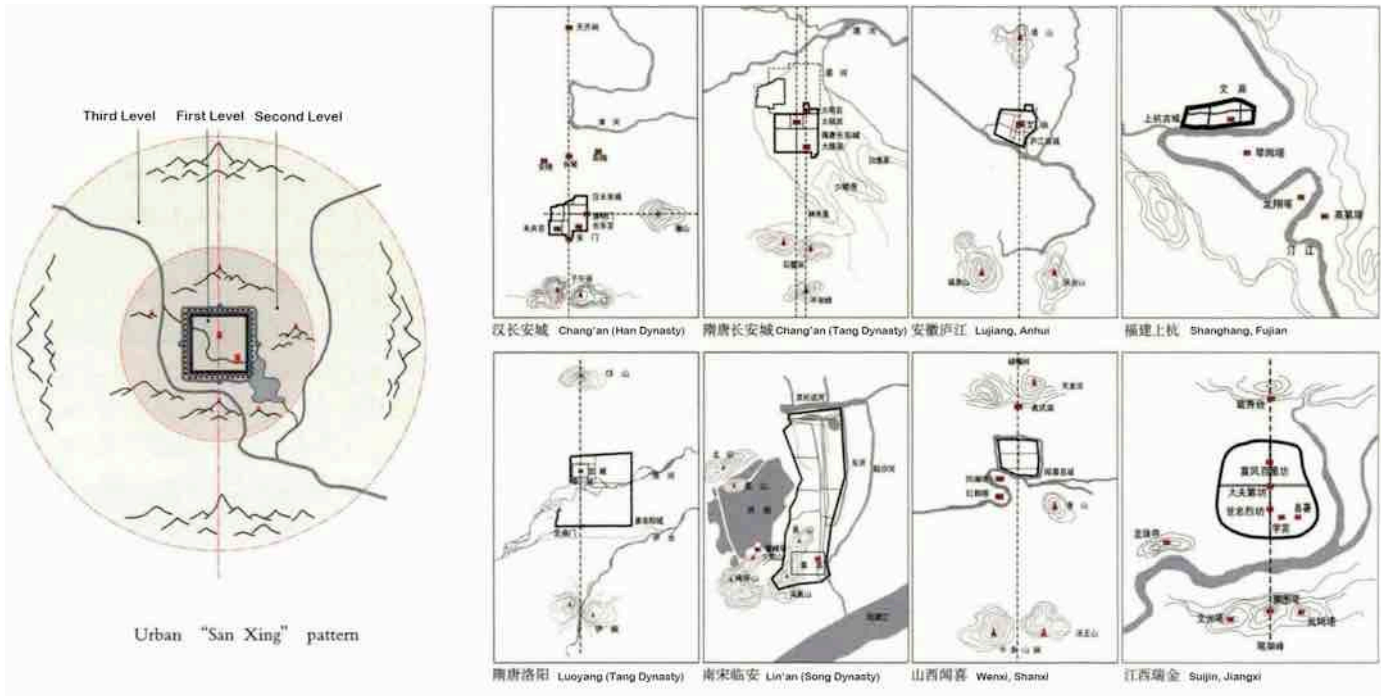


Figure 2-7 Wang Shusheng's research on Urban structure with landscaping. Source: Shusheng Wang, Yuan Gao and Xiaolong Li, "A Study on the Spatial Structure of Chinese Landscaping and Cultural Cities," *Urban Planning Forum*, 01, (2019):27-32.

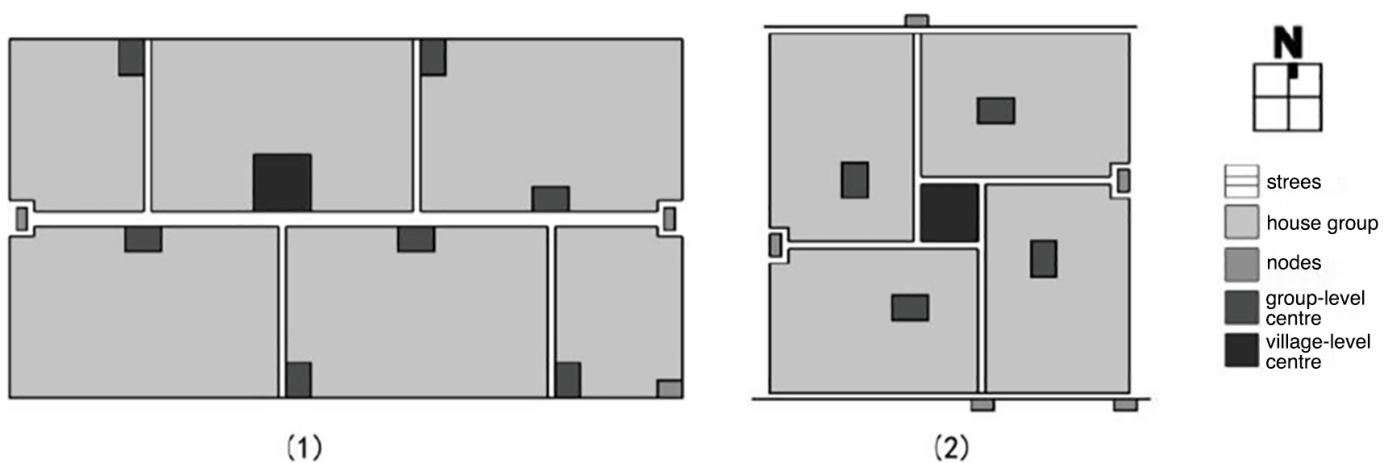


Figure 2-8 Figure 2 6 Schematic diagram of village spatial organization mode: (1) Banded cluster villages; (2) Clustered villages. Source: Modified by the author on the basis of Jinglei Wang, "Research on regional characteristics-oriented space organization mode in loess plain region villages" (master's thesis, Xian University of Architecture and Technology, 2014), 51

"view", "scale"), and from these four aspects, they conducted quantitative research (mainly include statistics and measurement and data analysis) on "regular form" and "organic form" ancient villages⁹⁰. The main method of their axis research is to find "markers" such as mountains and temples in the natural environment outside the village, and to demonstrate the relationship between the main spatial axis of the village and the "markers". In the scale study, they tried to use the ancient metrics such as Tang ruler, Tang step, Qing ruler, etc. to measure the positional relationship between ancient villages and peripheral markers, as well as the basic scale of villages and courtyards, and tried to explore the planning logic of the village when it was first created. Obviously, this research method is inspired by Fu Xinian's methodology⁹¹ for studying ancient Chinese cities.

Wang Shusheng (2016) who studied under the academician Wu Liangyong, believes that traditional Chinese urban planning is a system different from modern western urban planning⁹², so it is necessary to study the ancient Chinese urban planning tradition and its modern significance. His research ideas are like Zhang Jie (also constructing a morphological reading system based on 'markers'⁹³), but he also elaborated the experience of ancient urban planning more systematically. Through extensive literature surveys (mainly local history gazetteers and many ancient maps in them)⁹⁴, Wang and his assistants summarized a series of terms⁹⁵ used to describe traditional urban planning concepts. They also studied the relationship between natural landscapes (including mountains endowed with cultural significance) and cultural landscape nodes and urban space on a large scale⁹⁶. Furthermore, the natural environment outside the city is also included

90. Jie Zhang, Songnan Wu, "Quantitative analysis of the Morphologies of Traditional Chinese Villages" *World Architecture*, no. 1(2010): 118-121.

91. Fu Xinian used the modulus based on ancient length units to study the forms of ancient Chinese cities (such as Tang Chang'an, Luoyang, etc.) and temples. Cf. Xinian Fu, *Research on the Layout and Architectural Design Methods of Ancient Urban Planning Buildings in China*, 3 edizione. (Beijing: China Architecture & Building Press, 2015). 傅熹年, *中国古代城市规划建筑群布局及建筑设计方法研究*. (北京: 中国建筑工业出版社, 2015).

92. Shusheng Wang, Xinpeng Li, and Shaofei Yan, "Research on the design method of China's traditional urban planning based on large-scale landscape environment (in Chinese)," *Chin Sci Bull* 61,33(2016): 3564-3571, doi: 10.1360/N972015-01449. 王树声, 李小龙, 严少飞, "结合大尺度山水环境的中国传统规划设计方法," *科学通报* 61,33(2016): 3564-3571.

93. Generally speaking, the marker is a western concept. The "marker" here refers to the "coordinates" that combine natural characteristics with the human spirit. "Marker" may be a mountain, river or temple with cultural significance. fig. 2-6 shows the effect of "marker" on the city axis.

94. For information on local gazetteer maps, please refer to the series of books: Shusheng Wang, ed., *The Historical Atlas of Urban Habitat in China*, (Beijing: Science China Press, 2015). 王树声 编著, *中国城市人居环境历史图典*, (北京: 科学出版社, 2015).

95. Wang pointed out that China's urban planning has always focused on combining the ingenuity of the landscape and environment, implementing key humanistic constructions, and boosting the urban landscape and humanistic pattern. Beginning in 2017, Wang Shusheng's research team published a series of articles on "Urban Planning Combining Natural Landscapes" and "Urban Humanistic Space Planning" in China's City Planning Review magazine to explain the terms related to traditional Chinese planning concepts, which is extracted from Chinese ancient books and special local chronicles.

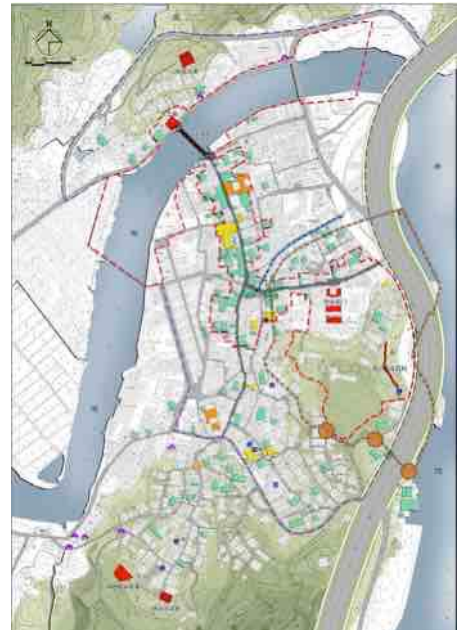
96. The "large scale" does not refer to the size of the landscape, but to the long distance between the marker and the city.



a. Traditional street protection plan of Linggen Village



b. Landscape sight corridor protection plan



c. The current situation and protection scope of Min'an Village



d. Min'an Village Conservation Plan (2014)



e. The characteristic space structure of Min'an Village (status)



f. Min'an Village Characteristic Space Planning

Figure 2-9 Conservation plan of Linggen Village and Min'an Village (2015). Source: Beijing Tsinghua Tongheng Urban Planning & Design Institute.

in the analysis of urban spatial form, and a three-level theory of settlement form is proposed: inner-city, walkable, visible⁹⁷.

Based on a survey of the village morphology of typical villages in the plains of Shaanxi and Shanxi, Wang Jinglei (2014)⁹⁸ drew a schematic diagram of the Traditional Village space organization model (fig. 2-6), She proposed that the basic constituent elements of village space are the street system, the house group, the node space, the group-level centre (ancestral hall, etc.), and the village-level centre (temple, stage, and square).

Wang Xin and Shan Jun (2016)⁹⁹ Statistical analysis of Traditional Village samples in central Shanxi. Based on Kevin Lynch's "two-way interaction theory of built space and environment" and Frei Otto's "space occupation and connection theory", they summarized the three basic types of Traditional Villages (the active settlements, the passive settlements, the comprehensive settlements) and five trends¹⁰⁰, then they put forward the concept of morphological pattern, that is, the combination of morphological type and morphological trend. Zhang Jie et al. (2015) compiled the Protection Planning and Village Planning for the historical and cultural villages of Lingen Village in Linhai City (《临海市岭根村历史文化名村保护规划与村庄规划》). In their proposed village form protection measures, in addition to building height control and historic building protection, there are three other points worth noting: 1. Specific measures for street protection are proposed (in fig.2-9-a below, the red line indicates strict protection of the street pattern and repairing the damaged interface; the pink line indicates that the width and direction of the street must not be changed, and the street interface needs to be restored; the blue line indicates that the direction of the street must not be changed and signs should be set to indicate the historical pattern); 2. Proposed a landscape corridor that should be protected (fig.2-9-b); 3. The plan of the village development area fig.2-14) is schematically planned (but the spatial form and the original shape of the area are not specifically studied), in order to explain that the texture of the newly built residential area needs to be coordinated with the texture of the existing house in the village. They suggested that the new residential buildings should adopt the layout form of the group, and it is strictly forbidden to design the residential groups in the newly-built construction areas into the form of row houses. The Protection Plan of The Historical and Cultural Village of Min'an Village compiled by Zhang Jie et al. (2015) puts forward the concept of "vibrant space" (fig.2-9-c,

97. Wang summed up a series of experiences of ancient Chinese urban planning and considered that the ancestors used natural landscapes to build three levels' shape to control the construction of cities: city (inside the city walls) shape, suburbs shape, large-scale landscape environment shape. In the process of coordinating the above three levels, Chinese cities have integrated artificial construction with natural mountains and waters to form an integral whole. Cfr. Shusheng Wang, Lu Shi, and Ling Zhu, "Three forms: combining three levels of natural landscape planning", *City Planning Review*, no. 1 (2017): insert 1-2. 王树声, 石璐, 朱玲, "三形: 结合自然山水规划的三个层次", *城市规划*, no. 1 (2017): insert 1-2.

98. Jinglei Wang, "Research on regional characteristics oriented space organization mode in loess plain region villages" (master's thesis, Xian University of Architecture and Technology, 2014), 51.

99. Xin, Wang, and Shan Jun. "A Study on Form Types and Changing Trends of Traditional Settlements in Central Shanxi" *World Architecture*, 2016(06):112-17. 王鑫, 单军. "晋中传统聚落形态的类型及变化趋势浅析". *世界建筑*, 2016(06):112-17.

100. 1.expansion & contraction, 2.multi-direction & one-direction, 3.conservation & renovation, 4.independence & connection, 5. separation & integration.

fig.2-9-d). The vibrant space and the square and the green open space together constitute the public space system of the village.

Pei Yifei, Leng Jiawei and Gong Kai (2018)¹⁰¹ analyzed the depictions of ancient maps (home maps) of 12 villages in Huizhou, and counted the share of the nine elements of mountains, water, farmland, woods, place names, roads, landmarks, houses, and graves in the map. It is concluded that the mountain has the largest share of factors, followed by residential and farmland. On this basis, they believe that the surrounding environment, village form and regional industry have always been the focus of Huizhou ancestors in the process of village construction. After observing the daily life of the villagers, the road map of the daily activities of the villagers (cultivation path, rest gathering area) were compiled.

Duan Jin et al. made the spatial analysis of the world cultural heritage Xidi Ancient Village (2006)¹⁰² and Hongcun Ancient Village (2009)¹⁰³ (the analysis did not draw on the methodology of Western urban studies). Their analysis is based on a variety of scale plans and scene photos, from the "top-down" and "bottom-up" two different perspectives to analyze the village space. Including the development process of village space (scale, road, family ancestral hall - group development), composition of material space, external influence factors, village location, spatial factors, leading factors (fengshui concept, clan concept, scientific thinking, private concept) The original shape and variant of the combination of residential houses, the positional relationship between the main body of the dwelling house and the auxiliary building, and the spatial analysis of the spatial topography of the complex group plane. The study believes that the formation process of the village form can be understood as three levels, namely, "orderly composition of architecture", "disordered process of group development" and "orderly organization of village form". Duan's village survey results also revealed a series of single-phase typological studies: the architectural plan of residential houses (courtyards); the relationship between the residential courtyards and their auxiliary spaces on the plane; the roof plan types of building clusters; and architectural spaces; the building space sequence and travel route in the courtyard; the space boundary of the courtyard section; the street space interface (street plan; continuous building facade; typical section of the street and buildings on both sides; the ratio of street width to building height on both sides); intersection plan form etc. These detailed typological studies are good examples of village spatial morphology research. My investigation of Zhangdaicun Village partly draws on the above-mentioned classification methods, and conducts a diachronic type study on the basis of it.

2) The dynamic mechanism of the evolution of rural settlement forms

In 1994, the Journal of Xi'an Institute of Metallurgy & Construction Engineering published an issue on the theoretical study of the morphological structure of rural and small towns, Among them, Liu Kecheng

101. Yifei Pei, et al. "Architectural Drawing: Graphical Representation in the Surveying and Mapping of Village." *New Architecture*, 2018(04):80-86. 裴逸飞, 冷嘉伟, 龚恺. "建筑绘图: 村落测绘中的图示再现". *新建筑*, 2018(04):80-86.

102. Jin Duan et al., *Spatial Analysis of the Acient Village of Xidi World Cultural Heritage*. Nanjing: Southeast University Press, 2006. 段进等, *世界文化遗产西递古村落空间解析*. 东南大学出版社, 2006.

103. Jin Duan and Minghao Jie, *Spatial Analysis of the Acient Village of Hongcun World Cultural Heritage*. Nanjing: Southeast University Press, 2006. 段进, 揭明浩, *世界文化遗产宏村古村落空间解析*. 东南大学出版社, 2009.

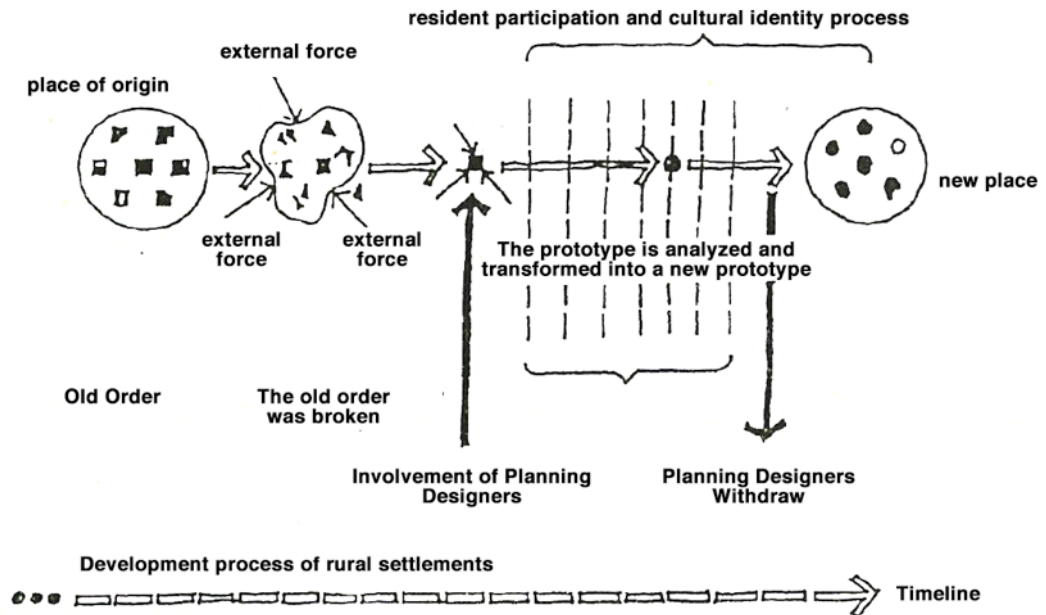


Figure 2-10 Morphodynamic planning method model. Source: Li u, K., & Xiao, L. (1994). *Dynamic Pattern of Town and Village Evolution* (in Chinese: 乡镇形态结构演变的动力学原理). *Journal of Xi'an Institute of Metallurgy & Construction Engineering*, 26(2), pp. 5-23.

and Xiao Li constructed a set of theories to explain the self-organization and dynamics of the evolution of township morphological structure and put forward the concept of 'pattern filed'. Seeing through the chaos appearance of towns and villages' developing, Liu pointed out that there was some prototype (or archetype) and pattern fields in rural are. The developing of prototypes (or archetypes) and pattern field were the primary distinguishing features of towns and village. Liu also established a dynamic pattern of evolution of towns and village. Liu believes that 'pattern filed' plays a very important role in the development and evolution of township construction forms, and it has promoted the development of rural physical forms and people's understanding of forms in a certain area. According to the principle of dynamics, Liu believes that the evolution of township morphological structure is mainly the result of the interaction of the gravity of the regional prototype field, the maintenance force of the original archetype field, and the external force of variation. Liu and Xiao's theory provides a methodology for planning and design. It affirms that 'design enhancement', as an external force, has the effect of improving and improving the prototype and strengthening the morphological field. It also gets rid of the concept of planning and designing everything by planners, and focuses on the analysis and research of prototypes and archetypes, and establishes and maintains the order of rural construction through prototype fields.

Li Li (2007) explored the changes and characteristics of rural settlements in rural areas during the industrialization process in the regions south of the Yangtze River¹⁰⁴. Affected by Dennis A. Rondinelli's

104. Li Li, *Rural Settlement: Form, Type and Evolution: A Case Study of Jiangnan*, (Nanjing: Southeast University Press, 2007). 李立, *乡村聚落: 形态、类型与演变——以江南地区为例*, (东南大学出版社, 2007)

theory of spatial structure types and Doxiais's theory of human settlement, he explained the village form from three aspects: elements, structure, and levels, and proposed "dominant forms" and "recessive forms" of the village: he proposed that the village form mainly consists of three aspects, namely settlement lifestyle (dominant), settlement space characteristics (dominant) and social structure characteristics (recessive). Sun Weiwei's (2014) research believes that rural landscape is an organism based on the organic integration of local natural ecological environment, economic production, and living¹⁰⁵. She proposed an overall rural landscape construction method that emphasizes 'systematic construction content', 'controllability of the construction process', 'ecological nature of the landscape pattern', and 'symbiosis of stakeholders'. Lei Zhendong (2007) analyzed the characteristics of the transition of the state and morphological structure of rural settlements in Guanzhong, Shaanxi Province, and proposed the concept of **Disusing Rural Settlements**¹⁰⁶ which helps us to understand the reasons behind the changes in Traditional Village forms.

Wang Zhu (2011) summarizes the present rural construction problems in four aspects¹⁰⁷. The first is the rootless state of the village layout and spatial form resulting from the rootless¹⁰⁸ existence of the living state and the consciousness of the mind in contemporary rural construction; second, is the lack of infrastructure and public service facilities of scientific allocation; third, the vitality of Traditional Villages are facing extinction; fourth, the new rural construction presents blindness and conformity issues. To solve the above problem, he proposed a "rural space syntax", but in the study for the syntactic interpretation is vague, simply interpreted as a "rural basic living unit". It's a housing group with 6 to 10 units, the housing layout is relatively flexible, and enclosed a public space, to restore a residential space between the organization of the "organic order" to counter is widely used in the construction of new rural residential layout rough determinant. However, Wang shu did not discuss the specific content of the "spatial syntax" and the construction principles of "rural basic living unit". In addition, the response to continuity is a general one. Because his strategy is not specific to specific areas, but simply summarized as should continue the courtyard form and control the shape of the roof contour.

105. Weiwei Sun, "Research on the Integrated Methods of Rural Landscape Construction of Zhejiang," (doctoral thesis, Zhejiang University, 2014),41. 孙玮炜, "基于浙江地区的乡村景观营建的整体方法研究," (博士论文, 浙江大学, 2014),41.

106. Cf. Zhendong Lei, and Jiaping Liu, "Integration and Restructuring: A Study on the Transformation of Mid-Shaanxi Rural Habitat," *Time Architecture*, no.4(2007): 22-27. 雷振东, 刘加平, "整合与重构陕西关中乡村聚落转型研究," *时代建筑*, no.4(2007): 22-27.

107. Zhu Wang, Liyang Fan, Zongyan Chen, "Research on the Model of "Ecological Habitat" in the New Countryside: A Case Study of the Countryside in Jiangnan, China," *Architecture Journal*, no.4(2011): 22-26. 王竹, 范理杨, 陈宗炎 "新农村" 生态人居 "模式研究 — 以中国江南地区乡村为例," *建筑学报*, no.4(2011): 22-26.

108. "Rootless" means lack of roots, it is a description of the phenomenon of the split between contemporary rural construction and traditional context, that is, the lack of cultural roots.

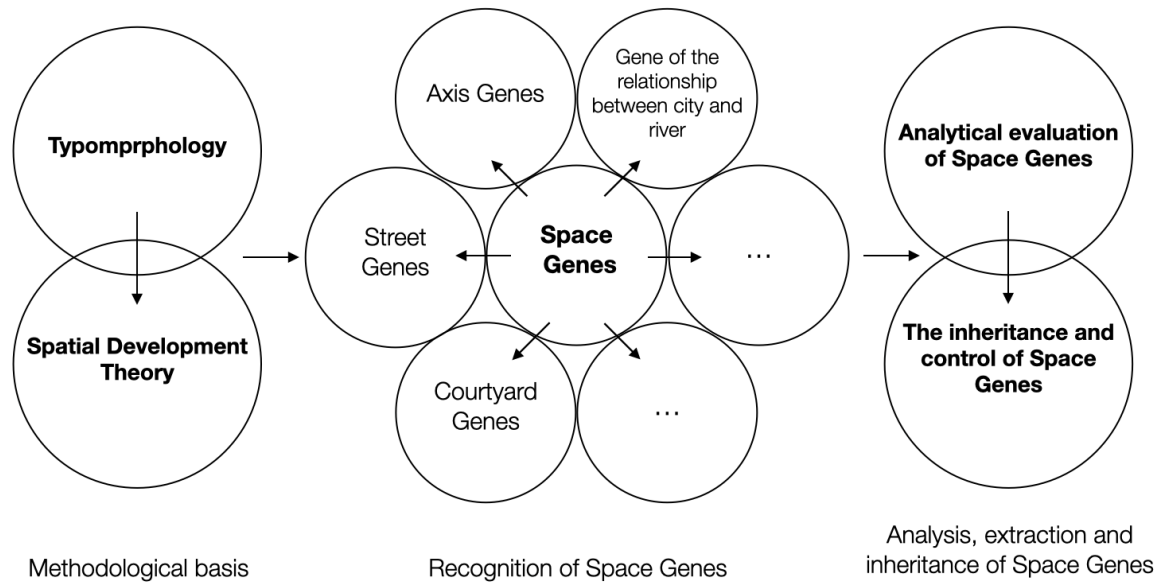


Figure 2-11 The technical framework diagram of "space gene" proposed by Duan Jin, drawn by the author.

Liu Peilin (2014)¹⁰⁹ applied the concept of 'landscape genes' he proposed earlier¹¹⁰ to the study of traditional settlement landscape. He proposed that the traditional settlement landscape gene, which has a decisive effect on the formation of a cultural landscape, is a cultural factor that is inherited from generation to generation and is different from other cultural landscapes. Liu Peilin's method of identifying the settlement landscape genes (that is, the content examined for identifying the landscape features) includes six aspects: the overall layout of the settlement, the characteristics of the residential buildings, cultural signs, subjective public buildings, environmental factors, and basic forms. Then he also proposed six elements of the residential landscape genes: roof shape, gable shape, facade form, plane, partial decoration, and building materials. Liu Peilin's contribution is to evoke people's thinking about the relevance of settlement cultural landscape features through the word 'gene'. However, in his research, there are only abstract morphological descriptions and general explanations of certain morphologies (such as certain customs, allegories, etc.), but he neither "decodes" the cultural landscape through in-depth case analysis nor in-depth study of the geographical and cultural connections of "tectonic". Therefore, his research failed to describe the combined motivation of the 'gene'. In explaining the elements of residential landscape genes, Liu did not discuss the reasons for the differences in the layout of residential yards in a certain area, but

109. Peilin Liu, *Traditional Settlement Cultural Landscape Gene* (Beijing: The Commercial Press, 1992), 111. 刘沛林, *家园的景观与基因—传统聚落景观基因图谱的深层解读* (北京: 商务印书馆, 2014).

110. Peilin Liu, "The gene expression and the sight identification of the ancient villages' cultural landscape," *Journal of Hengyang Normal University: Social Science*, no.4 (2003): 1-8. DOI:10.3969/j.issn.16730313.2003.04.001. 刘沛林, "古村落文化景观的基因表达与景观识别," *衡阳师范学院学报: 社会科学版*, no.4 (2003): 1-8.

only described the plane characteristics of different yards in isolation. Like the "recessive form" proposed by Li Li, he proposed "recessive gene", but unfortunately, he did not elaborate the production rules and causes behind the recessive gene.

Duan Jin (1999) proposed *the theory of urban spatial development*¹¹¹, studied the endogenous interaction process of the "space-nature-humanities" system through multidisciplinary interdisciplinary research, and introduced the concept of development to space research for the first time in China. After sorting out and conducting on policies related to rural urbanization and field investigations in Wuxi, Duan Jin (2015)¹¹² carried out phase division and feature analysis of the development of village space under the promotion of rapid urbanization policies. Duan's research summarized the characteristics of the evolution of village space development and the interaction between policy and space. He believed that the village's space development would face a transition from the traditional slower self-growth mode to a new development mode guided by policy regulation and planning. However, how to avoid or reduce the social development problems caused by the friction and collision between the two models will be the key to the rapid and stable transformation of the villages in the future. Based on the research of morphological types, recently Duan proposes the concept of "Space Gene" from the perspective of urban spatial development theory¹¹³. Space gene is a unique and relatively stable space model formed by the interaction between urban space, natural environment, and history and culture. It conveys distinctive local characteristics of different regions, forms a special city identity, and maintains the harmonious relationship between urban space, natural environment, and history and culture. The identification, analysis, and guidance techniques of space gene can improve the localization of urban planning and design, which can avoid the practice of using a unified mode to create the same image in different cities. It can provide an effective design path to achieve all win between urban development, natural protection, and cultural inheritance, which contributes to the directional change of urban planning and design approach from spatial form creation to space gene analysis.

2.2.3 Conservation and development

2.2.3.1 Principles of conservation

After a long-term investigation and study of the ancient towns in the south of the Yangtze River, Ruan Yisan (2010) proposed that the principles that should be followed to protect the historical buildings and historical environment of historical villages and towns are: Maintain the integrity of the historical environment, maintain the authenticity of cultural heritage, and adhere to the sustainability of protection

111. Jin Duan, *Urban Spatial Development Theory*, (Nanjing: Phoenix Science Press, 1999). 段进, *城市空间发展论*, (南京: 江苏科学技术出版社, 1999).

112. Jin Duan, and Guoqin Zhang, "Policy-Included Contemporary Villages Form: A Field Survey from Wuxi City," *Urban Plan Forum*, no.3 (2015): 65-71.

113. Jin Duan, et al., "Space Genes," *City Planning Review* 43, no.2 (2019): 14-21. 段进, 邵润青, 兰文龙, 刘晋华, 姜莹, "空间基因," *城市规划* 43, no.2 (2019): 14-21.

and development¹¹⁴. Later, he developed the principle of protecting cultural heritage (from the characteristics of built-up heritage in China) into Four Principles of conservation (including the principle of authenticity, integrity, readability, sustainability) and Five Principles of restoration (original materials, original technology, original style, original structure, original environment)¹¹⁵. At the end of the 20th century, Chang Qing began to pay attention to the conservation and regeneration of vernacular settlements in metropolitan suburbs¹¹⁶. He believes that the purpose of protection is to continue the historical space form, and the purpose of regeneration is to continue and develop the life form. In the study of the ancient town of Jinze in Shanghai, Chang proposed four principles of protection and design: "the principle of integrity", "the principle of authenticity", "the principle of regeneration", "and the principle of natural generation". The first three are protection principles.

In 2014, a government's official document¹¹⁷ proposed conservation principles such as "scientific planning", "overall protection", "heritage development", "focus on people's livelihood", "steady progress", and "focus on control" to protect the 'integrity', 'authenticity' and 'continuity' of Traditional Villages.

China's accession to the World Heritage Convention in 1985 also means that China accepts the principles of international cultural heritage conservation based on the Venice Charter¹¹⁸. Since 1997, in cooperation with the National Institute of Cultural Heritage of China, the Getty Conservation Institute and the Australian Heritage Commission, ICOMOS China has compiled the Principles for the Conservation of Heritage Sites in China (2005, revised 2015). The document draw on the Australian Barra Charter model in editorial form. According to the revised edition, the principles for the conservation of cultural relics and historic sites in China are 'preserve its historic condition', 'authenticity', 'integrity', 'minimal intervention', 'cultural traditions', 'appropriate techniques' and "disaster preparedness"¹¹⁹.

The difference between the village and other cultural relics is that the village is a kind of living heritage, and the residential buildings in the village are not all cultural relics recognized by the official institutions. Therefore, in the protection and utilization, whether to insist on "preserve its historic condition" should

114. Yisan Ruan, Zhen Li, and Lin Lin, *The Work of Protection for Historical Buildings and Environment of Ancient Towns in Jiangnan* (Shanghai: Shanghai People's Fine Arts Press, 2010). 阮仪三, 李滨, 林林. *江南古镇历史建筑与历史环境的保护* (上海: 上海人民美术出版社, 2010), 5-6.

115. Yisan Ruan, and Yanhong Li, *The Question of Authenticity: What is Real Urban Heritage Protection* (Shanghai: Tongji University Press, 2016), 5-6. 阮仪三, 李艳红. *真伪之间: 何谓真正的城市遗产保护* (上海: 同济大学出版社, 2016), 5-6.

116. Qing Chang, Qi Ying, and Yuhui Zhu, "Regeneration of a Vernacular Settlement: A Case Study of Jinze Town in Shanghai," *Urban Planning Forum*, no.2(2008):77-82. 常青, 齐莹, 朱宇晖, "探索风土聚落的再生之道——以上海金泽古镇"实验"为例," *城市规划学刊*, no.2(2008):77-82.

117. *Guiding Opinions on Effectively Strengthening the Protection of Traditional Chinese Villages*, MHURD, MOCU, SACH, MOF, (2014), http://www.mohurd.gov.cn/wjfb/201404/t20140429_217798.html. *关于切实加强中国传统村落保护的指导意见*, 住房城乡建设部, 文化部, 国家文物局, 财政部, (2014).

118. Zhou Lyu, Revision of the "Principles for the Conservation of Heritage Sites in China" and the Development of the Conservation of Chinese Cultural Heritage, *China Cultural Heritage*, 02(2015): 4-24. 吕舟, 《中国文物古迹保护准则》的修订与中国文化遗产保护的发展. *中国文化遗产*, 02(2015): 4-24.

119. ICOMOS China, *Principles for the Conservation of Heritage Sites in China* (Revised 2015) (Beijing: Cultural Relics Publishing House, 2015), 65-70.

be treated differently according to the specific conditions of the village and its built environment. What kind of intervention measures should be taken, as well as the scope and degree of intervention, should be determined through specific value judgments. Protecting cultural traditions is part of the sustainable development of the village. If the protection technology adopted is not appropriate, the authenticity and sustainability of the village heritage will be threatened. In summary, the author believes that it is more refined to summarize the basic principles of Traditional Village protection as 'authenticity', 'integrity', and 'sustainable'.

At the implementation level of protection work, the "Protection and profit of ancient villages" (draft for comments) issued by the China National Institute of Standardization in 2017 proposed three principles: "According to local conditions, reflecting characteristics", "Progressive and gradual improvement", "Priority, protection by levels".

Traditional dwellings are the material subject of Traditional Villages, so here we need to briefly discuss the principles of dwelling protection.

Drawing on the viewpoint of the "Nara Document", in understanding the authenticity, it is necessary to make clear how to combine the concept of authenticity with the actual situation and cultural environment of each country¹²⁰. Therefore, we must put "authenticity" into the system of cultural relativism to understand and consider. In 1963, Liang Ssu-ch'eng gave a positive evaluation of the restoration of the Zhaozhou Bridge in Zhao County and Guanyin Temple tower in Jinan, and proposed that the principle of "Reintegrate the Aged as Aged (in Chinese: 整旧如旧)"¹²¹ should be advocated¹²². We can understand it as the traces of the age of the building that cannot be erased in the restoration (age value). But this principle is often misunderstood by later scholars¹²³. The reason for the misunderstanding is probably that Liang Ssu-ch'eng did not make a clear definition of "aged" (or "old") in the term "Reintegrate the Aged as Aged" at the time. Because in the case of Guanyin Tower repair that he agreed with, in order to achieve the "as aged" result, not only the raw materials (existing) were reset, but also the old bricks (taken from elsewhere, Non-original) used to fill the incomplete parts. From Liang's elaboration, we do not see the "authorial authenticity"¹²⁴ consciousness that Brandi advocates to distinguish between ancient and modern works. Liang's Pursue "integration of image" thought actually recognized "patinatura artificiale", but he did not

120. Knut Einar Larsen, *Nara Conference on Authenticity*, (Paris: World Heritage Centre, 1995), xiii.

121. Ssu-ch'eng Liang, "Talk about the restoration and safeguard of building relics," *Chinese Cultural Relics*, 7(1963):5-10. 梁思成, " 闕話文物建筑的重修与维护," *文物*, 7(1963):5-10.

122. Coincidentally, also in 1963, the core work *Teoria del Restauro* of the Italian theorist of the conservation of the tangible cultural heritage of Cesare Brandi strongly proposed the idea of respecting and protecting patina.

123. Di Lu, "Liang ssu-cheng's "Reintegrate the Aged as Aged" and Relevant Western Concepts," *Time Architecture*, 6(2017): 138-143. DOI:10.13717/j.cnki.ta.2017.06.023. 陆地, " 梁思成的 " 整旧如旧 " 和西方的相关概念," *时代建筑*, 6(2017): 138-143.

124. autenticità autoriale, Cf. Eco Umberto, *I limiti dell'interpretazione* (La Nave di Teseo Editore spa, 2016). Eco Umberto, *The Limits of Interpretation* (Bloomington: Indiana University Press, 1994), 179.

explicitly point out "where the distinction between added pieces and fragments can be ensured¹²⁵", blurring the relationship between "identifiability" and authenticity. In this regard, his thinking is inconsistent with Brandi's restoration thinking. As a result, people's understanding of "aged" (or "old") is divided. "As aged" can trigger three very different concepts about restoration: "repair the old like the original"(修旧如初), "repair the old as it is now"(修旧如现), and "artificial patina"(新材料"做旧")¹²⁶.

In response to the issue of "authenticity", Chang Qing proposed the "authenticity of tectonic" and the "authenticity of materials" in traditional Chinese architecture¹²⁷. This understanding of "authenticity" can be traced back to Viollet-le-Duc's ideas. According to the logic of rationalism, Viollet-le-Duc's focus on the search for "truth" contains traces, or at least the consciousness of seeking original works¹²⁸. The authenticity of tectonic refers to the correspondence between the generation of architectural forms and construction methods that have been preserved in historical changes.

Riegl's 1903 book *Der moderne Denkmalkultus (The Modern Cult of Monuments)* played a key role in the monument-protection process because it defined a system of monument-protection values that respects all elements of a monument. Riegl divided the values into intentional and unintentional; the former already inhibit the character of a monument, whereas the latter acquire it gradually and are the main empirical subject of monument protection; as such, they exhibit greater objectivity towards the past¹²⁹. Chang suggests that we should revisit the interpretation of "commemorative value" by Riegl: the commemorative value is made up of "historic value" and "traces of time" (or age-value). Based on Riegl's theory, "the authenticity of materials" means that in the restoration of buildings, the surface imprints -the ancient value "patina"- should be emphasized.

In addition to the choice of main building materials, there is another significant difference between the traditional built heritage of China and the Western as represented by Italy, that is, under the foundation

125. "In questo senso si contraddice a molti assiomi del restauro detto archeologico, perchè si viene ad asserire non solo la necessità di raggiungere l'unità cromatico-luminosa dei frammenti con le integrazioni, ma ove la distinzione fra pezzi aggiunti e frammenti possa essere assicurata con una speciale e durevole lavorazione, non si esclude neppure l'uso di una stessa materia e della patinatura artificiale, setnprechè di restauro si tratti e non di rifacimento." Cfr. Brandi Cesare, *Teoria del restauro*, (Roma: Edizioni di Storia e Letteratura, 1963),45.

126. Jun Li, "The Protection and Restoration of Cultural Heritage: A Comparative Study of Theoretical Modes," *Literature & Art Studie*, 2(2006): 102-117. 李军, "文化遗产保护与修复: 理论模式的比较研究," *文艺研究*, 2(2006): 102-117.

127. Qing Chang, "Future of the Past: Critical Review and Practice of the Built Heritage," *Architectural Journal*, 4(2018): 8-12. 常青, "过去的未来: 关于建成遗产问题的批判性认知与实践," *建筑学报*, 4(2018): 8-12.

128. Cfr. Viollet-le-Duc, Eugène-Emmanuel. *Lectures on architecture*. Vol. 1. Courier Corporation, 2013.

129. Helena KALČIĆ, "Eugène Emmanuel Viollet-le-Duc and monument protection: A case study." *Urbani izziv* 25, no. 2 (2014):130-142







Figure 2-12 Yu Wang Temple in Shidai Village, Hancheng. The temple was built in the Yuan Dynasty (1271-1368), the exact age is unknown. In 1743 (eighth year of Qianlong in the Qing Dynasty) the temple was restored, and beams and purlins were replaced. It can be seen from the figure that the materials of the interior beams and purlins are different from the wood of the facade photo. (Photo by author).

of traditional Chinese historical buildings, the phenomenon of "sovrapposizione"¹³⁰ is not as complicated as Western architecture. The building materials in different periods rarely appear in the form of overlap and lamination, but often in the form of replacement of building components. Unlike the West, where masonry was used as the main material, the ancients in China did not value the longevity of the original building. Therefore, in history, the traditional concept of building restoration is attaching importance to the inheritance of "original style" rather than the eternity of "original materials"¹³¹. Therefore, in an ancient wooden structure building in China, we can often see the building components of different periods left over from historical repairs at the same time (fig. 2-9). In this case, the components of different times constitute the "integrity" of the building. Article 11 of the Venice Charter (1965) states that "The valid contributions of all periods to the building of a monument must be respected, since unity of style is not the aim of a restoration". Before the restoration work begins, very rigorous archeological and historical research is needed to keep the restored artifacts in accordance with what Brandi calls the double principle of art and history. Therefore, for Chinese wooden architecture, "repair the old like the original" cannot well reflect the "authenticity" principle because in the "repair the old like the original", the historical documents that can be used for restoration are often insufficient, and the method lead to the ignorance of the traces left by the past eras.

In China, the mainstream restoration view represented by Ruan Yisan is that the original appearance of historical buildings should be retained, and the damaged parts of the buildings should be repaired with "identical materials, original processes, and original styles". This method preserves the authenticity of the original appearance of the historic building, but it also implies the crisis of "unrecognizable" for the patched part.

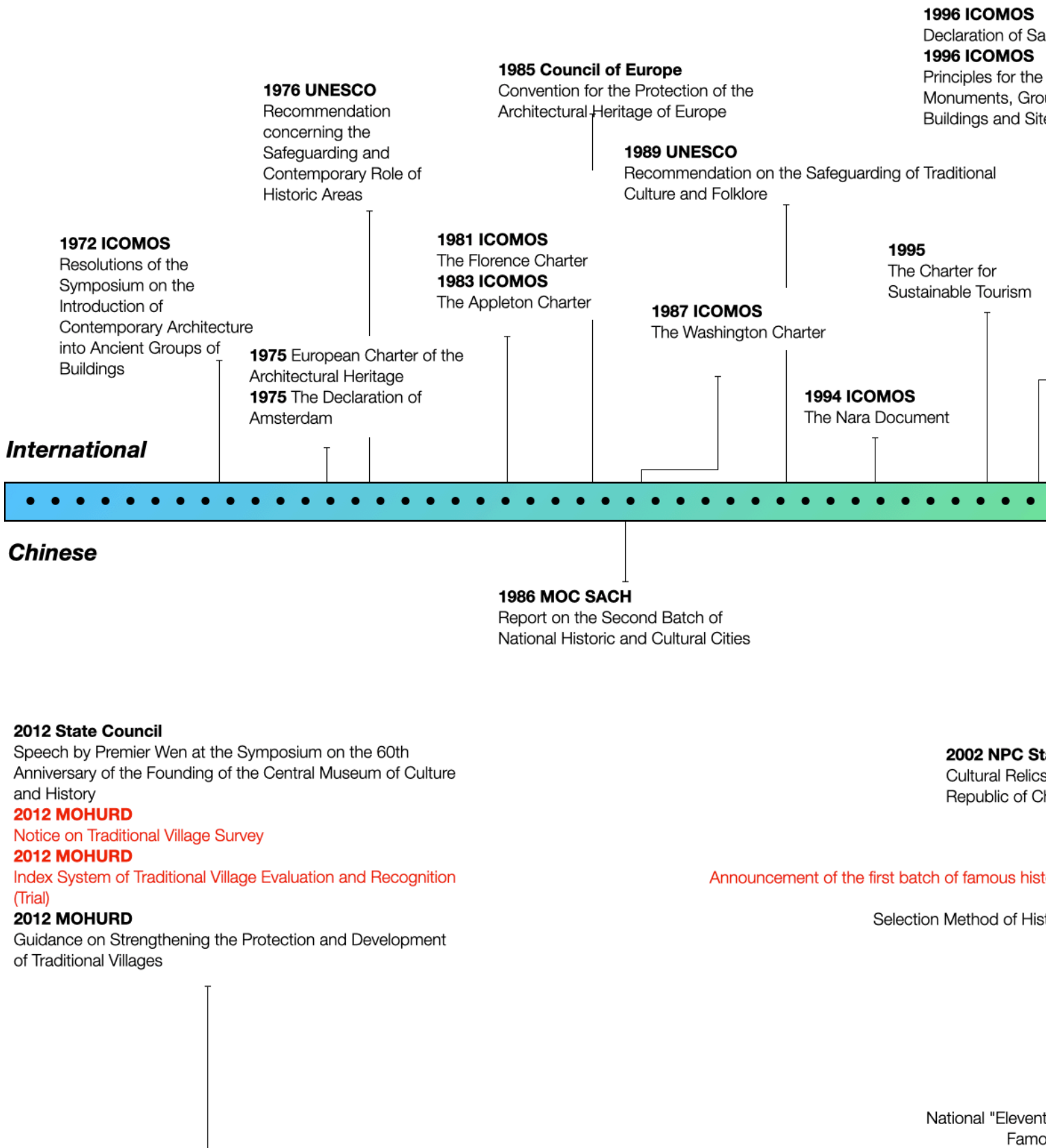
We should critically inherit the above claims. I agree that Chang Qing's restoration traces should take into account the principles of 'overall harmony' (in Chinese: 整体协调) and 'distinguishable at close range' (in Chinese: 细查可辨, in Pinyin: Xì chá kě biàn)¹³². But the I also think that "patinatura artificiale" cannot be ruled out absolutely¹³³. Let's review the "identifiability" principle in Italian restoration practices, "...any integration must always be easily recognizable, but without interfering with the unity that one is trying to re-establish. Thus, at the distance from which the work of art will be viewed, the integration should be

130. Giovannoni introduced the idea of the city plan as a palinsesto (palimpsest), where the dense stratification of different layers reveals the progressive, partial accretions and erosions of the initial implantation. "Quasi tutti i monumenti d'Italia ci presentano, nella loro lunga vita, esempi delle due tendenze, o della sovrapposizione spregiudicata, o rispetto, che quasi può dirsi mimetismo. E questi procedimenti di continuazione ci interessano per due ragioni: perché ci mostrano la complessa formazione, fatta di varie fasi, come in un palinsesto in cui gli strati si sovrappongono, e con questo individuano i quesiti del restauro; e perché ci espongono sperimentalmente i precedenti del restauro moderno."Cfr. Giovannoni, Gustavo. *Il restauro dei monumenti*. Roma: Cremonese, 1945.

131. Qing Chang, "Reflection on the Fundamental Category of Heritage Architecture," *Heritage Architecture*, 1(2016): 44-61. DOI:10.19673/j.cnki.ha.2016.01.01. 常青." 对建筑遗产基本问题的认知." *建筑遗产*, 1(2016): 44-61.

132. Ibid.

133. Chang Qing pointed out that "artificial patina" is not more legitimate or normal than "repairing new" to wait for years, because neither has conveyed the true historical information before repair. Cf. Qing Chang, "Future of the Past: Critical Review and Practice of the Built Heritage," *Architectural Journal*, 4(2018): 8-12.



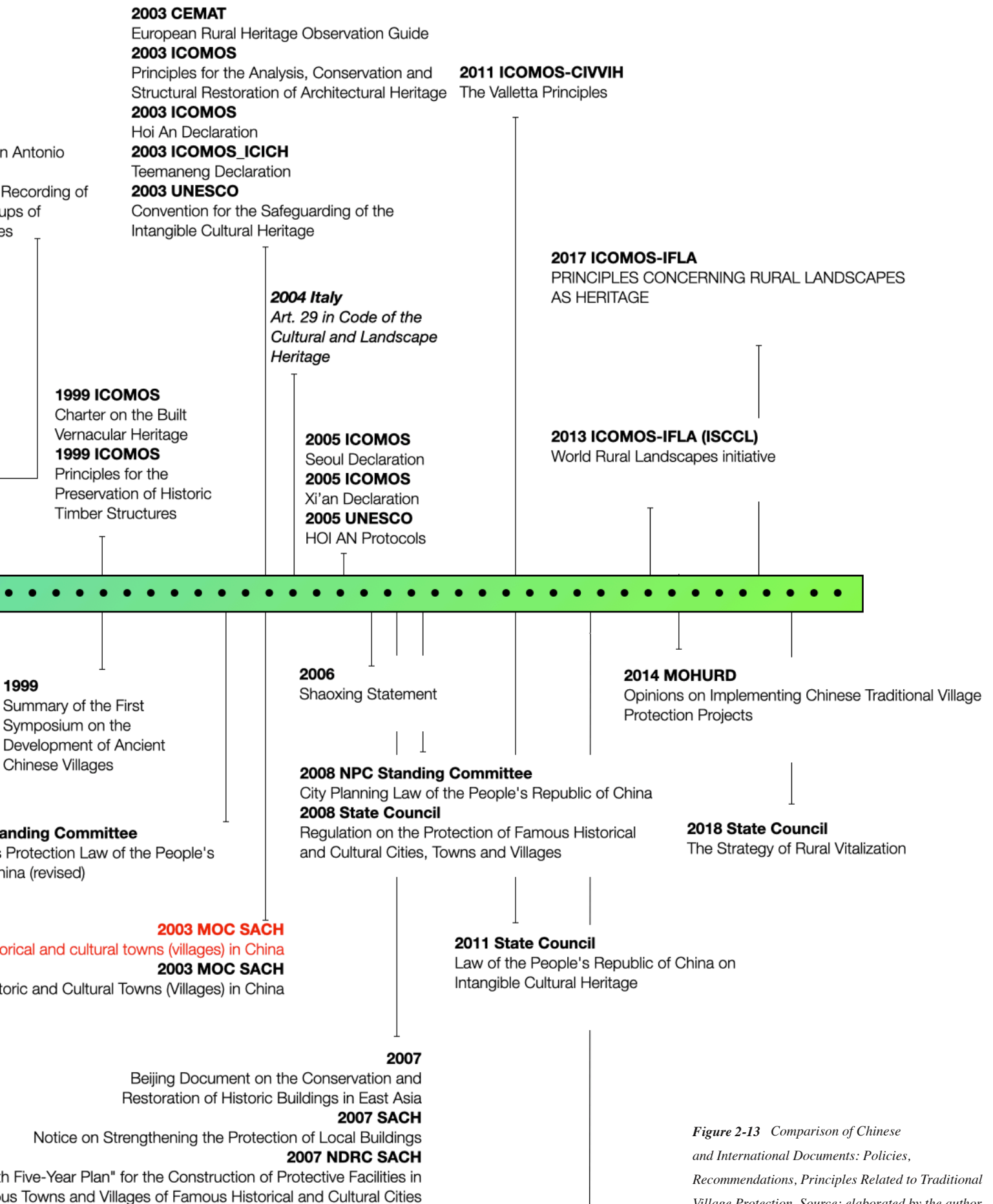


Figure 2-13 Comparison of Chinese and International Documents: Policies, Recommendations, Principles Related to Traditional Village Protection. Source: elaborated by the author.

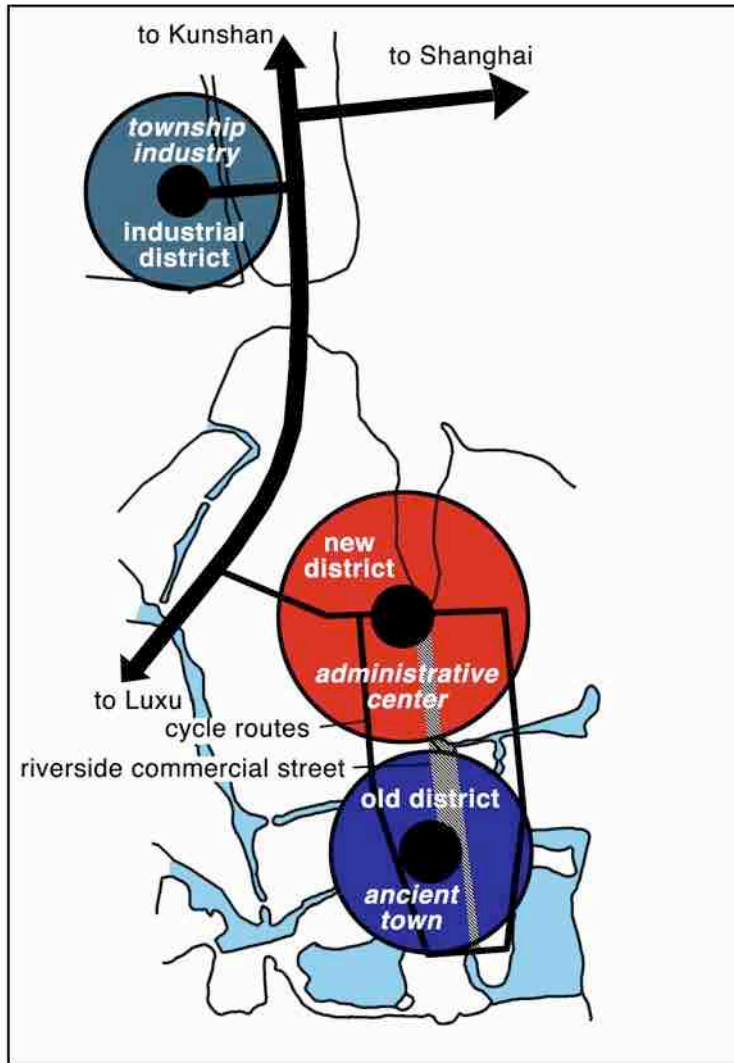


Figure 2-14 Overall layout structure diagram of Zhouzhuang Town General and Conservation (1986) Plan. Source: Yisan Ruan, *Records on the Protection of Ancient Cities: Collection of Ruan Yisan's works* (in Chinese: *护城踪录: 阮仪三作品集*) (Shanghai: Tongji University Press, 2001), 69. Redraw by author.

invisible¹³⁴". We can see that the "distinguishable at close range" is the inheritance of Brandi's theory.

I believe that the traditional dwellings in CTVs should be a living heritage. In addition to paying attention to historical factors and aesthetic factors, we should also pay attention to their use factors (such as the optimization of building physical properties such as enclosure and ventilation and the modernization of living facilities). Therefore, in the restoration of traditional dwellings, history, aesthetics, and use are three factors that play a game relationship with each other. Specific cases should be analysed to determine the extent to which the residential houses can be changed.

2.2.3.2 Conservation strategy

a) Strategy 1: separation of old and new

Among Ruan Yisan's studies, the milestone was the Zhouzhuang Town General and Conservation Plan (in Chinese: *水乡古镇周庄总体及保护规划*), which completed by Professor Ruan Yisan and his assistants in Tongji University in 1986. This plan created a precedent for the conservation of ancient towns in China. A meaningful and far-reaching principle or guiding ideology was put forward, that is "**protecting ancient towns, developing new districts, developing tourism, and revitalizing the economy**". Compared with the strategy proposed by Ruan in 1984 in "*The Nanxun Ancient Town Conservation and Town Master Plan*"¹³⁵, the sustainable development of the economy was emphasized in 1986. With the implementation of the plan, Zhouzhuang's conservation practice had embarked on a new development path of "development and conservation of ancient towns with good economic benefits, but do not demolish the ancient towns. This "separation of old and new" strategy which quite similar with Marcello Piacentini's planning concept for Ostia Marittima (Rome, Italy) in the early 20th century¹³⁶, inherits the idea of separating Beijing's

134. Brandi Cesare, *Teoria del restauro*, (Roma: Edizioni di Storia e Letteratura, 1963),45.

135. See 2.1.3

136. In 1915, Piacentini drafted his first town planning study for the whole city of Rome. Piacentini combined functional zoning with a shift of the civic center to safeguard the historic fabric, a public transport service and public parks, connected in form of a green belt, and the historic center should remain the ideational core of the city. In 1925, when Mussolini had come to power and Rome was under the fascist government, Piacentini updated his study for a "Greater Rome" by proposing a new direction of expansion. Together with the Roman Urbanist Group (GUR), led by his student Luigi Piccinato, Piacentini presented a first regional plan for the roman area in 1929. At that time the future design of the city had become a main topic for the fascist government and in several occasions Mussolini had expressed his desire for a representative but modern Rome. The diverse ideas Mussolini had put together in his speeches were taken from differing authors, times and conceptual backgrounds. On the one hand he wished for a monumental center, on the other hand he propagated a city-antagonistic ruralisation. This ambiguity created a strong concurrence among roman architects like Brasini, Giovannoni and Piacentini, who tended to interpret Mussolinis words in favor of their own urbanistic concept. Cf. Christine Beese, *About the Internationality of Urbanism: The Influence of International Town Planning Ideas Upon Marcello Piacentini's Work*. *Bauhaus-Institut für Geschichte und Theorie der Architektur und Planung*, 2015.



Figure 2-15 Linggen Village Status Plan (left), Linggen Village Long-term Planning General Plan (right). Source: Beijing Tsinghua Tongheng Urban Planning & Design Institute.

new city development from the old city proposed by Liang Ssu-ch'eng and Chen Zhanxiang in 1950¹³⁷. Unfortunately, Liang and Chen's wishes have not been fulfilled. Like Beijing, the historical buildings of countless ancient cities in China have been damaged by urban renewal in the past decades. But perhaps Liang will be relieved, because ten years after his death, the concept of "separation of old and new" was finally applied to the protection of historic towns.

Ruan planned three districts in the plan: the traditional block commercial center (the old district), the administrative center (the new district) and the industrial district (fig.2-14). The reason is that this zoning model was conducive to protecting the ancient town, expanding construction land to develop township industry, and also facilitating the use of surplus rural labor force; avoiding a large number of factories

137. Ssu-ch'eng Liang, and Zhanxiang Chen, "Suggestions on the location of the central administrative district of the Central People's Government," in *The Complete Works of Liang Ssu-ch'eng* (Beijing: China Architecture & Building Press, 2001), 5:60-81; 梁思成, 陈占祥, "关于中央人民政府行政中心区位置的建议," *梁思成全集* (北京: 中国建筑工业出版社, 2001), 5:60-81.

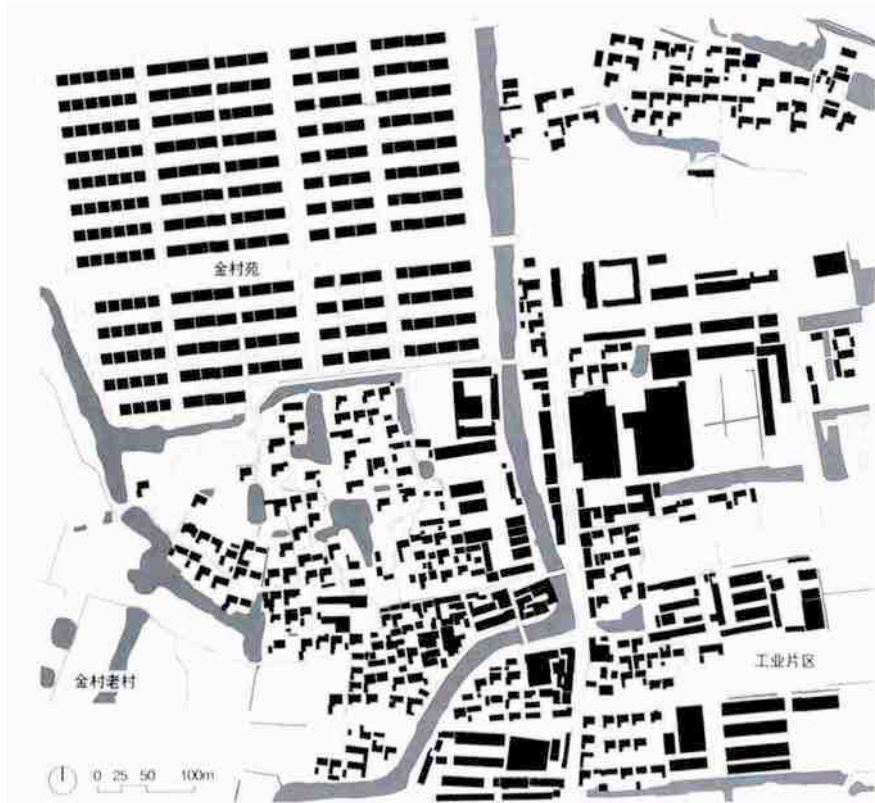


Figure 2-16 Village form of Jincun in 2013. A phenomenon of spatial growth during the development of the village: the new residential area (top left) has no relation to the shape of the old village (bottom left). Source: Wowo Ding and Qian Li, "Study on the Morphological Identities and Its Elements of Southern Jiangsu Village," *Architecture Journal*, no.12 (2013):64-68.

affecting the landscape of the core area of the ancient town, and reducing the impact of water pollution¹³⁸. Another outstanding contribution of Ruan's Zhouzhuang conservation plan is to put forward the concept of classification of protection zone. The zones of protection include three levels, namely, key protection area, general protection area and environmental protection coordination area. This classification method was widely recognized at that time and was followed by other conservation plans in the next two decades. It also became a reference for the formulation of laws and regulations¹³⁹. Based on the "Zhouzhuang Model" and the subsequent practice of historic villages and towns conservation, in 2008 China's first special regulation on historic villages and towns (Regulation on the Protection of Famous Historical and Cultural Cities, Towns and Villages) stipulated that the protection scope of historic villages and towns should include the

138. Yisan Ruan, *Records on the Protection of Ancient Cities: Collection of Ruan Yisan's works* (Shanghai: Tongji University Press, 2001), 68. 护城踪录·阮仪三作品集

139. Yisan Ruan and Fei Yuan, "From guardian to inheritance: The practice of conservation of historic water towns south of Yangtze River for 30 years," *China Ancient City*, no.7 (2016): 4-7. in Chinese: 从守护到传承——江南水乡古镇保护实践30年.

core scope of protection and the construction of control zone (buffer zone). From the perspective of the small quantity of Traditional Villages and towns reserved in China now, Ruan's suggestion at the time was very forward-looking and necessary. Because at that time, the negative impact of the Cultural Revolution was still faltering, and the mainstream consciousness of the society thinks that the "Four Olds"¹⁴⁰ are all bad. The community did not pay enough attention to the protection of ancient villages and towns, and the demolition became the mainstream consciousness at that time¹⁴¹. Therefore, for a long time after that, Zhouzhuang Town has become a model for many historic towns to follow.

To sum up Ruan's contribution, in short: the Nanxun Plan in 1984 and the Zhouzhuang Plan in 1986 first proposed the idea of 'separation of old and new', that is, protecting ancient towns and building new areas. In the 1988 Luanzhi Plan, three levels of protection areas (key protection areas, general protection areas, and environmental coordination areas), as well as value evaluation factors¹⁴² for cultural relics and historic sites in ancient towns (not the entire settlements), cultural relic protection measures¹⁴³, and height control of buildings were proposed;

The second edition of the 1997 Zhouzhuang Plan¹⁴⁴, proposed the protection program of "protecting the appearance of the ancient town, renovating the historical environment, improving the quality of tourism, and improving the living environment". The objects protected include cultural relics at all levels, the spatial pattern of the ancient town, the outline of the ancient town skyline and the traditional culture of the ancient town. The content of the conservation plan can be divided into three levels: 1. On the macro level, delimit the protection scope, adjust land usage, road traffic planning, and social life planning; 2. On the meso level, determine the building conservation and renewal mode, the building height control, space environment improvement; 3. On the micro level, the improvement planning of key areas, etc.

In recent years, the idea of "separation of old and new" has also been applied to the development and construction of some Traditional Villages. The first reason is that the traditional houses in the village are not suitable for modern life. At the same time, the traditional houses need to be protected, and the cost of renovation is large. Therefore, the local governments in many places have chosen to plan and build new residential areas; The second reason is the increase in the registered population in the village. Although most young people leave the village to work in cities and towns, under the current land system in China, the new generation of hukou in their hometown still has the right to apply for a homestead in the village. As the population grows, new residential land is needed. Taking the "Protection Planning and Village Planning for the Historical and Cultural Villages of Linggen Village in Linhai City" completed by Beijing Tsinghua Tongheng Urban Planning & Design Institute in 2015 as an example, the new residential area is arranged

140. The Four Olds were: Old Customs, Old Culture, Old Habits, and Old Ideas. Cf. Spence, Jonathan. *The Search for Modern China*. 2nd ed. New York: W.W. Norton & Co., 1999. p575.

141. Xing Lu, *Rhetoric of the Chinese Cultural Revolution: The Impact on Chinese Thought, Culture, and Communication*. University of South Carolina Press, 2004. 61-62.

142. Including use value (functional value, economic value, social value) and cultural value (archaeological value, aesthetic value, architectural value).

143. In the planning, cultural relic protection measures are divided into five different levels: maintenance, reinforcement, repair, reconstruction, and use.

144. The Detailed Plan for the Conservation of the Ancient Town of Zhouzhuang (in Chinese: *周庄古镇区保护详细规划*).

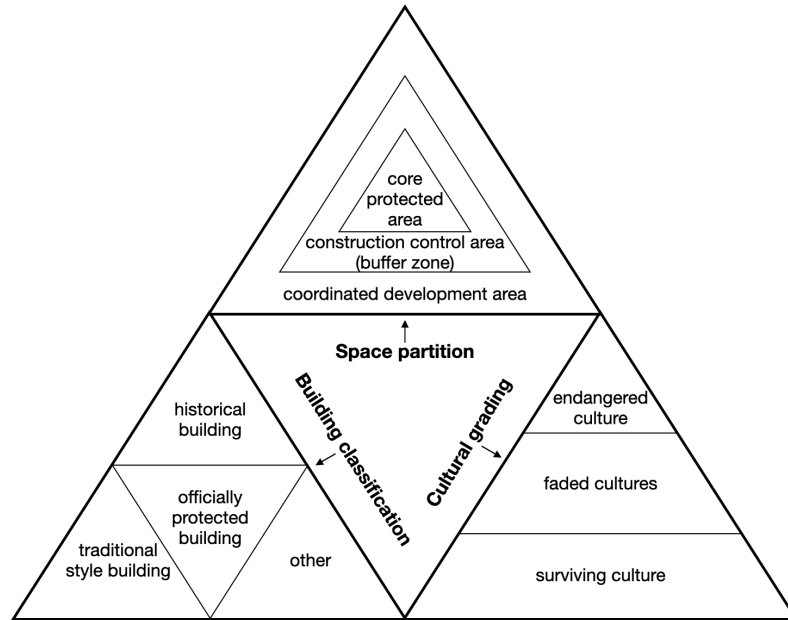


Figure 2-17 Zoning, classification and grading protection framework for Traditional Villages. Source: elaborated by the author based on the "Protection and profit of ancient villages" (draft for comments) GB-PPAV-2017 issued by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China and Standardization Administration of China, 2017.

on the farmland in the northeast of the village (fig. 2-15).

However, the "separation of old and new" approach also poses a potential threat to the village's historical environment. If new construction is inevitable, then the strength of this threat mainly depends on the concept and level of planning and design. In a state of natural growth and before "modernity" had an impact on China's countryside, the relationship between the villages in the traditional society and the natural environment is harmonious. The village location and house building both reflect the understanding of nature, and the combination of scattered and clustered building distribution model reflects respect for land resources. Nowadays, the consciousness of treating the land during the farming period has been gradually abandoned, and the development of industry and the tertiary industry is regarded by many regions as the only way for the countryside to become rich. It is also at this time that the ideas and methods of urban planning began to gradually penetrate into the countryside, which not only accelerated the disappearance of rural style, but also created a batch of "non-urban and non-village" material forms and spaces¹⁴⁵. Some simple and rough planning and design often cause damage to the rural landscape.

145. Wowo Ding and Qian Li, "Study on the Morphological Identities and Its Elements of Southern Jiangsu Village," *Architecture Journal*, no.12 (2013):64-68. 丁沃沃, 李倩. "苏南村落形态特征及其要素研究," *建筑学报*, 2013(12):64-68.

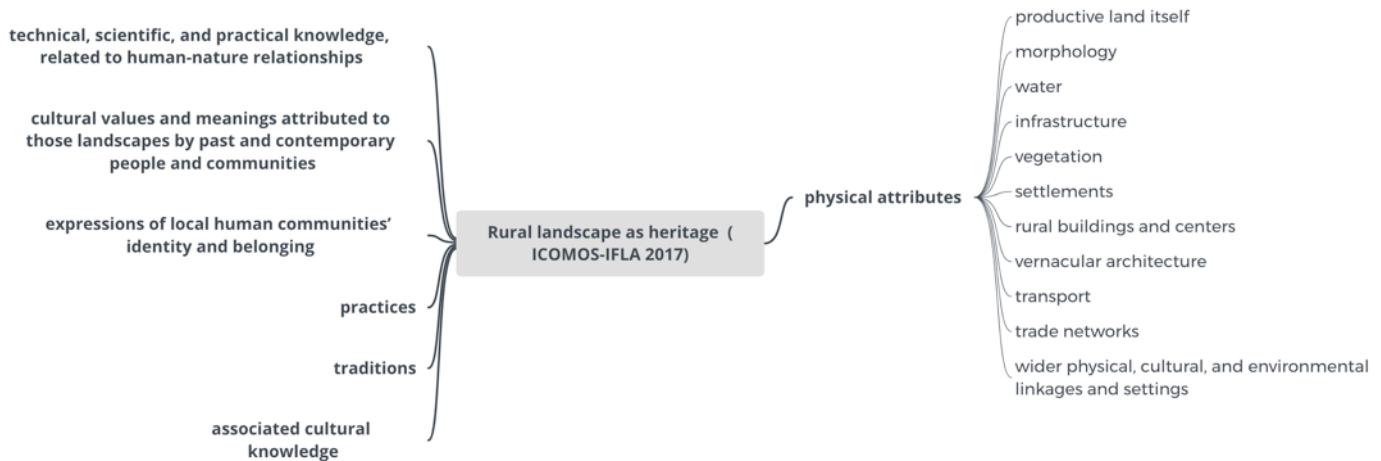


Figure 2-18 Rural landscape framework. Source: elaborated by the author based on the *Principles Concerning Rural Landscapes as Heritage* (ICOMOS 2017).

Therefore, some scholars have criticized the appropriateness of "separation of old and new". In response to the phenomenon of the growth of Traditional Village space, Dingwowo advocated that under the premise of protecting the village's original morphological structure, scattered sites should be established instead of planning new residential communities¹⁴⁶. She refutes the argument that the layout of the new village housing construction can save land resources and believes that the number of different types of road intersections and their proportion of total road intersections are positively correlated with the richness of village road space. Another scholar proposed that design projects related to the growth of village space should follow the principle of "natural generation"¹⁴⁷, that is, the "continuation" of generating logic and rules following the original space. In fact, the above arguments are all around the question of "how to continue the harmonious form of the village and the natural environment". On the other hand, this issue has also triggered discussions about the integrated protection of the village.

b) Strategy 2: conservation ideas of hierarchical, classification and partition

History is progressive, Traditional Villages need to be developed, and the urban areas where Traditional Villages are located also need to be developed. It is meaningless and impossible to blindly protect all Traditional Villages. Therefore, it is of great significance to evaluate the values of Traditional Villages.

The "Regulation on the Protection of Famous Historical and Cultural Cities, Towns and Villages"(in Chinese: *历史文化名城名镇名村保护条例*) promulgated by the MHURD in 2008 (hereinafter referred to

146. Ibid.

147. Qing Chang, Qi Ying, and Yuhui Zhu, "Regeneration of a Vernacular Settlement: A Case Study of Jinze Town in Shanghai," *Urban Planning Forum*, no.2(2008):77-82. 常青, 齐莹, 朱宇晖, "探索风土聚落的再生之道 — 以上海金泽古镇"实验"为例," *城市规划学刊*, no.2(2008):77-82.

as "RPFHC-CTV") stipulated that the protection scope of historic and cultural villages and towns includes the "core protection scope" and "construction control zone (buffer zone)". Zhang Jie et al. (2012) proposed that a scientific classification of traditional Chinese villages and towns should be carried out, and that the assessment work should be carried out from the overall planning stage of the city (region)¹⁴⁸. They advocated the division of Traditional Villages and towns into four categories: 1. historic and cultural towns and villages, 2. traditional style-protected traditional towns, 3. pattern-protected traditional towns, and 4. traditional-style buildings. They also proposed the method of delimiting the boundaries of 'core protection areas' and 'building control zones' in historic and cultural villages and towns. In 2011, Jiangxi Province promulgated China's first local standard for the protection and use of ancient villages¹⁴⁹. This document adds 'environmental coordination zone' in addition to 'core protection area' and 'building control zone'. The definition of 'environmental coordination zone' is a zone delineated outside the 'building control zone' whose main content is the protection of natural terrain.

In 2017 the "PRC National Standard: Protection and profit of ancient villages" (draft for comments)¹⁵⁰ issued by the Standardization Administration of China (hereinafter referred to as "GB-PPAV"). This national standard clarifies the principles of space partition protection, building classification protection, and cultural hierarchical protection for Traditional Villages. (fig. 2-13). The spatial zoning method basically follows the standards of Jiangxi Province in 2011, but is slightly different: "environmental coordination zone" was changed to "coordinated development area". The definition of "coordinated development area" is "the area delineated outside the construction control area to protect the natural landscape and other ecology and landscape." Literally emphasizes the "development", "ecology", and "landscape".

Table 2-1 Different expressions of zonal protection of Traditional Villages.

Spatial Zoning	Ruan Yisan, 1988	RPFHC-CTV, 2008	DB 36/ T637—2011	GB-PPAV,2017
First level	key protection area 重点保护区	core protection scope 核心保护范围	core protected area 核心保护区	core protected area 核心保护区
Second level	general protection area 一般保护区	construction control area 建设控制地带	construction control area 建设控制地带	construction control area 建设控制区
Third level	environmental coordination area 环境协调区		environmental coordination area 环境协调区	coordinated development area 协调发展区

148. Jia Zhang, Minjun Zhang, and Xiaowei Huo, *Technical guide and control manual for protection and development planning of Traditional Villages and towns* (Beijing: China Architecture and Building Press, 2012), 16. 张杰, 张军民, 霍晓卫, *传统村落保护发展规划控制技术与保护利用技术手册* (北京: 中国建筑工业出版社, 2012), 16.

149. "Protection and profit of ancient villages in Wuyuan County (DB 36/ T637—2011)," Quality and Technological Supervision of Jiangxi Province, accessed December 30, 2011. "江西省婺源县古村落保护与利用 DB36/T637-2011," 江西省质量技术监督局.

150. In Chinese: *传统村落保护与利用*. The document is a national standard of the People's Republic of China that will be published after confirmation.

c) Strategy 3: integrated conservation of the historical environment

Since the 1960s, heritage protection has evolved from a single cultural relic to a historic block, a town, from an artificial environment to a cultural landscape, from a tangible cultural heritage to an intangible cultural heritage, and ultimately to the development of the overall environment associated with these elements¹⁵¹. More than 50 years ago, the International Charter for the Protection and Restoration of Monuments and Sites (the Venice Charter) pointed out that the essentials of historical monuments include not only individual buildings, but also the ability to find a unique civilization, a meaningful development or a city or rural environment witnessed by historical events. This applies not only to great works of art, but also to some of the more primitive works of the past that have gained cultural significance at any time. It clarifies the importance of protecting urban and rural historical sites and their environment.

After half a century, the new document has not broken through this view. The Xi'an Declaration (ICOMOS 2005) extends the scope of heritage protection to cultural traditions, religious rituals, spiritual practices and concepts such as Feng Shui, history, topography, natural environment, and other physical and non-material settings. It further enriches the connotation of "integrity" protection and emphasizes the need to protect and manage the surrounding environment through planning means and practices. The Valletta Principles for the Safeguarding and Management of Historic Cities, Towns and Urban Areas (ICOMOS 2011) emphasizes the issue of historical heritage in the region, not just on the urban scale, and the role of the landscape as a common foundation. *Principles Concerning Rural Landscapes as Heritage* (ICOMOS 2017) considers that all rural areas have the cultural implications given to them by people and communities: all rural areas are landscapes, and all rural areas can be considered as excellent and common traditional cultural heritage. The rural landscape is omnipresent¹⁵². On the practical level, people have broken the previous urban-rural dualism in their understanding of rural landscapes, and are increasingly actively facing the negative impact of economic development on rural landscapes

Since the beginning of this century, the overall protection of historical settlements has attracted more and more attention from domestic scholars. Ruan Yisan (2010) believes that holism is the biggest feature of the historical environment of the town and is an important concept throughout the historical protection. This "holistic" includes the historical environment and style of historical towns, material and cultural heritage and intangible cultural heritage, etc. Zhang Jie (2008) interprets "integrated" as "systematic", and believes that the protection of settlements and cultural landscapes in the surrounding areas of historical and cultural cities is an important link in the historical and cultural city protection system¹⁵³; Zhang Song (2010) the

151. Jie Zhang and Xiangyu Deng, "Towards an Integrated Conservation of Settlement Heritages and Cultural," *Journal of Urban and Regional Planning*, 2008,1(03):7-23. 论聚落遗产与文化景观的系统保护

152. Lionella Scazzosi, "Rural Landscape as Heritage: Reasons for and Implications of Principles Concerning Rural Landscapes as Heritage ICOMOS-IFLA 2017," *Built Heritage*, 3(2018):39-52.

153. Jie Zhang and Xiangyu Deng, "Towards an Integrated Conservation of Settlement Heritages and Cultural 论聚落遗产与文化景观的系统保护," *Journal of Urban and Regional Planning*, 2008,1(03):7-23.

study of Japan's historical wind protection legislation and its enlightenment to China¹⁵⁴.

Shao Yong (2012) proposed two evaluation factors ("uniqueness of the natural environment" and "integration of settlements with the natural environment") (corresponding to the 11th factor in the *Index A*)¹⁵⁵, in order to improve the weight of "settlement environment" in the evaluation.

Zhang Bing (2015) put forward the concept of "urban and rural historical and cultural settlements". From the perspective of holistic, related and systematic, it refers to the regional culturally common geography that crosses administrative boundaries from the perspective of "overall protection". Unit, that is, urban and rural settlements with historical and cultural values¹⁵⁶.

Zhang Song (2017) believes that the overall protection of the built environment and the regional cultural landscape of Traditional Villages is an important prerequisite for the continuation of the "habitability" of Traditional Villages. It is of great significance for the sustainable development of society, economy, environment and culture. To realize the vision of rural social rejuvenation, we should also consider the maintenance of the social network structure of Traditional Villages and the adaptive transformation of contemporary design meetings¹⁵⁷. All the above points explain the importance of the overall protection of the historical environment to the protection of historical settlements from the height of epistemology. In the specific planning and operation, RPFHC-CTV stipulates that "historical and cultural cities, famous towns and famous villages shall be protected as a whole and maintained. The traditional pattern, historical features and spatial scales must not change the natural landscape and environment with which they depend on each other, and prohibit the "occupation of conservation planning to determine the reserved garden green space, rivers and lakes, roads, etc." "Change the natural colors of gardens, rivers and lakes, etc. "State activities" should be submitted for approval according to law. However, the "Regulations" are often subject to resistance from all levels in the actual implementation process. For example, the RPFHC-CTV stipulate that "protection planning should be approved from historical and cultural cities, famous towns, and famous villages. It was completed within one year from the date of the establishment. However, in fact, many historical and cultural cities, famous towns and famous villages have been selected for several years, and the protection plan is still missing, no matter the implementation of the plan.

Based on the "core protection scope" of the RPFHC-CTV, Ruan Yisan proposed the concept of "protection

154. Song Zhang and Liying Xue, "On Japan's " Law for the Conservation and Enhancement of Historic Environment and Cultural Setting in the Historic City" and Its Reference to China 日本的历史风致保护立法及对我国的启示". *Urban Planning Furom*,2010(06):102-108.

155. Yongshao, and Juan-juan Fu, "Significance and methods for evaluating historical and cultural towns and villages in China," *Journal of Xi'an University of Architecture & Technology (Natural Science Edition)* 44, no.5 (2012): 644-650. 邵甬, 付娟娟, "历史文化村镇价值评价的意义与方法," *西安建筑科技大学学报:自然科学版* 44, no.5 (2012): 644-650.

156. Bing Zhang. "Historic Urban and Rural Settlements: A new category towards regional and integral conservaiton of cultural heritage 城乡历史文化聚落—文化遗产区域整体保护的新类型". *Urban Planning Furom*,2015(06):5-11.

157. Song Zhang. "A study on Traditional Villages as a form of human settlement and their integrated conservation 作为人居形式的传统村落及其整体性保护". *Urban Planning Furom*,2017(02):44-49.



Figure 2-19 Aerial view of reconstruction of wooden house in Rongshui County, Guangxi Province (left); Architects and villagers discuss building reconstruction design (right). Source: Deqi Shan, and Mu Yuan, "Reconstruction of Wooden House in Rongshui for 18 Years: Reflection on Reconstruction of Traditional Settlement in China's Western Poverty-Stricken Area," *World Architecture*, no. 7 (2008):21-29.

zone" in historical and cultural blocks¹⁵⁸, referring to the core area composed of cultural relics, historical buildings and their landscapes. Emphasizing the integrity of historical features and the authenticity of historical relics in the region and proposing four suggestions for the delineation of protected areas. These recommendations not only emphasize the need to "adapt to local conditions" but also the implementation of "holistic" protection. Guided by: 1. The construction control area can be delineated as a whole on the periphery of the decentralized protection area; 2. The landscape passage should be included in the scope of the protection area; 3. The natural landscape and environment that are interdependent with the overall style of the protected area, such as Mountains, forests, water bodies, rivers and farmland should be included in the scope of protected areas; 4. Cultural spaces related to the expression of intangible cultural heritage should be included in the scope of protected areas. From the point of protection, the above suggestions should also apply to the protection of historical and cultural towns, famous villages and Traditional Villages. The above recommendations further explain the guiding principles of "integrated protection" in the Regulations and provide clearer work guidance for practitioners who have made protection plans. However, under the pressure of huge real estate development, the protection plan rarely controls the overall landscape of the surrounding landscape. In other words, although the current mainstream guiding principles

158. Yisan Ruan, Zhen Li and Lin Lin. "The work of Protection for Historical Buildings and Environment of Ancient Towns in Jiangnan 江南古镇历史建筑与历史环境的保护". Shanghai: Shanghai People's Fine Arts Publishing House, 2010.



Figure 2-20 Photos during construction of the Aoni No. 3 Courtyard House project, a: replacement and addition of wooden building elements; b: pouring terrazzo floor; c: floor insulation; d: fresh air system channel; e: laying of roof tiles; f: roof insulation (rock wool) and breathability film. g,h: laying of roof vapor barrier film; Source: HXP Planung GmbH.



Figure 2-21 Photos after the Aoni No. 3 Courtyard House renovation project was completed. Source: HXP Planung GmbH.

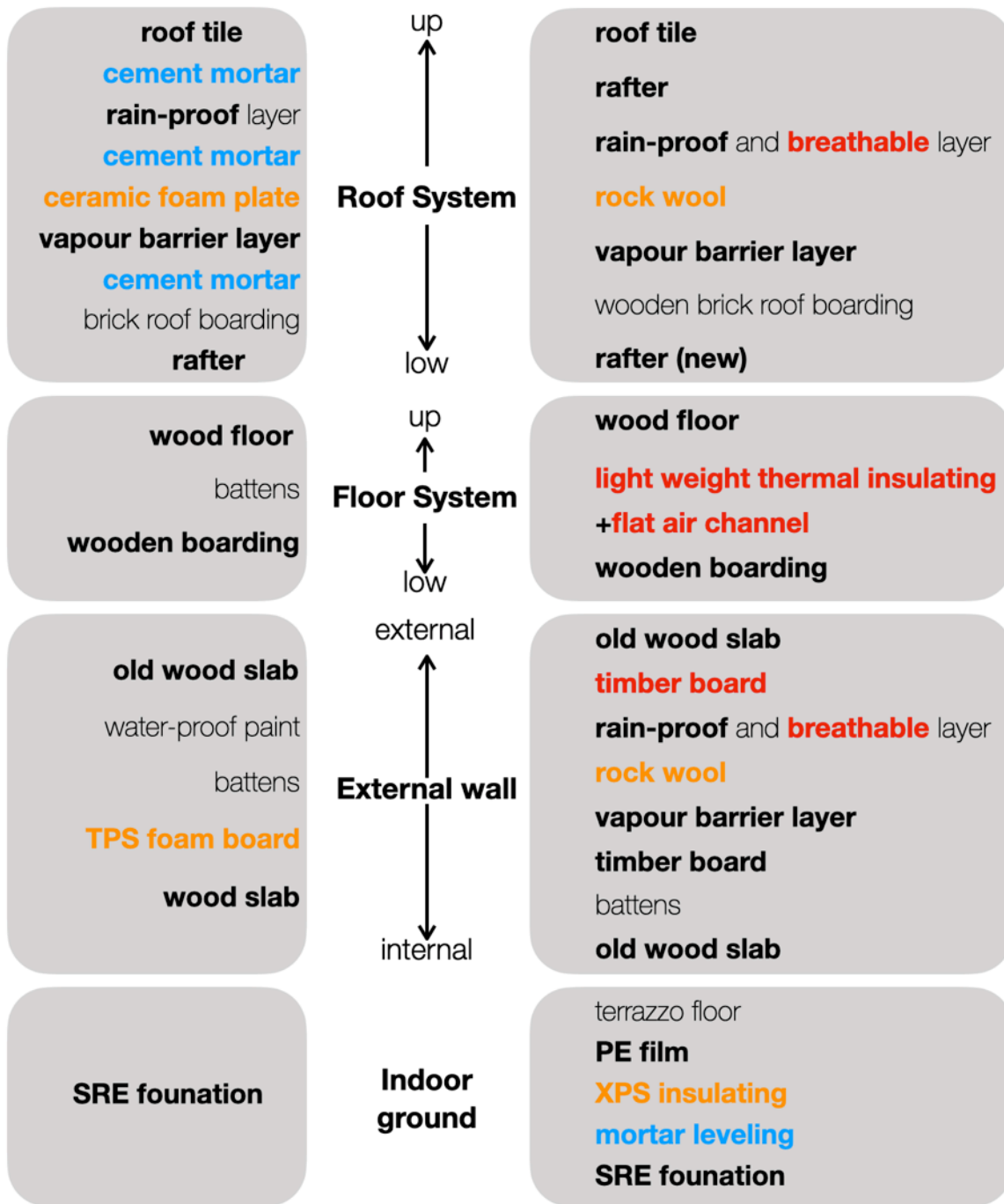


Figure 2-22 Comparison of the layers of building construction of the outer envelope in the reconstruction of Bao (left) and Zhao (right).

in China¹⁵⁹ recognize that the natural environment surrounding the settlements must be protected, the specific protection methods lack specific measures for evaluation, protection, and development control. Therefore, the protection of the heritage elements in the peripheral areas is often relatively isolated¹⁶⁰.

Since the promulgation of the "Regulations" for more than ten years, under the dual pressure of achieving rural revitalization and new urbanization goals, the "isolation" of rural historical settlements is still intensifying. This phenomenon is particularly prominent in the historical settlements of Hancheng, a national historical and cultural city that is a new type of urbanization pilot city.

d) Strategy 4: study on organic renewal and reuse of dwellings

Due to lack of funds and protection measures, many traditional dwellings are left vacant and cannot be effectively protected and utilized. Through functional replacement and expansion, it will be beneficial to continue the use of traditional dwellings and reflect more value. The research on the reuse of traditional dwellings is mainly divided into two aspects: (1) Paying attention to the functional transformation directions and measures of different types of dwellings in different natural environments and social backgrounds; (2) Research on technologies and methods to improve the performance of residential buildings based on individual cases¹⁶¹. Shan Deqi was one of the earliest architects who started the adaptive transformation of traditional dwellings in China¹⁶². In the late 1980s, Shan led the team to try to use the new materials to rebuild the wooden buildings in Miao Village¹⁶³ in Guangxi Province. Facing the reality of expensive wood, Shan converted the traditional wooden building in place to a modern building with a cement-brick-concrete structure (fig.2-19). The purpose was to improve the rough conditions of mixed human and livestock and to respond to the fire threat of pure wood building structures. In order to continue the tradition, Shan's design still retains the sloping roof and imitates the characteristics of more traditional houses in the architectural modelling. In this way, the building performance was improved in a low-cost manner, but the building loses the authenticity of the architectural heritage. Because this design enhancement comes at the expense of

159. For example, GB-PPAV-2017 states: "Respect the traditional site selection pattern and its dependence on the surrounding landscape and environment, pay attention to overall protection, and prohibit all types of sabotage activities and behaviors that have constituted destruction, and should be restored. The surrounding areas of Traditional Villages should be restored. To protect the natural features, Feng Shui environment, and outbuildings; retain the original road network structure, characteristic features and landscapes of other villages, landscapes, forests, ancient trees, natural landscapes; also, in *The Guiding Opinions on Effectively Strengthening the Protection of China Traditional Villages* issued by MHURD, MOCU, SACH, MOF in 2014, the integrity of Traditional Villages is interpreted as the integrity of space, the integrity of history, and the integrity of value.

160. Jie Zhang and Xiangyu Deng, "Towards an Integrated Conservation of Settlement Heritages and Cultural Landscapes 论聚落遗产与文化景观的系统保护," *Journal of Urban and Regional Planning*, 2008,1(03):7-23.

161. Jinguan Ji, Dawei Xiao, "The Research on Reuse Forms of Traditional Buildings in Villages," *South Architecture*, no. 4 (2015):48-51.

162. Deqi Shan, "The Search for the Reconstruction of Traditional Houses in Underdeveloped Areas: Practice and Theoretical Discussion on the Reconstruction of Miao Village Wooden Building in Rongshui, Guangxi," *Architecture Journal*, no. 4 (1993):15-19. 单德启, "欠发达地区传统民居集落改造的求索——广西融水苗寨木楼改建的实践和理论探讨", *建筑学报*, no. 4 (1993):15-19.

163. The Miao are an ethnic group belonging to South China, and is recognized by the government of China as one of the 56 official ethnic groups.

heritage value, it is not the approach encouraged in this study. On the other hand, combined with the reality, the rapid improvement of the quality of the living environment was the most urgent need of local farmers at the time. In this project, Shan's contribution also lies in organizing the training of villagers to participate in the construction, selling part of the original building materials to be dismantled to cover the construction funds, and the roof tiles and rafters of the old house are reused for the construction of new houses. This greatly reduces construction costs. Due to the low cost, this transformation model has been copied in large numbers in rural areas in China since the 1990s.

In recent years, the model of organic renewal of traditional dwellings in China (referring to the enhancement of functions to meet the needs of modern use) has shifted from the "reconstruction" model advocated by Shan to the "renovation" model that preserves the chronological value of heritage.

Bao Li (2017)¹⁶⁴ proposed that the overall improvement of the function and performance of traditional dwellings must first assess the location of the building, the state of property rights, the quality of the building and the potential for reconstruction and plan the function of the objects to be transformed. Bao takes the traditional dwellings in Yixing, Jiangsu, southern China as the research object, and puts forward the specific promotion path in three aspects: (1) Modular design of auxiliary functions such as kitchen and toilet; (2) Improved thermal performance of walls and roofs combined with traditional technology; (3) Improved indoor natural light and uniformity; (4) Integrated design and construction methods for solar facilities, air conditioning systems, and other building equipment.

Zhao Xing (2018)¹⁶⁵ completed a century-old courtyard dwelling renovation project in Songyang county, Zhejiang Province. The project is designed according to the modern living standard and the performance requirements of PHI Passive House for the construction components, aiming at avoiding the building weakness of the local traditional house. Both Bao and Zhao are premised on preserving the traditional values of dwellings, and both have a certain exemplary significance. But the difference is that with as little intervention as possible, Bao can show the original appearance of traditional houses more. Zhao's idea is to reduce the energy consumption of buildings. He considers the economic pressure and sustainability of the owners on reducing the energy consumption of the dwelling in use. Zhao's thinking made his design use internal thermal insulation technology on the roof, ground, and exterior walls, and replaced the original wooden external building envelope with large-area thermal insulation glass windows. Table 2-2 and fig. 2-20 are the comparison of the technical and building construction levels adopted by Bao (left) and Zhao (right) in their renovation projects. In the roof renovation, Bao used more wet work, while Zhao's approach was dry work, which is more reversible and has better breathability. In addition, in terms of indoor air quality, sound insulation, floor moisture and insulation, Zhao's plan is better.

Table 2-2 Comparison of the technologies used by Bao and Zhao in the renovation projects.

164. Li Bao, et al., "The Strategy of Integrated Promotion of Function and Performance in the Renovation of Vernacular Dwelling: The Case of the Renovation of Vernacular Dwelling in the Historical City of Yixing, Jiangsu," *New Architecture*, no. 5 (2017):12-17.

165. "Aoni No. 3 Courtyard House: PHI Passivhaus renovation plan," Wofun, accessed January 02, 2018, <https://kknews.cc/home/2evoajz.html>.



Figure 2-23 Figure 2 20. Traditional dwellings of Wencun in Fuyang District, Hangzhou, Zhejiang (2016). Source: ©Zhou Guangping.

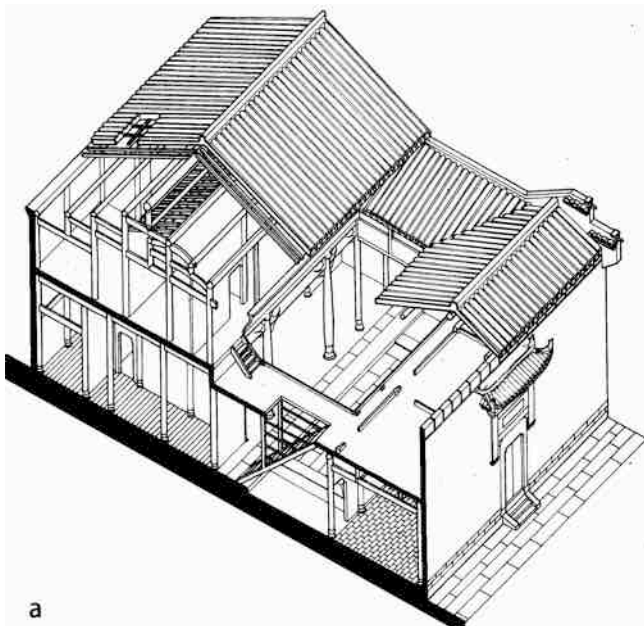


Figure 2-24 a. type of traditional dwelling house common in Southeast China. Source: The Department of Architecture of Southeast University, Series of the Ancient Architecture in Huizhou: Zhanqi Village. Nanjing: Southeast University Press, 1996, 36; b. a new house designed by Wang Shu for Wencun (2016). Source: ©Zhou Guangping.

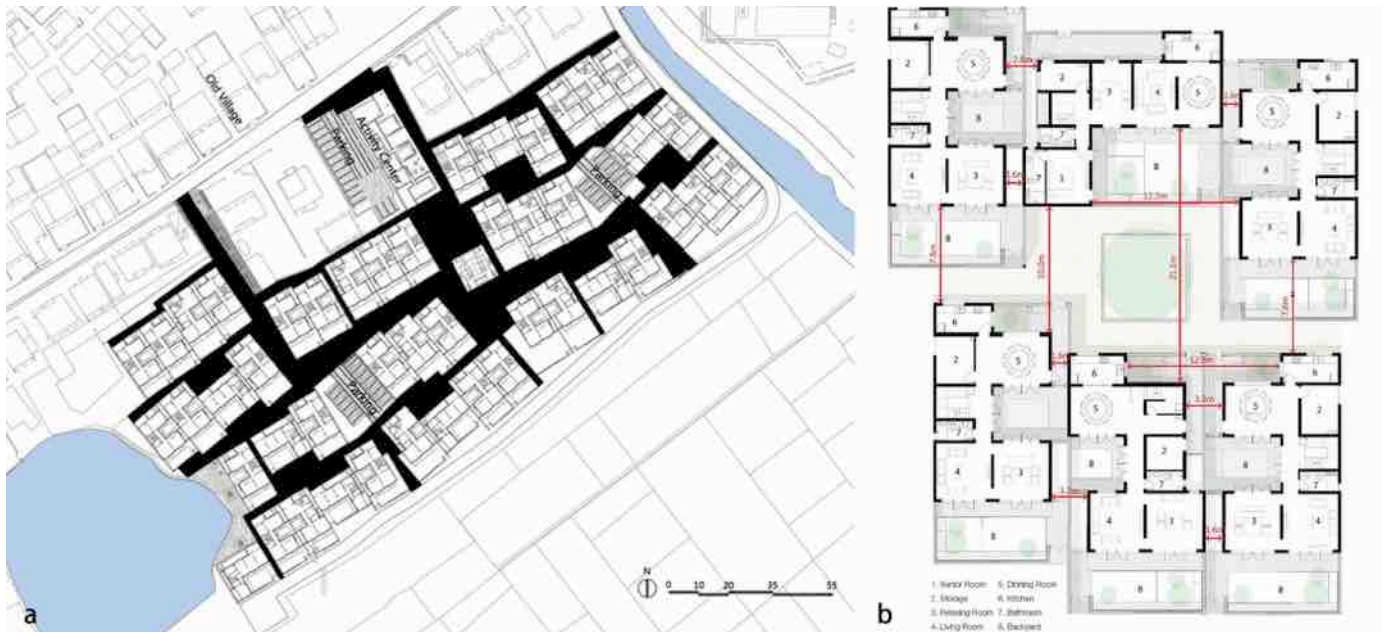


Figure 2-25 a. Site plan for Dongziguan Affordable Housing for Relocalized Farmers. b. Ground Floor Plan (part). Source: <https://www.archdaily.com/802369/contemporary-rural-cluster-dongziguan-affordable-housing-for-relocalized-farmers-in-fuyang-hangzhou-gad>.



Figure 2-26 Wu Guanzhong's Paintings. Source: <http://art.ifeng.com/2018/0828/3440114.shtml>.



Figure 2-27 Dongziguan Affordable Housing for Relocalized Farmers. Source: <http://art.ifeng.com/2018/0828/3440114.shtml>.

	Thermal performance improvement of external wall	Thermal performance improvement of roof	Ground insulation performance improvement	Light environment improvement	Solar facility	Fresh air system	Sound insulation performance improvement
Bao (2017)	×	×		× skylight	×		
Zhao (2018)	×	×	×	× french windows		×	×

2.2.3.3 New prototypes and the creation of a harmonious environment

As Carlo Aymonino wrote, the emergence of new needs - determined by the economic, political and social development of a historically defined society, the bourgeois one - which in their own development become organized activities, therefore socially necessary. When these activities reach a more complex and articulated stage of their organization, with the consequent tendency to become "definitive", that is, stable with respect to a certain period of time, the additional (and therefore different from the initial) need arises to create an artefact appropriate building, capable of confirming and developing, by solving them, those activities with its own architectural "presence"¹⁶⁶. Facing the inadequacy of traditional buildings to meet modern needs, some architects have focused on the analysis and research of prototypes, and organized new "morphological fields"¹⁶⁷ through new prototypes to build and maintain the order of village construction.

166. Carlo Aymonino, *Il significato delle città* (Marsilio: 2000), 67.

167. Borrowing the concept of "field" in physics, Chinese architect Liu Kecheng proposed the term "morphological field". Through the study of Chinese villages and cities, he found that there is a kind of "field" in the development and evolution of the township construction pattern. It promotes the development of the physical form of towns and villages in a certain area, and the development of people's understanding of the concept of form, or to promote the development of physical form and the development of people's understanding of the form itself to maintain a certain direction and order. Cfr. Kecheng Liu, and Li Xiao, "Dynamic Pattern of Town and Village Evolution," *Journal of Xi'an Institute of Metallurgy & Construction Engineering*, no.02 (1994)5-23.

The following are the projects that have attracted more attention in China in recent years.

a) Case: the pilot project of Wencun Village House designed by Wang Shu

In the Wencun Village, Zhejiang Province, Wang Shu (2013) did the renovation design for the ancient village. He advocates that the construction of the village cannot be separated from the old village's environment. Like Hassan Franco, he consulted with local residents during the process of design. At first, the villagers were dissatisfied with his design scheme, accusing him of designing a house that was too dense compared to the current general-built house in other rural area. And he countered that the dense arrangement was a continuation of the ancients' idea of saving arable land¹⁶⁸. He retorted that the dense arrangement was to continue the ancient people's idea of saving arable land, and the traditional houses in the old village of Wencun were denser than his design, so he convinced the villagers. This practice has subverted the design method of "beautiful countryside projects" and "new socialist countryside projects" in recent years, which is mostly for the purpose of pure space production, newly built rigid (regular array) low-rise houses are not based on the study of the old village. However, Wang Shu designed eight different new prototypes for a total of 24 households. The material, process and scale reflect the traditional inheritance. Wang Shu selected gray, yellow, white tricolour tone, corresponding rammed earth walls, plaster walls, Hang limestone walls, cut fake stone facade design, so that the new village and the old village organic integration. In terms of space organization, on the basis of respecting the traditional prototypes of architectural scales and small courtyards surrounded by four sides, Wang Shu reorganized the spatial order of traditional dwellings and deconstructed the inward-looking structure of traditional dwellings. For example, in order to reduce the mutual interference between different family members in the courtyard house, in the house he designed, the elderly can directly enter the room through the ground-floor entrance, and the young people can enter the second floor through the outdoor stairs. Although it is in a building, it forms two independent and complete living units. Different generations communicate with sight and sound through the patio, taking care of each other without disturbing each other.

b) Case: Dongziguan affordable housing for Relocalized Farmers by Gad Architects

Some indigenous peoples in Dongziguan Village still live in historic buildings which are for long years out of repair. The project tackles a current social issue within the urbanization process in China: the increasing urban-rural disparity. Currently the living conditions in large part of rural China are poor, for instance in Dongziguan Village in Fuyang Hangzhou, most of the farmers still live in the aged housings of disrepair. Local Government in Fuyang District of Hangzhou decided to fund an exemplary affordable housing project in Dongziguan Village aiming at improving living condition for relocalized farmers. The project was designed by Gad Architects, whose planning and design is based on the study of different levels of "prototypes". The first is to study the overall form of the village. The planar combination order of the village dwellings has a certain randomness, not a regular orthogonal geometry (fig. 2-24-a). Gad replicates and mirrors it through four "new prototypes" (Fig. 2-24-b), forming a block like the Traditional Village spatial scale. The second is the architectural space prototype. The basic prototype of the traditional

168. Yijun Yin. 2018. "Conversation with architect Wang Shu: Rural transformation should continue the true state of life." THE PAPER (澎湃). https://www.thepaper.cn/newsDetail_forward_2005270.

residential unit is a hollow surrounded courtyard (fig. 2-25-a). However, the residential units designed by Gad are two "U" -shaped planes and one "Z" type plane. The design of the courtyard makes it vary into four prototypes that learnt from the tradition and its diversity. The prototypes could be developed into clusters, which later grow into a larger rural settlement; Third, similar to Wu Guanzhong's landscape paintings depicting the houses in the south of China (fig. 2-26), Gad emphasized the prototypes of the three symbols: "black tile roof", "white wall" and "small window" (fig. 2-27).

2.3 Summary and reflections on the results of current researches

2.3.1 Basic technical route for the conservation of Chinese Traditional Villages

This chapter discusses the development process of the protection of rural heritage in China. From the above literature review, we can see that the protection of Traditional Villages is becoming more and more important in China. Furthermore, we can sort out the basic ideas and technical route of the current conservation method of Chinese Traditional Village as follows:

1. The focus of conservation is: 1. Protect the village's macro structure and pay attention to the relationship between cultural routes and village protection; 2. Grading and scientific classification of different types of Traditional Villages; 3. Develop conservation plans for Traditional Villages.

2. The survey and valuation of heritage resources.

The value components of Traditional Villages include two types: explicit physical components and hidden non- physical components. These contents vary with the regional culture. The non-physical elements interact to form a social structure, an economic structure, and a cultural structure, which will eventually be reflected in the spatial structure. Therefore, the historical environment is a tangible social, economic and cultural expression. The investigation and value evaluation of heritage resources can help answer questions such as what is worth protecting in Traditional Villages and where are its value characteristics reflected.

3. The develop conservation plans.

The content of conservation planning can be divided into three levels:1. Macro level: delineation of protection scope, planning and control technology for natural and human environmental protection, land use adjustment, road traffic planning, social life planning; 2. Meso level: building protection and utilization, building height control, space environment improvement; 3. Planning measures to protect the

social structure and interests of indigenous peoples; 4. Planning measures for the protection of intangible cultural heritage.

2.3.2 Deficiencies of historical environmental diagnosis of integrity, value and meanings evaluation tools

The landscape pattern (specifically referring to the relationship between mountains, rivers and settlements) is a unique cultural content of Chinese traditional settlement heritage and has very high cultural value. With regard to the protection of the historical environment of the settlements, the current research focus of scholars can be summarized as follows: 1. Concerned about the protection of the contours, commanding heights of the mountains around the settlements, the protection of the mutual sight corridor between the mountains and between the mountains and the settlements; control the spread of village construction land in the mountains. 2. Treatment of river pollution and improvement of water quality. 3. Emphasize the protection of natural vegetation, historical topography, and the traditional pattern of villages. However, due to the lack of quantitative evaluation tools for the integrity of the historical environment, it is difficult to implement the protection, management, and monitoring of the village's historical environment and traditional agricultural landscapes.

In terms of policies and regulations, the 'Requirements for Famous Historical and Cultural Cities, Towns and Villages Conservation Planning (Trial)' (2012)¹⁶⁹ stipulates that the conservation plans must delineate the protection boundaries of Famous Historical and Cultural Towns and Villages. The protection boundaries includes the core protection unit (核心保护范围) and buffer zone (建设控制地带). The "core protection unit" demarcated by the "red line" of the site boundaries, presumed the integrity of the ancient towns and the ancient villages, is actually the result of substitutions or roughly juxtaposes the old types, and of rural parts morphologically differentiated in a short-term process of transformation in use and meaning. However, we need to re-understand the relationship between use and meaning.

Following the guidelines of the "Principles for the Conservation of Heritage Sites in China" (2015) and the "Regulation on the Protection of Famous Historical and Cultural Cities, Towns and Villages" (2008), the red line removes the "core protection unit" from the buffer zone, and the buffer zone separates its assumed integrity from the rest of the settlements without clarifying its characteristics, relations, and interactions.

2.3.3 How to permanently preserve traditional houses: a potential epistemological contradiction

If we say that most traditional houses in the West are written by brick and stone, then most traditional houses in China are written by wood and raw soil. The poor durability of wood and raw materials has determined that the original Chinese residential buildings cannot be stored for a long time. Master Liang

169. MOHURD, SACH. "Requirements for Famous Historical and Cultural Cities, Towns and Villages Conservation Planning (Trial)" (16 November 2012). "历史文化名城名镇名村保护规划编制要求"(试行).

Ssu-ch'eng believes that the ancient Chinese had the concept of "Do not expect the original to be preserved permanently"¹⁷⁰. For the ancient Chinese, architecture is similar to furniture and can be constantly replaced or even moved. But today we want to protect Traditional Villages. The purpose is to hope that this heritage, as a carrier of local knowledge, can be permanently preserved.

However, permanent preservation and the non-permanent nature of residential building materials are inherently contradictory. When studying the protection of Traditional Villages, we must first realize the existence of this contradiction. If the goal is permanent preservation, it is necessary to maintain the building construction form that contains traditional tectonic features, and it is also necessary to replace the remaining building components. Just as the Japanese reconstruct Ise Shrine every 20 years by replacing building elements, the protection of traditional houses must also have the same awareness.

When considering Traditional Villages as a living heritage, we encourage Aboriginal people to live in these traditional homes. However, when it is necessary to repair and maintain these dwellings, we must consider providing temporary residence for residents, which is what we should consider when formulating conservation plans.

2.3.4 Insufficient understanding of "Traditional Village" morphology fields

Form protection is an important part of Traditional Village conservation. When we recognize Traditional Villages as living heritage, we must recognize that villages will likely continue to expand or shrink.

When the village expands, a major threat is the difference in the spatial production results caused by the differences in the acquisition modes of rural residential land in ancient and modern times. This difference can easily lead to the destroyed the organic form of the Traditional Village space. The social mechanism of freely buying and selling land in ancient times has been replaced by the current supply system of homesteads, that is, peasant families can obtain it for free as a social welfare. This is a planned land allocation model. Under this premise, we need to provide a plan (ie design and management) from the level of urban design to avoid the assimilation of Traditional Villages by modern urban space during the process of expansion or contraction.

It is precisely because of the lack of specific pre-arranged planning that, in the context of rapidly satisfying the needs of modern life, Traditional Villages are being assimilated by modernity, while their traditionality is constantly being alienated. Therefore, at present, from the perspective of the effectiveness of protection, the static and specimen-type protection methods have instead made Traditional Villages better protected.

Therefore, it is necessary to confirm the "morphological field" as a form of heritage. The theory of "dynamic pattern of village evolution" and the theory of "spatial gene" mentioned in this chapter can be used as a theoretical basis. Based on the in-depth study of the mechanism of morphological formation,

170. In Chinese: 不求原物长存之观念. Cf. Ssu-ch'eng Liang, *History of Chinese Architecture* (Tianjin: Baihua Edition, 1998), 18. 梁思成, *中国建筑史* (天津: 百花文艺出版社, 1998), 18.

design will be used as a basic means to set boundaries on various levels in advance for changes in village morphology, which will help maintain the stability of the "morphological field".

As Whitehand pointed out¹⁷¹, the current study of urban morphology in China has two characteristics: 1. Compared with most other aspects of Chinese urban studies, the development of urban morphology is largely independent of Western countries. 2. In the study of urban morphology in China, narrative descriptions and other types of descriptions are dominant, and there are relatively few analytical and conceptual approaches. Although the amount of research on urban forms has increased rapidly in recent years, it has had little to do with guiding urban development. The replacement of Chinese native urban forms by Western ideologies, especially the replacement of traditional courtyards by multi-storey buildings, has brought about various problems on spatial, social, economic and cultural.

It is undeniable that rural villages and small towns are the locus of the persistence of Chinese settlement forms and not just that of local vernacular traditions seems evident. There is a typo-morphological solidarity between the dwelling courtyards and the clear topographic structure, which allows us to interpret the entire settlement as a high-quality organism-figure¹⁷². However, in the field of research focusing on the Chinese rural area, the current reading methods and interpretations seem to be insufficient to interpret the principles that constitute urban-rural form, nor to interpret its underlying form structures, as well as style, construction technology, vernacular tradition, and settlements facts in the relationship between type and topography.

2.3.5 Lacks of effective policies for the management and distribution of conservation funds

Since 2014, China's central government has provided 3 million yuan of special funds for each CTV to support the protection of Traditional Villages. In the interview, Zhang Yingquan, the head of Zhangdaicun Village, said that the local government currently intends to use these funds to optimize the infrastructure of Zhangdaicun Village. At present, in addition to these funds, the village has not raised other funds for the protection of the village. It is confusing that, without a scientific protection plan, wouldn't there be a risk of constructive damage to the historical environment of the village in the reconstruction of the infrastructure? Shouldn't these only protection funds be given priority to rescue the Guandi Temple, which is the oldest building in the village, that collapsed a few years ago? The village chief said that the decision-making power for the use of these protection funds belongs to the town government, and he can only participate in the implementation of the decision. That is, key stakeholders in the village's heritage, such as the village chief, are not entitled to participate in discussions about the use of heritage funds. This shows that, in some areas, in terms of the source, use and management of protection funds, the protection of Traditional Villages still faces difficulties.

171. Whitehand, J. W. R., and Kai Gu. "Research on Chinese urban form: retrospect and prospect." *Progress in Human Geography* 30.3 (2006): 337-355.

172. Cf. Laura A. Pezzetti, *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rurban Landscape*. (Tongji University Press, 2019), 12.

Judging from the current situation, the protection of Traditional Villages varies greatly from place to place, some of them are better preserved (such as Dangjia Village in Hancheng), and some of them are extinct (such as Zhangdaicun Village in Hancheng). Traditional Villages have a great need for protection funds, and a central, local, resident, and social investment mechanism must be established. The local financial departments at all levels, especially the provincial financial departments, should coordinate related special efforts to increase investment in the protection of Traditional Villages, and explore specific ways to attract social resources to participate in protection according to local conditions.

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3. The Typo-morphological Investigation on the Heritage Identities of the Traditional Villages in Hancheng County

3.1 Theoretical basis of the investigation

- 3.1.1 Layered morphologies and latent structure
- 3.1.2 Morphogenetic field
- 3.1.3 The perspective of the investigation: the relationship between building type and village form
- 3.1.4 Epistemological foundation: the mechanism of the village form
- 3.1.5 Research path of the village morphological investigation

3.2 The case-study in rural landscape in Hancheng County

- 3.2.1 Reading the landscape pattern and landscape changes of Hancheng villages in historical maps
- 3.2.2 Relationships and connections between Villages
- 3.2.3 The decline of rural landscape in the process of urbanization
- 3.2.4 Introduction of Zhangdaicun Village

3.3 Morphological Investigation of the spatial form: Zhangdaicun Village's case study

- 3.3.1 I-Analysis of morphological characteristics: relevance of natural landmarks
- 3.3.2 II- Analysis of morphological characteristics : detect geomorphic units formed by the surrounding environment
- 3.3.3 III- Analysis of morphological characteristics : the form of the village's plan
- 3.3.4 IV- Analysis of morphological characteristics: reading of recessive forms, the law of formation of courtyards and groups

3.4 Analysis of the formation mechanism of morphogenetic field formation and change

- 3.4.1 Settlement morphology under the view of macro-history
- 3.4.2 Five types of human interventions that affect settlement morphology

"Mr. Zhang, do you have any photos of Jiwangshan Mountain and Gushan Mountain taken from Hancheng?"

"No, Because of the poor air quality, Dagushan and Xiaogushan (Jiwangshan mountain) can't see clearly. It's just a good memory of my childhood.

When I was a child, I often played by the bank of the Yellow River. My father often said that when he was a child, he could see big and small solitary mountains very clearly."

—One day in May 2021, I had a dialogue with Zhang Yanjie, a villager of Zhouyuan village in Hancheng.

3.1 Theoretical basis of the investigation

3.1.1 Layered morphologies and latent structure

As mention before in chapter 2 the complex issues related to Traditional Villages raise the need to re-address typomorphological studies to the study of urban and rural forms as "a whole architecture". Architects conceive and project the world in terms of form which in itself is a carrier of meaning and layering of culture.

This survey attaches great importance to the connection between morphology and architecture, which is the biggest difference from most previous studies on urban morphology. Most of past morphological study have no link with architecture like the Conzenians who are basically geographers or even the muratorian which list diachronic development as a process but without interpretation of what is architecturally significant and derived projects from this process while project needs interpretation and a creative act. So the problem is how to deal with contexts which overlaps different historic orders and structures and make a sense of a unity which is unlinear and complex.

As mentioned before, Pezzetti's research on Chinese historical villages and towns combines the morphological characteristics of the territory with the meaning of the place, integrating urban research to topology, the decoding of morphological typology to the stratigraphy of Chinese historical villages and towns. Her research has revealed on the unique historical sub-structure and stratification of historical

villages and towns, and discusses the relationship between design, history and tradition⁰¹. In the study of the ancient town of Fenghuang (Shaanxi), Pezzetti's methodology reference is derived from the research traditions of urban studies and urban architecture developed from Milan and Venice.

"Layered Morphologies" is another interdisciplinary conceptual tool proposed by Pezzetti to investigate the coevolutionary nature of buildings and settlements and as a base to define site-specific project design strategies. This morphological concept is related to geographical origins, which evokes the topological dimension of buildings defined by the settlement behavior itself ("tópos", "place" and "lógos"study" from Greece) and its topographical dimension. This concept effectively connects the reading of architectural "facts" in terms of their morphological type's dimensions and the writing of the ground topography to the study of urban and rural forms as "a whole architecture". Architects conceive and project the world in terms of form which in itself is a carrier of meaning and layering of culture.

At the same time, this conceptual tool defines architectural heritage as "historicised architecture" and landscape as "a structure of structures". As Pezzetti pointed out, in China, latency, disappearance and uncertainty often open the way for demolition, replacement and simulacrum reconstruction, while the diachronic and synchronic stratigraphic readings and interpretative mapping remove the alibis of the lack of layering in China since they have been proven effective also in China.

Another issue demonstrated by Pezzetti is unity formed by farmland structure which in Fenghuang study resulted in triple relationship between the type, the morphology and agrarian structure. This redefined totally the object of construction and enhancement.

She emphasized that the importance of the farmland pattern should not be ignored in the study of settlement morphology, which is no less important than the architectural heritage in the village. Farmland and architectural heritage were produced and co-evolved in a mutual relationship, thus condensing the meaning of historical settlement forms.

Pezzetti also proposed another concept corresponding to layered morphologies, that is the "latent structure". The existence of latent structures can even appear as an explanatory element, used to explain the apparently incomprehensible filling and trace expansion process afterwards. Which, although typologically differentiated, nonetheless followed in most time previous tracing and buildings, following the latent structure. Pezzetti demonstrated that there is a typo-morphological solidarity between the residential courtyard (co-yard) and the clear topographic structure in traditional Chinese settlements, which allows us to interpret the entire settlement as a high-quality "organism-figure". This concept makes the difference for architects and provides an formal structure capable to absorb diachronic constructions and future writings in a complex but organic unity made of parts. She believes that this organism is real and can be rewritten (she has repeatedly emphasized the importance of the concept of "palimpsest"), and will develop and benefit from proper "writing" in the future. It can be said that latent structure provides a kind of compositional logic that could guide harmonious evolution. Also, Pezzetti's explanation of the structure of the Fenghuang village gave an ascertainable physical body to Shan Shui and Feng Shui principles, connecting them for

01. Cf. Laura A. Pezzetti, *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rural Landscape*. (Tongji University Press, 2019).

first time to rural form.

Therefore, Pezzetti's contribution became an important methodological reference for this survey. The investigation of this thesis reveals the "semantic units" of the settlement morphology and the "complex morphotypes" that it constitutes. At the same time, this research attempts to discuss the heteronomy of architecture, because it is the key to understanding contradictions and historical conflicts. Therefore, this chapter's investigation of Hancheng's Traditional Villages also explained the roots of the organicity of the settlement morphology in Zhangdaicun Village through the study of ancient laws, Feng Shui traditions, numerology traditions, and genealogy, as well as the relationship between the family unit and the morphological unit in the settlement. These contents of investigation will also become the prerequisites of the Integrated Plan-Project proposed in Chapter 4.

3.1.2 Morphogenetic field

The "**Morphogenetic field**" is a concept about the developmental biology. In the developmental biology of the early twentieth century, a morphogenetic field is a group of cells able to respond to discrete, localized biochemical signals leading to the development of specific morphological structures or organs⁰². The spatial and temporal extents of the embryonic field are dynamic, and within the field is a collection of interacting cells out of which a particular organ is formed⁰³. The object explained by the concept of "morphogenetic field" is not to emphasize the results of organ morphological development, but to explore the specific leading factors that affect the morphological development results, and the role of different "field elements" in the difference in morphological developments.

Drawing on the concept of "**morphologic systems**"⁰⁴ put forward by Vittorio Gregotti in his article *The Grounds of Typology*, integrated with non-material factors, I tried to introduce the concept "morphogenetic field" into the study of rural morphology. I would like to make an analogy between the 'Morphogenetic field' in the biological field and the morphological development environment of rural settlements, and consider the extent to which the tangible and intangible factors (such as climate, topography, resource conditions, economy, culture, history) are reflected in the village morphology and morphological changes from the dual dynamic dimensions of time and space. The "morphogenetic field" of different regions has spawned a specific "prototype field". On the other hand, the prototype field was composed of various "prototypes" under a certain order and in a specific environment.

It should be noted that the "morphogenetic field" in biology breeds different biological organs, while the "morphology field" in the rural environment breeds not only various physical prototypes, but also prototype-based variants, including the organizational relationship between (immaterial) prototypes at the cultural level.

02. Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P (2002). Universal Mechanisms of Animal Development. in: Molecular Biology of the Cell (4th ed.). Garland; Jacobson AG, Sater AK (1 November 1988). "Features of embryonic induction". *Development*. 104 (3): 341–59. PMID 3076860.

03. Gilbert SF, Opitz JM, Raff RA (1996). "Resynthesizing evolutionary and developmental biology". *Dev. Biol.* 173 (2): 357–72. doi:10.1006/dbio.1996.0032.

04. Cf. Gregotti, Vittorio. "I terreni della tipologia." *Casabella* 49 (1985): 4-7.

Another difference is that the results of organs bred from the biological "morphogenetic field" are specific and unambiguous, while the "prototype A" induced by the "morphogenetic A" of the "village A" may affect "prototype B" in "village B" (or it may be reversed that "prototype A" may also be assimilated by "prototype B"), so there is a possibility of uncertainty. This is also the complexity of the village's "morphogenetic field". Therefore, I think it is necessary to study the identification of each element in the "morphogenetic field" in the research case, and to analyze and analyze the degree of interaction between the elements. The qualitative analysis will be used to rank the influence weight of each element in the "morphological field", which will help us to find those decisive elements. (Chapter 3.5)

Based on observations of western towns, Rob Krier proposed "a full register of urban architecture can only assure the external shell. Life then has to take the root of its own accord, fulling it to completion over the course of generations, breathing a kind of soul into the abstract structure. It is only in such a cultural medium that unique towns with a heady variety come into being."⁰⁵ Cultural medium, as an immaterial form, profoundly affects the development and changes of houses and settlements⁰⁶. In the study of the ancient village of Xidi, a world cultural heritage, Chinese scholar Duan Jin proposed that the impact of intangible factors on the shape of the village has deep meaning and can be summarized as a set of parallel elements, namely social relations, cultural concepts, production methods, construction techniques and policy system⁰⁷. However, the shortcomings of previous scholars' research lies in the lack of explanation of how these "parallel elements" affect each other. Therefore, at the end of this chapter, the author attempts to explain these relationships by putting these elements in the traditional context and understanding them through the study of the "morphogenetic field" of the case village.

3.1.3 The perspective of the investigation: the relationship between building type and village form

Let us recall once again the special issue of "The Grounds of Typology" by Casabella on typology in 1985. Gregotti wrote in the magazine's theme article: "The notion of type encourage a different interest towards the cite form the one promoted by modern movement. On one hand the city and its urban issues were studied as a summation of types, with a hierarchy between them, and one the other one tried to re-codify, usually referring back to the neoclassic and eclectic models, the different types of elementary and collective urban assemblages such as the street, the block, the square, not so much as research tools but as diagnosis and starting point for urban design. This is in contrast to be the modern idea of public space as residual and impossible to describe; this is a polemics which clearly addresses both modern vulgar results and various original models of zoning and garden cities. Urban structure is indebted to far richer and more complex morphologic systems, far more capable to "narrate" urban facts than a morphology based on

05. Rob Krier, et al. *Town Space, Contemporary Interpretations in Traditional Urbanism*, Krier&Kohl Architects Ed., Basel, Berlin, Boston: Birkhäuser ,2003,12.

06. Cfr. Amos Rapoport (2000) *Theory, Culture and Housing, Housing, Theory and Society*, 17:4, 145-165, DOI: 10.1080/140360900300108573.

07. Duan Jin et al., *Urban Space 1: Analysis of the space of Xidi ancient village, the World Cultural Heritage*, (Nanjing: Southeast University Press, 2006), 80.

the addition of types intended as recognizable constitutive elements."⁰⁸ Are the above arguments equally applicable to Chinese villages? Villages in northern China are mostly large-scale flat-land villages⁰⁹, showing the distinctive characteristics of "clustered villages"¹⁰ or "nucleated villages"¹¹. Moreover, traditional rural houses are dominated by courtyards, just like traditional cities. These rural settlements usually have a population of hundreds to thousands of people, and their size is equivalent to a micro city. If we consider these Chinese villages as different types of collections, the debate proposed by Gregotti is also truly reflected in the transformation of Chinese rural settlements. There is a sharp contrast between contemporary Traditional Villages and the new villages around them. The public space in the new village is also reduced to a residual, indescribable existence. We should realize that no matter how the technology develops, contrast with an understanding of the context and of its modification through architecture¹² is still one of the main directions of architecture development. Whether in the city or in the countryside, reading and inheriting the context should always be the responsibility of the architect.

In the 1970s, Peter Eisenman had reminded people to focus on syntactics when discussing the relationship between "form-meaning"; that is, the consideration of formal elements or regularities seen as a **potential system** of marks¹³. Eisenman also pointed out that the understanding that what is perceived--the particular configurations in the built environment--is only one aspect of a more complex phenomenon, that there exists in any environment an **underlying structure** which ultimately affects communication.

As reminded by Pezzetti, in Italy, from the issue of environmental pre-existences that gave theoretical dignity to the dialogue between design and history and the focus on the physical dimension of settlements within the unity of architecture and urbanism to the analytical study of the urban fabric in relation to building typologies on the other hand, the basis for urban science and the urban significance of architecture were jointly established and further developed by the following generation¹⁴.

The above points remind us to pay attention to the underlying structure of a rural settlement, and the

08. Vittorio Gregotti, "I terreni della tipologia," *Casabella* 509-501, (1985):4-7.

09. Cfr. Yigang Peng and Lansheng Nie, *Analysis on the Landscape of Traditional Villages and Towns* (Beijing: China Architecture & Building Press, 1992). 彭一刚 聂兰生, *传统村镇聚落景观分析* (北京: 中国建筑工业出版社, 1992).

10. The concept proposed by Japanese scholar Yajima Nikichi (in Japanese: 矢嶋仁吉) in *Settlement Geography*. Compared with scattered villages, houses in the clustered villages are densely arranged. Cfr. Yajima Nikichi, *Settlement Geography*, (Kokon Shoin, 1956),394. 矢嶋仁吉, *集落地理学*, (古今書院, 1956),394.

11. According to Muir Richard 's definition in *The New Reading The Landscape* a nuclear village is also called an clustered settlement. The concept is that most farmhouses in an area of a village are compactly focused on the "focus" near the center of the village " (such as churches, etc.). The focus can be single or multiple. Cfr. Muir, Richard. *The new reading the landscape: fieldwork in landscape history*. University of Exeter Press, 2000.

12. Cfr. Gregotti, Vittorio. "I terreni della tipologia." *Casabella* 509-501 (1985): 4-7.

13. Peter Eisenman, 'Notes on conceptual architecture IIA', *Environmental Design Research*, (1973), 2.

14. Pezzetti L. A. Layered Morphologies and Topographical Structures in Historic Rurban Landscape: Integrating Typo-Morphological, Topographical and Landscape tools with Feng Shui. *Cities as Assemblages, ISUF, XXVI International Seminar on Urban Form*. 2020: 1-11.

process of reading and describing this underlying structure is a "decoding"¹⁵ process. As Pezzetti stated, therefore, "decoding" is not only a tool for us to understand the meaning of formal meaning, but also a tool for guiding future design (re-coding).

Even though Liang Ssu-ch'eng and his colleagues at the SRCA began to pay attention to the types of traditional Chinese architecture in 1940¹⁶, Italian scholars began to pay attention to the types of rural architecture ten years before Liang completed his famous *A Pictorial History of Chinese Architecture*.

In an attempt to support the rationality of modern architecture and to critically prove the historical and logical similarities between the Mediterranean's local traditions and new international trends, Giuseppe Pagano and Guarniero Daniel studied the evolution of contemporary farmhouses from rural to modern forms in the 1930s to describe the characteristics of the farmhouse; and look for the evolutionary route from the local architectural tradition to modern architecture, and try to discover some eternal development law. However, Pagano's rational ideas seem to be very different from those advocated by modernist proponents. For him, the rationality or logic of architecture is not a universal value system and has nothing to do with time and place. Rather, it belongs to the constructive process itself. In extreme cases, reason becomes a synonym for the intelligibility of a process through which a form is derived from the past, loses its previous functional limitations, and is reduced to a simple aesthetic issue¹⁷.

Quatremère de Quincy's theory in the 1800 pointed out that Type has two characteristics, one is the word Type does not represent so much the image of a thing to copy, but the idea of an element that must serve as a rule for the model¹⁸; the other is the Type is always the product of the study of a series of specimens that are never formulated a priori¹⁹. In Pagano's eyes, rural architecture is regarded as a working tool, a result of spontaneous awareness inherited from the cultural habits passed down from generation to generation. Pagano can be considered to be the first to posit a general typological process whose singular stages could be traced back into different geographical traditions. When we observe the historical center of any Italian city, we can easily realize that the types related to cultural attributes are organic, and the city is formed through organic organization. The law of the birth and transformation of cities is not "natural" but the result of precise cultural behavior²⁰.

15. Cfr., Laura A. Pezzetti, *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rurban Landscape*. (Tongji University Press, 2019),84.

16. In 1931, Liang Ssu-ch'eng and his colleagues at the SRCA began a systematic investigation and study of ancient Chinese architecture, and on this basis, they were able to roughly outline the development of ancient Chinese architecture. On the eve of the victory of the Anti-Japanese War in 1944, in Lizhuang, Nanxi, Sichuan, Liang Ssu-ch'eng completed his first manuscript of *A Pictorial History of Chinese Architecture*. Cfr., Liang Ssu-ch'eng, *A Pictorial History of Chinese Architecture: A Study of the Development of Its Structural System and the Evolution of Its Types*, (The MIT Press, 1984).

17. Cfr., Giuseppe Pagano, and Guarniero Daniel, *Architettura rurale italiana*. (Milano: Hoepli, 1936).

18. Cfr., Quatremère De Quincy. *The true, the fictive, and the real: the historical dictionary of architecture of Quatremère de Quincy*. (Papadakis Publisher, 1999).

19. Argan, Giulio Carlo. "On the typology of architecture." *Architectural Design* 33.12 (1963): 564-565.

20. Saverio Muratori, "Vita e storia delle città." *Rassegna critica d'architettura*, no. 11-12 (1950): 3-52.

In 1959, Giuseppe Samonà's important book *L'urbanistica e l'avvenire della città* (in English: *Urban planning and the future of the city*)" was published²¹. Later, on an article that on architectural design theory, Aldo Rossi commented on Samonà work: those works that for the first time were proposing something different: opposing a static condition, which provide a new foundation for people's research on cities and architecture. This foundation is the first time that the city is viewed as an evolving whole. The city has become a fact, a fact so important that people have to continue to accept it: even, especially from the perspective of architecture.²²

In the 1960s, Muratori published the results of his and his assistants' studies on the cities of Venice²³ and Rome²⁴. Their studies explored the continuity of the process of the historical city's transition from traditional to modern.

Architecture is an urban phenomenon. In turn, urban research cannot be separated from the architecture. The forms expressed in cartography constituted different urban tissue at different moments in its history, and from time to time, new urban nodes and new routes have played a particularly important role, thereby changing the overall shape and the law of formation²⁵. As Carlo Aymonino stated The fundamental character of the architecture we are looking at is its urban quality, its ability to dialogue with the context, its ability to "relate from time to time to (to other existing architectures, to a specific landscape, to a infrastructure system, etc.), to be a complete part of an ongoing process"²⁶.

However, in China today, when we study the historical cities as represented by Xi'an, we will find that the process of transition from traditional to modern is no longer continuous. With the exception of some monuments, most areas in the ancient city have been rewritten in an eradicate-eliminate way in the

21. Giuseppe Samonà, *L'urbanistica e l'avvenire della città negli stati europei*, Laterza, Roma-Bari, 1959.

22. Aldo Rossi, *Architettura per i musei*, in AA.VV., *Teoria della progettazione architettonica*, Edizioni Dedalo, Bari 1968, p. 135.

23. Saverio Muratori, Paolo Maretto, *Studi per una Operante Storia Urbana di Venezia*, Diretti da Saverio Muratori II: *L'edilizia Gotica Veneziana con Saggio Conclusivo di Saverio Muratori: Il Problema Critico dell'età Gotica*, (Roma: Libreria dello Stato, 1960).

24. Saverio Muratori, Renato Bollati, Sergio Bollati, Guido Marinucci, *Centro Studi di Storia Urbanistica: Studi per un operante storia urbana di Roma*, (Roma: Consiglio nazionale delle ricerche, 1963).

25. Paolo Carlotti, "Elementi per una esegesi della morfologia urbana." in Carlotti, Paolo, Alessandro Camiz, and Carmen Díez. "Urban Morphology and Design." *Joint Research Perspectives and Methodological Comparison: Italy, Spain*. U+ D Edition, Roma (2017), 40-56.

26. Carlo Aymonino, *Il significato delle città* (Marsilio: 2000),137.

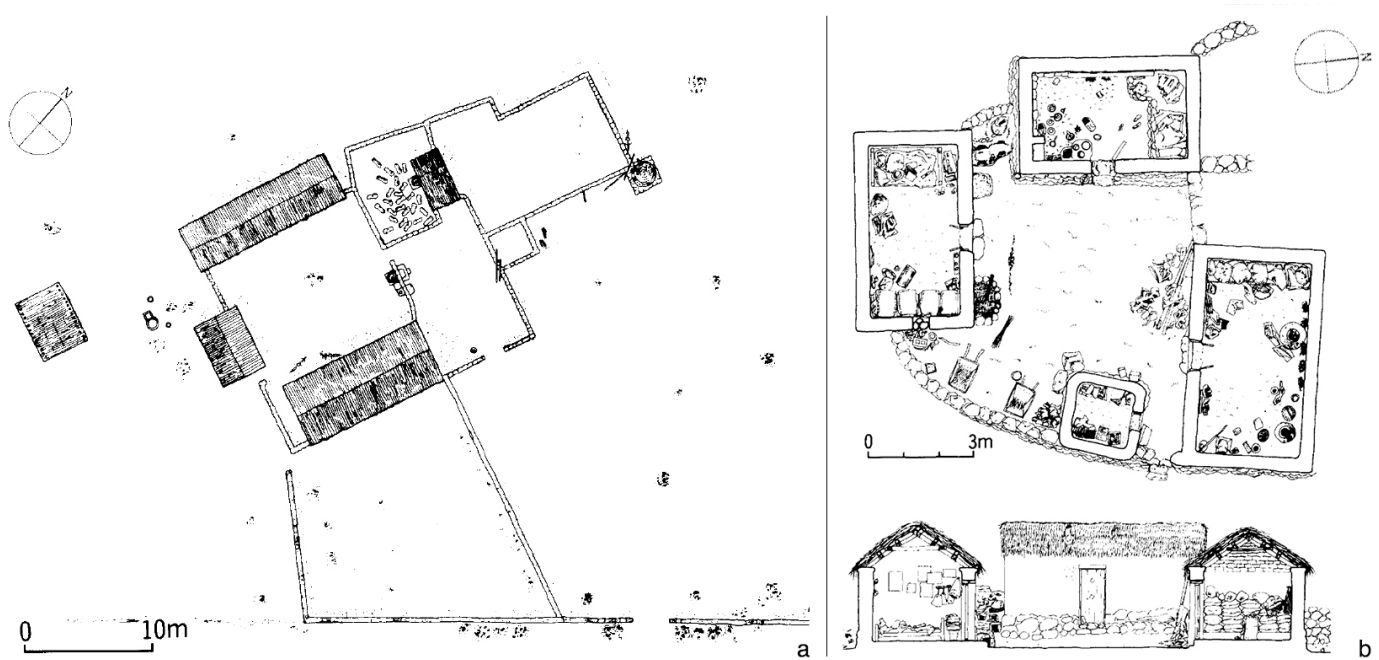


Figure 3-1 Akira Fujii 's study of Indian people 's dwellings in South America, a. La Huachaca in Bolivia; b. Condorire in Bolivia.

contemporary era²⁷. As Wang Shu said, he no longer holds hope for Chinese cities. Even so, fortunately we still have the opportunity to try to find the possibility of the continuity of the transition from tradition to modernity in the surviving Traditional Villages in China.

Gustavo Giovannoni pointed out early that form is a transitional stage in the never-ending process of development, and the form itself retains and continuously shows its inner traces. When Giovannoni proposed his concept of "organicity", he pointed out two issues. One is that we can read the historical environment of the historical center through contextualism, and the other is that through the strategy of complementarity between new and old, "organicity" has an opportunity for organic continuity (the new

27. For an explanation of "rewriting", please refer to Gustavo Giovannoni's paper *Il Restauro dei Monumenti* (1931), "Quasi tutti i monumenti d'Italia ci presentano, nella loro lunga vita, esempi delle due tendenze, o della sovrapposizione spregiudicata, o rispetto, che quasi può dirsi mimetismo. E questi procedimenti di continuazione ci interessano per due ragioni: perché ci mostrano la complessa formazione, fatta di varie fasi, come in un palinsesto in cui gli strati si sovrappongono, e con questo individuano i quesiti del restauro; e perché ci espongono sperimentalmente i precedenti del restauro moderno." The "palinsesto" here corresponds to the "palimpsest" in English and is used to explain the phenomenon and process of stacking on top of one another. Cfr. Giovannoni, Gustavo. *Il restauro dei monumenti (con 19 Figure nel Testo)*. Roma: Cremonese, 1945. <https://conservacion.inah.gob.mx/normativa/wp-content/uploads/Documento3011.pdf>

expansions)²⁸. This also demonstrates that the space of traditional organic settlements is readable and rewritable²⁹.

Perhaps the construction crisis in Europe has begun since the French Enlightenment³⁰, but the crisis of traditional Chinese architecture appeared in most parts of China only in the past 150 years. In my opinion, the emergence of the crisis of Chinese architecture is mainly accompanied by four important time nodes: The first is the mid-19th century. After 1845, Britain, France, Italy and other Western countries successively established concessions in Shanghai, Tianjin and other cities in China. After the establishment of the concession, the construction of the concession played a role in promoting and demonstrating the construction of coastal cities, and the influence of Western culture on all aspects of China's opening cities continued. For example, the influx of Western culture and the construction of concession buildings have broken Tianjin's original urban style, which is composed of traditional buildings in northern China³¹. The second is that since the founding of the People's Republic of China in the 1950s, China has carried out large-scale economic construction and systematically learned Soviet technologies, and has introduced corresponding norms and standards. At that time, China's civil engineering specialty teaching and engineering construction standards were fully borrowed from the Soviet technical system³². The architectural and urban planning laws imported from the Soviet Union have brought about subversive changes to China's urban form; Third, the 1960s Cultural Revolution trampled on and destroyed traditional culture. Whether in rural or urban areas, the result was not only the destruction of traditional culture at the material level. This negative impact also made many Chinese people hold a negative attitude towards traditional culture. Fourth, the reform and opening-up policy since the 1980s, with a policy orientation centered on economic construction, has further induced more traditional buildings in cities and villages to be demolished. When you walk into cities and most villages in China, you will see the results of these four crises. This process is irreversible and continues.

The aforementioned Italian scholars' views strongly support the research perspective of contextualism and organic cities. Therefore, re-recognizing the architectural crisis and sorting out the relationship between the village form and the building type is an important means of protecting Traditional Village settlements.

In recent years, with the introduction of relevant theories and the holding of the International Seminar on Urban Form (ISUF) in China, more Chinese scholars have recognized the potential of morphological

28. Gustavo Giovannoni, "Vecchie città ed edilizia nuova", *Nuova Antologia* XLVIII 995 (1931): 449-472.

29. Laura A. Pezzetti, "Overwriting the Urban Palimpsest: A Regenerative Structure for Historic Public Spaces and Buildings," *New Architecture*, 02(2019): 5-14.

30. Carlo Aymonino, *Il significato delle città* (Marsilio: 2000), 66.

31. Lin, Qing, Masayuki Ikezoe, and Terukazu Takeshita. "The Trend of Reutilized Buildings in the Historical Concession Area of Tianjin China- A study on the diversity of architectural space in the historical concession area of Tianjin China Part 1." *Journal of Architecture and Planning (Transactions of AII)* 605 (2006): 15-22.

32. Youlin Xu, and Yaona Gong, *Basic Knowledge of Standards and Norms: Standard System Reform and Comprehension and Application of Mandatory Provisions*, (Beijing: Tsinghua University Press, 2015). 徐有邻, 巩耀娜, *标准规范基本常识: 标准体制改革及强制性条文的理解与应用*, (北京: 清华大学出版社, 2015).

typology methods in interpreting and analyzing traditional Chinese urban morphology and architectural types, and Committed to case studies and practice. Although the main theories ? ? are devised by Conzen school which is little use for architects. At the same time, Western scholars pioneered the interpretation of the morphological typology method in the built environment of Chinese historical villages³³.

3.1.4 Epistemological foundation: the mechanism of the village form

Based on different goal orientations, the study of urban morphology can be divided into four types: Cause Mechanism, Cognition and Evaluation, Presentation and Interpretation, and Ideal Criteria³⁴. "Cause mechanism" and "cognition and evaluation" are a set of research ideas that echo each other. They both try to explore the relationship between the morphology of the block and other related factors, and carry out the discussion through objective investigation and statistical argumentation. The goal of "Presentation and Interpretation" is to analyze and interpret the configuration of the block form³⁵. I believe that the form itself has its own internal logic and laws to follow. By describing the geometric information of the block form and developing the corresponding presentation technology and interpretation strategy, we can classification and interpretation of various forms.

The starting point of Traditional Village morphology research is the study of the mechanism of its morphology, that is, the study of the cause mechanism based on the human geography background through the specific appearance of the village morphology, focusing on the influence and shaping of political, economic and cultural factors on the village morphology, and study its causes and the mechanism behind it. This starting point points to the necessity of historical research.

Muratori proposed the concepts of towns as living organisms and as collective works of art, and the idea of planning new buildings in continuity with the building culture of the place³⁶. The term "territory" represents a space-time organism, a planned structure, and the result of a series of coherent periodic developments. Based on the concept of "operative history", Muratori proposed the necessity of historical research on territorial issues to ensure a comprehensive and rational understanding of reality. As Nicola Marzot put forward, Muratori believes that the nature as a "substratum" and the culture as a "phenomenon", his criticism of modernity was based on the precise definition of nature, and revealed a new anthropological method using "territory"³⁷. In fact, within the "territory", all historical events are logical and balanced

33. For example, cooperated with Xi'an University of Architecture and Technology, Professor Laura A. Pezzetti of Politecnico di Milano and her team have done research on the ancient town of Fenghuang in Shaanxi, China. Cfr., Laura A. Pezzetti, *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rurban Landscape*. (Tongji University Press, 2019).

34. Dongqing Han, "Designing Cities_From Formal Understanding to Formal Design", *The Architect* 164, 4(2013): 60-65.

35. Dongqing Han et al., "Overview of researches on urban block form in the west," *urbanism and architecture*, no. 8 (2016):15-20.

36. Cataldi, Giancarlo, Gian Luigi Maffei, and Paolo Vaccaro. "Saverio Muratori and the Italian school of planning typology." *Urban morphology* 6.1 (2002): 3-14.

37. Nicola Marzot, "Studies for an anthropology of the territory. New achievements from Saverio Muratori's archive." *City as Organism. New visions for urban life*. Vol. 1. U+ D edition, 1(2016):43-53.

in a "quadro di unione". "All historical events are part of the system, whether it is beautiful or not"³⁸. Generally speaking, Territory has undergone the following changes: from Territory to materials to houses, from villages to towns, to Territory. This sequence is reflected in both time and space, and is suitable for All types of culture. Therefore, Territory is the largest number of organisms produced by humans. It exists before other organisms, and its production and maintenance are the prerequisites for other organisms³⁹. Muratori pointed out for us that the formation of traditional settlements has the dual characteristics of regularity and organicity.

From Rudofsky's *Architecture Without Architects*, it shows us the different forms of residential houses and settlements in different cultural backgrounds and natural environments around the world⁴⁰. In the book *House Form and Culture*, Amos Rapoport has demonstrated the error of "material determinism" and pointed out that building a house is a cultural phenomenon, its form and organization are greatly influenced by the cultural milieu to which it belongs⁴¹. Akira Fujii's research on Indian people's dwellings in South America⁴² shows that in the same region, different types of housing may be formed due to different cultural origins. In terms of the courtyard form and the direction of the building, the Indian people's residence in Bolivia is very similar to the traditional Chinese courtyard dwellings (fig.3-1). With the help of the north arrow in the plan, we can see the clear orientation of these houses. Coincidentally, the skeleton of a teenage girl was found in 2007 in the underwater caves called sistema Sac Actun in Mexico's eastern Yucatán Peninsula. The skeleton was found to be 13,000 years old. The DNA indicates she was from a lineage derived from Asian origins and also represented in the DNA of the modern native population⁴³. If it is not a coincidence, is there a deep cultural genetic reason for the similarity phenomenon in architecture?

Based on the theoretical core of "space-society relationship" constructed by the neo-Marxist school, space production is understood as the production of space and the production of social relations and the interaction between the two. Lefebvre dedicated a great deal of his philosophical writings to understanding the importance of (the production of) space in what he called the reproduction of social relations of production. This idea is the central argument in the book *The Survival of Capitalism*, written as a sort of prelude to *La Production de l'espace*⁴⁴. Space is not only a vessel and medium for material production, but also a container for social relations, realizing unity in the three major fields of material, spirit and society. The organization and meaning of space are the product of social change, social transformation and social experience. So in the process of organic growth of a specific settlement, how do cultural factors play an important role in influencing the shape of a certain settlement? The answer to this question must be

38. S. Muratori, *Autocoscienza e realtà nella storia delle ecumeni civili, lezioni 1971-72*, 1976. 42.

39. Ibid.

40. Cfr., Rudofsky, Bernard. *Architecture without architects: a short introduction to non-pedigreed architecture* (UNM Press, 1987).

41. Amos Rapoport, *House Form and Culture* (Prentice-Hall Foundations of Cultural Geography Series, 1969), 46.

42. Akira Fujii, "A study on the structure of villages and the form of housing of south American Indians," *Housing Research Foundation Annual Report*, Volume 21 (1995): 429-446. DOI https://doi.org/10.20803/jusokennen.21.0_429.

43. Nemecek, Sasha. "Who were the first Americans?." *Scientific American* 283.3 (2000): 80-87.

44. Lefebvre, Henri. "La production de l'espace." *L'Homme et la société* 31.1 (1974): 15-32.

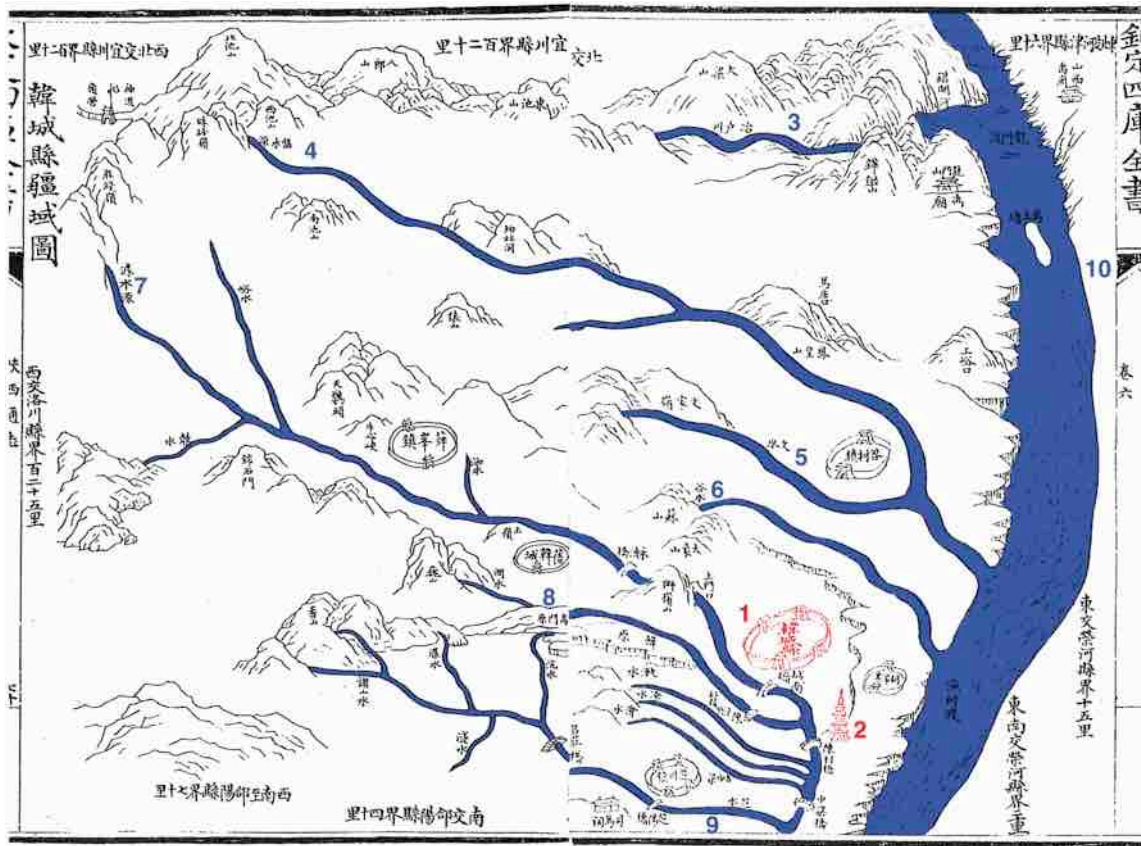


Figure 3-2 Hancheng County Map (1735). 1-Hancheng County; 2-Pagoda; 3-Cuo Kai River; 4-Pan River; 5-Wen River; 6-Gu River; 7-Ju River; 8-Jian River; 9-Zhi River. Source: Yuyi Liu et al., *Shaan Xi Tong Zhi*, (1735, repr., Xi'an: Xi'an Sanqin Publishing House, 2014), 70.

obtained through a specific analysis of the case.

3.1.5 Research path of the village morphological investigation

This chapter includes the following three aspects of Traditional Village morphological investigation: 1. Analyze the presentation and expression of Hancheng's landscapes in ancient local chronicles (gazetteers) and maps, in order to understand the landscape characteristics of the area in the ancients' thoughts. That is to study the semantic expression of the landscape in the historical period (traditional Chinese society) from abstract, even symbolic records; 2. Take Zhangdaicun Village as an example to study its "morphogenetic field" by integrating material and non-material contents; 3. Based on the ontology of positivism, this study regards the formation of Traditional Villages as the overall process of human behavior. This process is seen as a human response to external and external environmental pressures. I will explain these reactions as a series of (five kinds) of human intervention, which will ultimately act on the growth results of the village morphology.

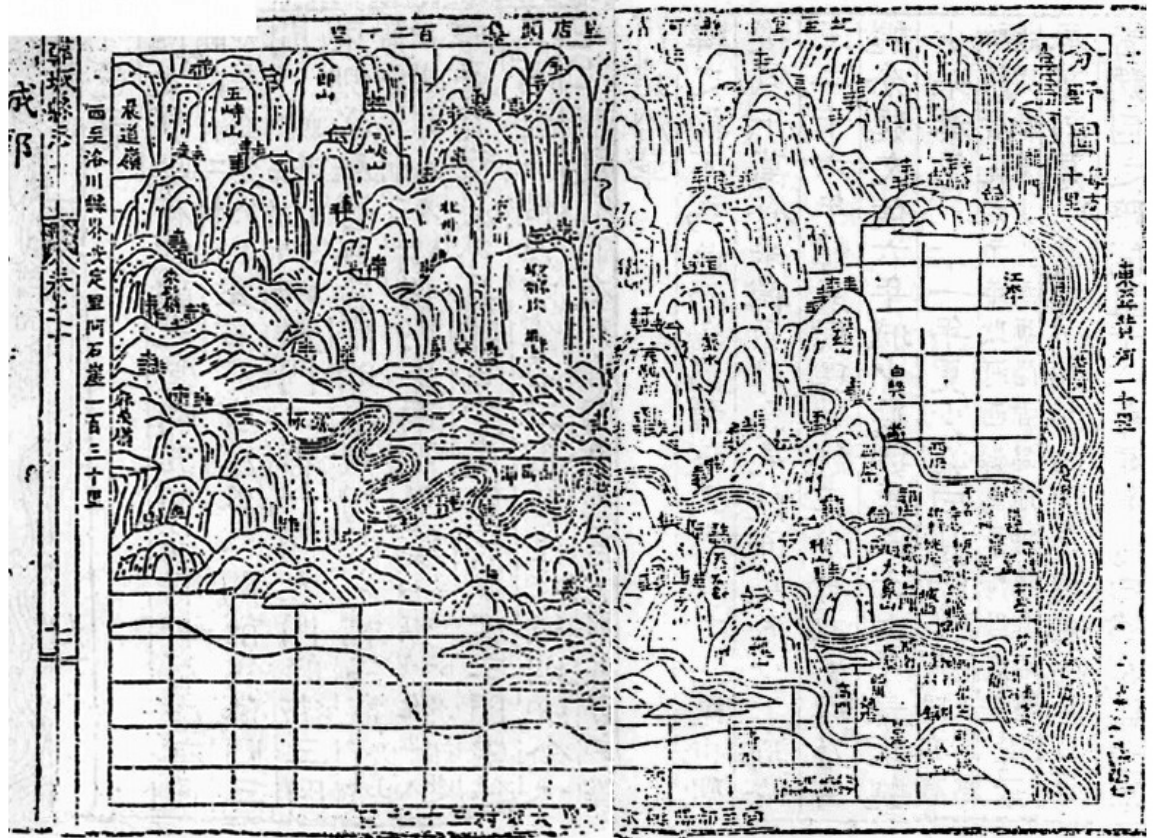


Figure 3-3 Hancheng County Map (1607). Source: Shiwei Zhang, Jin Su, *Han Cheng Xian Zhi*, (1607, repr., Beijing: National Library of China Publishing House, 2017).

3.2 The case-study in rural landscape in Hancheng County

3.2.1 Reading the landscape pattern and landscape changes of Hancheng villages in historical maps

3.2.1.1 County Map Analysis: Decline of Forest Landscape

In the first chapter I have introduced different versions of Hancheng's local gazetteers. Among these gazetteers, the relatively old Hancheng county maps were completed in 1607, 1735, 1784, 1899, 1906 and 1924. From Fig. 3-2, we can see the landscape of Hancheng County in the middle of the Qing Dynasty (1636-1912). The mountains to the west are the source of water in this area. From the source, seven



Figure 3-4 Figure 3 4. Hancheng County Map (1784). Source: Yingkui Fu, Dian Qian, Han Cheng Xian Zhi, (1784, repr., Nanjing: Jiangsu Phoenix House, 2007).

main rivers flow into the Yellow River from west to east. The soil in the relatively flat area in the east is collapsible loess. In addition to the historical changes in the position of the river, the area where the river flows through forms gullies. The edge of a gully is usually a cliff with a height of tens of meters.

In the narrow and long area between the mountain and the Yellow River, the seemingly flat land was cut into different areas by ravines, which also caused historical inconveniences in transportation. In this picture, we can extract the basic landscape features of Hancheng County in the 18th century: The mountainous region in the west, the natural terrain formed by valleys and ravines formed by the Yellow River and its tributaries in the east, and the human landscape composed of cities, villages, cultivated land, Chinese pagodas, and temples.

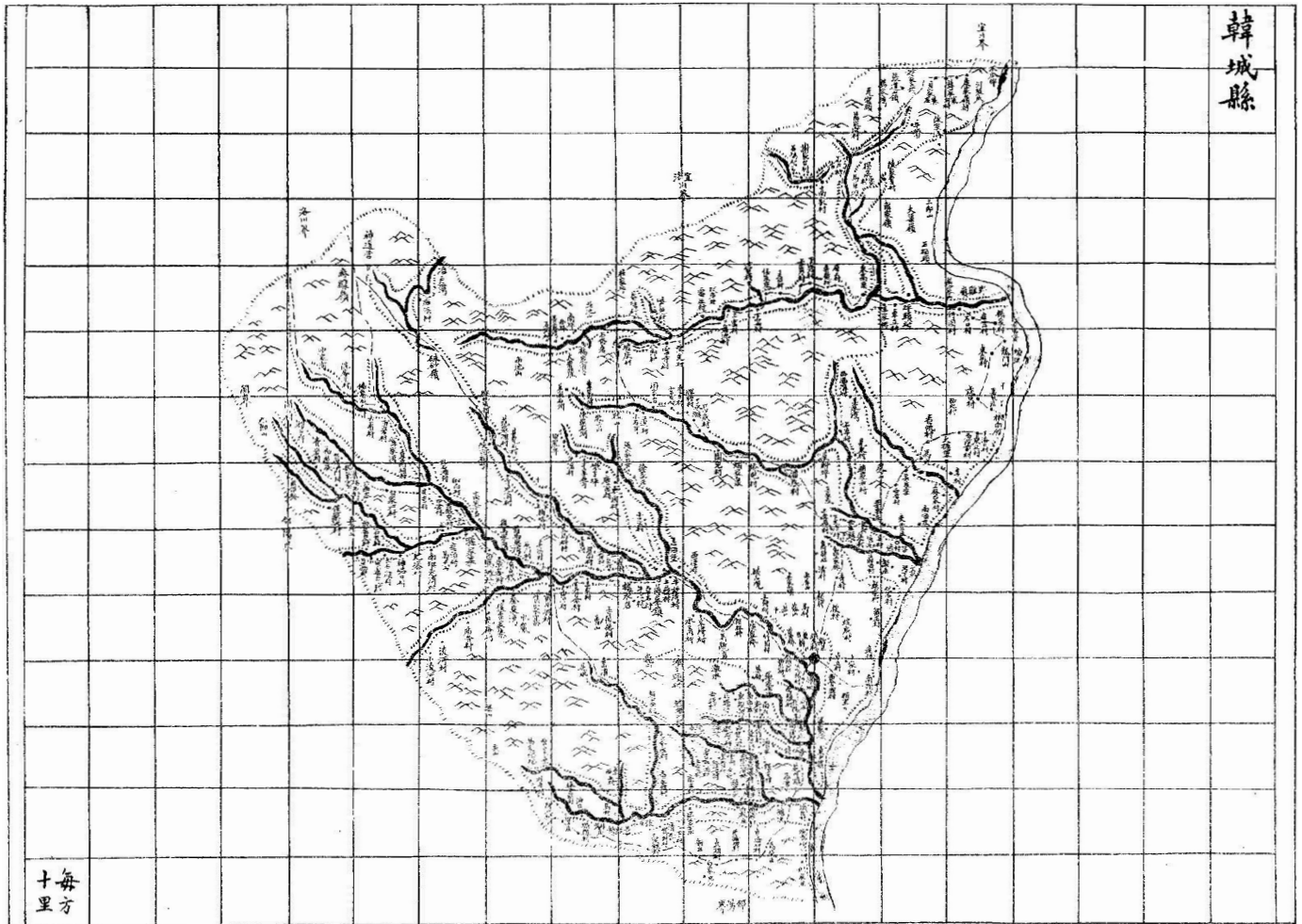
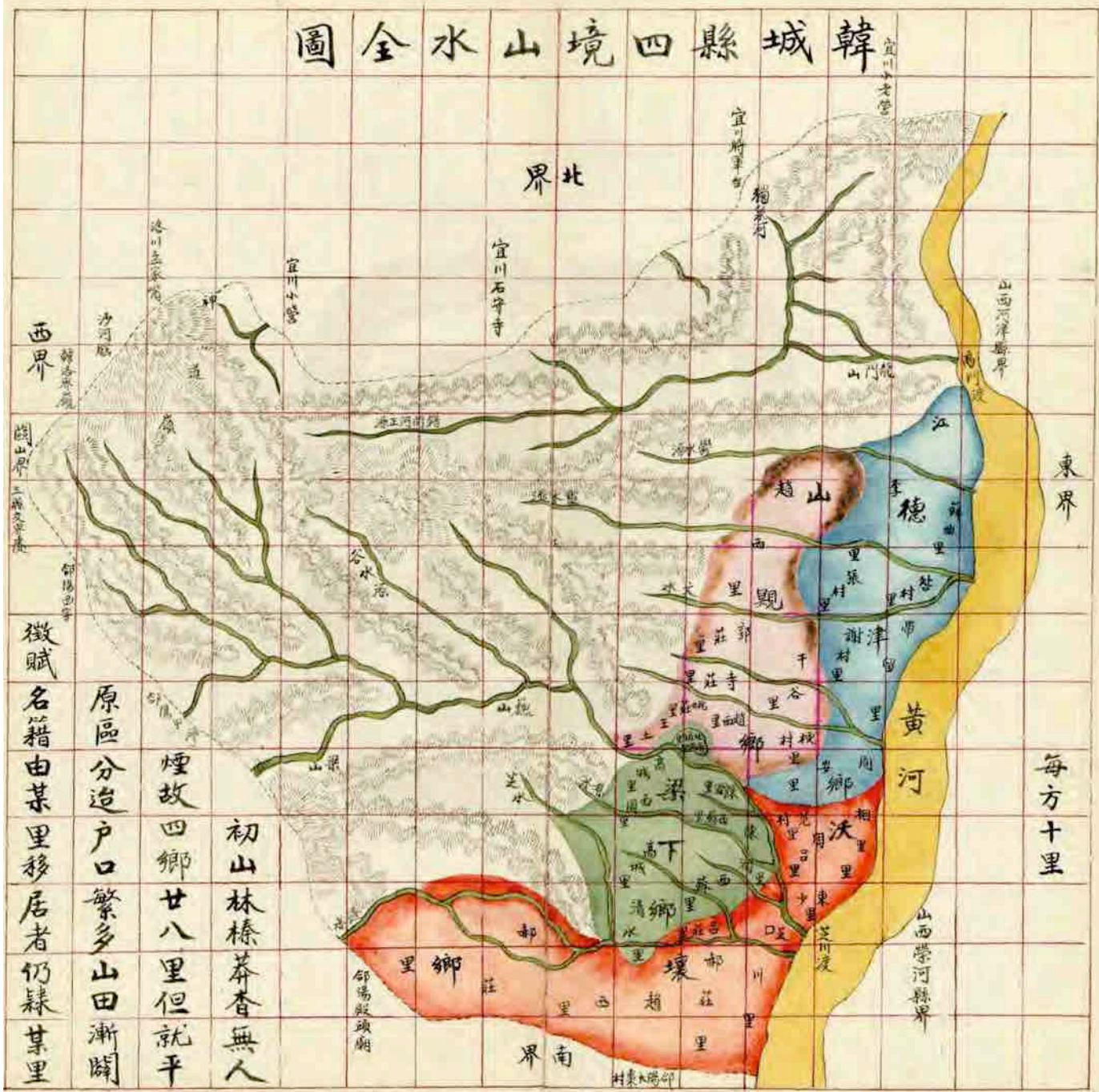


Figure 3-5 Hancheng County Map (1899). Source: Wei, Guangtao. Shaan Xi Quan Sheng Yu Di Tu. 1899.

The maps of 1607 (fig. 3-4), 1735 and 1784 (fig. 3-5) have the characteristics of traditional Chinese landscape painting. These pictures vividly outline the mountains and rivers, and mark the names of cities, villages, mountains and rivers with text. From the comparison between the map of 1607 and the map of 1784, we can get the following information: 1) From the beginning of the seventeenth century to the end of the eighteenth century, the villages of Hancheng are mainly distributed in the eastern region, and there are no villages in the western mountainous regions; most of the villages are located in the area south of the Pan River and north of the Zhi River; 2) In the map of 1607, most of the mountains in the western region have the symbol of trees (a single tree, or three or two trees as clusters). In the map of 1784, except for the

韓城四縣山境水全圖



徵賦名籍由某里移居者仍隸某里

原區分造戶口繁多山田漸闢

煙故四鄉廿八里但就平

初山林榛莽杳無人

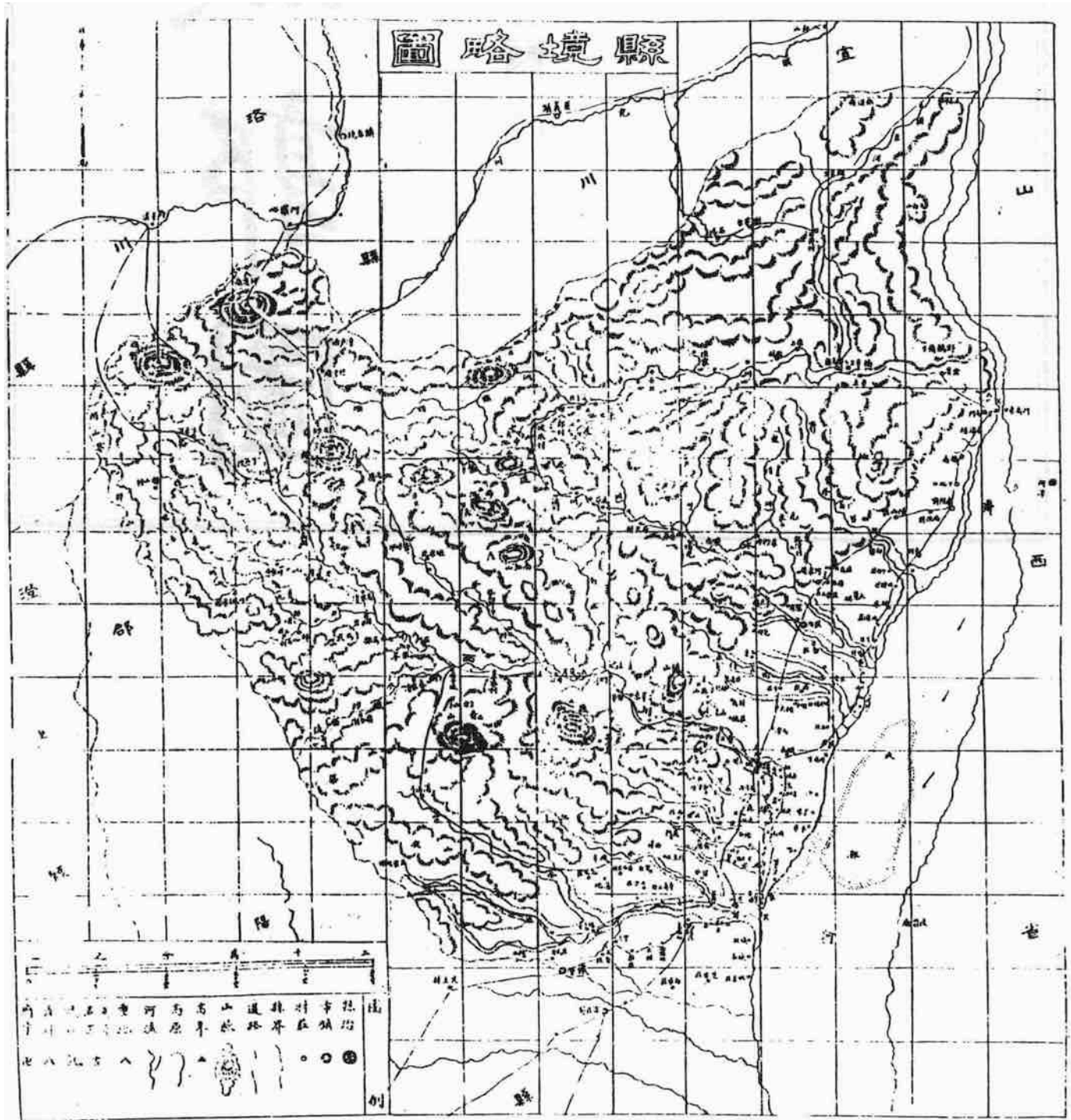
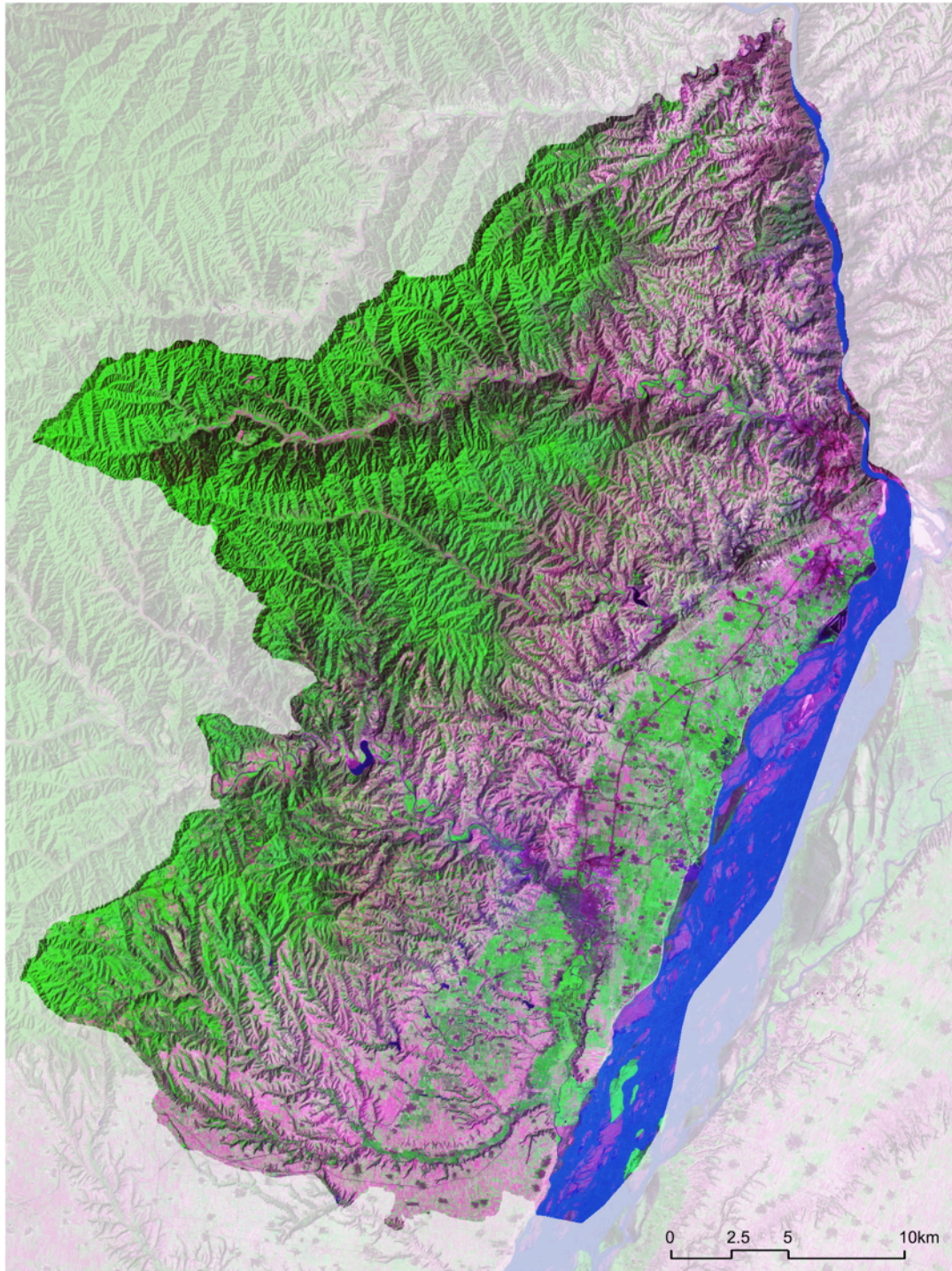


Figure 3-6 Left: Mountains and rivers map of Hancheng County Zhang (1906). Source: Zhang Ruiji, *Hancheng County Local Records*, Scanned in Hancheng Archives. Right: Hancheng County Map (1924). Source: Zhongzhao Cheng et al., *Han Cheng Xian Xu Zhi*, (1924, repr., Nanjing: Jiangsu Phoenix House, 2007).



Legend

- vegetation
- soil
- built up area
- water



Figure 3-7 Hancheng Hyperspectral Satellite Imagery (2002). Source: USGS (United States Geological Survey).

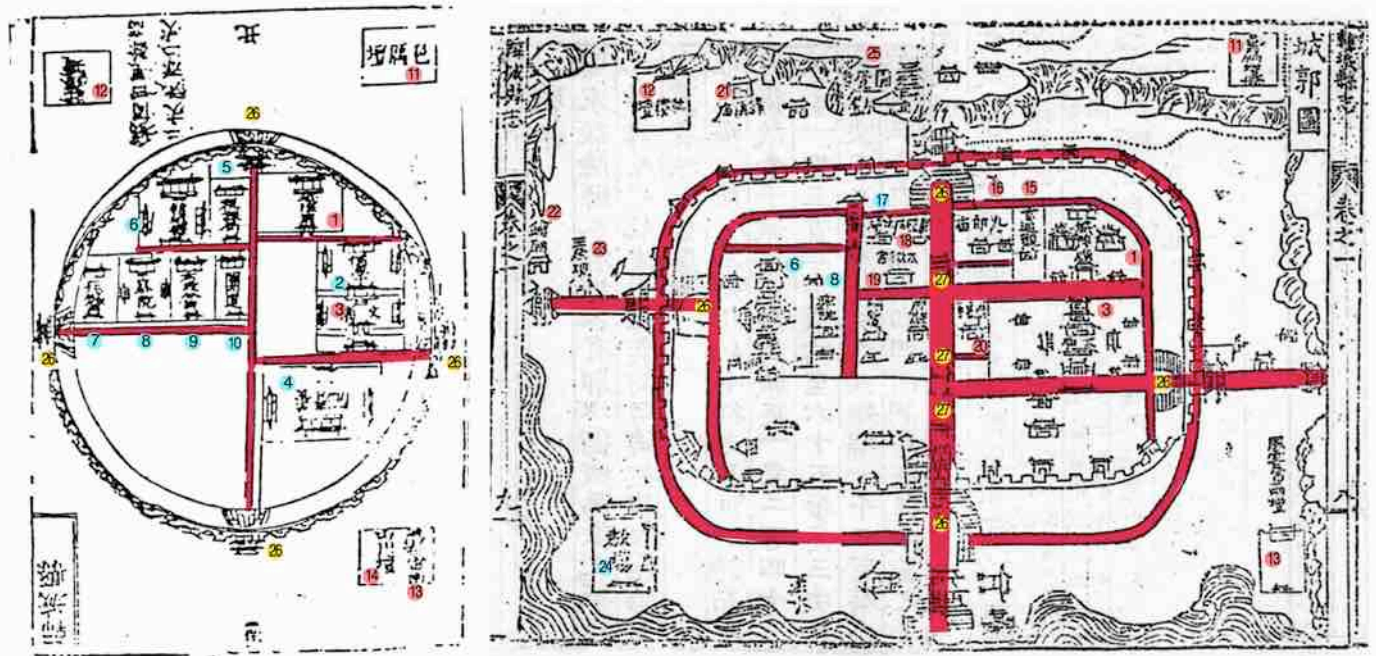


Figure 3-8 City map of Hancheng (1542, 1607). 1-Town god's temple 城隍庙; 2-Confucianism School 儒学; 3-Confucious' temple 文庙; 4-Asylum 养济院; 5-Tax bureau 税课司; 6-Hancheng county government 韩城县; 7-Police station 在城舖; 8-Censorate 察院; 9-Bu Zheng Fen Si 布政分司; 10. Guan Nei Dao 关内道; 11-Altar of ghost 邑厉坛; 12. Altar of Land and Grain 社稷坛; 13-Altar of wind, cloud, thunder, rain 风云雷雨坛; 14. Altar of mountain and river 山川坛; 15-Xuan Tong Temple 玄通观; 16-Jiu Lang Temple 九郎庙; 17-She Xue 社学; 18-Temple of Guan Yu 关帝庙; 19- Temple of Supreme Palace enclosure 太微宫; 20-Qing Yang Temple 庆养寺; 21-Temple of Han Xin 韩侯庙; 22-Ba La Temple 八蜡庙; 23-Yu Xu Temple 玉虚观; 24-Drill ground 校场; 25-Yuan Jue Temple 圆觉寺; 26-City gate 城门; 27-Memorial gate 牌坊. (Religious or sacrifice places are marked in red, and government functions or schools are marked in blue) Source: The author elaborated based on Tingrui Zhao, Li Ma, Nan Lyu, Shaan Xi Tong Zhi, (1542, repr., Beijing: National Library of China Publishing House, 2017); Shiwei Zhang, Jin Su, Han Cheng Xian Zhi, (1607, repr., Beijing: National Library of China Publishing House, 2017).

pictographic symbols of small forest trees on the west bank of the Yellow River, there are no pictograms of trees in other mountains.

Since the map of 1607 and the map of 1784 have an obvious inheritance relationship in production, the lack of forest symbols in the map of 1784 should not be the reason for the difference in production methods. If the above speculation is true, it shows that the main landscape of the mountainous area in Hancheng was the forest landscape dominated by trees in the early seventeenth century to the early eighteenth century, and the forest landscape in the mountainous area has completely changed at the end of the eighteenth century, that is, the forest landscape has basically disappeared. Therefore, we can infer that the eighteenth century was a time of dramatic changes in the cultural landscape of Hancheng County.

Regarding this argument, the written records in some county gazetteers can be corroborated. The Hancheng County Chronicle published in 1703 contains verse describing the landscape environment: "On the south side is the north foot of Liangshan Mountain. Thousands of rocks are competing for the show. You can see

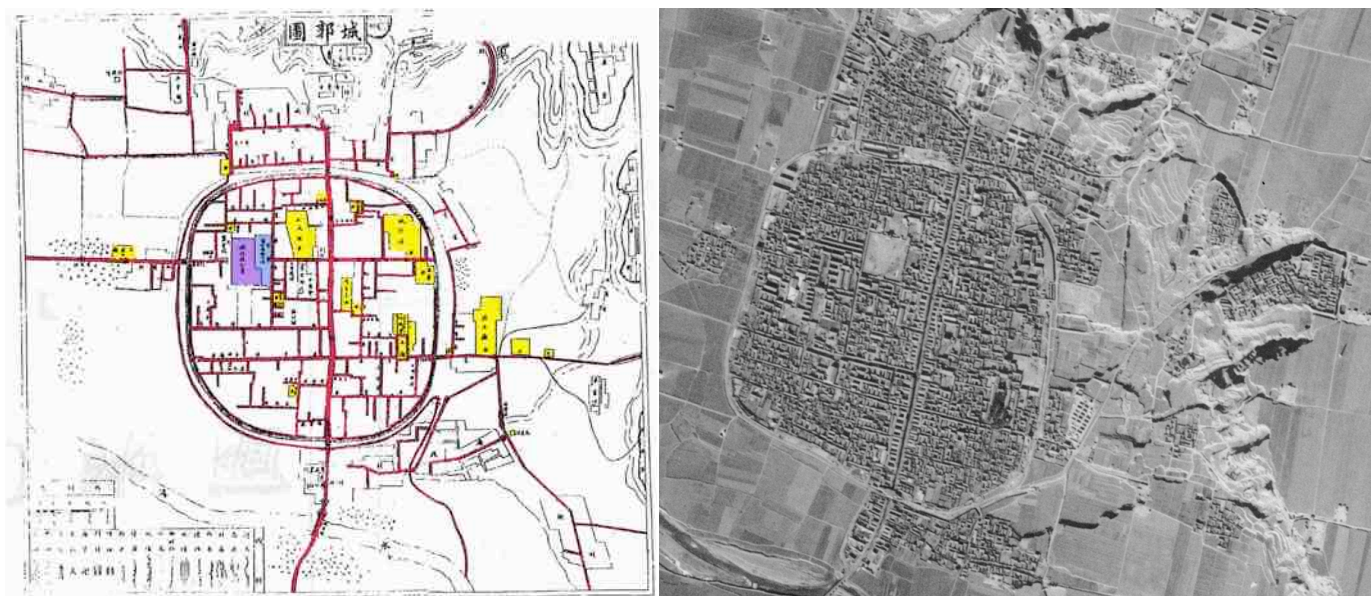


Figure 3-9 Left: Hancheng Ancient City Map (1924). Places of religion and worship are marked in yellow; schools are marked in blue; and government is marked in purple. Source: The author elaborated based on Zhongzhao Cheng et al., *Han Cheng Xian Xu Zhi*, (1924, repr., Nanjing: Jiangsu Phoenix House, 2007). Right: Hancheng County Satellite Map (1967). Source: USGS (United States Geological Survey), Base map Declass 1 (1996), DS1102-2135DA120 © earthexplorer.usgs.gov.

the lush scenery when you climb high."⁴⁵ In 1924, the county gazetteer recorded a poet's description of Zhuyuan (Zhuyuan means "bamboo garden" in Chinese) village in the valley of Wuhe River, 15 kilometers west of Hancheng county town, "There is no bamboo in the mountain. Why is it named after bamboo? There are barren mountains and no flowers in the distance and near."⁴⁶ To the north of Zhuyuan village is Hengshan Mountain, to the northeast is Sushan mountain, to the East is Xiangshan Mountain, and to the southeast is Weishan mountain. These mountains were covered with forests in the 18th century. At this time, there were not only no trees, but also no flowers and plants. Each mountain presented a barren mountain landscape.

According to the local gazetteer in 1607, Hancheng County had about 2640 households at that time and about 15,840 Dingkou (men aged 16-60), and the total population was estimated to be less than 40,000. By 1784, the number of households in Hancheng had increased to 24,867, and the population had increased to 194,442. The total population has increased by about 5 times, and it was inevitable to develop suitable land in mountain areas as farmland, so the number of villages would increase accordingly. The change

45. In Chinese: 南枕梁麓, 千岩竞秀, 登高而望之, 如织如绿, 郁郁葱葱. Cfr., Xingxian Kang, Naixin Kang, *Han Cheng Xian Xu Zhi*, (1703), Volume 1 "Xing Ye Zhi".

46. In Chinese: 山中本无竹, 胡以竹为名? 远近皆童山, 更无嘉卉荣. Cfr., Zhongzhao Cheng et al., *Han Cheng Xian Xu Zhi*, (1924), Volume 3 "Wen Zhi Lu", 270.

in the number of villages was not reflected on the map of 1784. Therefore, I think the credibility of the information expressed by the map in 1784 is insufficient.

The maps of 1899 and 1924 are flat projection maps with certain modern map making technology. Especially in the map of 1924, the symbols and annotations in the picture are relatively small and dense, so the content is richer than the previous maps. The map has basically adopted abstract map symbols, such as county towns, towns, villages, county boundaries, roads, mountains, peaks, plateaus, rivers, heavy areas, historic sites, ferries, forests, temples, etc. In terms of drawing methods, the map of 1924 and the maps of 1899 and 1906 have an inherited relationship. Compared with the maps of 1607 and 1784, the map after 1899 also has an obvious feature, that is, the distribution of villages extends to the north of the Pan River and the south of the Zhi River, and it also appears in the western mountainous areas a large number of villages, although according to the existing survey, not all the villages are marked in the map.

Therefore, from these five maps, we can summarize the basic understanding of the changes in the landscape of Hancheng County as follows:

1) From the early seventeenth century to the eighteenth century, most of the mountainous areas in Hancheng County were dominated by forest landscapes. By the end of the eighteenth century, the forest landscapes in most places that were easily accessible by people had basically disappeared; By the beginning of the 20th century, there were only a few forests in Hancheng County, and most other mountainous areas were barren mountain landscapes. Today, through the hyperspectral satellite image (fig. 3-7), we can see that until today the decline of the Hancheng forest landscape still exists.

2) At the end of the 18th century, a large population increase resulted in a large increase in the number of villages. The 18th century was a period of rapid development in the construction of Hancheng villages. In fact, in the villages we surveyed, the oldest existing residential buildings were basically built in the 18th century.

3.2.1.2 Map of the County Town: Isomorphic Characteristics of Traditional Cities and Villages

The information in the historical plan of County Town is very limited and even very abstract. In the plan of Hancheng County in 1542, the main contents we can identify are: The general outline of the city wall and the location of the city gate, the main roads in the city, religious places, schools and offices located inside and outside the city wall. The citizens' dwellings are not drawn in the picture.

Going further, we can read how the ancient Chinese described the city: First of all, religious and sacrificial places play an extremely important role in urban life and occupy an important position in the map. This is similar to the influence of Christianity on the form of European cities. However, the difference from the West is that there are temples of different religions in ancient Chinese cities. Some of them belong to Buddhism, some belong to Taoism, and some belong to Confucianism. As de Groot put forward in *The Religious System of China*, in China, people and gods coexist in the city, and religion profoundly affects all aspects of traditional China. In the later case analysis, we will further find that this habit of "coexistence of man and god" is also reflected in rural settlements and dwellings.

The 1607 local gazetteer once again depicts the plan of Hancheng County town. Compared with the

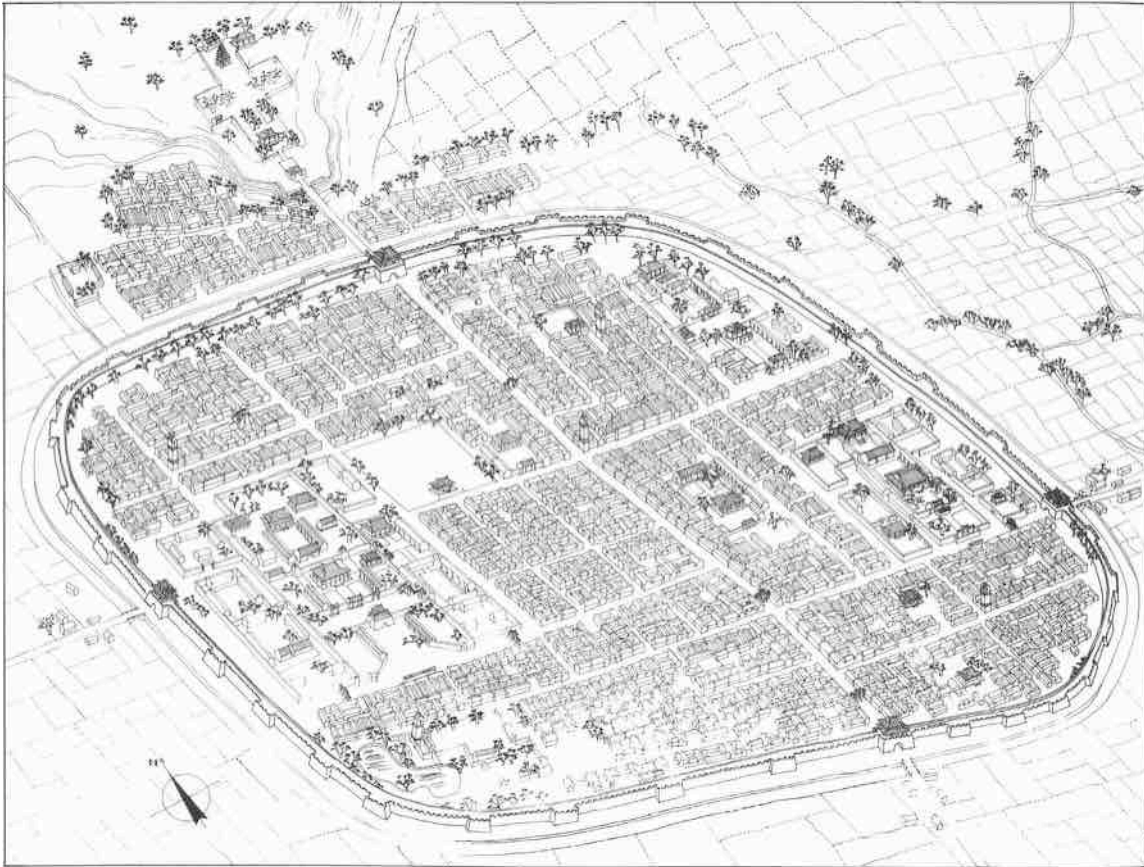


Figure 3-10 Aerial view of Ancient Hancheng city. Source: Zhou, Ruoqi, and Guang Zhang. 1999. *Ramparts, Villages and Vernacular Dwellings of Dang-Jia-Cun Village of Han-Cheng*. Xi'an: Shaanxi Science & Technology Press, 20.



Figure 3-11 The historical center of Western historical cities and the recognizability in the plan. Source: Allan B. Jacobs, *Great Streets*. MIT Press, 1995.

previous map, three new elements have been added to this version: the loess plateau landform around the city, the water flowing from the southwest side of the city, and the drill ground in the southwestern suburb of the city (lower left corner in the map). In addition, in reality, the approximate circular city plane is depicted as a rectangle. This expression seems to emphasize a sense of direction of orthogonal geometry and a stronger azimuth order.

Compared with earlier drawings, the city plan of 1924 is closer to the actual shape of the city (fig. 3-9-right). The road on the central axis connects the north and south gates of the city, while the east and west gates of the city wall are not on the same road. Apart from the two "+" type intersections on the central axis, "+" type intersections are hardly found in the road system in other parts of the city. The intersections of other roads are "T" type intersections and "L" type intersections. At the same time, we can also see that the area of religious places was exaggerated in ancient drawings. But this also shows precisely the importance of religious places to the city in the eyes of the ancient elite.

From the ancient drawings, we cannot read the spatial scale of city buildings and their surroundings. From 1987 to 1994, a joint investigation group of more than 60 scholars from China and Japan conducted four investigations on the Dangjiacun Village and surrounding villages in Hancheng⁴⁷. In these studies, the researchers investigated the shape of Hancheng County (fig.3-10), which made up for the neglect of the urban spatial scale in the previous maps. In the picture, we can read the basic characteristics of the building: small-scale buildings (residential courtyards) occupy most of the city, and the scale of these residential courtyards is similar, and they are based on the same prototype (fig. 3-31, A-0). The other larger buildings are city gates, temples, and official buildings, which correspond to the yellow, purple, and blue areas in fig. 3-9. All buildings follow the absolute directional order. All large buildings (except the city gates on the east and west sides of the city wall) sit north to south, and the boundaries of all residential buildings follow

47. The results of surveys in 80s and 90s can be summarized as follows: 1. From the aspects of natural geographical conditions, agricultural production and defence needs, the characteristics of the location of the historical villages in the Dangjiacun village of Hancheng and surrounding areas were discussed; 2. It was discovered and confirmed that there are widespread "Village and rampart separation- symbiosis type" settlements in Hancheng area; 3. In the aspect of village morphology research, it summarized the general composition of village life production facilities, the basic form characteristics of road organization, and focuses on the impact of "defence" function on the formation of rural settlements; 4. More than 40 villages were selected for a real-life survey, and the history, facilities, family information, etc. of the villages were recorded in varying degrees. Statistics were made on the population and cultivated area at the time of each village; 5. The background, age and construction method of 52 ramparts of villages in Hancheng area were selectively studied. The number, scale and function of the ramparts were studied, the mutual distance and location relationship between the ramparts and the village and the topography around the ramparts, the basic form of the village road network were studied; 6. They conducted detailed and in-depth research on the Dangjiacun village, including the history of the village, the land, the population, the location of the site, the composition of the village space, the relationship between the house site and the street space, the evolution of the village's growth, social life, etc. Cfr. Masao Aoki, *A Study on Farm Villages and Houses in Hanchon prefecture of Shan Xi province in China* (1). *Housing Research Foundation Annual Report* 21 (1995): 145-156. Masao, A. (1996). *A Study on Farm Villages and Houses in Hanchon prefecture of Shan Xi province in China* (2). *Housing Research Foundation Annual Report*, 22 (1996): 101-112. Zhou, R., & Zhang, G. *Ramparts, Villages and Vernacular Dwellings of Dang-Jia-Cun Village of Han-Cheng*, (Xi'an: Shaanxi Science & Technology Press,1999).



Figure 3-12 Architectural scale and road form analysis of five Traditional Villages in Hancheng in 2019.
Source: elaborated by the author.

the orthogonal geometric orientation. So, what caused the scale and form of residential buildings to show striking similarity and consistency? I will discuss this issue later.

The author investigated the road shape and architectural scale of some CTVs in Hancheng County. In the past few decades, the rural spatial production has caused different degrees of damage to the Traditional Village and its surrounding. Therefore, the first thing the research should solve is how to identify the traditional areas in the village.

In the book *The Great Street*, Allan Jacobs uses scale differences to find out the scope of ancient cities. No matter how the city develops, the "self-contained" form in the "container" of the city wall era has become a unique part of the urban space (fig.3-11) is the source of urban development⁴⁸. Jacobs' method is very effective in identifying the historical centers of most medieval cities. The spatial self-organization of most medieval urban systems in Europe is indeed a stark difference from the surrounding modern urban spaces.

Therefore, the author introduces this method of distinguishing graphical features in the plan into the Traditional Village space identification. As shown in fig. 3-12, we can distinguish the traditional area (historical center) in the Traditional Village by the morphological type on the plan. These areas are clearly different from the neatly arranged new houses around. At the same time, we can also find out the commonalities between some Traditional Villages and traditional cities in terms of form. These commonalities can be understood as the homogeneity of the construction ideas and results of traditional Chinese cities and villages. Whether it is a village or a city, buildings follow the order of orientation; the scale of residential courtyards the same; at the same time, the relationship between the streets of the village and the scale of the outdoor space are also similar to those of the city. For example, from the right part of fig.3-12, we can find that there are only one or two "+" type intersections in all the streets in each village, and the rest are all "T" type intersections and "L" type intersections. In addition, like cities, religious and sacrificial buildings are widespread in villages, and are concentrated in large numbers in the eastern part of the settlement.

3.2.2 Relationships and connections between villages

3.2.2.1 Basic elements of rural landscape

The western part of the Hancheng area is a mountainous area, and the eastern part belongs to the yellow earth belt. The native loess here is formed by the northwest wind scraping. The soil is uniform and contains a large amount of carbonate. It has the characteristics of vertical layering and is easy to form a vertical cliff wall. Under the combined action of the often-flooded **Yellow River** and the tributaries of the Yellow River originating from the western foothills, the eroded complex terrain is formed, which is characterized by the formation of gullies and blocky or linear plains separated by gullies. Most of the places where the plains and ravines are connected are mostly precipices. Combined with such natural landforms, the ancestors built three types of villages: 1. Large and medium-sized clustered villages that are widely distributed in the plains

48. Alan Jacobs. *Great Street*. Wang Youjia, Jin Qiuye translation. Beijing: China Architecture and Building Press, 2009.



Figure 3-13 Panorama of Hancheng County Town, 1935 © 乔家珍照相馆



Figure 3-14 Pagoda in Hancheng © Ning Yongquan.



Pond of Zhangdai Village



Pond of Biyang-Bu Village



Pond of Xiyuan Village

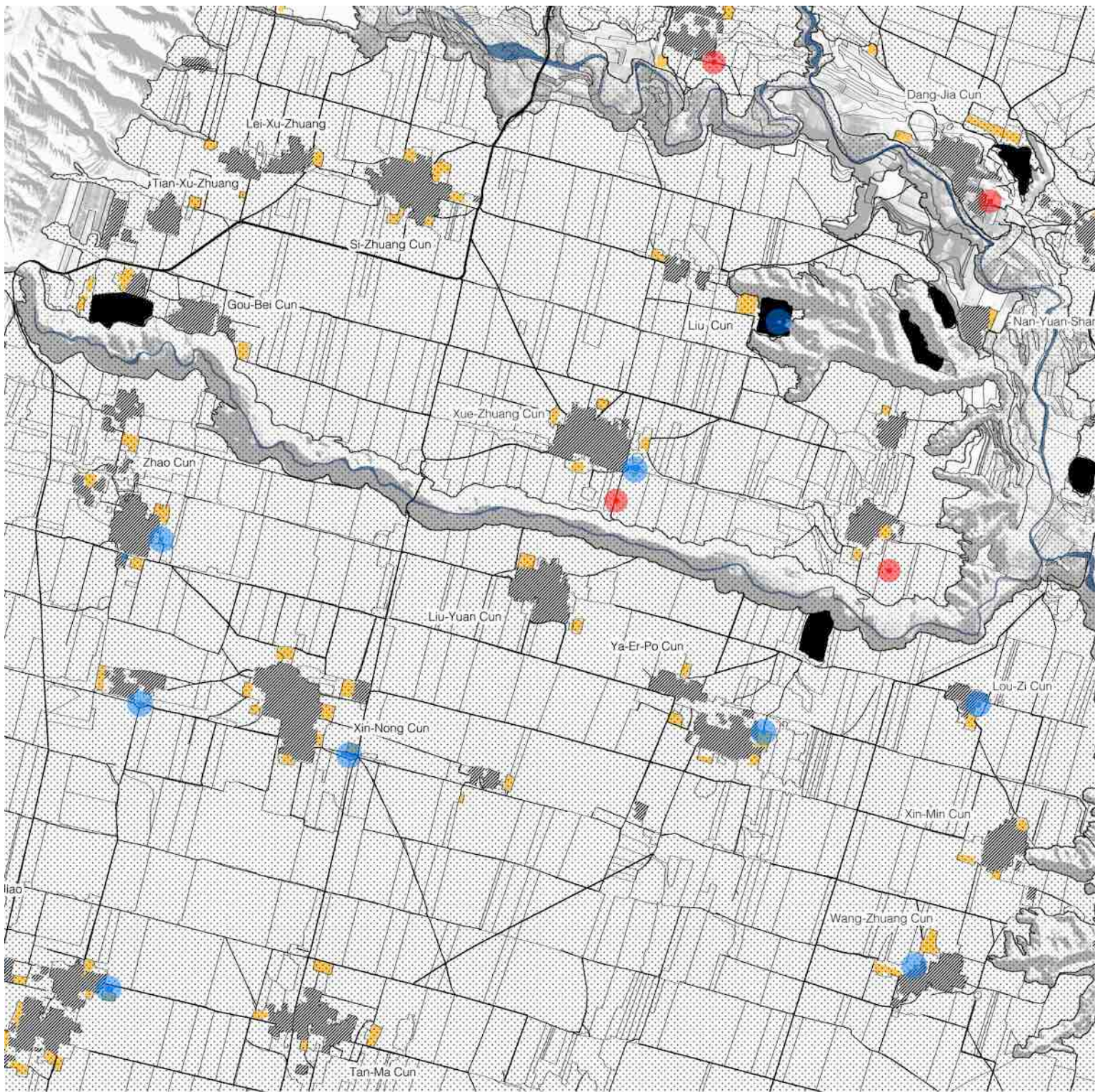
Figure 3-15 Ponds in Hancheng.

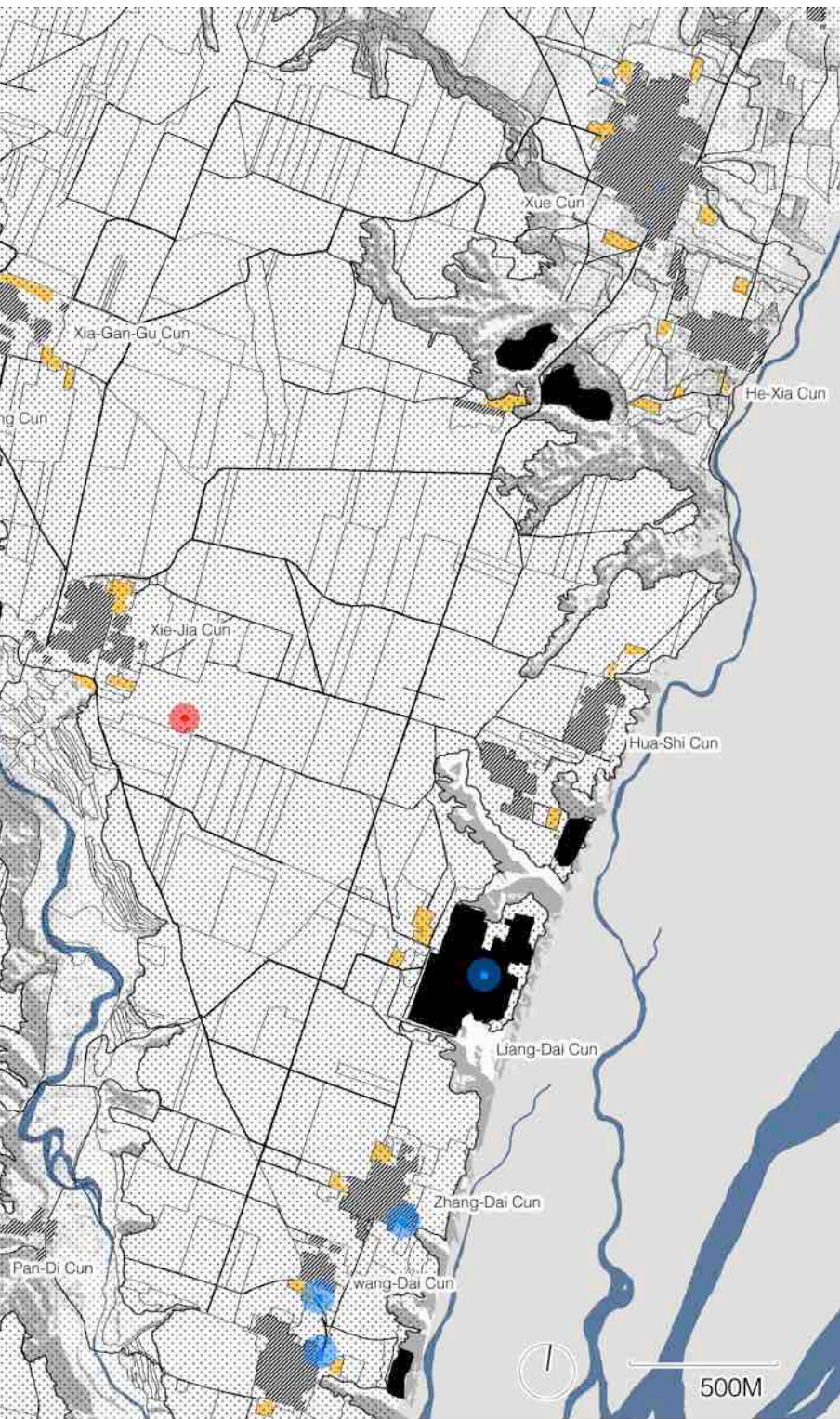


Figure 3-16 Landscape of the Yellow River on the east side of Zhangdaicun Village, Hancheng County in 2018.



Figure 3-17 Hancheng County Satellite Map (1967). Source: elaborated by the author based on the data of USGS (United States Geological Survey), Base map Declass 1 (1996), DS1102-2135DA120 © earthexplorer.usgs.gov.





ground
 Road
 Borders divided by cultivated plots

Figure 3-18 Analysis of Landscape Elements of rural areas in Hancheng in the 1960s. Source: elaborated by the author based on the data of USGS (United States Geological Survey), Base map Declass 1 (1996), DS1102-2135DA120 © earthexplorer.usgs.gov.

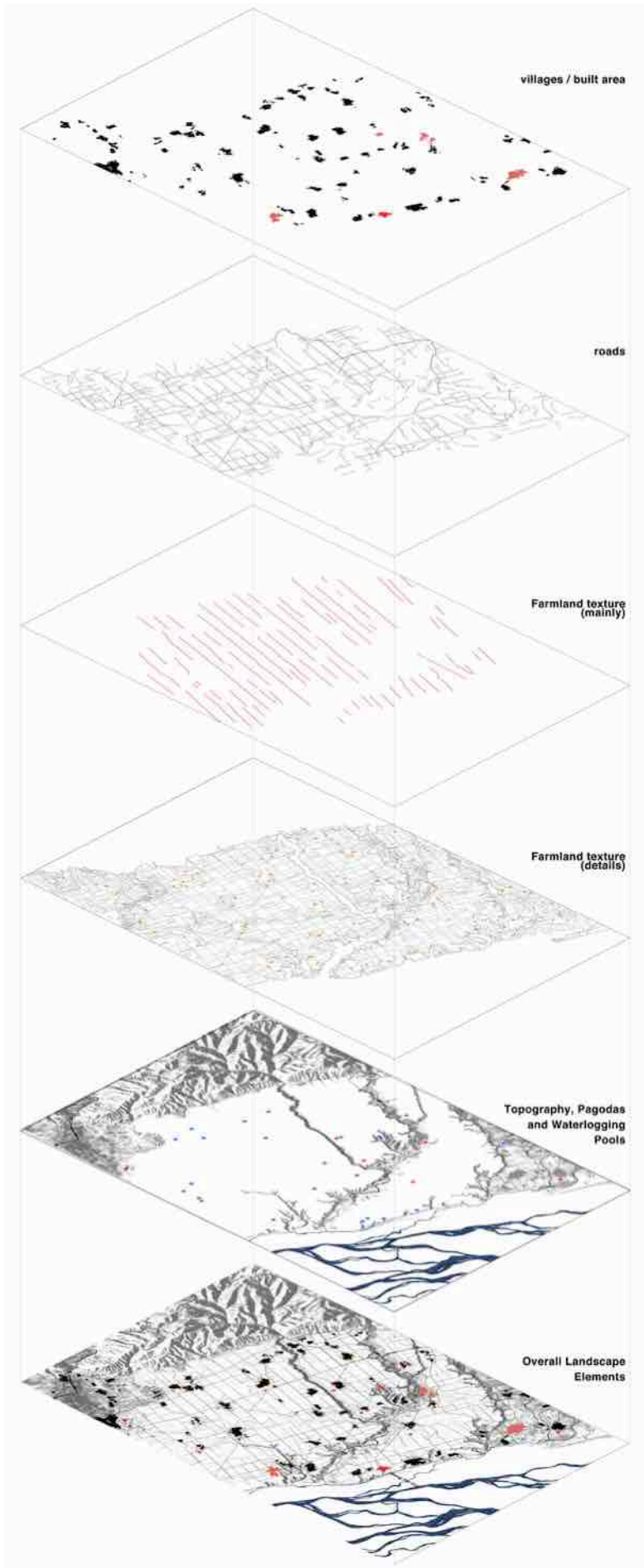


Figure 3-19 Analysis of Landscape Elements of rural areas in Hancheng in the 1960s. Source: elaborated by the author.

or in the flat areas of large ravines; 2. Defensive ramparts on the Loess Cliff; 3. Small, scattered village in the mountains. Initially, the ancestors built a cave-style cave and then formed a settlement on the nearby flat land. If there is a need for defensive purposes, they built ramparts on the high stage where the cave building was built before⁴⁹. At present, there are currently 11 villages in Hancheng that have been selected as national Traditional Villages, including 1 historically and culturally famous village. Hancheng is the city (county) with the largest number of national Traditional Villages in Shaanxi Province, and the villages are most concentrated. Ten of the 11 villages are located in the eastern Loess Plain and one in the northern valley.

Before the 1980s, the agricultural population of Hancheng accounted for the vast majority of the total population, and agriculture was still the dominant industry at the time. Compared with the present, the traditional form and landscape of urban and rural spatial forms at that time were not very different. From the satellite images of the 1960s, we can identify the main landscape elements of the Hancheng countryside. These elements include buildings, ponds, pagodas, roads, farmland and threshing fields, and topography.

The **ponds** were built at the lowest position in the settlements. The main function of the ponds is to alleviate waterlogging, and it is also a backup water source for drought and a water source for firefighting. According to local residents, when their ancestors were constructing villages, the first thing after choosing the village address was to build a pond. We can understand the reason as follows: when building a village, people need to use a lot of water, whether it is used to make building materials or guarantee basic life. Because here is a relatively arid region, the water in the river is far away and the height difference of tens of meters must be overcome, so the construction of a low-lying ponds to collect rainwater is the best way to ensure stable water sources.

Pagoda is an important element in the traditional rural landscape of Hancheng. Almost all pagodas are built in the southeast of the village. Pagoda's role is mainly spiritual, and is closely related to folk Wenchang beliefs. Because the topography of Hancheng is high in the northwest and low in the southeast, the ancients who believed in Fengshui theory believed that the construction of a high-rise pagoda in the southeast could make up for the disadvantage of the low terrain in the southeast, and thus achieve a balance in the overall environment. In fig. 3-14, we can judge the position of the segment pagodas by the shape of the shadow.

In traditional society, people walk between villages mainly on foot. Man-drawn vehicles and animal-drawn vehicles are more often used as tools for agricultural production than vehicles. The form of roads outside the Traditional Villages is completely controlled by land rights. The distribution of land rights mainly comes from agricultural production⁵⁰. Therefore, the road is mainly related to the texture of cultivated land. Of course, we can also read some "shortcuts" to "cut" cultivated land in fig.3-16. With a little observation, it is not difficult to see that these "shortcuts" play the role of connecting settlements.

The northern plains of China are generally clustered villages, and the larger villages are almost the size

49. Masao Aoki, A Study on Farm Villages and Houses in Hanchon prefecture of Shan Xi province in China (1). *Housing Research Foundation Annual Report* 21 (1995): 145-156.

50. Arthur. H. Smith, *Village life in China: A study in sociology* (New York, Chicago, Toronto: Fleming H. Revell Company, 1899), 35.

of medieval European towns. American sociologist Sidney David Gamble once described the relationship between rural settlements in northern China and surrounding cultivated land before the 1930s:

*"The Typical North China village consisted of an aggregate of house surrounded by a farming area that ordinarily was controlled by the village. There were no separate farmhouses. The farmland outside the village was often referred to as the ch"ing-ch"uan, the "green circle." It's size was more or less related to the number of families in the village."*⁵¹

As can be seen from the satellite photos of the 1960s (fig. 3-17), the **threshing fields** of Traditional Villages in Hancheng (Traditional Villages) are located on both sides of the main road between the settlement and the farmland. In the traditional society, these threshing grounds are spaces used by all the villagers for drying and processing the harvested crops.

3.2.2.1 Links between ordinary villages and fortress villages

Building a large number of "fortress villages" with defensive functions is a feature of Hancheng. Because Hancheng has some important Yellow River ferries, they were transportation hubs connecting Shaanxi and the eastern region in ancient times. The importance of traffic location has brought about the accumulation of commercial wealth, but it has also brought armed conflict. In the 19th century, villagers in many villages not only engaged in agricultural production, but also engaged in commercial trade, thereby accumulating a lot of wealth. Therefore, the function of collective defense is very important in rural areas. Before the 19th century, villages had to obtain government approval to build village walls in order to prevent villages from becoming strongholds for anti-government armed forces. However, in the late Qing Dynasty, especially during the "Tongzhi Hui Revolt"⁵² period, due to the weakening of the central government's control force, coupled with social turbulence and other unstable factors, a peak period for the construction of fortress villages was formed. This peak period continued until the first half of the 20th century. In the second half of the 20th century, after the founding of the People's Republic of China, social security stabilized, and the

51. Gamble, Sidney David. *North China villages: social, political, and economic activities before 1933*. Univ of California Press, 1963, 11. The "green circle" described by Gamble is not a regular circle, but an abstract description of the farmland around the village.

52. The Tongzhi Hui Revolt (1862–1877) was a mainly ethnic and religious war fought in 19th-century western China, mostly during the reign of the Tongzhi Emperor (r. 1861–1875) of the Qing dynasty. The conflict led to a recorded 20.77 million population reduction in Shaanxi and Gansu due to migration and war-related death, started by riots of the Hui and massacres of the Han Chinese, accompanied by the revenge killing of Hui by the Hui. Based on research by modern historians, at least 4 million Hui in Shaanxi before the revolt, only 20,000 remained in the province while the rest of the Hui were all killed in massacres and reprisals by government and militia forces or deported out of the province. According to post-war consensus, 74.5% population reduction was reported in Gansu, and 44.7% in Shaanxi. Cf. Dongwei Lu, "Shaanxi's population loss during the reign of Tongzhi Guangxu," *Historical Geography*, 19.1 (2003): 51-51. 路伟东. "同治光绪年间陕西人口的损失." *历史地理* 19.1 (2003): 51-51.



Figure 3-20 a. Current plan of Guozhuangzhai Village (a fortress village). Source: elaborated by the author; b. Memorial gate (in the village) in front of the tunnel entrance; c. Tunnel to the bottom of the cliff; a-1. Remaining rampart; a-2. Remaining rampart; a-3. Loess cliff; a-4. View of the village from the edge of the loess cliff; a-5. The main road in the village; a-6. The branch road in the village.

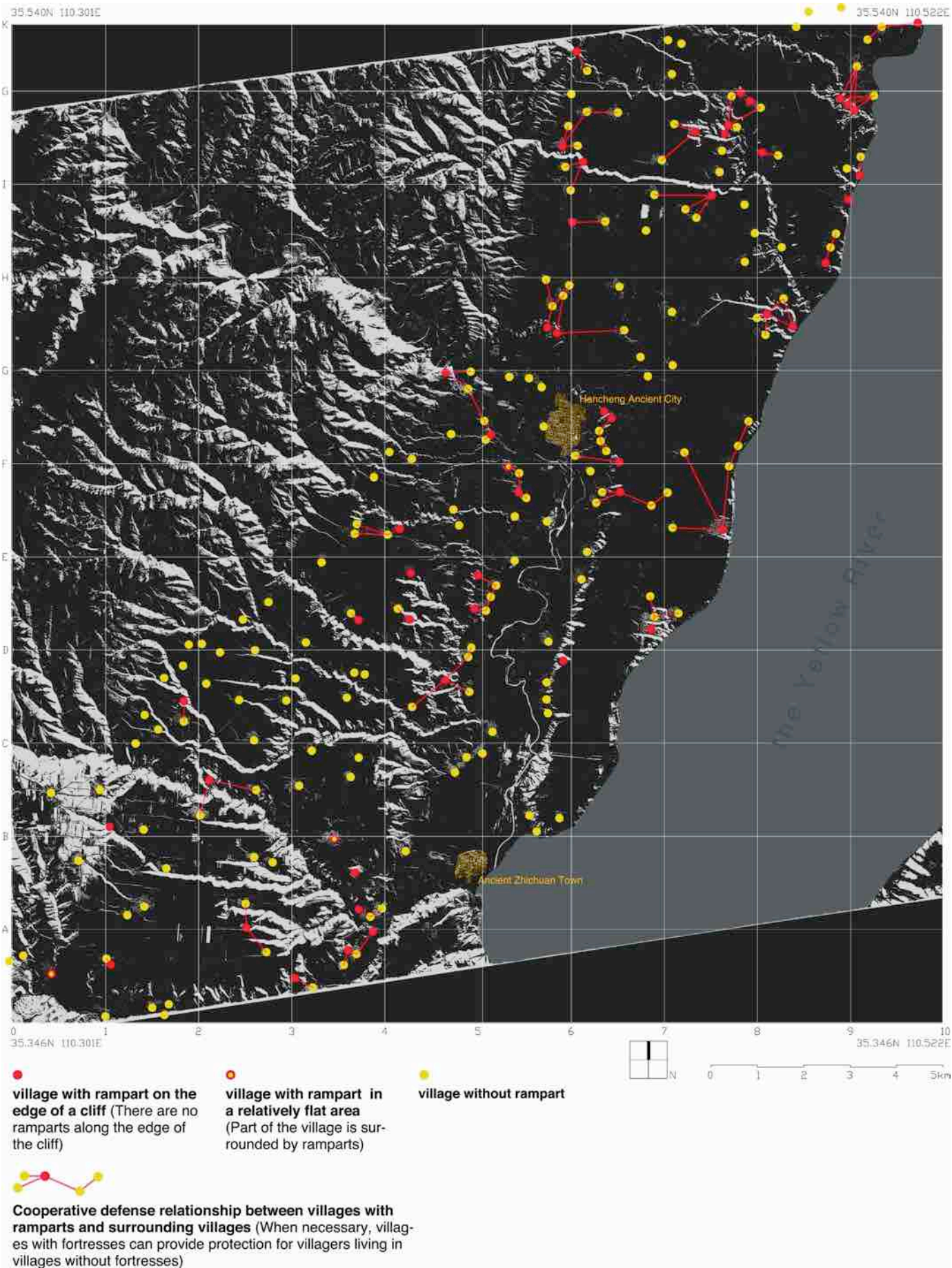


Figure 3-21 Relevance analysis of ordinary villages and fortress villages in Hancheng. Source: elaborated by the author based on the data of USGS (United States Geological Survey), Base map Declass 1 (1996), DS1102-2135DA120 © earthexplorer.usgs.gov.

defense function of fortress villages was no longer important.

We can divide the villages in Hancheng into two categories. The first category are the villages without defense functions (ordinary villages). The other type has defensive functions (fortress villages).

A fortress village are generally funded by one or more ordinary villages. In normal times, fortress villages and ordinary villages are places where villagers live, but in an emergency, fortress villages are also a refuge for residents in ordinary villages. From fig.3-18, we can see that villages with fortress functions are usually built on gully cliffs, which are natural barriers against enemies. Locals build rammed earth walls on the side not on the cliff. In this way, the cliff and the rammed earth high wall together form the outer defensive circle of fortress villages. The height of the ancient village wall in Hancheng area is 8-10 meters, and the thickness is generally about 3 meters.

According to statistics, at the beginning of the 20th century, there were 192 old fortress villages scattered throughout the urban and rural areas of Hancheng, and more than 70 old fortress villages were still preserved in the 1990s⁵³.

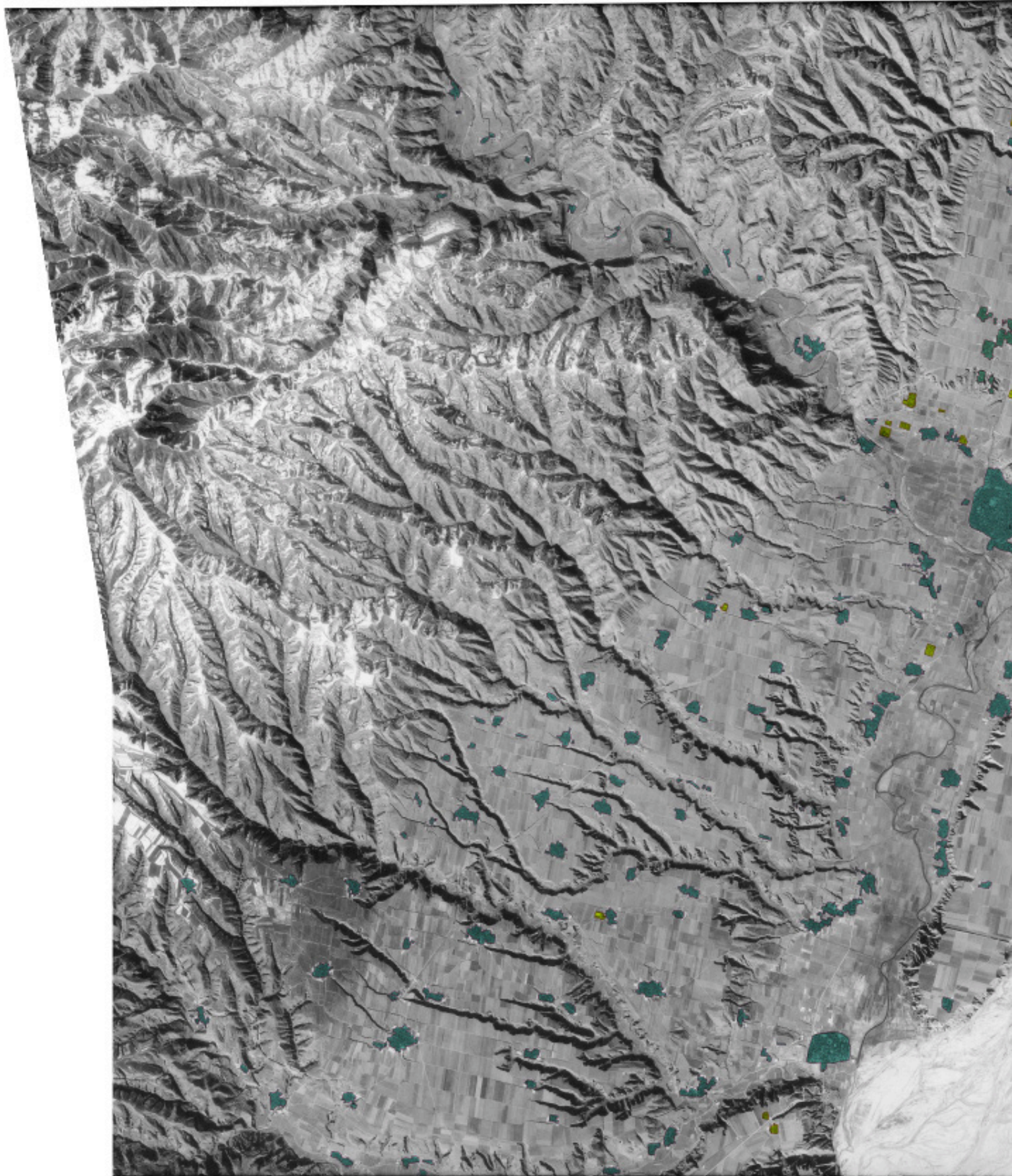
In the northern mountainous area, the village is located in the East-West flow Valley, with low terrain. The fortress village is built on the steep hillside or small platform on both sides of the valley, which is "cliff type" and "island type" fortress village. The western mountainous area is a tributary watershed of the Ju River, and the old fortress villages form are roughly the same as the northern mountainous area. In the north area of the ancient city of the county, villages on the Bank of the Yellow River build "cliff edge" fortress villages; On the edge of the Loess Plateau, the villages located in the lowlands eroded by the small river often build "cliff top" fortress villages at the end of the high platform behind the villages. In the centre of the loess plateau where the terrain is relatively gentle, more "flat type" fortress villages or "quasi cliff type" fortress villages were built.

According to the analysis of area scale, fortress villages can be divided into three types: small-scale fortress villages with an area of less than 5000 square meters, medium-sized fortress villages with an area of less than 5000-20000 square meters and large-sized fortress villages with an area of more than 20000 square meters. Overall, the medium-sized type accounts for the majority. According to topography, the fortress villages with cliffs on all sides are mostly small-scale models and medium-sized models with less than 10000 square meters.

The elements of ancient fortress village are mainly composed of village gate, tunnel, village wall, dwellings, temples and streets. "Cliff edge type" and "peninsula type" usually have a gate in the village wall, while "cliff top type" entrance usually inclines the tunnel to connect the cliff up and down. Sometimes "flat type" fortress villages have two gates. At present, in some villages the gate are well preserved, and some of them are demolished artificially and collapsed by landslides.

The section of tunnel slope of "cliff top type" fortress villages is round arched, generally about three meters high and two meters wide (the carriage can pass), and the height difference between the beginning and end of the ramp is usually 20-30 meters. The inner wall of the tunnel is made of brick (fig. 3-20-c),

53. Cfr., Shaanxi Provincial Institute of Culture Heritage, Hancheng Ancient Village and Ancient Fortress Village Protection Planning (2015-2030) exposure draft, 2015.



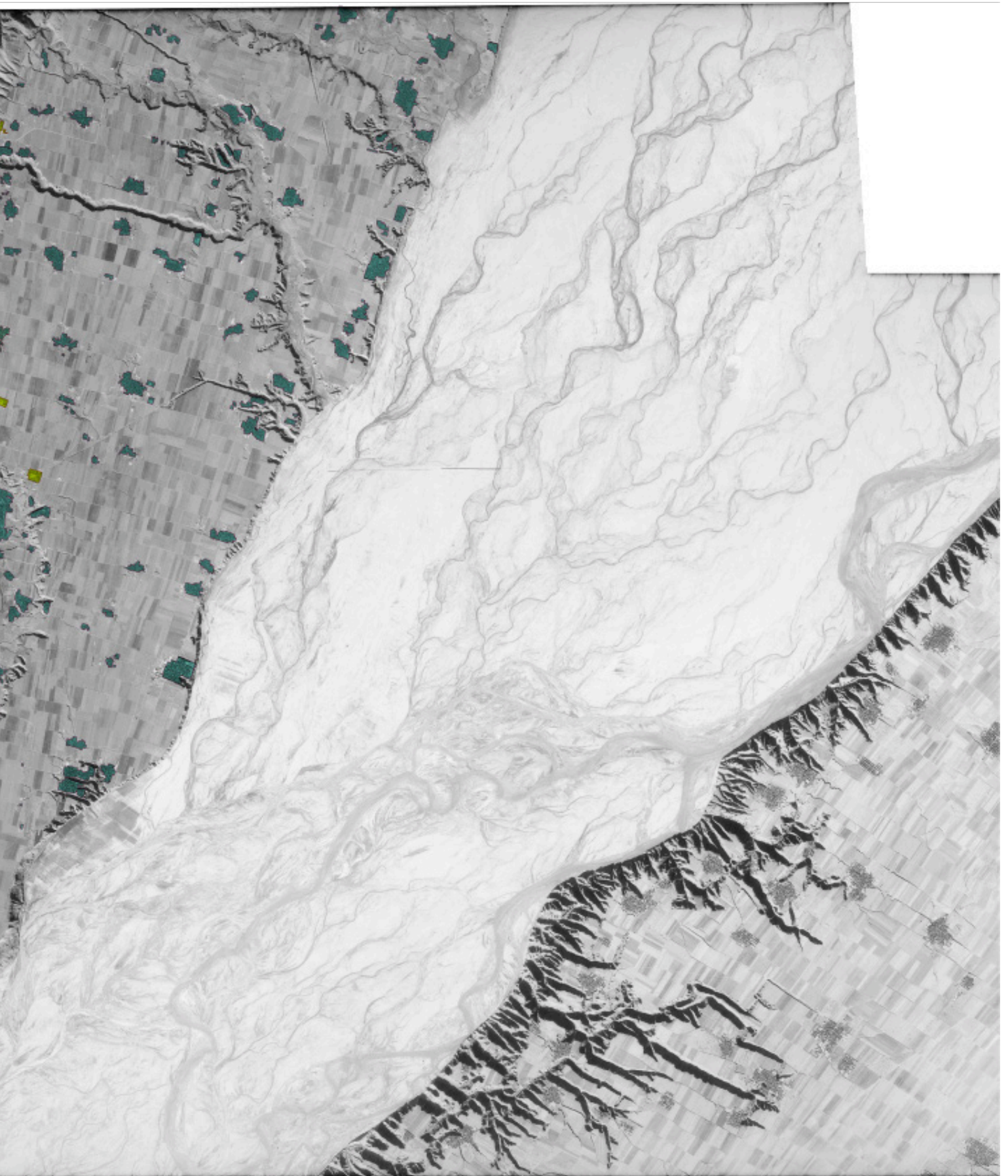


Figure 3-22 Hancheng satellite image (partially), 1967. Human settlements marked in green. Source: elaborated by the author based on the data of USGS (United States Geological Survey), Base map Declass 1 (1996), DS1102-2135DA120 © earthexplorer.usgs.gov.

and a small cave at the entrance is used for guarding. When the enemy strikes, the cave can be filled with earth and sand to seal the tunnel. In each of the fortress villages, there is a Temple of Guan Yu⁵⁴, as a part of the defense system in terms of faith, it highlights the military characteristics of the fortress village. In the fortress villages, there is a "fish bone" road network with the main road and the secondary road perpendicular to the main road. Some ancient villages have a "ladder" road network.

Take Guozhuanzhai fortress village as an example. This fortress village is located 8 kilometers north of the ancient town of Hancheng, by the The Wen River, with cliffs on the north side. The overall plan of the village is rectangular, about 230 meters long and 180 meters wide. In 2016, the village was listed in the fourth batch of CTV.

According to the villagers, the family name of the village is mainly "Xie, Chen and Xue". There is no family name Guo in the whole village. It is said that Guo Ziyi, a famous general of the Tang Dynasty, was in the nearby Guozhuang village to collect grain and garrison. At that time, there was no Guozhuanzhai fortress village. By the end of the Ming Dynasty, the society was in turmoil, and robbers were springing up. People generally lacked the sense of security, so they came up with the idea of building a fortress. At that time, the villagers of Guozhuanzhai fortress village were mainly surnamed Chen and Xue, with many poor people and unable to built the village walls. They invited the rich and wealthy people surnamed Xie and Wei who were officials and businessmen in the neighboring villages. In this way, the five surnames (and the surname Cheng) joined together, and it took eight years to spend more than 200,000 Chinese Tael silvers to build the Guozhuanzhai fortress village. There were two gates in the village. The south gate is the only way for villagers to work in the fields and has been destroyed. The north gate is a hole at the bottom of the northern cliff. It is 3 meters high and 4 meters wide. The roof is a brick arch. In the north gate is a vaulted tunnel with a slope of about 30 degrees. There are twelve lanes on the north and south sides of the main laneway in the village. The names of the twenty-four laneways are named according to the words in "Thousand Character Classic"(an ancient enlightenment textbook), and the order is 'Tian', 'Di', 'Xuan', 'Huang', 'Yu', 'Zhou', 'Hong', 'Hun', 'Ri', 'Yue', 'Ying', 'Ze', etc. Corresponding to the roadway on the ground, underground passages were built, and each underground passage leads to the residents' homes, forming a labyrinthine road system. The entrances and exits of the underpass are located on the half cliff on the north side and the cliff on the northeast corner. These have formed an anti-theft system above and below the entire village.

In the fig.3-21, the author analyzes the relationship between ordinary villages and fortress villages in Hancheng. From the figure, we can see each fortress villages (red dots) provide shelter for which ordinary villages (yellow dots). The relevance of Ordinary villages and fortress villages is reflected not only in the blood relationship and cooperation relationship of the residents. When we read the rural landscape of Hancheng, this unity should not be overlooked.

54. The Temple of Guan Yu, also known as Temple of Emperor Guan Yu, is an ancestral temple to sacrifice Guan Yu, the general of the Three Kingdoms period in China. He is also the God of war in Chinese folk belief. The name of Emperor comes from the title of "Guansheng emperor" granted to Guanyu by the emperor of Ming Dynasty.

3.2.3 The decline of rural landscape in the process of urbanization

3.2.3.1 decline in the quantity of villages and cultivated land

According to the 1967 satellite image provided by the US Geological Survey (USGS), the eastern high land area where the village is distributed intensively, was chosen as the survey objects. The area of the farming lands in most of the villages was calculated and compared with their current scale respectively. Due to the limitation of satellite image resolution and its scope, the research area is set as the east loess plateau zone between "north latitude 35.540° ~ 35.364°", with a total of 174 sample villages (natural villages).

The factors in the diachronic comparative analysis mainly include: the village area in 1967, the urban area in 1967, the area of other built areas in 1967, the village area in 2018, the urban area in 2018, and other built areas in 2018, the area of the village that disappeared between 1967 and 2018.

Through the comparative quantitative analysis (Fig. 3-23, Fig. 3-24), the following conclusions could be made: First, in the past 50 years, the number of the disappeared natural villages (villages) is 12 (6.9%); the number of the villages which turn to urban-village, is 24 (15.5%); the rest of the villages growing naturally is 136 (79.3%). Secondly, from the growth of rural residential area, the area has increased from about 664.4 hectares in 1967 to about 2020.2 hectares in 2018, and the area has increased more than threefold. The average growth area per village is 7.6 hectares, of which Liu Village, the one with the highest growth rate, the residential area of which has increased by about 10 times.

Table 3-1 Changes in the scope of built-up areas in Chines Traditional Villages in Hancheng.

village name	Xue-Cun	Dangjia-Cun	Liu-Cun	Zhangdaicun-Cun	Xianglibu-Cun	Qingshui-Cun
scope of the built-up area in 1967 (ha)	14.25	8.83	1.07	4.62	19.86	5.61
scope of the built-up area in 2018 (ha)	24.79	22.61	10.59	9.86	37.24	25.49
growth rate (%)	1.74	2.56	9.90	2.13	1.88	4.54

In the process of scale changing, except for 12 villages such as Xie-Lao-Zhai Village, Cheng-Gu-Zhai Village and Fu Village, which were demolished or destroyed before reconstruction, almost all the remaining villages retained the original road network structure. In the growth of the village scale, the road network of the newly built area may be linearly extended on the original road network or may be carried out with a simple parallel road network. The new village is closely connected with the old village but could be obvious recognized, and the richness of the street space is also obviously different. The "integration" indicator of "space syntax" is used to measure the difference (the higher integration areas tend to show the character of strong population accumulation). The results show that areas with high integration, exactly show out at the center area of the old village. The general integration of the newly built village usually shows the lower "integration" (fig. 3-25).

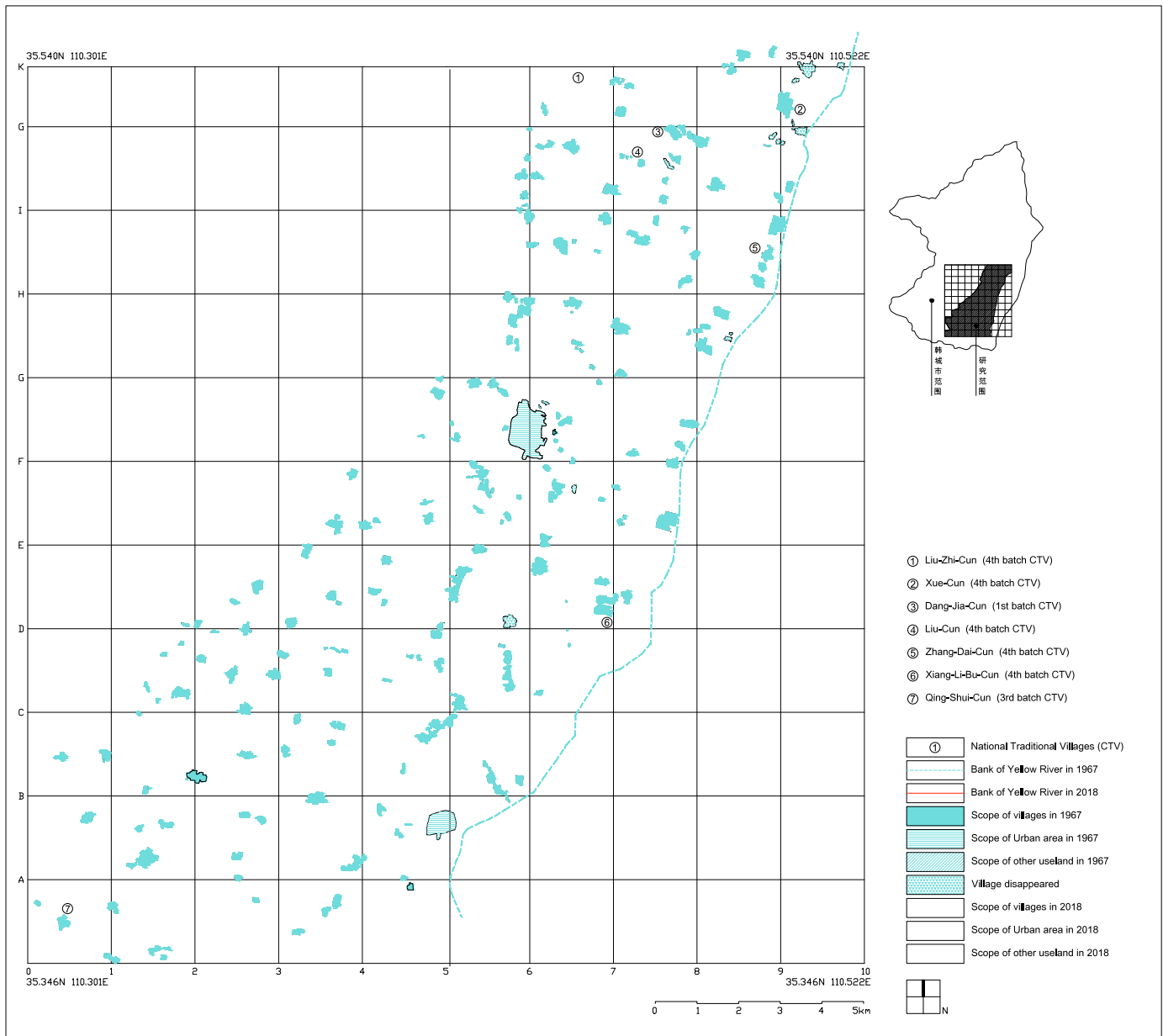


Figure 3-23 Distribution and scope of artificial urban / rural areas in Hancheng in 1967. Source: elaborated by the author based on the data of USGS (United States Geological Survey), Base map Declass 1 (1996), DS1102-2135DA120 © earthexplorer.usgs.gov.

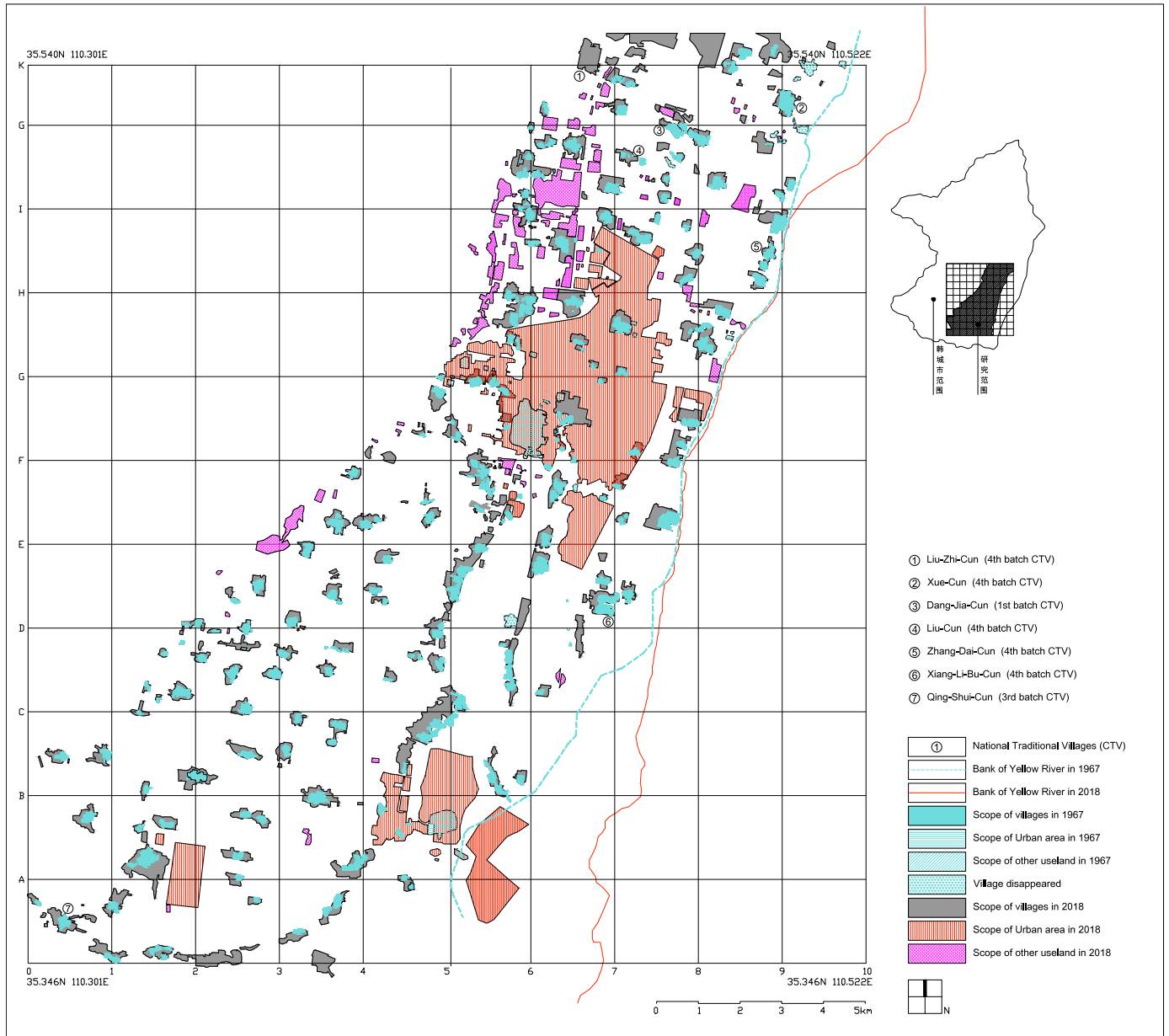


Figure 3-24 Distribution and scope of artificial urban / rural areas in Hancheng in 2018. Source: elaborated by the author based on Google earth.

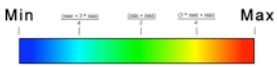
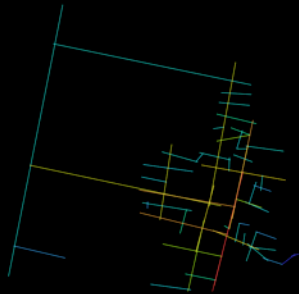


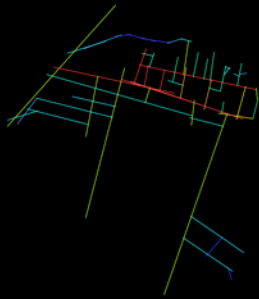
Figure 3-25 Analysis of the integration index of historical village streets. Source: Author's own.



Zhang-Dai-Cun Village



Dang-Jia-Cun Village



Guo-Zhuang-Zhai Village



Qing-Shui-Cun Village

200m



Figure 3-26 The status of Xuecun temples. Source: Photographed by the author in March 2018.

3.2.3.2 The decline and variation of the traditional forms of villages

1) The decline of traditional culture and the decline of spiritual places

As mentioned in the first chapter of this article, since the 1960s, the traditional spiritual and cultural system of Chinese villages began to disintegrate, and to the 1980s, the material environment of traditional settlements began to change on a large scale. The disintegration of traditional rural spiritual culture is reflected in the following aspects: 1) In the rural self-organization system, the clan etiquette system is dying, and traditional collective rituals and activities are greatly simplified or disappeared. 2) The decline and destruction of the material carrier (mainly built environment) of traditional spiritual culture.

In traditional Chinese villages, public places such as temples, ancestral halls, and theatrical stage play an extremely important role in the spatial structure of the entire settlement, and are the most important spatial nodes and functional elements in the settlement. It is a pity that in the national Traditional Villages of Hancheng, no village has completely preserved these traditional public places. The functions carried by these places have basically disappeared.

Take the Xianglibu Village as an example. Before the middle of the last century, there were still 8 groups of temples and ancestral temples in the village, but today no group can be completely preserved. There are many reasons for the destruction, decay, and abandonment of these temples and shrines. The most deadly was the movement to "Breaking the four old and establishing the four new" during the Cultural Revolution in the 1960s and 1970s. Temples and ancestral halls were used as workshops and student classrooms for production teams. In 1970s All idols, murals, and architectural decorations related to traditional culture (three religions of Confucianism, Buddhism, and Taoism) were artificially damaged to varying degrees, and genealogy and classic books were burned.

In the following decades, the sand digging industry on the Yellow River beach next to the village (the river sand was sold as a building material) emerged. In order to widen the road, the Niangniang Temple and theatrical stage in Xianglibao Village were demolished in the 1980s. The second branch ancestral hall of the Zhang clan, the main clan in the village, was bought by outsiders as a whole and moved away. Apart

from the gatehouse along the street, the rest were demolished. It can be said that a thorough criticism at the level of values has completely disintegrated the most important material and spiritual carriers of the rural tradition. As a result, the younger generation in the countryside today lacks a sense of identity with traditional customs and material spaces.

2) Driving force of morphological variation: land system and economy

a) Re-urbanizing the countryside

According to the American Sinologist Frederick W. Mote, whose research and teaching interests focused on China during the Ming Dynasty and the Yuan Dynasty, the rural settlement rather than the city defined the Chinese way of life after the Qin unification⁵⁵. Urban and rural formed an organic and integrated hierarchical system.

Nonetheless, the interdependence of cities, countryside and villages cannot be intended as a character of uniformity, as the city incorporated functions and a lively cultural situation that were absent in the productive countryside. In this dual system, the city was the administrative centre of an area and organized the countryside.

Despite the usual common sense, before the advent of industrialization, even in Italy "the village and the family, the countryside and the town constituted a single whole, expressing a single culture and civilization projected towards the future"⁵⁶.

China's fast development has left the countryside behind, creating an urban-rural dualistic structure and dramatic social inequalities. Nevertheless, villages and small towns are at the same time the very locus that still embodies and retains the historical form of urbanization in China.

If an alternative and site-specific model of development started to take shape, this irreplaceable heritage could be the real asset for the rebirth of the countryside.

Yet, China's rapid development has recently focused on villages and towns of the countryside, which have been undergoing a spontaneous process of uncontrolled re-urbanization over the last decade. Indeed, since the late 1970s, China's Reform and Opening Policies have brought about tremendous social changes. Whether occurring in urban or rural areas, economic growth has become the primary goal of social development. In the early 1980s, China inaugurated a rural economic reform of the land system that

55. Yinong Xu, *The Chinese city in space and time: the development of urban form in Suzhou* (Honolulu: University of Hawaii Press, 2000), 80.

56. Lucio S. d'Angiolini, "Infradisciplinary museum for our civilization in the year 2000 and beyond. Testing off-shoots, and roots, to the point where we can create a new "ethnos", *Hinterland* 4, July-August (1978), 50-54.

replaced collective management with a **household-based** land contract system⁵⁷. The "No. 75 document" of 1980 and the five consecutive "No. 1 documents" issued by the CPC Central Committee from 1982 to 1986⁵⁸ that constitute the policy framework mainly dealt with rural economic and land policies, which promoted the transformation of planned economy into service economy. The "Household-responsibility system" (a contracted responsibility linking remuneration to output) replaced the collective economy, thereby encouraging villagers' involvement in agricultural production⁵⁹.

In spite of the dramatic depopulation of the countryside during the process of rapid urbanization, at a certain point the modern urban construction industry began to turn its attention to rural areas. From 1978 to 2013, urban population in China increased from 170 to 730 million, while the urbanization rate increased from 17.9% to 53.7%; the number of cities increased from 193 to 658, while towns rose from 2,173 to 2,0113⁶⁰. At the end of 2017, China's urbanization rate was 58.52%⁶¹.

Due to the concurrent cause of land rights in rural areas (China's constitution decrees "collectives" owned rural land) and the devastating effects of the Cultural Revolution, which wreaked havoc on Chinese traditional culture and on the people's spiritual concept, the first phase of development has sprawled uncontrollably in villages and towns within and around traditional fabrics.

As a result, the vitality of traditional morphologies and dwelling types has gradually declined in favor of standardized multistory blocks with no architectural features, poor constructive quality and high carbon footprint. During the last decades, most rural settlements already lost their traditional form and structures.

Just as the historical urban landscape underwent dramatic changes over the last decades, so too the traditional features and heritage are disappearing rapidly in rural settlements.

The present dynamics are extending urban features to the whole territory similarly to what happened in Europe over the last twenty years. Nonetheless, the scale of the phenomena is huge in China and reaches

57. By 1956, China realized agricultural cooperation, i.e. the abolition of private ownership of land and the realization of public ownership. Since the implementation of the policy of agricultural cooperation, the collective management system of agriculture has been implemented. The enthusiasm of farmers' production has been suppressed for a long time, and the development of agricultural productivity has been slow. In September 1962, the Eighth Plenary Session of the Communist Party of China formally adopted and promulgated the Revised Draft of the Regulations on the Work Regulations of the Rural People's Commune, which stipulates that the ownership of rural homesteads has changed from being owned by individual rural family to being owned by the collective.

58. Document No. 1 refers to the first document issued by the Central Committee of the CPC every year. Since the Central Committee of the CPC continuously issued the Central Document No. 1 on agriculture, rural areas and farmers from 1820 to 1986 and from 2004 to 2018, the document has now become the proper term for the Chinese government to attach importance to rural issues.

59. Funing Zhong, ed., *Agricultural Policy 农业政策学* (Beijing: China Agriculture Press, 2017).

60. "Urbanization Plan for 2014-2020 *国家新型城镇化规划* (2014-2020)," Xinhua News Agency, accessed March 16, 2014, http://www.gov.cn/zhengce/2014-03/16/content_2640075.htm.

61. "China's urbanization rate rose to 58.52%, releasing new kinetic energy *我国城镇化率升至 58.52% 释放发展新动能*," Xinhua News Agency, accessed February 4, 2018, http://www.gov.cn/xinwen/2018-02/04/content_5263778.htm.

every county since it is politically driven. Since most CFHCTs also play the role of regional administrative centres⁶², during the last decade, under the guidance of the 11th Five-Year Plan and the National Urban System Planning Outline (2005-2020), the master plans formulated by provincial governments converted to urban residential areas an increasing number of farming areas around historical cores.

b) Homestead supply system

As mentioned earlier, the growth of village construction land is related to population growth. However, population growth is not the only reason. Another important reason is the distribution supply of homesteads.

Rural homestead refers to the collective construction land that rural villagers enjoy based on their membership of the collective economic organization (administrative village or production team), which can be used to build houses. Generally, farmers can obtain it without paying any land cost. However, the houses built on the homesteads belong to the villagers' personal property and can be inherited according to law. Villagers only have the right to use homesteads, but no ownership.

The current law stipulates that **one rural household can only own one homestead**. The area of the homestead shall not exceed the standard set by the provinces, autonomous regions and municipalities directly under the central government⁶³. Generally speaking, villagers in their villages who have reached the age of 20 can apply for a separate hukou (separated from the hukou of the original family) after marriage, so that newly-married families can apply for a new homestead.

Since 1962, rural homesteads in China have changed from original peasant to collective ownership while the right to use was owned by farmers⁶⁴. It was a way of "separating two powers". In 1963, the "Notice of the CCCPC on the Supplementary Provisions of Various Localities for the Issue of Commune Members' Homestead" clarified that members' homestead, including buildings and blank homesteads without houses, were owned by the Production Team and could neither be rent nor bought or sold. The homestead's attachments, such as houses, trees, factory sheds, pigsties and toilets, were also owned by members. Members had the right to buy or sell houses.

From 1962 to 1978, the use-right of homesteads was introduced, although the conditions and procedures for obtaining it were not clear or specific. Rural homesteads were allocated in a free and equal distribution,

62. i.e. the lower administrative unit of the county.

63. It comes from the Art.62 of "The Land Management Law of the People's Republic of China (Revised Edition 2004)". *中华人民共和国土地管理法* (2004年修正版). The law was enacted in 1986, and this clause first appeared in the revised version of 1998. See also, MLR, The Notice Issued by the Ministry of Land and Resources on "Opinions on Strengthening the Management of Rural Homesteads," 2004. *国土资源部印发《关于加强农村宅基地管理的意见》的通知* (国土资发[2004]234号).

64. In September 1962, Tenth Plenary Session of the eighth Central Committee of the Chinese Communist Party formally adopted and promulgated "The Draft Amendment to the Work Regulations of the Rural People's Commune". *农村人民公社工作条例修正草案*. Art. 17 stipulates that "all land within the scope of the whole production team belongs to the production team".



Figure 3-27 Village Morphology and Landform Changes on the West Side of Bishui River Valley in Hancheng from 1967 to 2020. The old in Xie-cun village has been demolished and restored to cultivated land. Source: elaborated by the author based on the data of USGS (United States Geological Survey) and Google earth.

and farmers had the right to use a homestead for an indefinite period⁶⁵.

Since China implemented the policy of reform and opening up, the rural economy has developed greatly. After farmers' incomes and living standards have increased, there has been a boom in housing construction, which has resulted in the continuous expansion of homestead land and the occupation of a large amount of cultivated land. Therefore, in 1990, the Chinese government proposed that small villages and scattered households with scattered land should be encouraged to relocate and restore the original site⁶⁶. Some villages in Hancheng disappeared under the guidance of this policy (fig. 3-25) At the same time, the government also encourages peasant families to build multi-story houses on the outskirts of cities and in economically developed areas with more people and less land⁶⁷.

In the early 1990s, in order to develop the rural economy, the country once allowed urban residents (non-

65. Chongmin Wang, "On the Modernization of the Rural Housing Land Use Right in China" (PhD diss., Wuhan University, 2013), 7.

66. State Council of the People's Republic of China. 'Circular of the State Council on Approving and transmitting the request for instructions of the State Land Administration on strengthening the management of Rural Homestead.' 国务院批准国家土地管理局关于加强农村宅基地管理工作请示的通告, Last modified January 1, 1990. http://www.china.com.cn/law/flfg/txt/2006-08/08/content_7060276.htm

67. Ibid.

rural hukou) to purchase the right to use homesteads in the village where they were born⁶⁸. However, this policy has further accelerated the expansion of rural construction land. This expansion began to be controlled after about 7 years. In 1999, the General Office of the State Council issued a notice stipulating that farmers' houses must not be sold to urban residents, nor should they be allowed to occupy farmers' collective land to build houses⁶⁹. In 2000, the government requested that the housing sites of farmers who have entered the town (whose household registration has been transferred from the rural household registration to the town) be converted in a timely manner to prevent idle waste⁷⁰. In 2004, the government further prohibited urban residents from buying homesteads in rural areas, and it was strictly forbidden to issue land use certificates for urban residents purchasing and illegally building houses in rural areas⁷¹. But throughout the 1990s, the drastic changes in the rural form have become irreversible.

According to the requirements of national laws, after 1998, laws issued by each province in China clearly stipulated the area of rural homesteads⁷². Taking Shaanxi Province as an example, each rural villager can only have one homestead: each household in the suburbs of the city does not exceed 133 square meters, and each household in the valley and the soil plateau does not exceed 200 square meters; Each household living in a mountainous or hilly area does not exceed 267 square meters⁷³. This provision has also contributed to the increase in rural construction land, because newly-married families whose hukou has not moved out of the countryside can apply for a new homestead. At the same time, the clear regulations on the area of homesteads have promoted rigid and uniform residential area planning, thereby further threatening and destroying the organicity of traditional rural forms.

In addition, in the late 1990s, the Chinese government advocated the construction of apartment buildings in relatively concentrated rural areas to save cultivated land⁷⁴. This policy has once again promoted changes in

68. Cfr., State Council of the People's Republic of China. Article 18 of "The Regulations on the Administration of Planning and Construction of Villages and Market Towns," 1993. *村庄和集镇规划建设管理条例, 第十八条*, 1993. "If a non-agricultural registered resident of a town needs to use the land owned by the collective to build a house in the planned area of a village or market town, he shall, with the consent of the unit to which he belongs or of the residents committee, handle it in accordance with the prescribed examination and approval procedures

69. General Office of the State Council, Circular on Strengthening the Management of Land Transfer and Forbidding Speculation on Land, *国务院办公厅关于加强土地转让管理严禁炒卖土地的通知*, 1999. http://f.mnr.gov.cn/201702/t20170206_1437218.html

70. CPC Central Committee and State Council, Some Opinions on Promoting the Healthy Development of Small Towns, *中共中央, 国务院关于促进小城镇健康发展的若干意见*, 2000. http://www.mohurd.gov.cn/wjfb/200611/t20061101_157341.html

71. MLR, Notice issued by the Ministry of Land and Resources on "Opinions on Strengthening Management of Rural Homesteads," *国土资源部印发《关于加强农村宅基地管理的意见》的通知*, 2004. http://www.lcrc.org.cn/zhzsk/zcfg/gwgb/bwj/201508/t20150806_31209.html

72. Cfr., "The Land Management Law of the People's Republic of China, 1998.

73. Cfr., Measures of Shaanxi Province to implement the "Land Administration Law of the People's Republic of China", *陕西省实施《中华人民共和国土地管理法》办法*, 1999.

74. CPC Central Committee and State Council, "Notice on further strengthening land management and protecting cultivated land," *中共中央国务院, 关于进一步加强土地管理切实保护耕地的通知*, 1997. http://www.lcrc.org.cn/zhzsk/zcfg/gwgb/gwywj/201508/t20150807_31348.html



Figure 3-28 Production and selling price per unit area of Hancheng pepper planting industry. Source: elaborated by the author.

building types and rural forms.

I think that all the above policies have induced the spatial production model of rural residential clusters to shift from the traditional form to the modern one. At the same time, we can see that the changes in the rural form are not entirely caused by farmers' spontaneous construction activities under a kind of "self-organization" or "collective unconsciousness", but driven by a clear external force of "policy".

c) Disposable personal income (DPI)

Due to the limited farmland, the economic benefits of the primary industry are not good. The phenomenon of labor force outflow in the rural areas is widespread. Most young adults choose to go out to work, so the exact number of resident population is hard to count. According to official data in 2015, the resident population of two large villages Xi-Yuan Village and Xiang -Li-Bu Village is about 4000 people, and the rest 8 Traditional Villages each have 1000 resident population. The main economic source of the villagers is to go out in labour force or grow economic crops of pepper. The average disposable income of the villagers is generally low, less than 10 thousand CNY (China Yuan) per person. In Wang-Feng-Cun Village per capita disposable income is 9500 yuan, which is the highest in the ten case villages. The main reason is that this village is located in mountainous areas, compared with other villages, farmers here have more per capita arable land (up to about 10 times as many as other villages). Because the prickly ash planting in this area is still traditional manual operation, the production efficiency of the plains and mountainous areas is almost the same, plus the price of prickly ash in recent years, the average income of the village is much higher than that of other villages.

Next is the Dang-Jia-Cun Village, the per capita disposable income is 6300 CNY. After the joint investigation of China and Japan scholars in the 80s of last century, the name of the Dang-Jia-Cun Village is becoming more and more famous. Unlike other villages, This village is now a mature tourist attraction. On the 25 day of June 2001, by the State Council, the ancient building group of the village was included in the state key cultural relic protection unit. In 2003, it was selected for the list of Chinese historical and

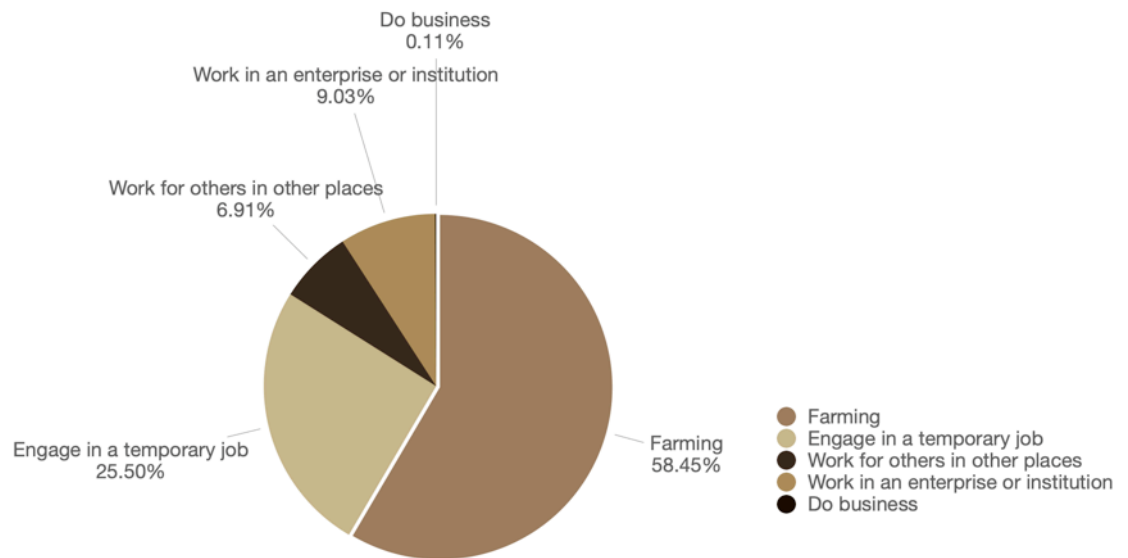


Figure 3-29 Proportion of occupation of villagers in Xiyuan Village in 2016. Source: elaborated by the author based on the data village committees.

cultural villages (the first batch). In March 28, 2008, the village was included in the list of China's world cultural heritage reserves by the State Administration of cultural relics. In December 9, 2016, it was rated as the national AAAA tourist attraction. However, the benefits of the development of the tourism industry for the villagers are limited. The tourist income of the village mainly comes from the ticket of the scenic spot, and at the end of the year for ten years, each villager can only get 300 CNY as the bonus. By rating the value of ancient dwellings, the homeowners who have well preserved and valuable ancient residences will receive "trusteeship fees" ranging from thousands to ten thousand CYN per year from the scenic area management department.

d) Prickly ash planting industry and farmers' income

The prickly ash (Pepper) tree is a very good economic tree, suitable for planting in most parts of China. The prickly ash tree is particularly drought resistant and can grow as long as the rainfall is over 400 millimeters. In recent years, the demand for pepper in the catering market is increasing, and the price of pepper has also been rising. Since the late 90s, prickly ash tree has become the first choice of the economic crops for farmers in Hancheng. Most of the cost of planting pepper is the human cost of collecting pepper. In general one mu (666.7 m²) planted about 70 or so. Two years later the trees start fruiting. Three years after each plant can pick more than 1 jin (=0.5 kilogram) of pepper, five years after the average harvest of 2 jin dried pepper per plant, 8 years after the average harvest of 4 jin of dried pepper. According to the price of this year, the dry pepper is 36 yuan per Jin. After three years, the income per mu is at least 2600 yuan. After five years, the income per mu is 4000 yuan, and the income per mu is 5000--6000 yuan after eight years. Except Wang-Feng-Cun Village, the per capita cultivated land in other villages is about 1000 square meters. Therefore, according to the different planting time, planting pepper after fruiting per capita income

in the 3500 to 14000 yuan. Some of the villagers use their relatives and neighbors land, who works in other place to grow prickly ash, so the actual income is higher.

Table 3-2 Changes in the scope of built-up areas in CTV villages in Hancheng.

The name of the Traditional Village	Census register population	Permanent population	Annual income of village collectives (CNY)	Per capita annual income of villagers (CNY)	Major industries
Dang Jia Cun	1,423	1,478	1,700,000	6300	Tourism & Pepper planting
Wang Feng Cun	1,570		20,000	9500	Pepper planting & Livestock
Xi Yuan Cun	4,005			7800	Pepper planting
Guang Zhuang Zhai Cun					Pepper planting
Liu Zhi Cun	1,960	1,880	20,000	3500	Pepper & Fruit tree planting
Xue Cun					Pepper planting
Liu Cun	1,207	1,005	30,000	3000	Pepper & Fruit tree planting
Zhang Dai Cun	1,000	1,000			Pepper planting & vegetables
Xiang Li Bu Cun	3,400	3,400	100,000	1500	Pepper planting & nursery stock
Qing Shui Cun	1,680	950	80,000	3000	Pepper & Fruit tree planting

Data source: village committees.

3) Variation of the form of traditional settlements

The basic pattern of village space growth is to plan new homesteads around the old village, which is related to the surge in the rural population after the 1980s. The most typical cases are Liucun old Village and Liucun New Village. The construction model of the new village is based on households and allocates housing sites. The arrangement of homesteads is usually rigid and line-by-line. The new buildings are mostly brick-concrete flat-roofed buildings, which changes the overall appearance of the village. This way of land allocation has replaced the natural reorganization and differentiation model of courtyard clusters based on blood relationship in the old village. In addition, in order to adapt to the lifestyle, many traditional courtyards in the old village have also been transformed.

Since 2000, the degree of rural socialization has been improved, and the structure of family income has been diversifying. The rural settlements in Guanzhong area are obviously affected by the development of urban or rural communities. The impact of rural urbanization makes the conditions of survival and development uneven between the settlements. The diversification of the rural family's economic source and the reduction of the degree of land dependence. The implementation of the strategy of returning farmland to forest and so on, has constantly triggered the one-way circulation of the rural population, which is bound to cause the discarded overall migration of the disadvantaged villages. This phenomenon in the ancient stockade of Liu-Cun Village reflect the most obvious, I found in the survey that, the Liu-Cun village ancient village has a total of 18 traditional courtyard. At present, there are only two yards left to live, which is said to prevent the theft of traditional building components, architectural ornaments and furniture. And the rest of the 16 traditional residential courtyards have been uninhabited.

Take the Xi-Yuan-Cun Village as an example, in 2016, according to official statistics, The working population of the village is 1882, the farming labor population accounted for 58.45%, mainly engaged in pepper cultivation, the rest is in the vicinity of the working population to work or to migrant workers,



Figure 3-30 Figure 3 28. Abandoned courtyard in the ancient Liu-Cun Fortress Village. Photographed by the author in March 2018.



Figure 3-31 The main building in a traditional courtyard was demolished for sale. Photographed by the author in Qing-Shui Village in March 2018.



Almost complete

One building in the courtyard was demolished

Two build courtyard



Figure 3-32 The buildings in the traditional courtyard were demolished to varying degrees. Photographed by the author in Xiang-Li-Bu Village in March 2018.



The wing building in the courtyard changed from traditional form to international style.

Figure 3-33 Figure 3 33. Phenomenon: the wing building in the courtyard have changed from the traditional form to the international style. The main reason for this phenomenon is that villagers have no place to dry their own cereals and peppercorns, so people use flat roof modern buildings to replace traditional buildings with sloping roofs, thus using flat roofs for drying. Photographed by the author in March 2018.

enterprises and institutions working in accounting for 9.03%⁷⁵. In the actual survey, I found that the majority of people living in the village are older than 50 years old.

Table 3-3 Changes in the scope of built-up areas in CTV villages in Hancheng.

Work situation	Farming	Engage in a temporary job	Work for others in other places	Work for others in other places	Do business	Total
Number of people	1100	480	130	170	2	1882
Proportion of the total labor population	58.45%	25.50%	6.91%	9.03%	0.11%	100%

Data source: village committees.

75. The protection and development plan of the Xi-Yuan-Cun Village of Longmen Town, Hancheng, Shaanxi (2018-2030).

The concept of "empty discarding" in rural settlements is the general name of the evolution process of the empty waste phenomena in various space environment of rural settlements⁷⁶. Facing the reality of "empty discarding" in traditional houses, the reason is: "empty" represents the inappropriate performance and function of traditional residential buildings and the living needs of today's residents. "discarding" reflects the lack and deficiency of villagers' consciousness of protection and the means of reusing traditional dwellings in the social and economic environment of the region.

Specifically, at the macro-regional level, the government lacks the functional guidance for the transformation and utilization of "empty discarding" traditional dwellings suitable for regional socioeconomic conditions, transportation conditions, and the spatial distribution of tourism resources. At the meso-level village level, there is a lack of suitable spatial distribution locations, distribution characteristics, and implementation strategies for the use of village landscape resources. At the micro-level of residential houses, there is a lack of effective methods and means suitable for the local environmental climate, cultural customs, aesthetic habits, material skills, and economic level, which are suitable for the inheritance of green experience in traditional houses and the upgrade of the livability of residential facilities.

a) The embodiment of spatial form variation in architecture

The changes of residential building types in Hancheng Traditional Villages are mainly in the following situations:

1. Abandoned

The entire village (building cluster) is abandoned, such as Liu Village, Nanyuan Shang Village, and the eastern area of Liangdai Village; or individual traditional buildings (mostly courtyards) are abandoned. Buildings that have not been used for a long time lack maintenance, and gradually collapse and break.

2. One or more buildings in the traditional courtyard house were demolished

There are generally two reasons for this. The first reason is that due to lack of maintenance funds, the second reason is that the entire building is sold by the owner. Traditional Chinese buildings are prefabricated buildings, so the buildings can be disassembled into parts and then transported to other places for reassembly.

There is a typical example to prove this: Yin Yu Tang House (蔭餘堂) is a late 18th-century Chinese house from Anhui province that had been removed from its original village and re-erected in Salem, Massachusetts. By the mid-1980s the house stood empty. Local and national authorities, with the endorsement of the original owner's descendants, gave permission for the house (and its contents) to be relocated to the Peabody Essex Museum (PEM) in Salem, Massachusetts. The house opened in June 2003 as a permanent exhibit at the PEM.

3. Traditional houses will continue to be used after micro-renovation: some traditional houses are relatively

76. Lei Zhendong, Liu Jiaping. Integration and reconstruction: the transformation of rural settlements in Guanzhong, Shaanxi, *Time Architecture*, 2007 (04): 22-27.



Figure 3-34 An example of reconstruction and restoration of a traditional courtyard house in Zhang-Dai-Cun Village. A,B - elevation and plan on which to rebuild the hall building; C,D - temporary site for wood processing outside the village; E,F - women clean up old tiles; G - traditional external blue brick wall and internal adobe bricks; H - in the hall building reconstruction project, modern red bricks are used instead of adobe bricks to be directly built on the inside of the old walls. Source: photos taken by the author.

well preserved and some people still live in them. The owner of the house made minor modifications to the building, such as replacing doors and windows, and installing suspended ceilings with modern materials.

4. Partial transformation into a modern architectural form:

One of the main reasons for the removal of many traditional slope-top houses in the surrounding villages of Hancheng into flat-roofed houses is not their dissatisfaction with contemporary residential functions, but their economic needs. Next I will explain from three aspects.

The first aspect is easy to understand. The maintenance of traditional civil structures is laborious and labor-intensive, and the economic cost of maintenance is much higher than the cost of rebuilding a brick-concrete structure modern house. Therefore, for those old houses that have been in disrepair, the most economically feasible way is to abandon the old houses and build new houses in the new village, or to demolish individual buildings with hidden safety hazards in the courtyard and rebuild the new houses (this method is more for the economy).

In the second aspect, some traditional residential buildings have a long history, sophisticated construction and exquisite decoration. The villagers sold the entire house to antique dealers at a high price, and they have received financial compensation.

The third reason is rather special and is related to the labor production of villagers. The rise of prickly ash plantation has allowed local farmers to earn more economic income than traditional crops, but problems have also arisen. In the process of producing dried peppercorns, a key link is drying the peppercorns. For security and theft prevention, farmers usually choose to dry on their roofs (the threshing ground in fig.3-18 has completely disappeared in the past few decades, and most of them have become the construction land for new houses). The traditional residential courtyard is small, the internal courtyard is narrow, the sunshine

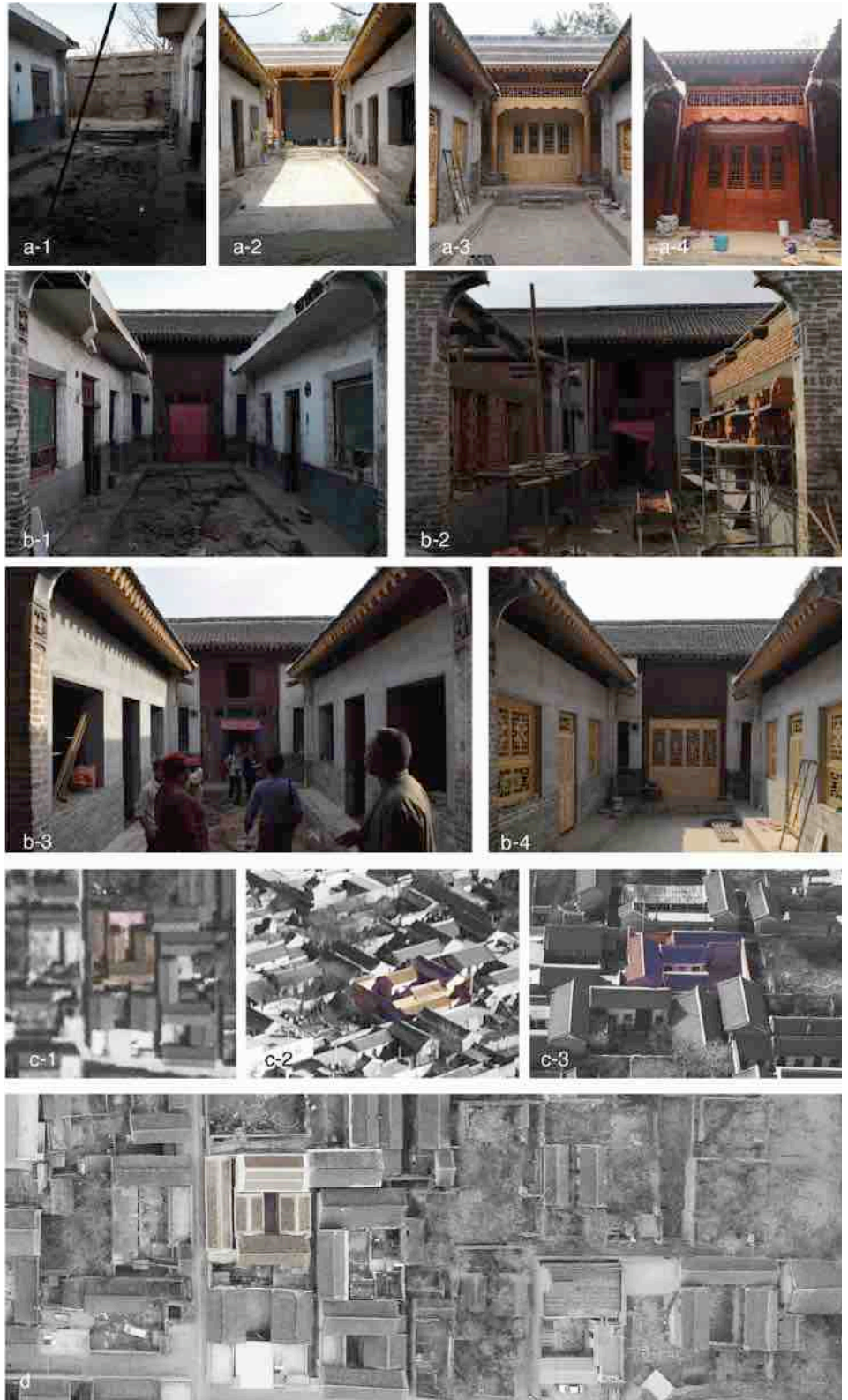


Figure 3-35 An example of reconstruction and restoration of a traditional courtyard house in Zhang-Dai-Cun Village. *a.* Rebuilding process of the main building; *b.* Restoration process of the wing buildings. *c.* Aerial view before restoration; *d.* Aerial view after restoration. Source: Fig. c-1 is from google earth, and other photos were taken by the author from March 2018 to November 2018.

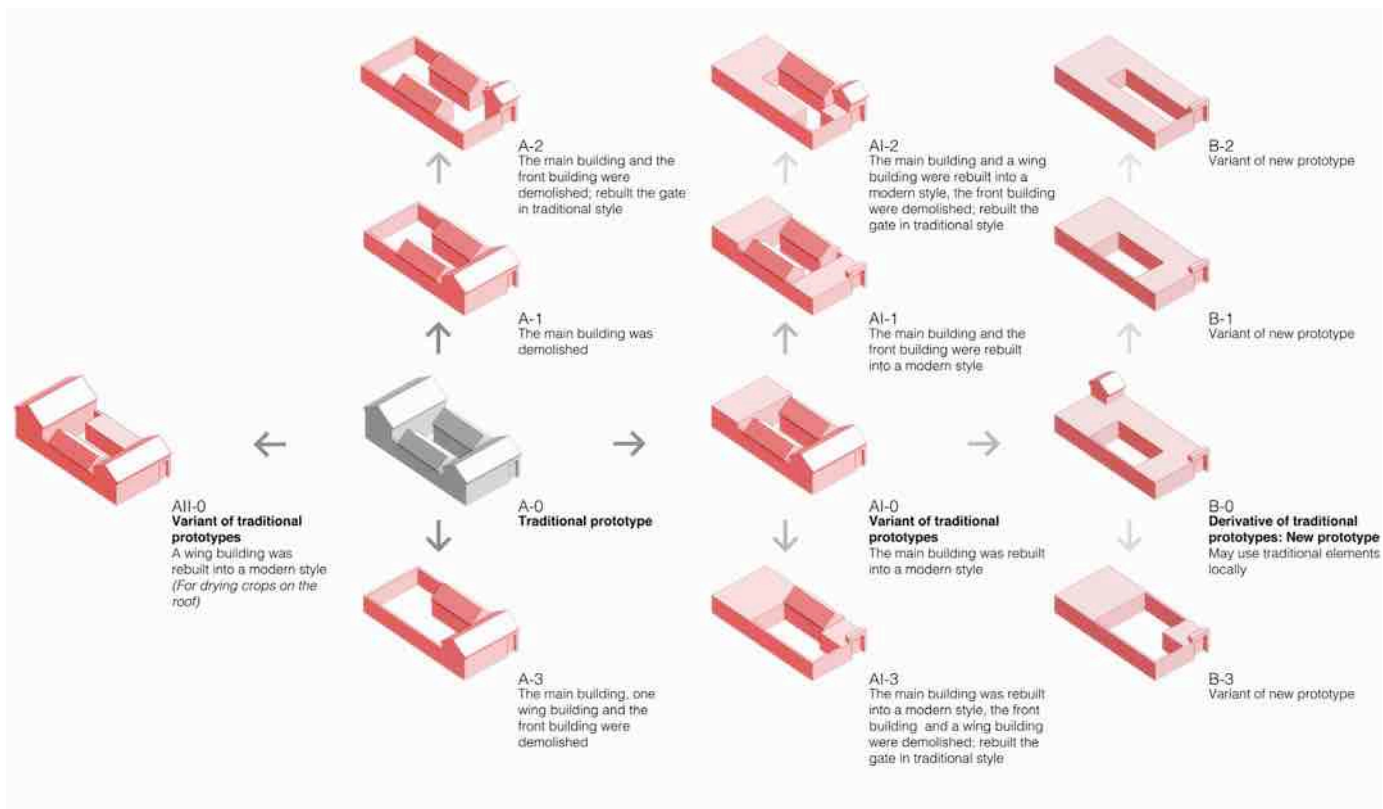


Figure 3-36 Types of existing reconstruction and restoration of traditional courtyard house in Zhang-Dai-Cun Village. Source: elaborated by the author.

hours are very limited, and the sloped roofs are not easy to dry. Therefore, some villagers demolished a wing building in the courtyard house and rebuilt the new flat-topped building, the main purpose of which was to dry peppers and crops (fig.3-33).

5. Rebuild in the traditional form:

There were few such cases in the investigation. The author only found one case in Zhangdaicun Village. The head of the house once sold the main house in the courtyard due to financial difficulties. In recent years, the son of the head of the household has invested in the reconstruction of the main building and the restoration of the wing buildings. Modern materials were used in the restoration of the buildings in the courtyard: the concrete lintel and brick wall in figure 3-34 (b-2).

The restoration and reconstruction project in 2018 was self-issued by the villagers, without government participation and no architects participating in the design. The artisans involved in the restoration are mainly from Hancheng and Heyang County, which is adjacent to Hancheng. There is no historical record document for the reconstruction of the hall in this project, and the craftsmen based it on a "borrowed" drawing (fig. 3-34). The timber for the beams and columns used in the reconstruction were imported from



Figure 3-37 Traditional pavement materials in the ancient Liu-Cun (a fortress village), Hancheng. Photographed by the author in March 2018.

Russia (the traditional wood used in the construction of the area comes from the forests of the Yellow River Basin). During the reconstruction and restoration, the doors and windows of the wing were replaced, and new wooden doors and windows were used, which came from the factory for mass production. Therefore, the restoration project is a stylistic restoration. Some construction traditions continued: craftsmen processed wood in the open space outside the village, and then transported the processed beams and columns to the construction site for assembly. The roof of the wing room was restored with the original tiles, and the roof tiles of the hall were taken from the old tiles left behind after other traditional buildings in the village were demolished. Women from the neighbourhood of the village participated in the cleaning and removal of tiles.

6. New form (new prototype):

Under the influence of modernity, the vast majority of newly built residences use brick-concrete structures, completely detached from traditional materials and traditional building structures. However, the new form also inherits the traditional form in some ways.

For example, new residences still use courtyards as their basic units; their homestead area and length-to-width ratio are similar to traditional courtyards; the main house is usually located on the north side; the south is still the ideal orientation of the courtyard; the entrance of most new residences is arranged in the southeast of the yard.

In addition, the forms of the new houses are highly similar to each other, reflecting the common choice of people in the region. Therefore, the formation of the new prototype is completed in the process of alienation and inheritance of the traditional form and the assimilation of the new form.

b) The embodiment of spatial form variation in architecture

The Valletta principles states that the tangible elements of historic towns include, in addition to the urban structure, architectural elements, the landscapes within and around the town, archaeological remains,



Figure 3-38 Comparison of original pavement before (right) and after environmental remediation (left) in Qingshui Village, Hancheng. Photographed by the author in March 2018.



Figure 3-39 Comparison photos of the stage before and after restoration in Qingshui Village, Hancheng. Source: the photo before the restoration were provided by the village committee of Qingshui village; the photos of the stage after restoration were taken by the author in March 2018.

panoramas, skylines, view-lines and landmark sites⁷⁷. In the previous content, I have pointed out the changes of traditional architectural elements in the villages of Hancheng. Going further, we should also recognize changes outside architectural elements.

Of course, none of these changes in material elements can be separated from changes in intangible elements. In a sense, the influence of immaterial elements is complementary to the changes of material elements. These intangible elements include activities, symbolic and historic functions, cultural practices, traditions, memories, and cultural references that constitute the substance of their historic value⁷⁸.

According to the Historic Urban Landscape (HUL,2011) Approach, the understanding of the historic environment should be beyond the notion of "historic centre" or "ensemble" to include the broader urban context and its geographical setting. "This wider context includes notably the site's topography, geomorphology, hydrology and natural features, its built environment, both historic and contemporary, its infrastructures above and below ground, its open spaces and gardens, its land use patterns and spatial organization, perceptions and visual relationships, as well as all other elements of the urban structure. It also includes social and cultural practices and values, economic processes and the intangible dimensions of heritage as related to diversity and identity."⁷⁹ From the previous satellite image, we can roughly see the changes in the physical environment of Traditional Villages. We can summarize these changes into the following points:

1. Changes in the spatial structure of the village

This change is mainly reflected in the differences between the new village and the peripheral spatial structure of the traditional part of the village.

2. Reduction of cultivated land

The number of people engaged in agricultural production has decreased, but traditional agriculture has not been completely replaced by modern agriculture. In the past few decades, under the combined effect of urban expansion and expansion of village construction land, cultivated land has become fragmented, leading to the decline of the traditional agricultural landscape system. The disappearance of the traditional agricultural cooperation model is directly reflected in the space. The result is the disappearance of the collective threshing ground. The villagers spontaneously changed the sloped roof of the traditional house to a flat roof, and used the flat roof as a private threshing ground. These phenomena can be viewed as a series of chain reactions.

3. Deterioration of ecological environment

Unlike traditional lifestyles, modern rural lifestyles generate a lot of domestic waste that cannot be rapidly degraded. Due to the lack of sufficient basic design, garbage removal is a problem in front of each village. It has become a common phenomenon for villagers to pile up garbage directly on the vacant land of the

77. ICOMOS, UNESCO. "The Valletta Principles for the Safeguarding and Management of Historic Cities, Towns And Urban Areas." (2011).

78. Ibid.

79. UNESCO Recommendation on the Historic Urban Landscape, <http://whc.unesco.org/en/activities/638>

village. This caused environmental pollution and damage to the landscape.

On the other hand, the emission of exhaust gas from nearby heavy industry companies is a drop in the visibility of the sky. The visual connection in the environmental landscape is weakened or disappeared, which also caused the decline of the rural landscape. Taking Zhangdaicun Village as an example, most of the older villagers said that decades ago, when the weather was clear, they could easily see two peaks located in Shanxi Province across the Yellow River from the village: Jiwang Mountain and Gu Mountain. However, in recent years, due to reduced visibility, it is difficult for people to see these peaks from the village. About the cultural significance of Jiwang Mountain, I will discuss it in detail later.

4. Scene changes in public spaces

Modern floor covering materials, utility poles inside the village, remodeled and newly built residential buildings, domestic garbage piled in the open air, etc., vegetable greenhouses and temporary buildings in the fields, etc., all hinder the continuity and unification of the traditional rural landscape. The emergence of these phenomena reflects the choices made by residents and investors (government) from their respective perspectives. Thereby forming a mixed field integrating consumption symbols and values⁸⁰. The main change inside the village is the change in the floor covering. The traditional material of pavement is old stone and soil of different sizes, but nowadays most of the pavement materials of Traditional Villages are replaced by cement or thin slabs of uniform size.

80. Silver, Daniel, and Terry Nichols Clark. "The power of scenes: quantities of amenities and qualities of places." *Cultural Studies* 29.3 (2015): 425-449.



Figure 3-40 The Xian Dian of Guan Yu Temple in Zhang Dai Village in 2000 (before collapse). Source: *The Genealogy of the Zhang Dai Village*.



Figure 3-41 The Xian Dian of Guan Yu Temple and the gate of Buddha Temple on the west side, are viewed from the south side of the pond in 2000. Source: *The Genealogy of the Zhang Dai Village*, photographed before the collapse of Guan Yu temple.



Figure 3-42 At present, the Guan Yu temple on the east side of the gate of Buddha Temple has collapsed and is viewed from the south side of pond. Source: Photographed by the author.

始祖 ○ 諱 賜生子 長 好仁 次 好理
 二世祖 ○ 諱 好仁 賜之長子生四子一名大折本甲另戶編籍次名秀中
 永樂戊子舉人後折城西里編籍其三以下失其名見
 有一甲六甲本甲編籍日文曰愛為本甲另戶人係八世
 本曰孟秋為城西里人係九世行日世忠曰世明為本
 甲人係八世行日孟極曰孟志為本里六甲人係九世
 行其餘不可考矣
 ○ 好理 賜之次子生三子長名宿次名翔三名為俱編代村里七甲里長
 籍至崇禎年間搭里勻甲為代留里一甲里長籍五世琮
 之後編代留里
 四甲里長籍
 三世祖 頭門 ○ 宿 好理之長子應辟舉授官未幾請成雲南調回原 生一 恒
 明朝繼伍不登至清朝將軍戶汰去軍氏一統行差矣 子 恒
 二門 ○ 翔 好理之 生一子 智
 三門 ○ 翥 好理之 生二子 嚴 建
 四世祖 頭門 ○ 恒 宿之 生一子 太

Figure 3-43 The first page of family member records in Zhangdaicun Village's genealogy. Source: The Genealogy of the Zhang Dai Village.

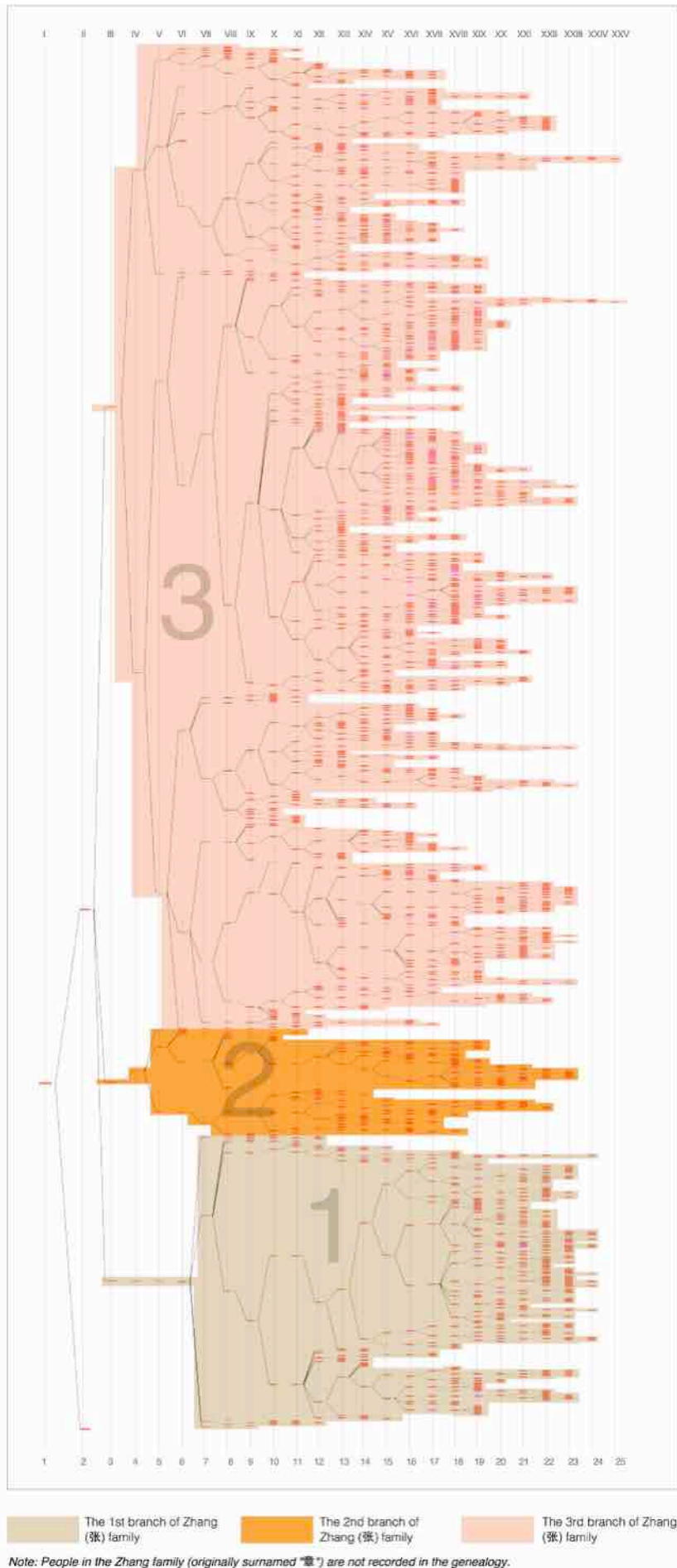


Figure 3-44 Schematic diagram of the Zhang family clan genealogy in Zhangdaicun Village. Each red dot represents a member of a genealogy. Source: elaborated by the author based on *The Genealogy of the Zhang Dai Village*.

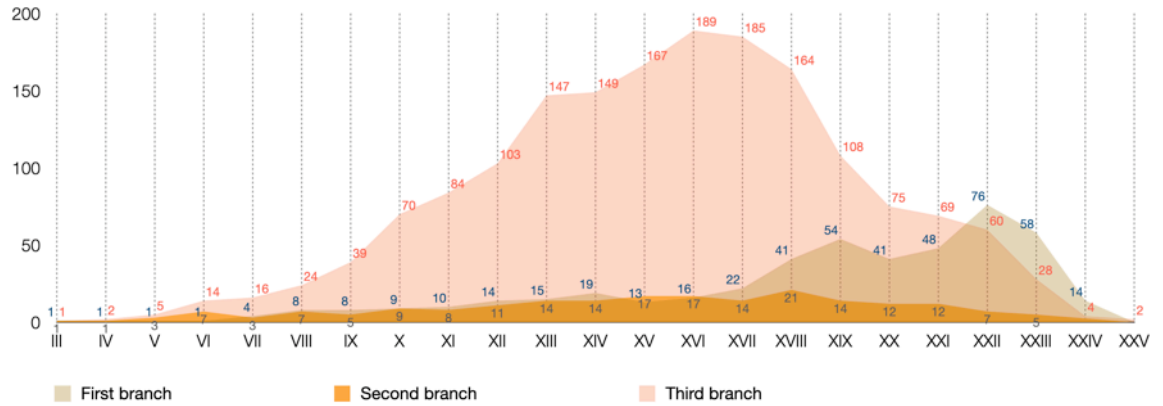


Figure 3-45 Intergenerational Changes in the Male Population of the Three Branches of the Zhang Clan in Zhangdaicun Village. Source: elaborated by the author.

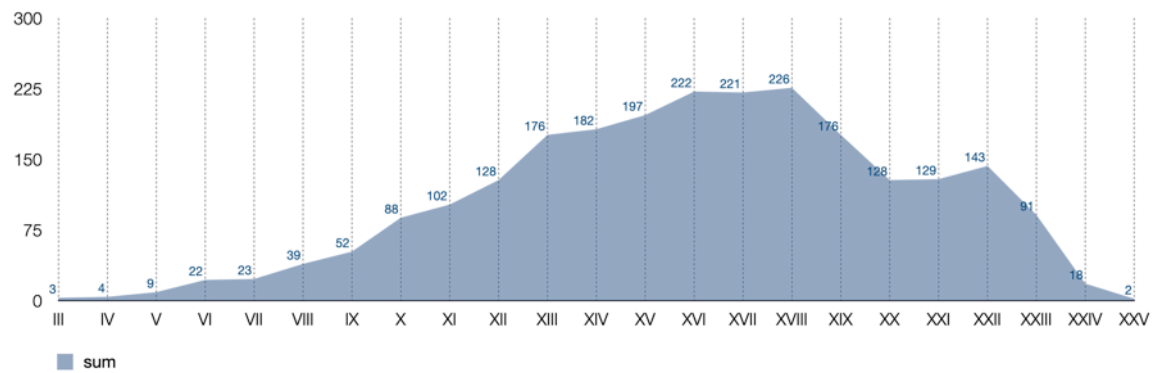


Figure 3-46 Intergenerational Change of the Total Male Population of the Zhang Clan in Zhangdaicun Village. Source: elaborated by the author

3.2.4 Introduction of Zhangdaicun Village

Zhangdaicun Village is a clan settlement surnamed Zhang. During the investigation, I found a genealogy, which recorded the names of 25 generations male members of the Zhang clan before 2005⁸¹. According to the records of Zhang's genealogy, the native place of the ancestor (first generation) of Zhangdaicun Village was Nanjing, and later he moved to Wuyan (in today's Jingbian County, Shaanxi Province) for his official career. Later the family moved to the east of Yichuan County, Shaanxi Province, and finally to Zhangdaicun Village, Hancheng County, Shaanxi Province. From the data collected so far, the exact time

81. Usually, only the names of male family members are recorded in the genealogy. But in a special case, the names of some women will also be recorded. In Zhangdaicun Village, in order to carry on the family lineage, some parents of families without male descendants will let their daughters marry "A live-in son-in-law". In feudal society, this meant that the husband had to live with his wife's family and work for his wife's family. The child of this daughter and her husband (aka "A live-in son-in-law") will follow her mother's surname. In this case, the daughter's name will be recorded in the genealogy along with her husband's name.

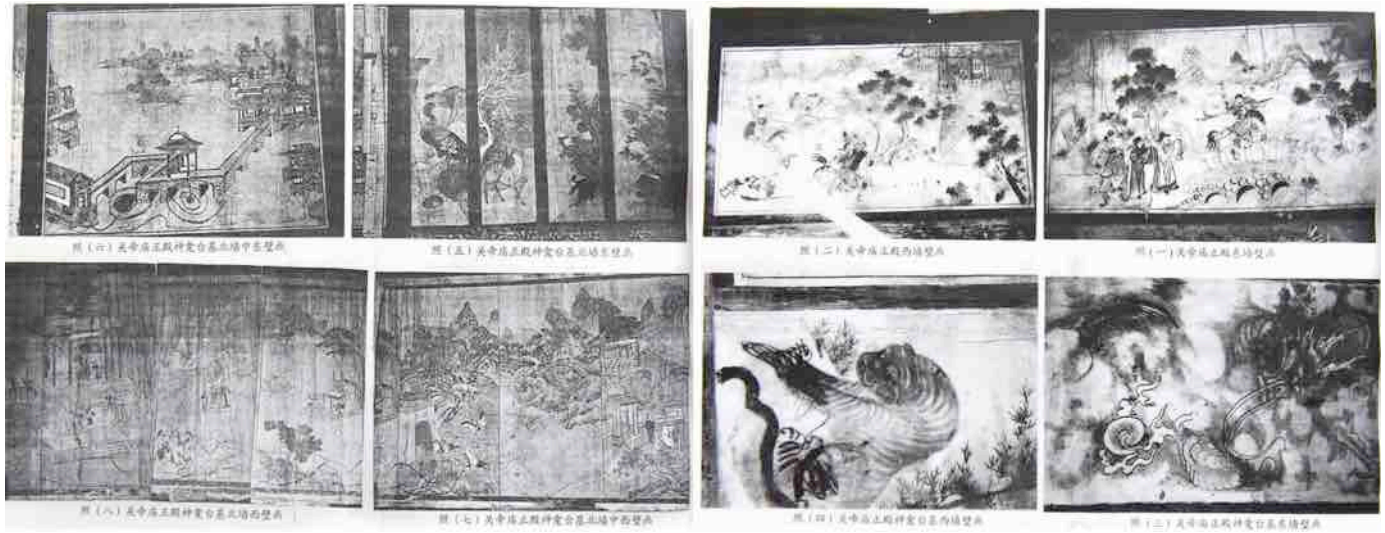


Figure 3-47 Murals in the main hall of Guandi temple in Zhangdaicun Village. Source: Zhang Mingchu, Zhang Tianyou, Zhang Binjie, Zhang Xiaocheng and Zhang Bingqiang, etc., *Zhangdaicun village's genealogical tree book*, edited based on the edition compiled in 1599, 1833, 1865, 1884 and 1911, Hancheng, 2005.

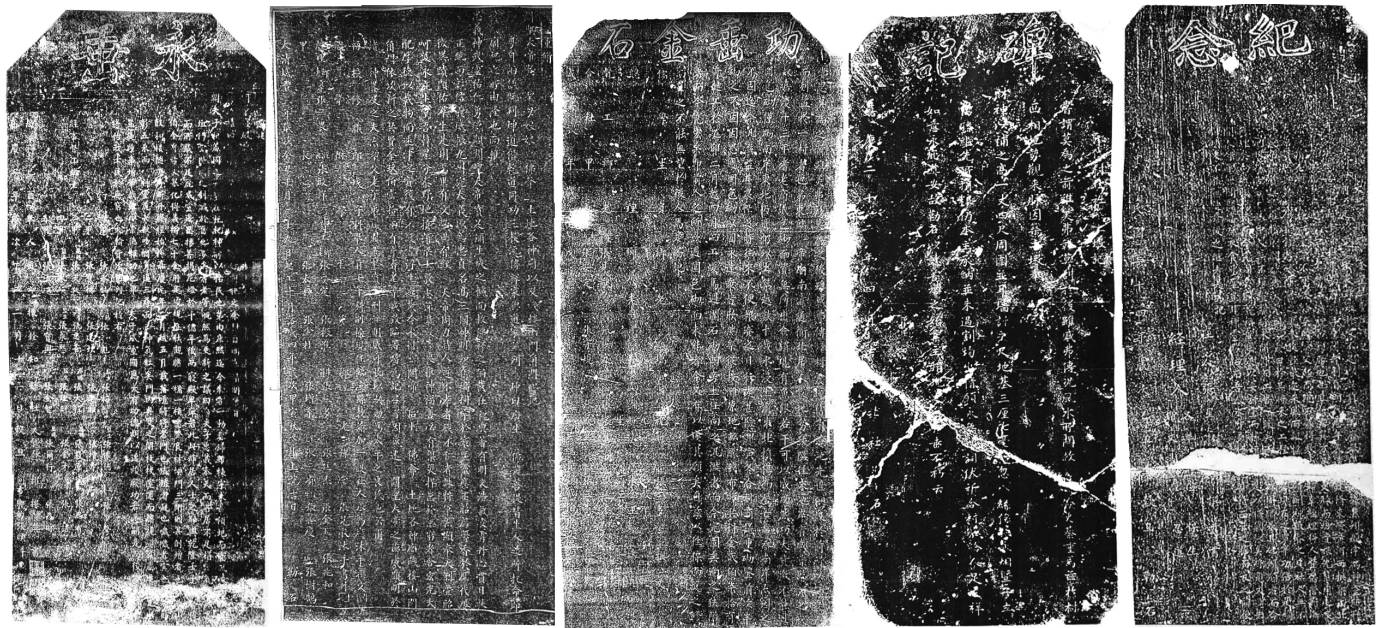


Figure 3-48 Rubbings of the stone tablets. Source: Zhang Mingchu, Zhang Tianyou, Zhang Binjie, Zhang Xiaocheng and Zhang Bingqiang, etc., *Zhangdaicun village's genealogical tree book*, edited based on the edition compiled in 1599, 1833, 1865, 1884 and 1911, Hancheng, 2005.

when the Zhang clan moved to Zhangdaicun Village is unknown. Zhang Jiaji (in Chinese: 张嘉绩), the tenth generation of the Zhang family, in his genealogy preface written in 1599, speculated that Zhangdaicun Village was founded in the Song Dynasty or Yuan Dynasty (the time span is roughly 960 to 1368 AD). The preface to the genealogy indicates that the Zhang family in Zhangdaicun Village had reproduced at least 10 generations as of 1599. If calculated according to the average reproduction rate of a generation of 25 years, the ancestors of Zhangdaicun Village might have lived in the mid-14th century, that is, the end of Yuan Dynasty in China.

According to the investigation of the descendants of Zhangdaicun Village, the oldest existing buildings in the village are the two temples (one of which has completely collapsed) at the eastern end of the village, and the Buddha Temple built in 1425 and Guan Yu Temple built in 1555⁸².

Usually, only the names of male family members are recorded in the genealogy. But in a special case, the names of some women were also recorded. In the history of Zhangdaicun Village, some families have no male descendants, and some parents of families without male descendants will let their daughters marry "A live-in son-in-law". From then on, the woman's husband lived with the woman's family and participated in the agricultural production of the woman's family. In this case, the daughter's name will be recorded in the genealogy along with her husband's name. The children of this daughter and her husband (aka "A live-in son-in-law") will follow her mother's last name. In a sense, the surname of this family composed of clan branches continues, so that the family's property has a legal heir.

According to the genealogy, the ancestor of the Zhang family was named Zhang Ci (in Chinese: 张赐). Zhang Ci gave birth to two sons, the eldest son was Zhang Haoren (in Chinese: 张好仁) and the second son was Zhang Haoli (in Chinese: 张好礼). At that time, the descendants of the eldest son moved to other places to live, so the villagers in Zhangdaicun Village are all descendants of the second son Zhang Haoli.

Haoli gave birth to three sons (the third generation in the genealogy), their names are Su (in Chinese: 宿), Xiang(in Chinese: 翔) and Zhu(in Chinese: 翥). According to the genealogy, I compiled a pedigree diagram (fig. 3-44). From the pedigree diagram, we can see that the offspring of the three of them formed three branches of the family, corresponding to the areas indicated by the Arabic numerals "1", "2" and "3" in fig. 3-44.

It can be seen from fig. 3-45 that since the sixth generation, the male population of the third branch has always been dominant. However, the total male population in the second branch is the smallest. In addition, it can be seen from fig. 3-46 that the first turning point of the decline in the total male population of the village is the eighteenth generation.

Every time the genealogy is revised, the time of revision and the generations of the people who participated in the revision have been recorded. This kind of related information in the genealogy of Zhangdaicun Village has been compiled by me in table 3-4. Based on these records, I speculate that most of the eighteenth generation lived in an era corresponding to approximately the entire 19th century.

82. Guan Yu Temple consists of two parts: the Xiang Dian (in Chinese: 享殿, sanctuary where deities are worshiped, also known as the main hall) and the Xian Dian (in Chinese: 献殿, a hall for worship, , also known as the front hall). The Xiang Dian, was built in 1555 and the Xian Dian was built in 1643.

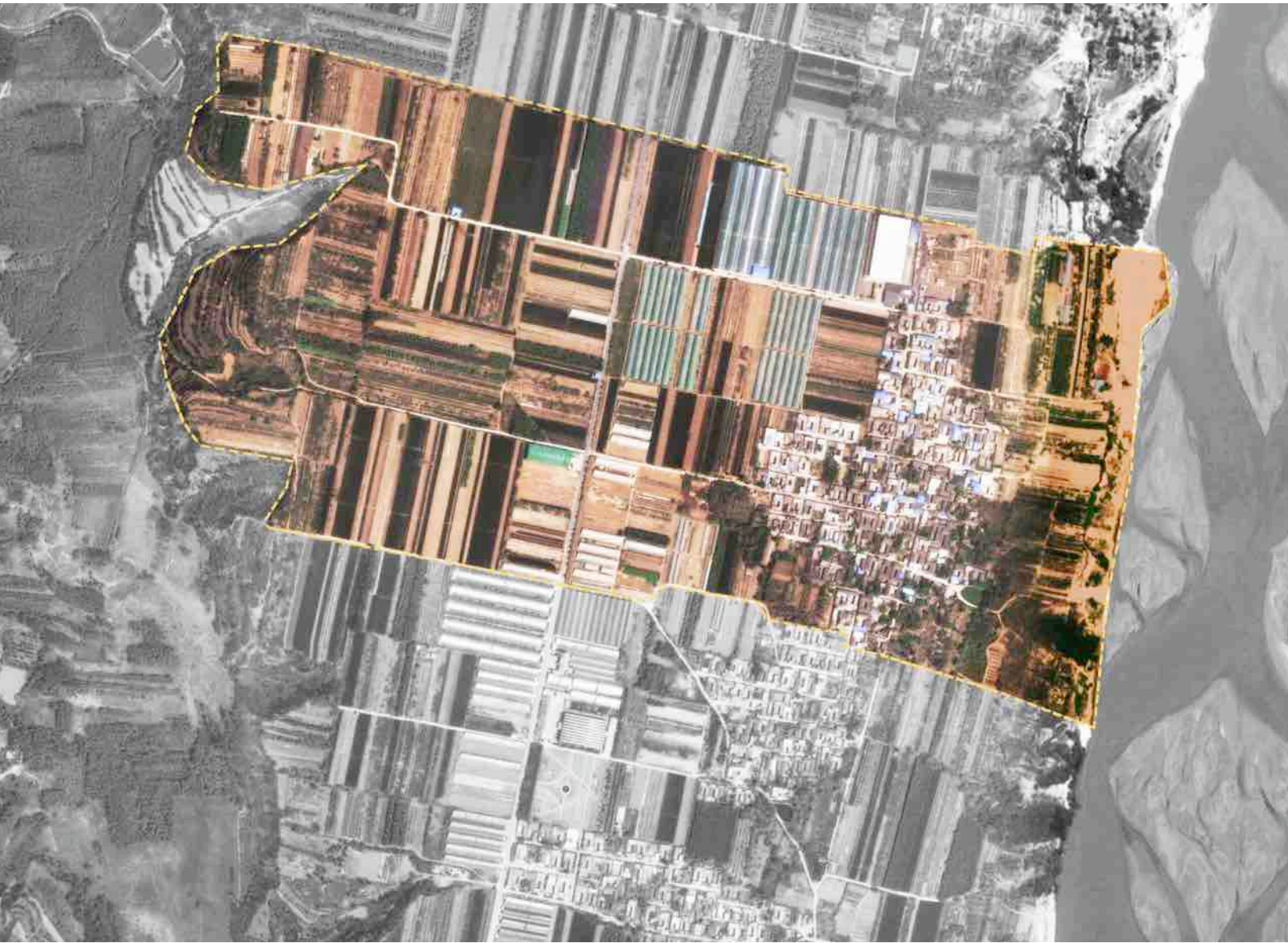


Figure 3-49 Zhangdaicun Village and the scope of its farmland. Source: OpenStreetMap © 2012–2020 Apple Inc.



Figure 3-50 Aerial view taken from above the west side of Zhangdaicun Village, 2018. The upper part of the photo is the Yellow River bed with a width of about 10 kilometers. Source: the copyright of the photo belongs to the village committee of Zhangdaicun Village, the author is authorized to use by Zhangdaicun Village Committee.

Table 3-4 The time of previous revisions of Zhangdaicun Village's genealogy and the generations of those who participated in the revision.

The year the genealogy was revised (Chinese chronology)	The year the genealogy was revised (the Christian era)	The name of the revisers	The revisers' generation
The 27th year of Wanli in the Ming Dynasty	1599	Jiaji (嘉績)	10th
The 1st year of Kangxi in the Qing Dynasty	1662	Tengxiao (騰霄)	11th
The 56th year of Qianlong in the Qing Dynasty	1791	Shuyao (述堯)	14th
The 33th year of Daoguang in the Qing Dynasty	1833	Deng"ao (登鳌), Jianyou(见猷)	15th
		Zhixue (志学), Zhaoxiu (肇修), Jing(敬)	16th
		Qixiang(啟祥), Chengqing (承庆), Wenwu (文午), Youzhi (友志), Sanduo (三多), Jinyu (金玉)	17th
		Zhaoyuan (兆元), Zhaoqing (兆庆)	18th
The 4th year of Tongzhi in the Qing Dynasty	1865	Dengdi (登第), Jianyou(见猷)	15th
		Jixiang (集祥), Qirui (啟瑞), Sanduo (三多), Jinyu (金玉)	17th
		Zhenshan (振善), Jian (鑑), Zhaoqing (兆庆), Zhende (震德), Jishan (继善), Jixiang (吉祥)	18th
		Qipeng (起鹏)	19th
The 10th year of Guangxu in the Qing Dynasty	1884	Bangyan (邦彦)	16th
		Tianji (天驥)	17th
		Weishan (维善), Mingshan (明善), Yiqing (漪清), Jun(筠), Dianbang (殿邦), Sishan (思善)	18th
		Qianji (謙吉), Tailai(泰来)	19th
The 3rd year of Xuantong in the Qing Dynasty	1911	Xintai (心泰), Wenji (雯吉), Hongji (鸿基), Qiyun (起云)	19th
		Chunrong (春荣)	20th
2005	2005	Tianyou (天佑), Mingchu (铭初)	21st
		Xiaocheng (效诚), Nianding(迺定), Bingjie (斌杰), Bingqiang (秉强), Bingkang (秉康)	22nd

Source: elaborated by the author. Data source: Zhang Mingchu, Zhang Tianyou, Zhang Binjie, Zhang Xiaocheng and Zhang Bingqiang, etc., Zhangdaicun village's genealogical tree book, edited based on the edition compiled in 1599, 1833, 1865, 1884 and 1911, Hancheng, 2005.

In addition, according to Zhang Yingquan, the head of Zhangdaicun Village, there was also a family in the village whose original surname is "Zhang" (in Chinese: 章, The pronunciation of "章" in Chinese is the same as "张"), who settled in Zhangdaicun Village earlier than the Zhang (in Chinese: 张) family. However, the "章" family was later attached to the "张" family and collectively changed the surname from "章" to "张", but the specific time of the change is unknown.

In addition, Zhang's genealogy also includes black and white photos of colorful murals before the temple was destroyed (fig.3-47), and rubbings of some stone steles found in village temples (fig.3-48). The main

content of the text on these steles is the repair time of the public buildings in the village (temples, theaters, water ponds, etc.) and the names of the sponsors.

3.3 Morphological Investigation of the spatial form: Zhangdaicun Village's case study

3.3.1 I- Analysis of morphological characteristics: relevance of natural landmarks

The chief feature of Zhangdaicun Village's geographic location is its location on the banks of the Yellow River. The Yellow River is the mother river of China. In the area of the Small North Reach of the Yellow River where Zhangdaicun Village is located, the villages on both sides of the Yellow River have communicated with each other by ferry since ancient times, and they often clashed for the right to cultivate the beach land on the broad riverbed of the Yellow River⁸³. The Yellow River is the link that connects the people in production, life, spiritual culture. At the regional spiritual and cultural level, there is also a cultural phenomenon that cross-domain administrative boundaries.

The villagers believe that since ancient times, the two sides of the Yellow River have had close exchanges in farming, medicine, beliefs, food, clothing, shelter, customs, dialects, common sayings, and fiber-stretching, and they are as close as a family. But in some years of famine, there will be conflicts over food problems. Zhouyuancun Village, 1.5 kilometers south of Zhangdaicun Village, is also located on the west bank of the Yellow River. According to the elderly in Zhouyuancun, in history (the exact time is unknown), Zhouyuancun and Sihou Village on the opposite bank of the Yellow River were fighting for farming the Yellow River flood land. As a result, a villager surnamed Chai of Zhouyuan village died, and the ancestral hall of surname Du in Sihou village was burned down by people surnamed Chai of Zhouyuan.

Since ancient times, in the Small North reach of the Yellow River area, the position of the river channel on the broad riverbed has changed irregularly, sometimes every few decades, and sometimes every hundreds of years.

Zhang Yingquan, a villager of Zhangdaicun Village, told me a story: The villages on both sides of the Yellow River near Zhangdaicun Village have the habit of farming the Yellow River floodplains. Compared with the plateau land, the soil on the flatland is more fertile and it is easy to irrigate, so the grain yield is much higher than that of the plateau land. However, there are risks involved in cultivating the floodplain. Once the floodplain is inundated by floods during the flood season, farmers will have no harvest. However, the generous rewards made villagers on both sides of the Yellow River venture to cultivate the floodplains.

83. Cf. Yingze Hu, *Flowing Land: A Social Study of the Small North reach of the Yellow River Since the Ming and Qing Dynasties*, (Beijing: Peking University Press, 2012).



- The riverbed of the Yellow River
- Zhangdaicun village
- Hancheng
- Jiwangshan Mountain
- Gushan Mountain

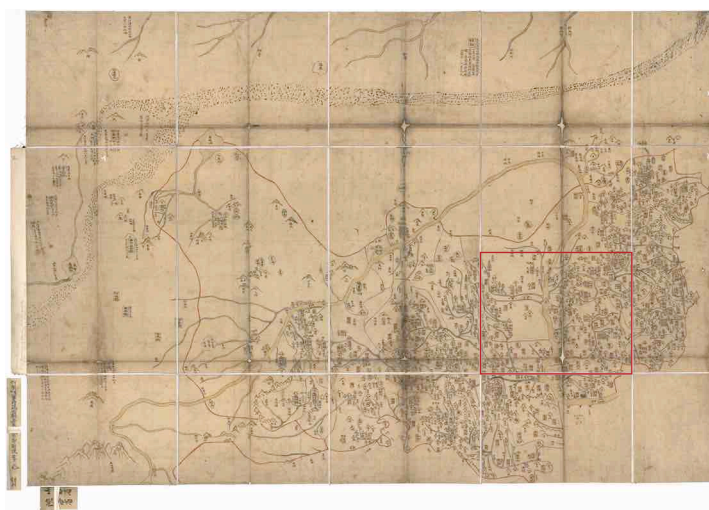


Figure 3-51 The great Ming Dynasty's atlas of mountains and seas (Published between 1721 and 1724), in Chinese: 大明一统山河图, Da Ming yi tong shan he tu. Source: Library of Congress Geography and Map Division Washington, D.C. 20540-4650 USA dcu. Digital Id: <http://hdl.loc.gov/loc/gmd/g7820m.gct00230>



Figure 3-52 Part of the Yellow River embankment map for six provinces, 1825, in Chinese: 六省黄河堤埝河道全图, Liu sheng Huang He sao ba he dao quan tu). Source: Library of Congress Geography and Map Division Washington, D.C. 20540-4650 USA dcu. <http://hdl.loc.gov/loc.gmd/g7822ym.gct00258>

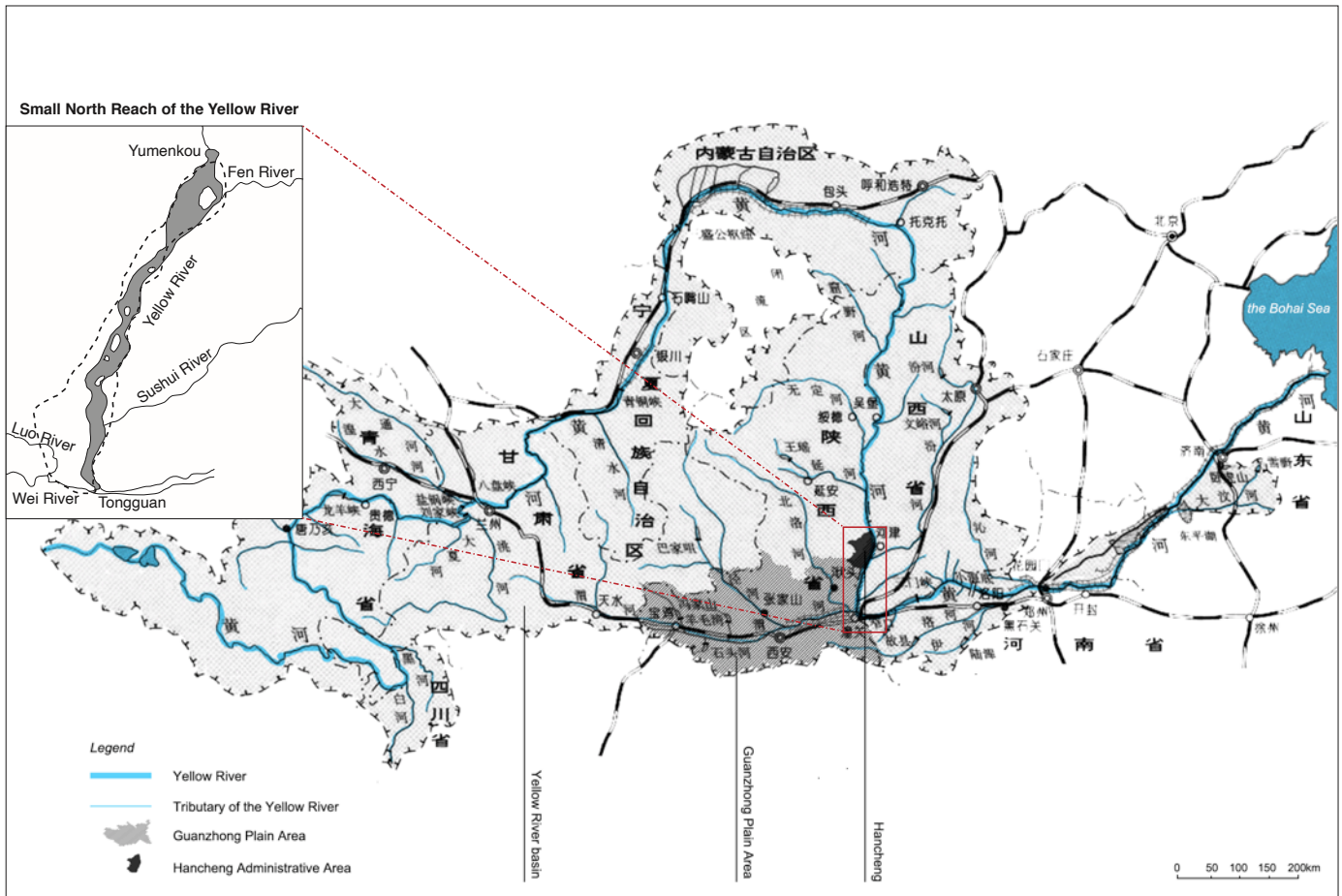


Figure 3-53 Schematic diagram of the scope of the Yellow River basin and the location of the Small North Reach of the Yellow River. Source: elaborated by the author.

About 300 years ago, the Yellow River near Zhangdaicun Village underwent a river diversion. The main river channel moved several kilometers westward. Before that, Zhangdaicun Village and other villages on the west bank of the Yellow River (as a community of interests) had been using the main river as the boundary to allocate farmland rights to villages on the east bank of the Yellow River. After the diversion of the Yellow River, the villagers on the east bank believed that the expanded beaches on the east side of the river should belong to the village on the east bank, so they began to cultivate the land that originally belonged to Zhangdaicun Village. Such behavior angered the villagers on the West Bank, and a fighting broke out between the east and the west. Two young men in Zhangdaicun Village sneaked into the east bank village one night, assassinated the leader of the east bank village, chopped off the head of the leader and brought it back to Zhangdaicun Village, and hung the chopped head on the flagpole of the village. The two young men became heroes in the village, but the contradiction between the East Bank and the West Bank was even more irreconcilable. So the villagers in the East Bank appealed to the court, and the emperor appointed an imperial minister to handle the case.

In the end, a ruling on the delimitation of farmland rights was formed: due to the uncertainty of the location of the river course, the Yellow River will no longer be used as the basis for the demarcation of the beach land in the future. The new demarcation method is based on the line-of-sight relationship between natural landforms and cultural landscapes. Standing on the riverbed's flood land and looking eastward, the areas where the villagers can see 'the peak of Jiwangshan Mountain' belong to the villagers on the west bank, while the areas in the eastern region where the line of sight is blocked by the cliffs on the east bank of the Yellow River where cannot see 'the peak of Jiwangshan Mountain' belong to the villagers on the east bank.

The story told by Zhang Yingquan illustrates the importance of the mountains on the east side of the Yellow River to villagers on both sides of the bank in agricultural production at least in the past few hundred years. This story aroused my interest in the cultural significance of Jiwangshan Mountain and guessed its influence on the morphology of villages on the west bank of the Yellow River.

In order to answer the above guess, the author analyzed 10 national-level Traditional Villages in Hancheng and several historical villages along the Yellow River. It was found that the main roads of many of the villages clearly pointed to the Jiwang Mountain or the Jiwang Temple in Wanrong County, Shanxi Province on the other side of the Yellow River. Although it has not been found in local gazetteers and other historical documents about the influence of the Jiwang Mountain on the layout of the villages on both sides of the Yellow River, we assume that this correspondence is not coincidental, but that the ancestors deliberately constructed the villages for the following reasons.

The basis for supporting this hypothesis is: In the history of China, there is a tradition of looking into the distance and worshipping the famous mountains and rivers, reflecting the reverence and admiration of certain mountains and rivers in a certain region. The Chinese ancients called this mountain or water area, which is viewed from afar and worshiped by Chinese people, as "a distant object of a region" (一方之望)⁸⁴. According to legend, Ji-Wang Mountain was the birthplace of the ancient Chinese god of the agriculture

84. Cfr. Shusheng Wang, Lu Shi, and Li Xiaolong, "A Distant Object of a Region: A Planning Model by Worship Mountain and water", *City Planning Review*, no. 4 (2017): insert 1-2. 王树声, 石璐, 李小龙, "一方之望: 一种朝暮山水的规划模式," *城市规划*, no. 4 (2017): insert 1-2.

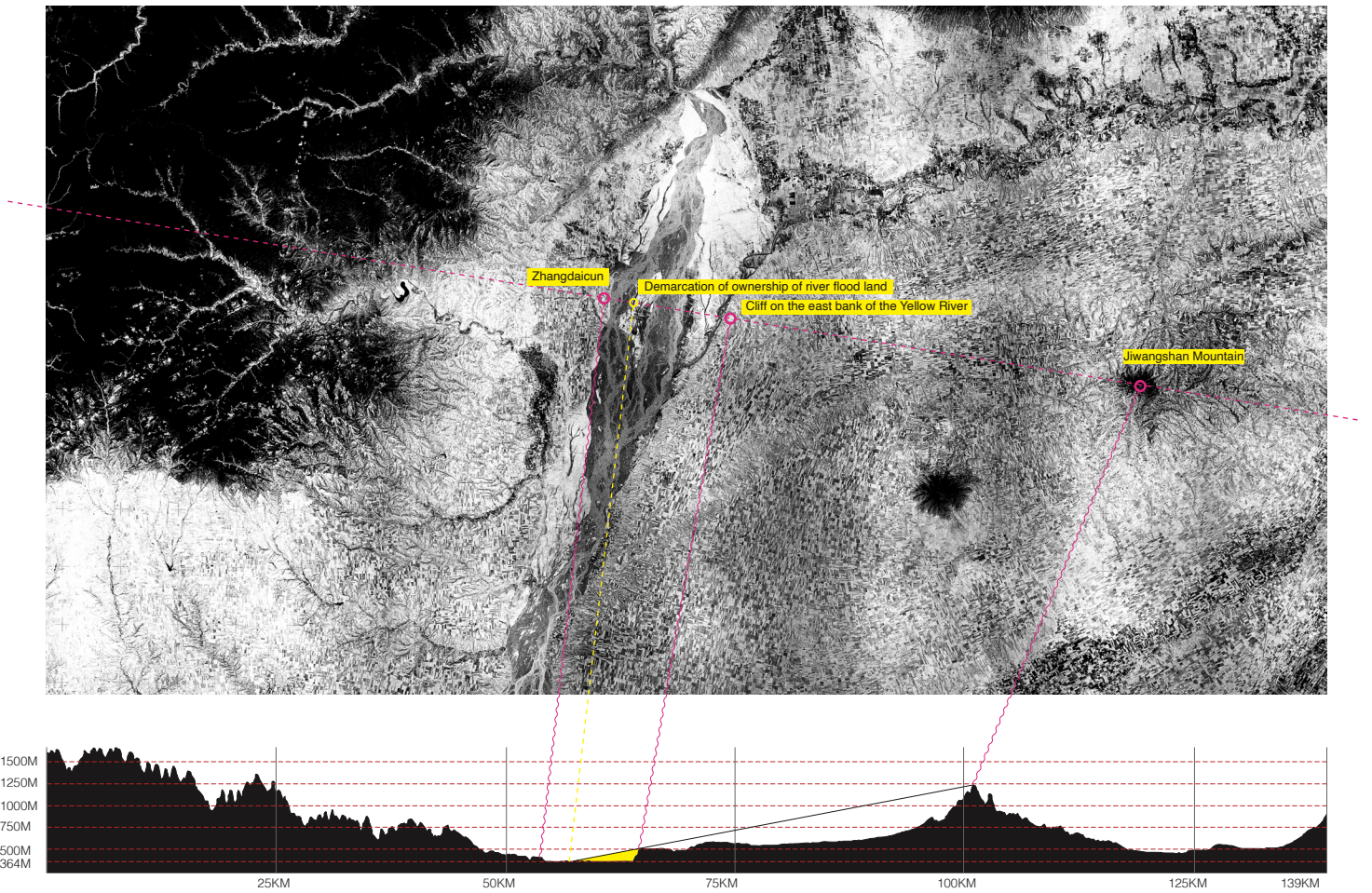


Figure 3-54 Analysis on the boundary of ownership of the Yellow River flood land under the influence of the peak of Jiwangshan Mountain. Source: elaborated by the author based on the photo from USGS (United States Geological Survey) taken in 1973, Base map Declass 1 (1996), DZB1208-500151L001001 © earthexplorer.usgs.gov.

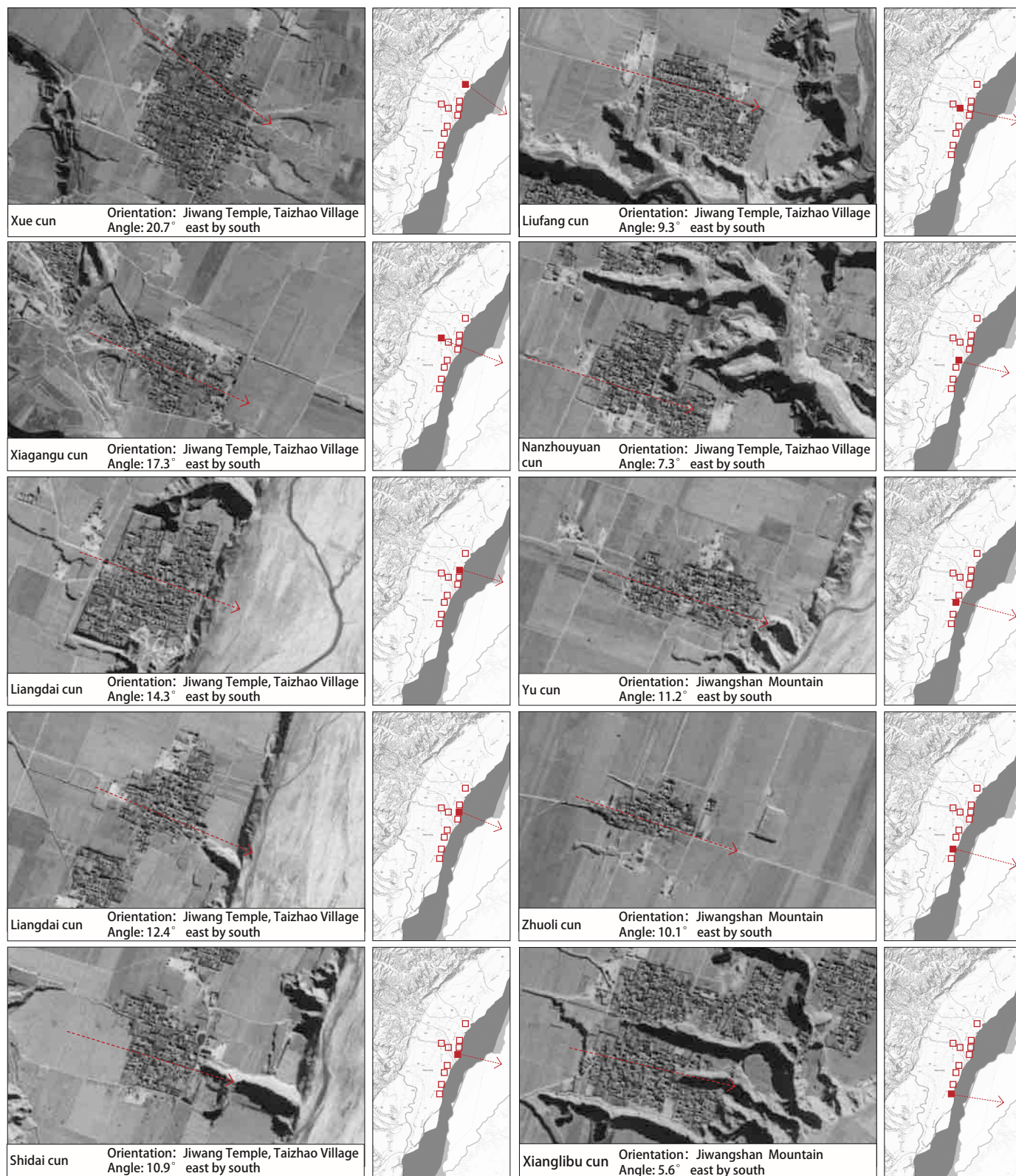
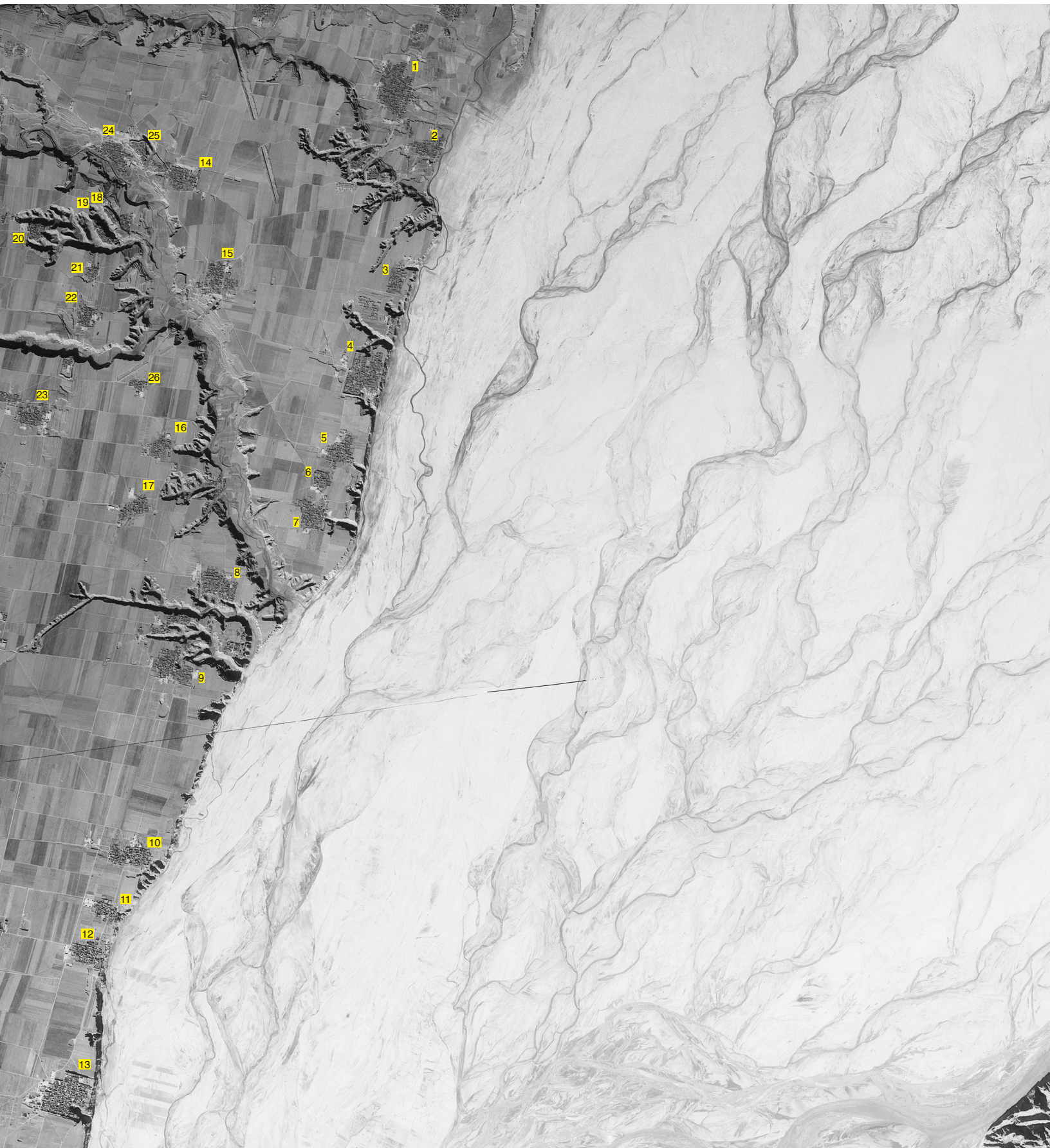


Figure 3-55 Analysis on the main street orientation of the villages on the west bank of the Yellow River in Hancheng. Source: elaborated by the author.



- | | | | | |
|---------------------------|-----------------|-------------------|-----------------------------------|-----------------|
| 1. Xue cun | 6. Wangdai cun | 11. Dingjia cun | 16. Xinmin cun | 21. Beiyuan cun |
| 2. Hexia cun (demolished) | 7. Shidai cun | 12. Hedu cun | 17. Wangzhuang cun | 22. Yuan cun |
| 3. Huashi cun | 8. Liufang cun | 13. Wuxing cun | 18. Nanyangshangzhai (demolished) | 23. Ya'erpo cun |
| 4. Liangdai cun | 9. Zhouyuan cun | 14. Xiangangu cun | 19. Xiejialaozhai (demolished) | 24. Dangjia cun |
| 5. Zhangdaicun cun | 10. Yu cun | 15. Xiejia cun | 20. Liu cun | 25. Biyangbu |



Figure 3-56 The area on both sides of the Yellow River near Zhangdaicun village in 1967. Source: USGS (United States Geological Survey), Base map Declass 1 (1996), DS1102-2135DA120 © earthexplorer.usgs.gov.

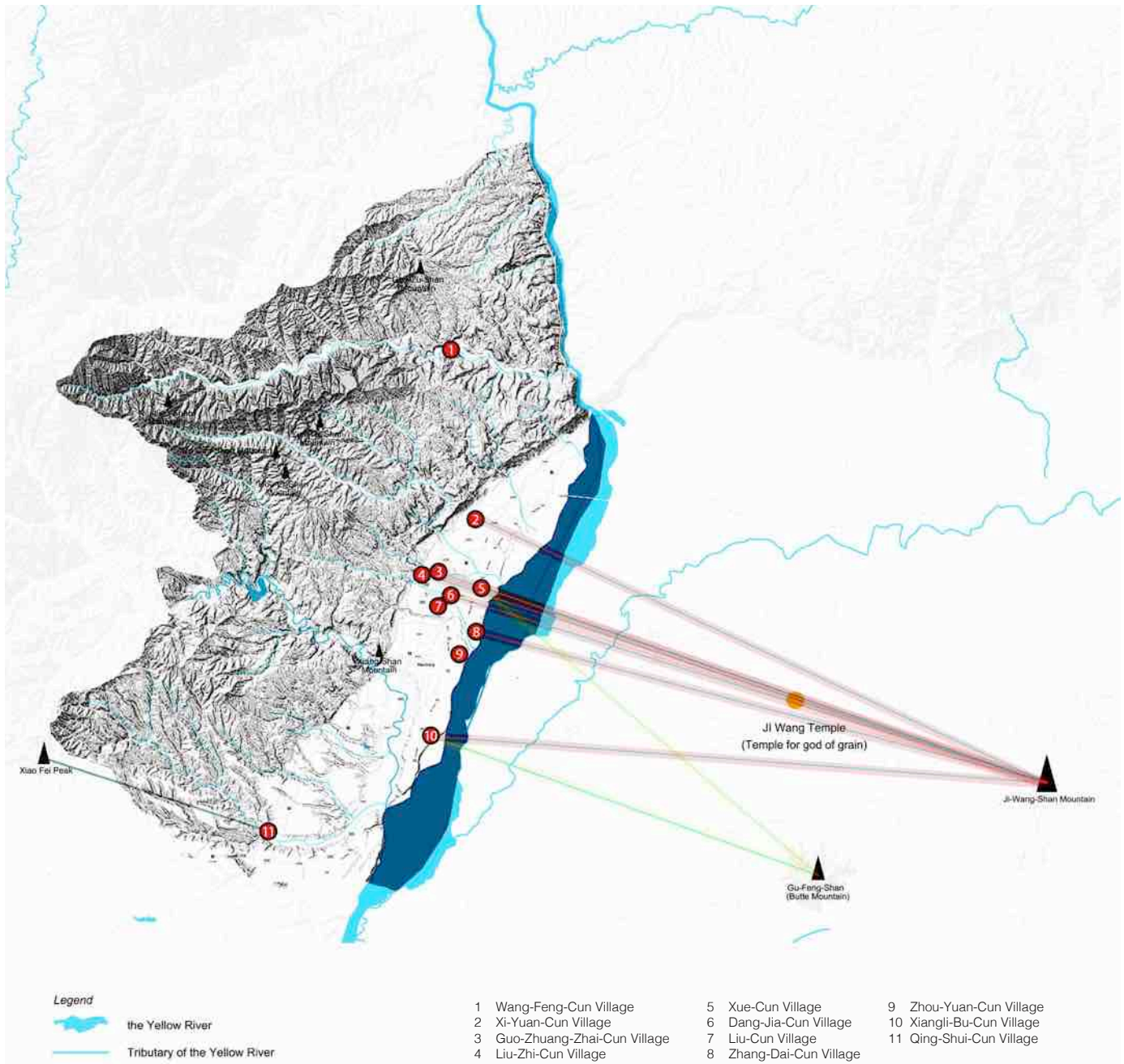


Figure 3-57 Visual connection between the main road direction in the village and the surrounding cultural landscape. Source: Elaborated by the author.

Hou Ji. Roughly after the Zhou dynasty, China formed a tradition of worshipping Hou Ji(后稷), and the Ji-Wang-Shan Mountain was the center of the worshipping activities. In ancient China, which was dominated by farming civilization, Ji-Wang Mountain had a lofty position. In Jishan County Annals published in 1815, it is stated that "in the south of county, there is a temple on the top of the Ji-Wang Mountain, 50 *Li*⁸⁵ south of the county seat. At the beginning of the Ming Dynasty, on April 17th (Chinese Lunar Calendar), the state sent officials to the Ji-Wang Temple to host the sacrificial activity⁸⁶. Therefore, the sacrifice to Ji Wang belongs to the state sacrifices, and its influence is very great. In addition, located at 20 km west of Ji-Wang Mountain, the Ji Wang Temple (located in Zhaotai Village, Wanrong County, Shanxi), its existing main hall was built in 1023⁸⁷.

As mentioned above, many villages in Hancheng were built later than the construction age of the Ji-Wang Temple. Take Zhang-Dai-Cun Village as an example. Later generations verified that the village's construction time was about the end of the 13th century, more than 700 years ago. The oldest surviving building in the village are the two temples at the eastern end of the village. They were the Buddha Temple built in 1425 and the Guandi Temple built in 1555⁸⁸. The main road connecting the eastern temple and Laochi Lake in the village is oriented 18° south to the east, heading toward the Ji-Wang Mountain. The main lanes of Xue Village, Xiaganggu Village, Huashi Village, Liang Dai Village, Zhang Dai Village, Wang Dai Village, Shidai Village, Liufang Village and Zhouyuan Village in the north of latitude 35°28' all point to Ji Wang Temple, while the Yu villages, Hedu Village, Zhuoli Village and Xianglibao Village in the south of latitude 35°28' all face Ji Wang Mountain Pagoda in the Song Dynasty at the top of Ji Wang Mountain. (table 3-6). Therefore, it is possible to speculate that at the beginning of the construction of the villages, which regard agricultural production as the fundamental, the ancestors point the road axis of the village to Ji-Wang mountain, in order to strengthen the line of sight and spiritual worship.

85. Li is a Chinese unit, 1 Li is equal to 0.5 kilometers.

86. Yingchen Zhang, Chizuan Wang, *Ji Shan Xian Zhi*, (1815, repr., Beijing: Zhonghua Book Company, 2018). 张应辰, 王擗纂, *稷山县志*, (1815, repr., 北京: 中华书局, 2018).

87. Xu, Yitao, "The basic method of determining the age of Chinese ancient architecture by the technology of carbon fourteen dating: A case study of the age of the main hall of Ji Wang Temple in Wanrong, Shanxi," *Cultural Relics*, 9(2014): 91-96. 徐怡涛. "论碳十四测年技术测定中国古代建筑建造年代的基本方法——以山西万荣稷王庙大殿年代研究为例." *文物* 9(2014):91-96.

88. Cf. Zhang's family Zhang's genealogy, 2005 edition, revised by Zhang Mingchu, Zhang Tianyou, etc. Revised according to the 1599, 1833, 1865, 1884, and 1909 editions.

Table 3-5 The relationship between the street direction of the Traditional Village and the sight line of the natural marker. Analysis shows that the direction of the main road in some villages is the same or very close to the direction of Jiwangshan Mountain.

Village name	Angle of main road 1 (degrees north west)	Angle of main road 2 (degrees north west)	Azimuth1. To Ji-Wang-Shan Mountain	Azimuth2. To Ji-Wang Temple
Wang-Feng-Cun	33		37	47
Xi-Yuan-Cun	16		36	31
Guo-Zhuang-Zhai-Cun	17		21	23
Liu-Zhi-Cun	24	20	20	20
Xue-Cun	23	38	20	21
Dang-Jia-Cun	21	12	20	18
Liu-Cun	7		19	16
Zhang-Dai-Cun	20	13	18	13
Xiangli-Bu-Cun	15	8	16	5

Source: elaborated by the author.

The above findings cannot fully prove that the main road of the village facing Jiwangshan Mountain is the active choice of people during the construction of the village. Because the direction of these roads is consistent with the direction of the roads in the fields surrounding the village, so this phenomenon may also be an accidental result under the influence of terrain slope. But in any case, looking at Jiwang Mountain from the road of the village has become the collective memory of the villagers for generations. As a spiritual surface, Jiwangshan Mountain is of great significance to the people on both sides of the Yellow River. Therefore, this line of sight connection between villages and mountains has become an important latent feature of the morphology of villages along the Yellow River.

As stated, in the past few decades, the city of Hancheng and the vast majority of villages have continued to expand. In this process, the above-mentioned planning tradition of combining the natural environment elements with the visual connection of space construction has been discarded. Walking on new roads outside the core historical areas of the city and the village, we can hardly find any visual connection with the Jiwang Mountain, the Jiwang Temple or other natural environmental markers. In figure 3-12, the red streets are historical roads, and the black roads are formed by the expansion of settlements in recent decades. This figure can help people to distinguish the historical core area of the village more easily.

On the other hand, like the dialogue at the beginning of this chapter, industrial waste gas emissions from coal companies and large steel companies that have been built since the 1950s have caused a decline in air quality in the region. Air pollution caused a decrease in visibility, making the markers on the original visual corridor of landscape difficult to identify.

To the south of Zhouyuan Village, there is an ancient chrysanthemum tree 300 meters away from the Yellow River. The height of the tree is nearly 40 meters. A Shanxi native on the east bank of the Yellow River said that in the hot summer afternoon, the shadow of this tree would fall into his yard. Because of the existence of this tree shadow (from 10 kilometers away), his family likes to enjoy the cool in the yard.

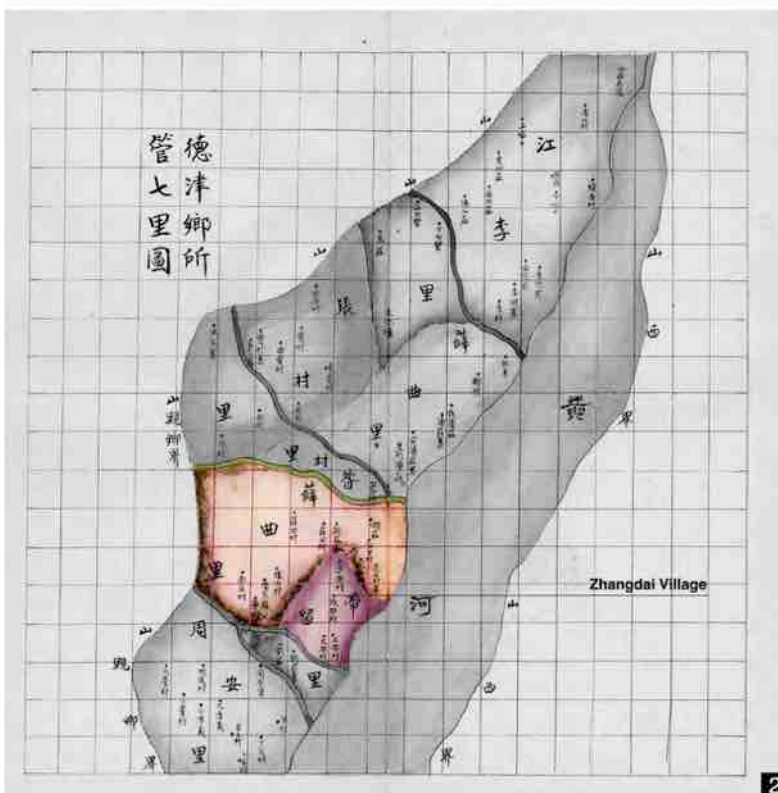
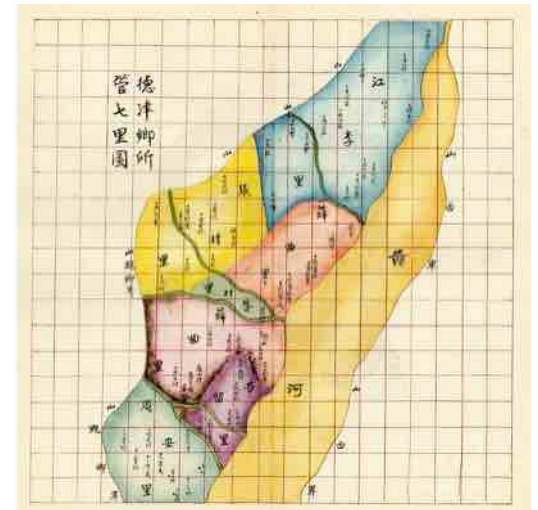
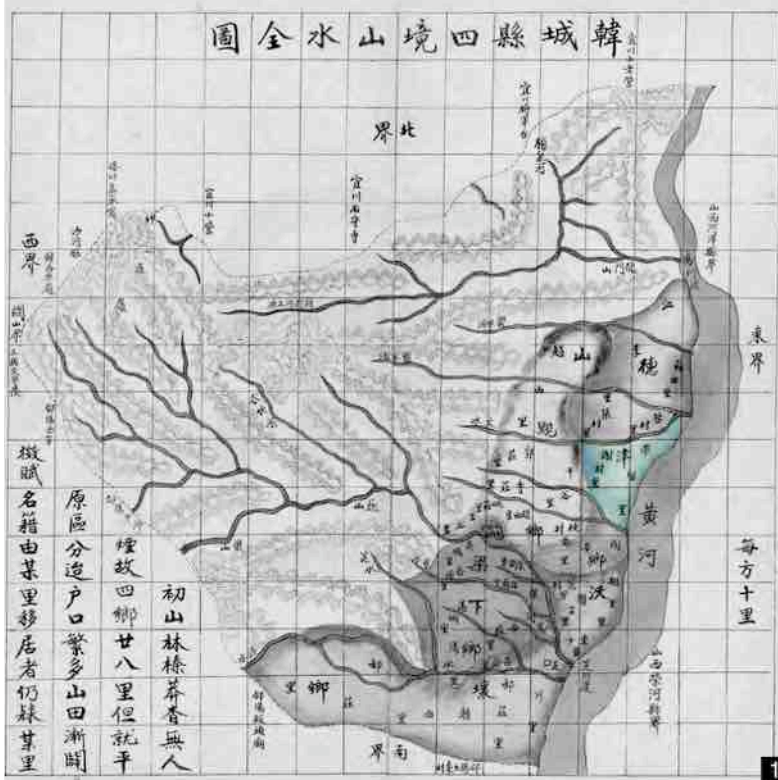


Figure 3-58 The location of the "Peninsula" area between the Bi River and Wen River on the map originally drawn by Zhang Ruiji in 1906. Source: Elaborated by the author based on Zhang, Ruiji. Hancheng County Local Records. 1906. Scanned in Hancheng Archives.

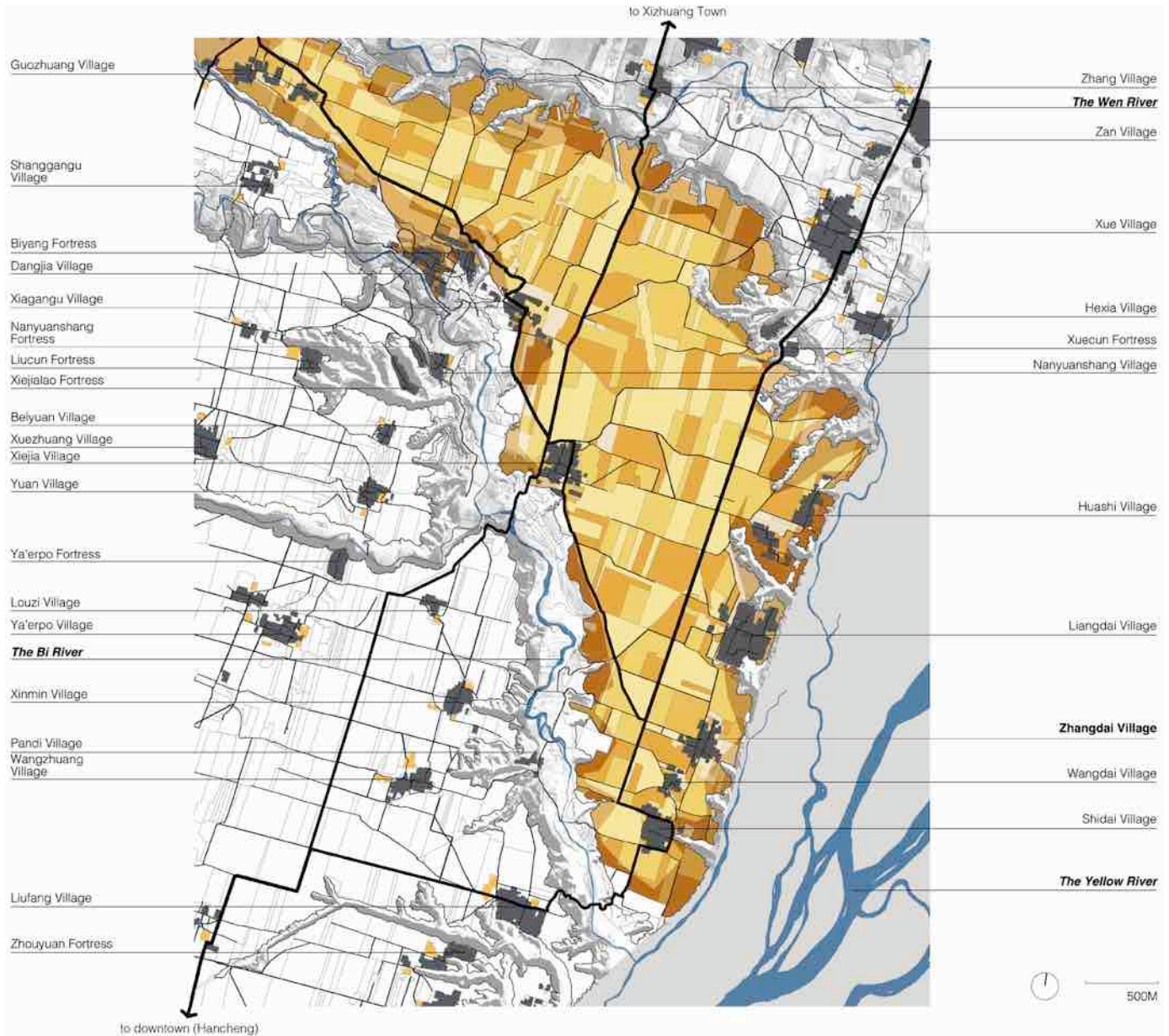


Figure 3-59 The relationship between cultivated land and villages in the Loess Plateau in the "Peninsula" area between the Bi River and Wen River in 1960s. Source: Elaborated by the author, mapping based on the 1967 satellite imagery from USGS.

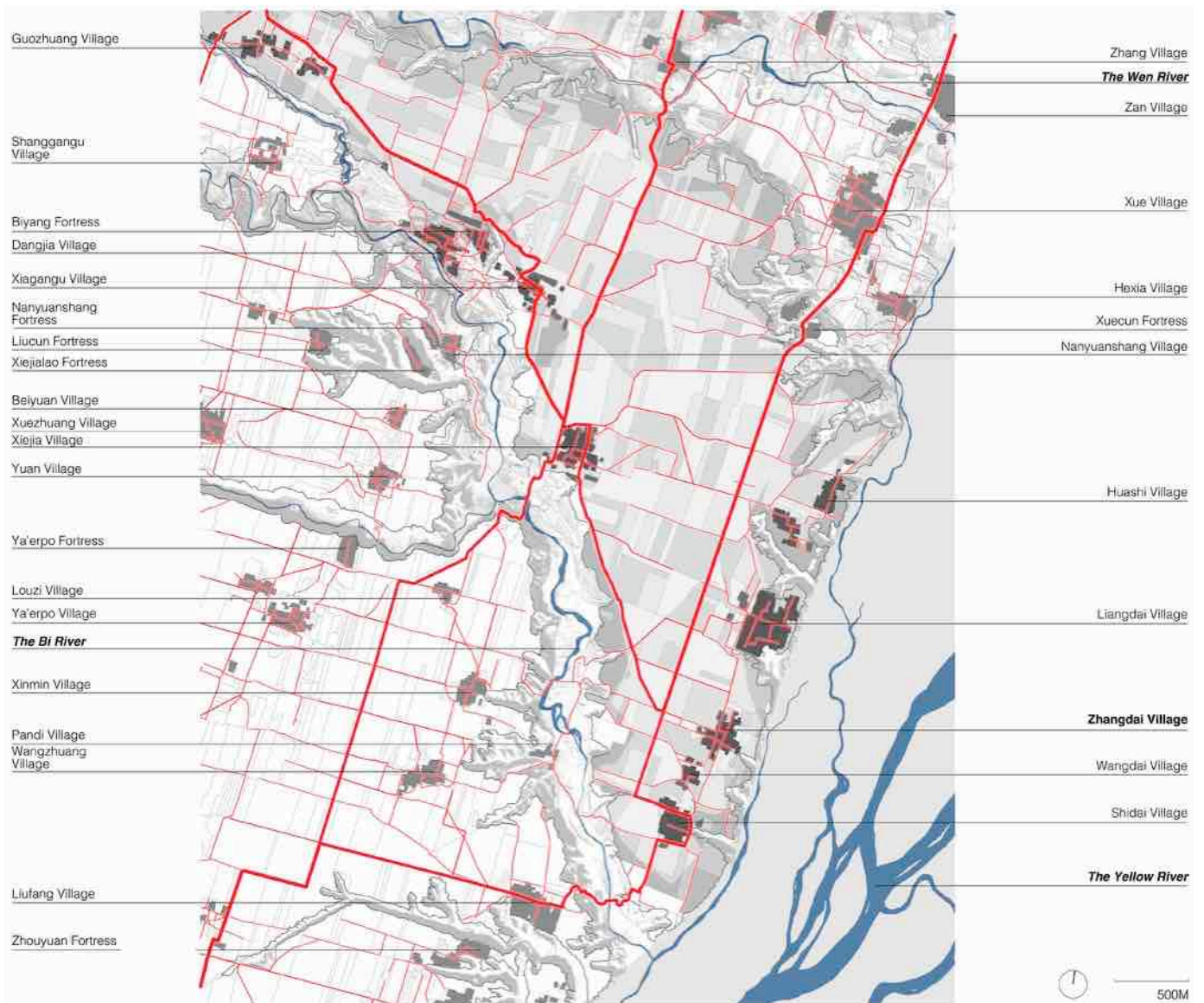


Figure 3-60 The road system links the Loess Plateau in the "Peninsula" area between the Bi River and Wen River and the outside in the 1960s. Source: Elaborated by the author, mapping based on the 1967 satellite imagery from USGS.

In the past, there were some folk proverbs related to the Yellow River and the mountains on the other side of the Yellow River in Zhangdaicun village and its nearby villages. For example, "when a long-term worker sees a hat like cloud on a lonely mountain, he goes to sleep because a heavy rain is coming soon"⁸⁹, "The rain in the East doesn't cross the river (the Yellow River), but when it crosses the river, it must be heavy rain"⁹⁰. These proverbs prove that in the past, agricultural production and life on the West Bank of the Yellow River were closely related to the scene on the other side of the Yellow River.

3.3.2 II- Analysis of morphological characteristics : detect geomorphic units formed by the surrounding environment

3.3.2.1 Geomorphic units

In order to avoid confining the reading of the landscape to only the dimensions of aesthetic perception, it is necessary to measure the landscape in the structural relationship of the landscape, that is, to identify its structure and internal fields, and to link the different scales it contains. Settlement forms have recognized theories and operating tools, which can dig into the depth of historical levels, beyond visible aspects and instantaneous values. According to Samonà, we should treat the landscape as a context that includes other contexts. These contexts require multidisciplinary reading to solve the multiple systems it contains (architectural settlements, territories, hydrogeography, socioethnology, justice, economic systems, etc.). As the concept of context is the basis of urban research, as far as architecture and settlement regional system are concerned, it includes all concepts of city, architecture, environment, region and landscape, and enables them to be read at the structural, cultural, economic, social and historical levels⁹¹.

Under the current administrative division, Zhangdaicun Village is a natural village subordinate to Shidai Village, Xizhuang Town, Hancheng County (Shidai Village has three natural villages: Shidai Village, Wangdai Village, and Zhangdaicun Village), is 7 kilometers away from the center of the ancient city of Hancheng and 5 kilometers away from the center of Xizhuang Town, covering an area of 3 square kilometers. The special feature of the village's geographical location is that it is located between two river valleys. To the east of the village is the Yellow River valley (riverbed) with a width of about 10 kilometers, and the Bi River valley with a width of about 400 meters to the west. The Wen River Valley is 2.5 kilometers north of the village.

Zhangdaicun Village is located on a "peninsula" enclosed by the above three river valleys (the Yellow River in the east, the Bi River in the south and the Wen River Peninsula in the north). In this thesis, the peninsula is named Bi River-Wen River Peninsula, or Bi-Wen Peninsula for short. Before the construction of modern roads, Bi-Wen Peninsula was a relatively closed area.

89. In Chinese: 孤山云戴帽, 长工睡大觉, 白雨马上就来到。

90. In Chinese: 东雨不过河, 过河了可是大雨。

91. Laura A. Pezzetti, *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rurban Landscape*. (Tongji University Press, 2019), 156.

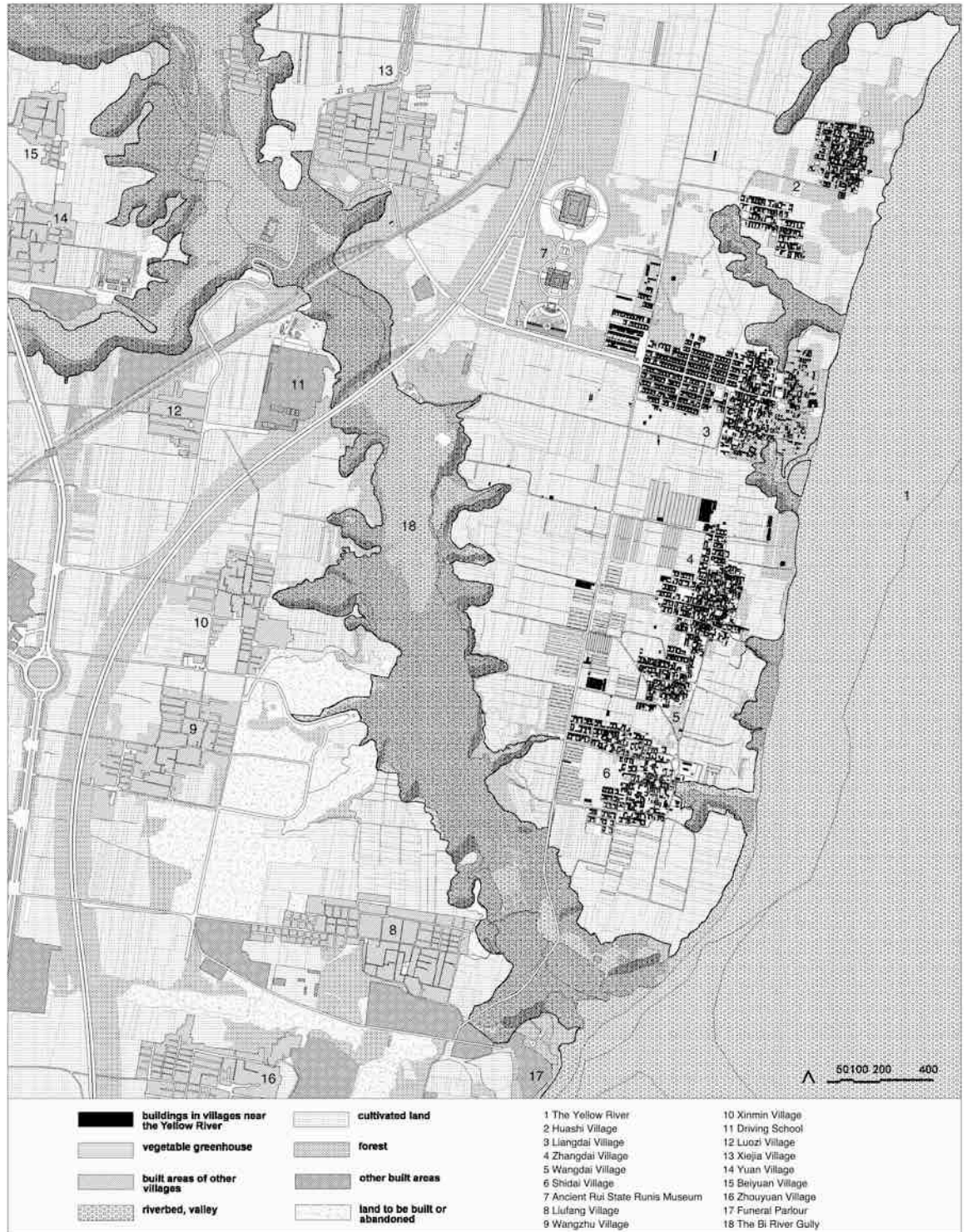


Figure 3-61 Analysis of the topography around Zhangdaicun Village (South of Bi-Wen Peninsula) in 2019. Source: Elaborated by the author.



Figure 3-62 The location of Zhangdaicun Village is marked in the schematic section: Zhangdaicun Village faces the Yellow River to the east, plains and a ravine to the west, and mountains in the west of Hancheng farther away. Source: Elaborated by the author.



Figure 3-63 An aerial image taken at an altitude of 100 meters, taken from west to east. The center of the picture is the settlement of Zhangdaicun Village, and Wangdai village and Shidai village are on the right. Source: the copyright of the photo belongs to the village committee of Zhangdaicun Village, the author is authorized to use by Zhangdaicun Village Committee.



Figure 3-64 An aerial image taken at an altitude of 100 meters, taken from east to west. Source: the copyright of the photo belongs to the village committee of Zhangdaicun Village, the author is authorized to use by Zhangdaicun Village Committee.

The peninsula is a relatively independent area in topography, which is called a **geomorphic unit** by the author. This **geomorphic unit** has the common geomorphic features and cultural landscape features of the Loess Plateau in the east of Hancheng (between the mountains in the West and the Yellow River in the East). These features include:

1. High in Northwest and low in Southeast;
2. Loess tableland is cut by gully;
3. The rural settlements are in the form of collective villages;
4. In the traditional period (before 1950's), villages had systematic defense facilities in the form of village integration or village separation;
5. In the traditional period (before 1960's), every village had similar production and living space and facilities except residence, including Waterloo pool, threshing field, archway, ancestral hall, temple, stage, brick pagoda, Earth Tower, ceremonial gate on the main road, etc;

In addition, this geomorphic unit has some unique features, including:

1. It is close to the Yellow River;
2. The Loess Plateau continued to shrink under the scouring action of the Yellow River;
3. The land for agricultural production includes the Yellow River bed's flood land;
4. The change of runoff form of the Yellow River makes the natural landscape and cultural landscape change.

The villages in the Bi-Wen Peninsula are all built on the edge of the island (fig. 3-59). The reason may be that it is convenient to defend against bandits and as little as possible to destroy the integrity of the cultivated land on the island.

From the satellite photos in the 1960s, we can also see that there are two main roads connecting Zhangdaicun Village to the outside world through the peninsula. One is a road parallel to the Bi River valley, leading to Xiejia Village; the other road is parallel to the Yellow River, which closely connects the five villages along the banks of the Yellow River (fig. 3-60). The five villages (from south to north) are Shi-Dai Village, Wang-Dai Village, Zhang-Dai Village, Liang-Dai Village and Hua-Shi Village. The locals collectively call these five villages "Four Dai One Hua"(四带一化).

Since the 1990s, in order to facilitate the passage of cars, the main road connecting the villages on the peninsula has gradually changed from unsurfaced roads to cement roads. In 2014, in order to facilitate external transportation, the roads on the west side of the five villages ("Four Dai One Hua") were extended to the south, and roads across the Bi River Valley were built. Connected to the road on the south side of Liufang Village, this road is convenient for vehicles to access the 108 National Highway (fig.3-61) built in 2015. The 108 National Highway leads to Hancheng downtown in the south and to Xizhuang Town and Shanxi Province on the opposite bank of the Yellow River in the north. Before that, the road connecting Zhangdaicun Village and the urban area were unsurfaced roads.

Comparing fig.3-65 and fig.3-66, we can see that people have not only transformed the village, but also made great changes to the external environment of the village. For example, in order to build the road on

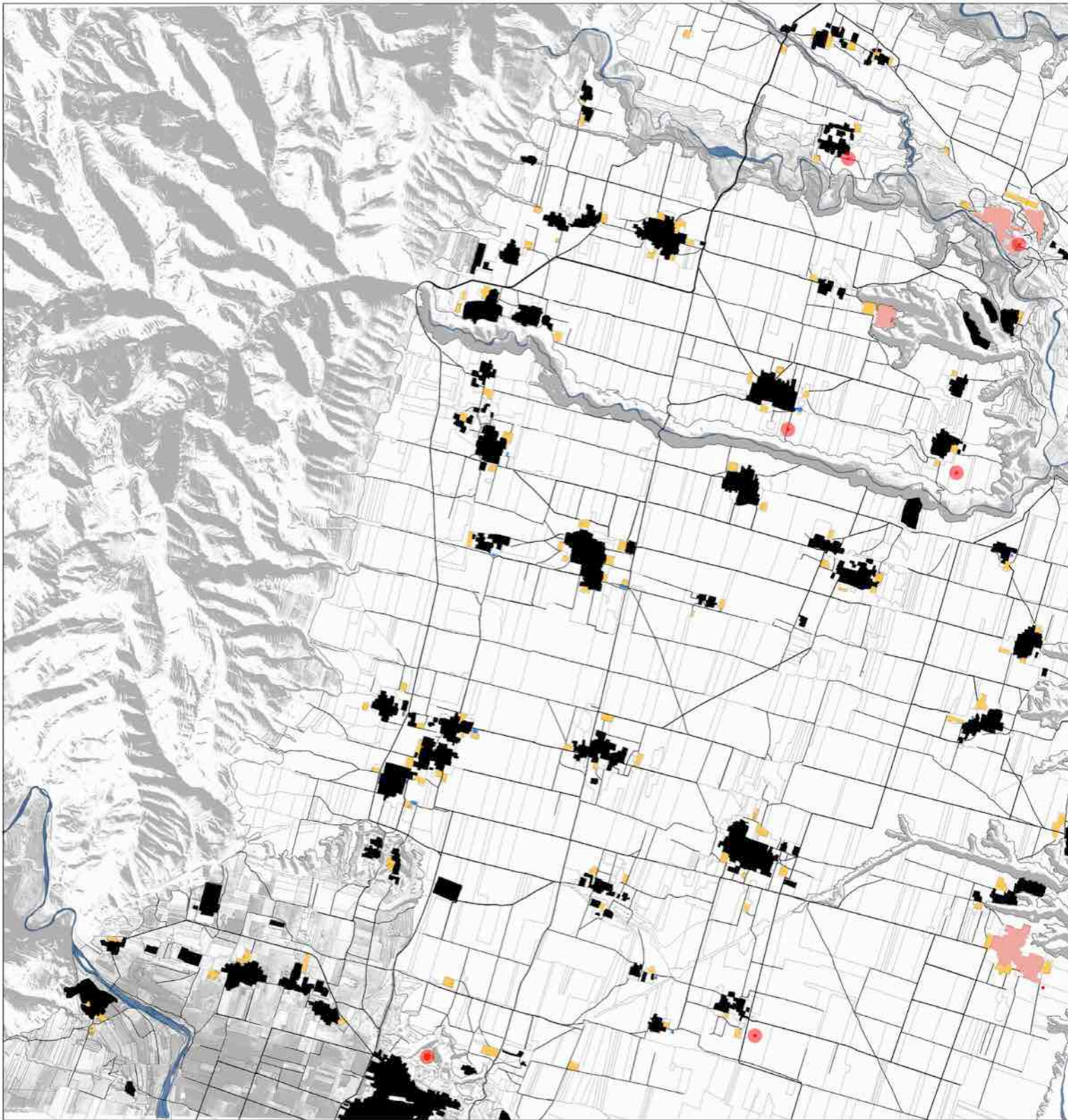
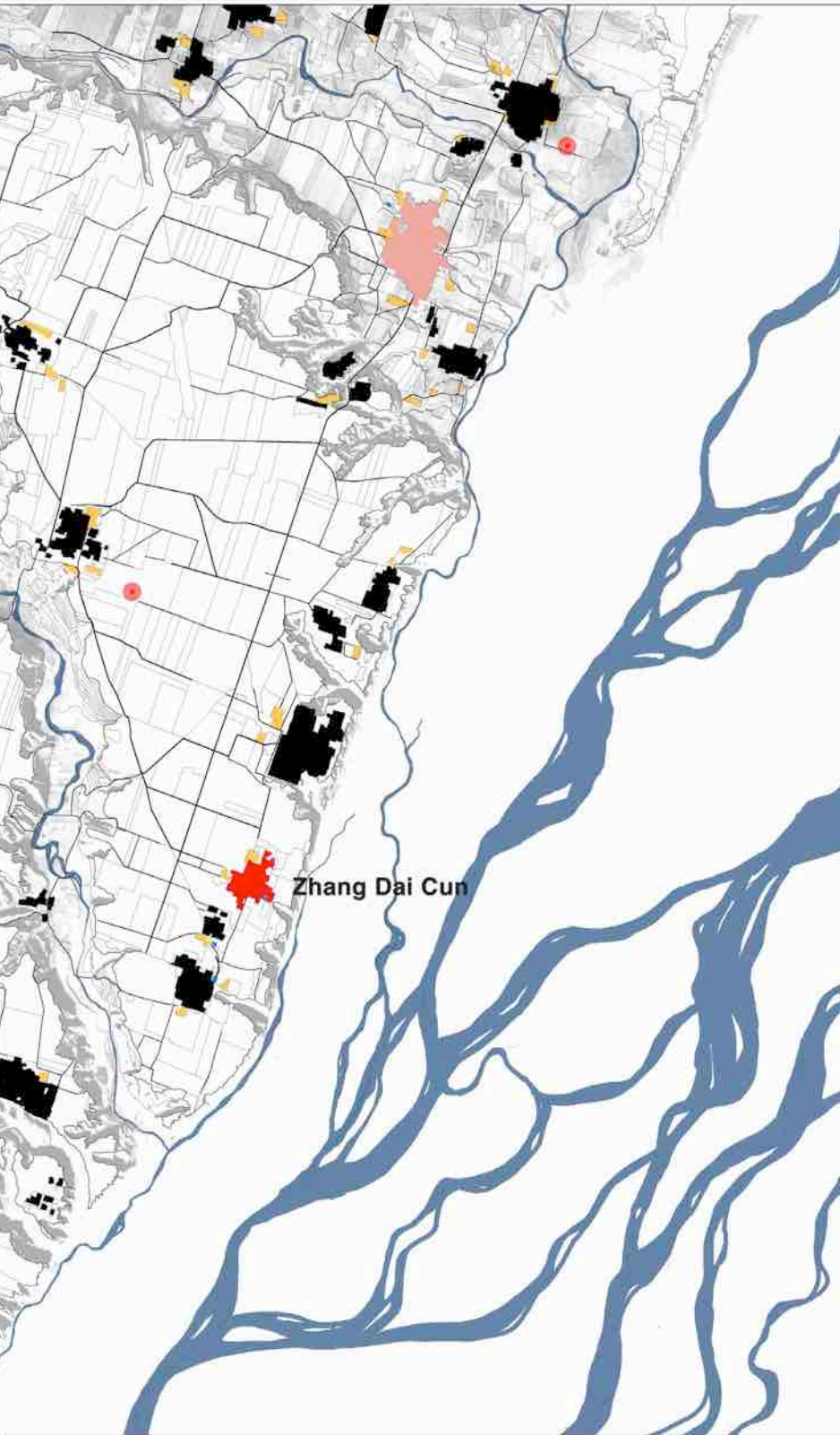









Figure 3-65 Built-up areas and the environment in northern Hancheng in 1967. Source: elaborated by the author based on the data of USGS (United States Geological Survey), Base map Declass 1 (1996), DS1102-2135DA120 © earthexplorer.usgs.gov.



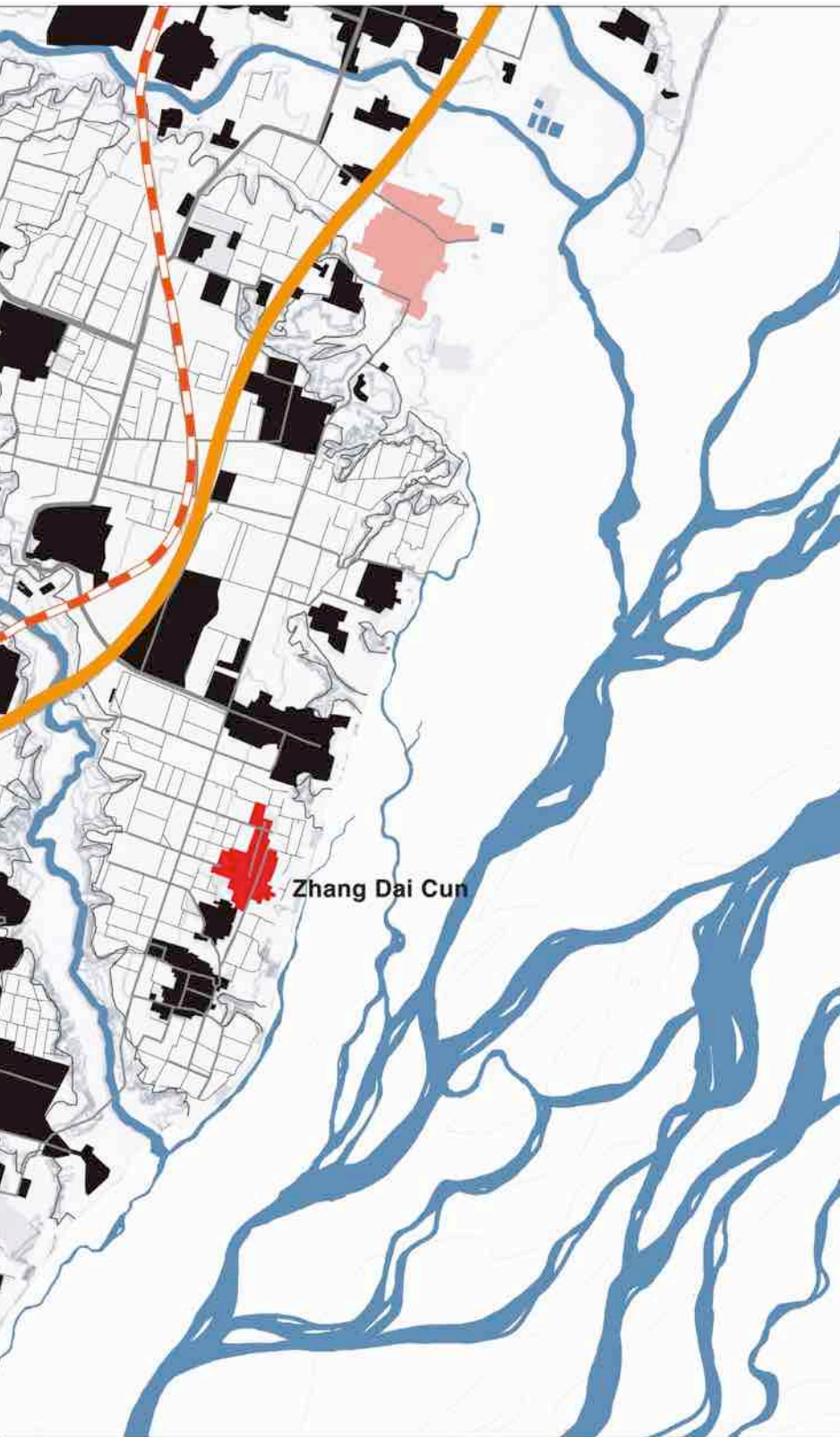
-  texture of farmland
-  built area
-  CTV villages
-  waters
-  roads
-  pagodas
-  threshing floor










1KM



Figure 3-66 Built-up areas and the environment in northern Hancheng in 2020. Source: elaborated by the author based on satellite map from Google Earth.



-  texture of farmland
-  built area
-  CTV villages
-  waters
-  roads
-  expressway
-  railway



1KM



Huashi Village

Liangdai Village

Zhangdai Village

Wangdai Village

*site of Zhangdai, Wangdai,
Shidai Villages shared fortress
ruins*

Shidai Village

1967





Figure 3-67 Comparison of the surrounding area of the five villages: Huashi, Liangdai, Zhangdaicun, Wangdai, Shidai in 1967 and 2020. Source: elaborated by the author based on google earth image and the data of USGS (United States Geological Survey), Base map Declass 1 (1996), DS1102-2135DA120 © earthexplorer.usgs.gov.

the south side of Liufang Village, a natural ravine was artificially filled. For another example, in 2015, on the farmland on the west side of Liangdai Village, the huge Ancient Rui State Ruins Museum was built. Subsequently, in 2016, three huge circles were built around the museum, and the arable land near the circles was also replaced by woodland. Since the 1990s, vegetable greenhouse technology has become popular in this area. In the west of Zhangdaicun Village, Wangdai Village, and Shidai Village, many vegetable greenhouses have appeared on the farmland of neighboring villages.

Compared with the 1970s, the changes in the rural landscape in this area today are mainly reflected in the construction of a large number of newly built houses, the construction of museum not far away, the landform changes caused by the filling of some gullies, vegetable greenhouses, and the changes to the skyline of the city's high-rise housing a few kilometers away.

3.3.2.2 Diachronic changes of land use

In the second section of this chapter, the author have analyzed the impact of Urbanization on the decline of the rural landscape. From the fig.3-59 and fig.3-60 we can see the drastic changes in land use in the large scale surrounding area of Zhangdaicun Village in the past half century: the expansion of the city is accompanied by the expansion of the built-up area of the village.

As I mentioned earlier, on the east side of Bi-Wen Peninsula, there are five villages in a row along the West Bank of the Yellow River: Huashi village, Liangdai village, Zhangdaicun village, Wangdai village and Shidai village (Four Dai One Hua). Historically, these five villages have similar topographical environment and rural landscape features: cliffs and wide Yellow River channels to the east, farmland and the Bi River gullies not far away to the west. Local villagers habitually regard these five villages as a geographical community, and this kind of consciousness still exists.










In this geographical sense of community, before the middle of the 20th century, the five villages were divided into three independent defense communities. The main reason for the formation of the defense community is in the military defense, that is, the defense group formed in the face of bandit invasion and war. The Huashi village and Liangdai village in the North form their own defense groups. The Huashi village is composed of two independent settlements. The settlement in the south is surrounded by rammed earth walls, which become a fortress. Liangdai Village, which has strong rammed earth walls on the north, west, and south sides, and a cliff on the east side, is a fortress village in itself. Another defense group is composed of Zhangdaicun Village, Wangdai Village and Shidai Village. The villagers of the three villages once built a joint fortress in an area along the cliff of the Yellow River bank east of Shidai village (no.13 in fig.3-71). The joint fortress was demolished in the middle of last century, and its eastern part has collapsed in floods. Historically, fortress settlements were inhabited like other settlements in peacetime, and the type of residential courtyard in fortress was the same as that in ordinary settlements. Only in the crisis period, the villagers of ordinary settlement will enter the fortress and live together with the villagers in the fortress. After the Communist Party came to power in the late 1940s, social security was stable, and the aforementioned defense alliance was dissolved.

The diachronic reading method uses the historical part, which is derived from some available records, in order to highlight the relationship between permanent and discontinuous elements by focusing on the breakthrough moments between historical cycles. Considering the integrity and completeness of the rural

landscape, this study extends the survey scope of the diachronic changes in the rural material environment around Zhangdaicun Village to the southeast of the Bi-Wen Peninsula, which is the "Four Dai One Hua" area, as a large-scale landscape unit. This landscape unit belongs to the southern part of Zancun town in Hancheng City in terms of administrative division.

The method used in the analysis of diachronic land use change in " Four Dai One Hua" area is based on the evaluation method of "National Historical Rural Landscape" proposed by "National Observation for Rural Landscapes, Agricultural Practices and Traditional Knowledge" of Italy since 2012. The classification of land use includes: uncultivated land, area anthropized, road network, simple arable land, mixed arable land, economic woods, mixed woods, arbuscle. The statistical results of the land use will be used for the historical persistence (historical index) analysis of the region (chapter. 4). Reading together the aerial maps and land use maps of 1967 and 2020 (fig.3-68, fig.3-69), it is obvious that in the past half century, with the expansion of the area anthropized, the agricultural grid has changed from large to small, and presented the characteristics of fragmentation.

Table 3-6 Statistics of land use in 1967 and 2020, Southeast of Bi-Wen Peninsula.

	1967	proportion	2020	proportion
 uncultivated land	1105663.83 m ²	0.13	585621.56 m ²	0.07
 area anthropized	742986.54 m ²	0.09	1599079.27 m ²	0.20
 road network	267904.27 m ²	0.03	387880.37 m ²	0.05
 simple arable land	6206795.14 m ²	0.75	691959.44 m ²	0.08
 facility agriculture	-		301215.06 m ²	0.04
 mixed arable land	-		569377.51 m ²	0.07
 economic woods	-		2071193.78 m ²	0.25
 mixed woods	-		1450272.83 m ²	0.18
 arbuscle	-		509914.27 m ²	0.06
total	8323349.77 m²	1	8166514.09 m²	1

Source: elaborated by the author.

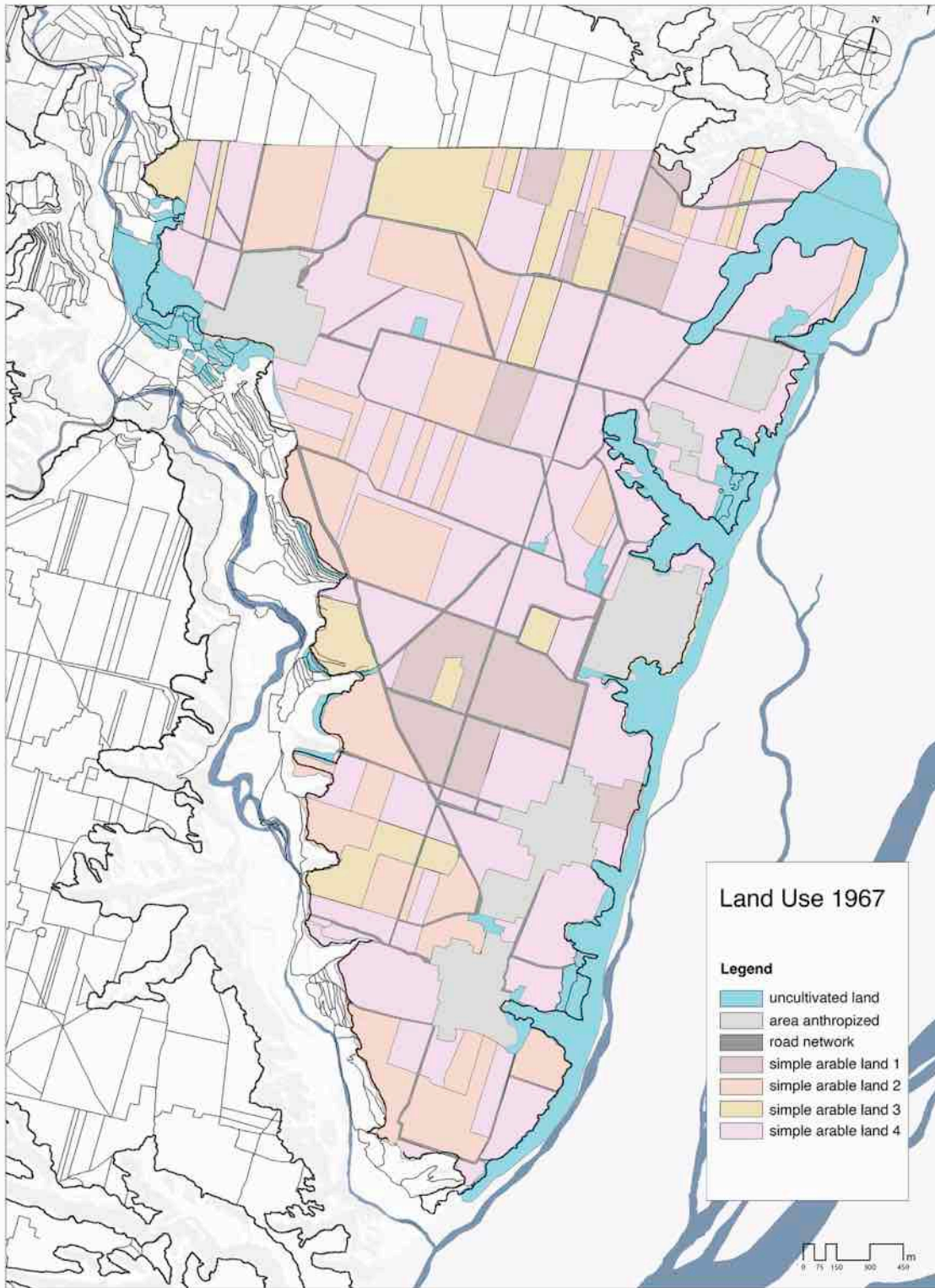


Figure 3-68 Land use in 1967, southeast of Bi-Wen Peninsula. Source: elaborated by the author based on the data of USGS (United States Geological Survey), Base map Declass 1 (1996), DS1102-2135DA120 © earthexplorer.usgs.gov.

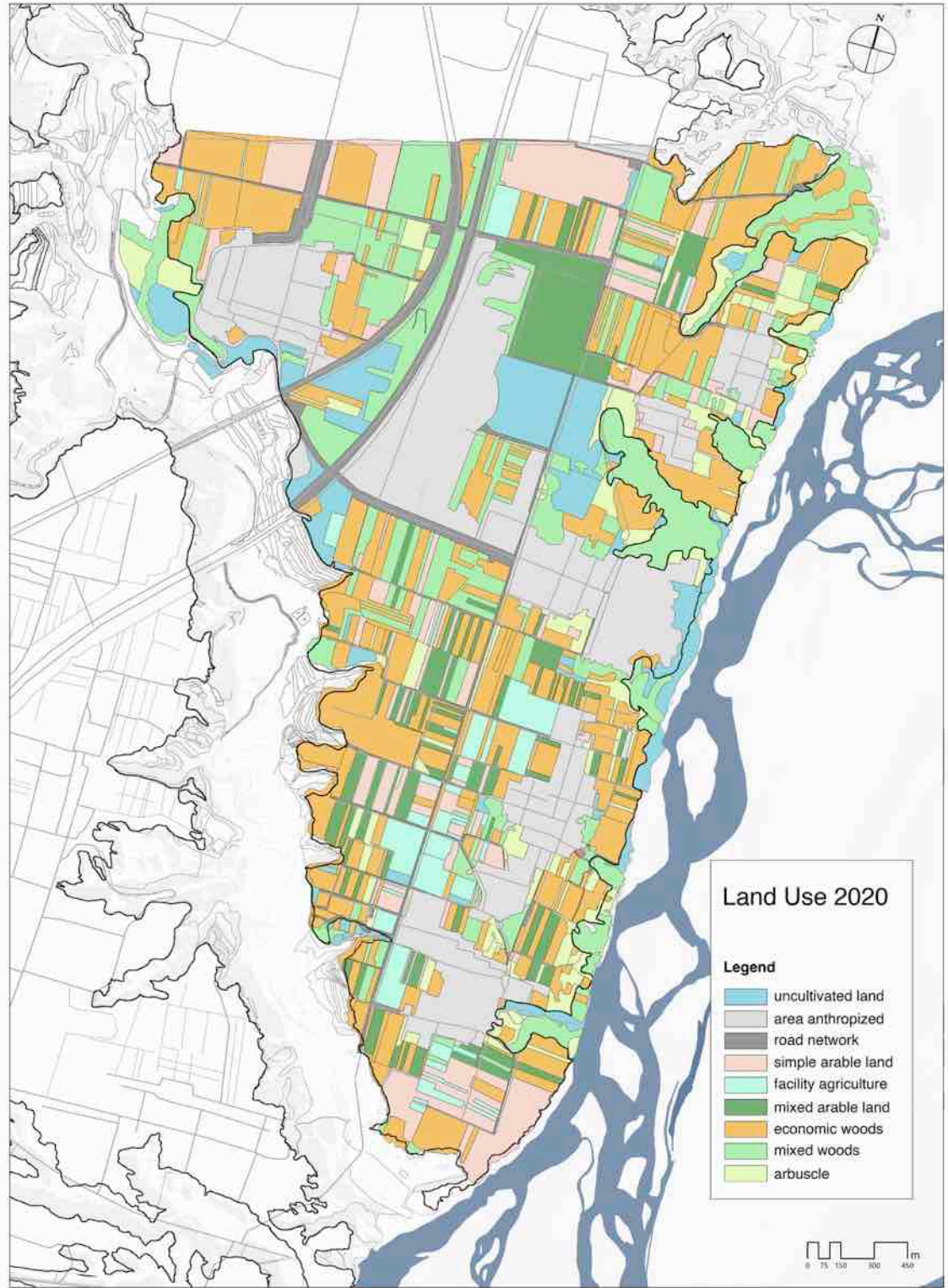
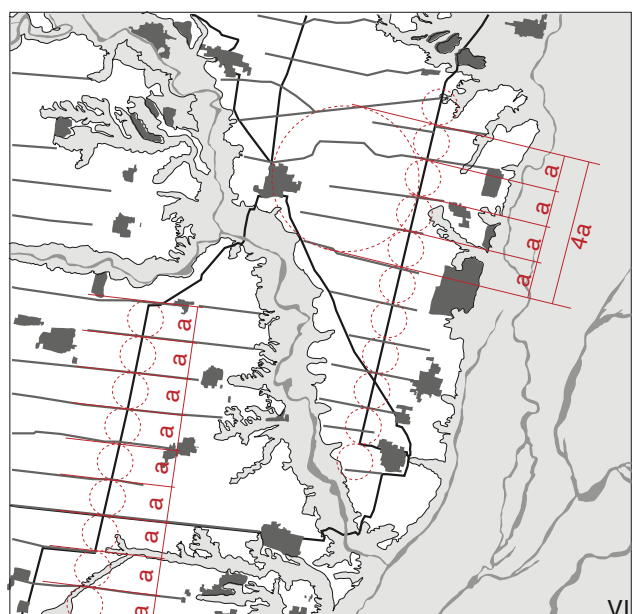
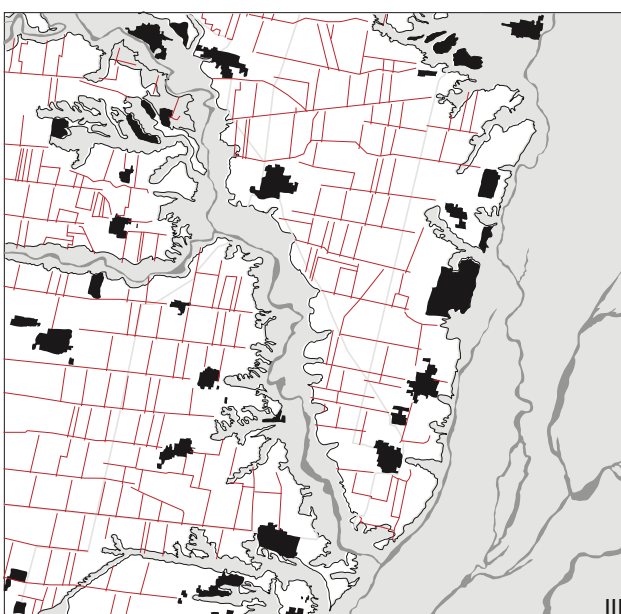
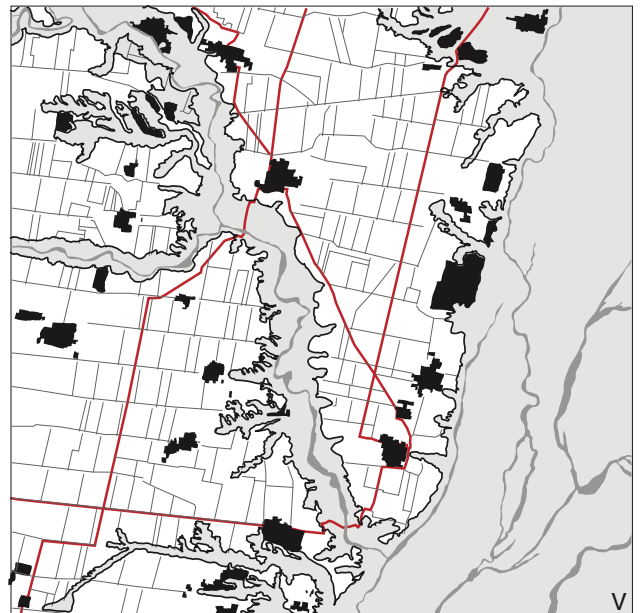
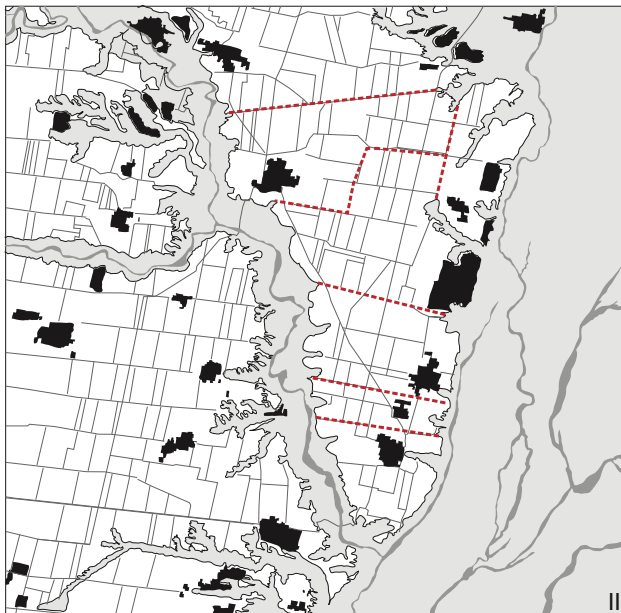
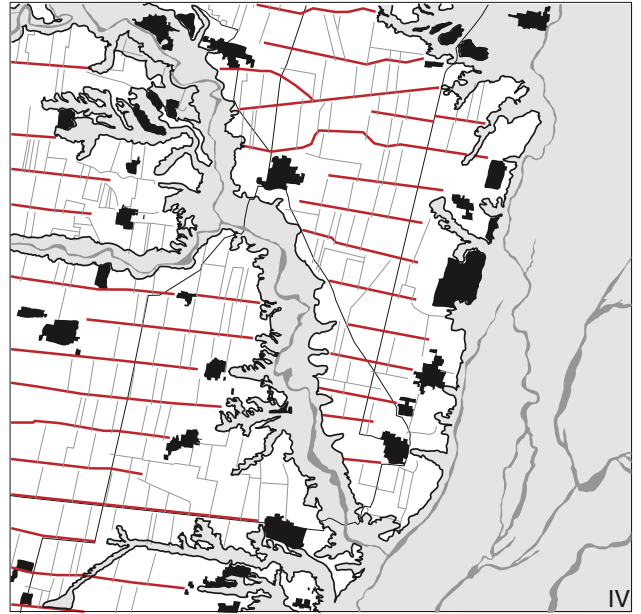


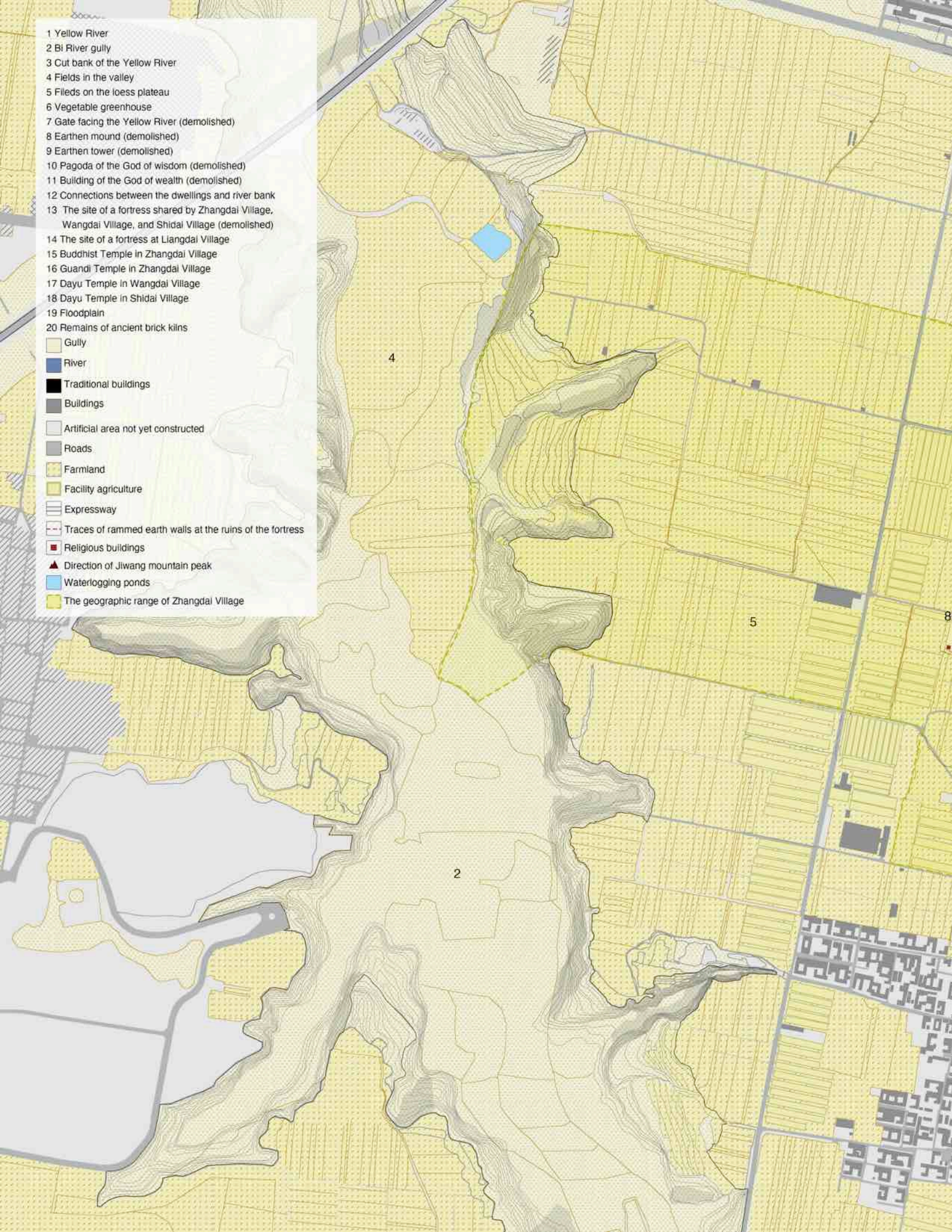
Figure 3-69 Land use in 2020, southeast of Bi-Wen Peninsula. Source: elaborated by the author based on satellite map from Google Earth.



Figure 3-70 The potential morphological characteristics of Bi-Wen Peninsula geomorphic unit:
I- The distribution of gullies and settlements; II- The border of farmland owned by the villages; III-
Structure of farmland patches; IV- Main roads with uniform spacing for agricultural production;
V- The direction of the main road is parallel to the Yellow River or the ravines; VI- The law of road
spacing is a latent morphological structure. Source: elaborated by the author.



- 1 Yellow River
 - 2 Bi River gully
 - 3 Cut bank of the Yellow River
 - 4 Fields in the valley
 - 5 Fields on the loess plateau
 - 6 Vegetable greenhouse
 - 7 Gate facing the Yellow River (demolished)
 - 8 Earthen mound (demolished)
 - 9 Earthen tower (demolished)
 - 10 Pagoda of the God of wisdom (demolished)
 - 11 Building of the God of wealth (demolished)
 - 12 Connections between the dwellings and river bank
 - 13 The site of a fortress shared by Zhangdai Village, Wangdai Village, and Shidai Village (demolished)
 - 14 The site of a fortress at Liangdai Village
 - 15 Buddhist Temple in Zhangdai Village
 - 16 Guandi Temple in Zhangdai Village
 - 17 Dayu Temple in Wangdai Village
 - 18 Dayu Temple in Shidai Village
 - 19 Floodplain
 - 20 Remains of ancient brick kilns
-  Gully
 -  River
 -  Traditional buildings
 -  Buildings
 -  Artificial area not yet constructed
 -  Roads
 -  Farmland
 -  Facility agriculture
 -  Expressway
 -  Traces of rammed earth walls at the ruins of the fortress
 -  Religious buildings
 -  Direction of Jiwang mountain peak
 -  Waterlogging ponds
 -  The geographic range of Zhangdai Village



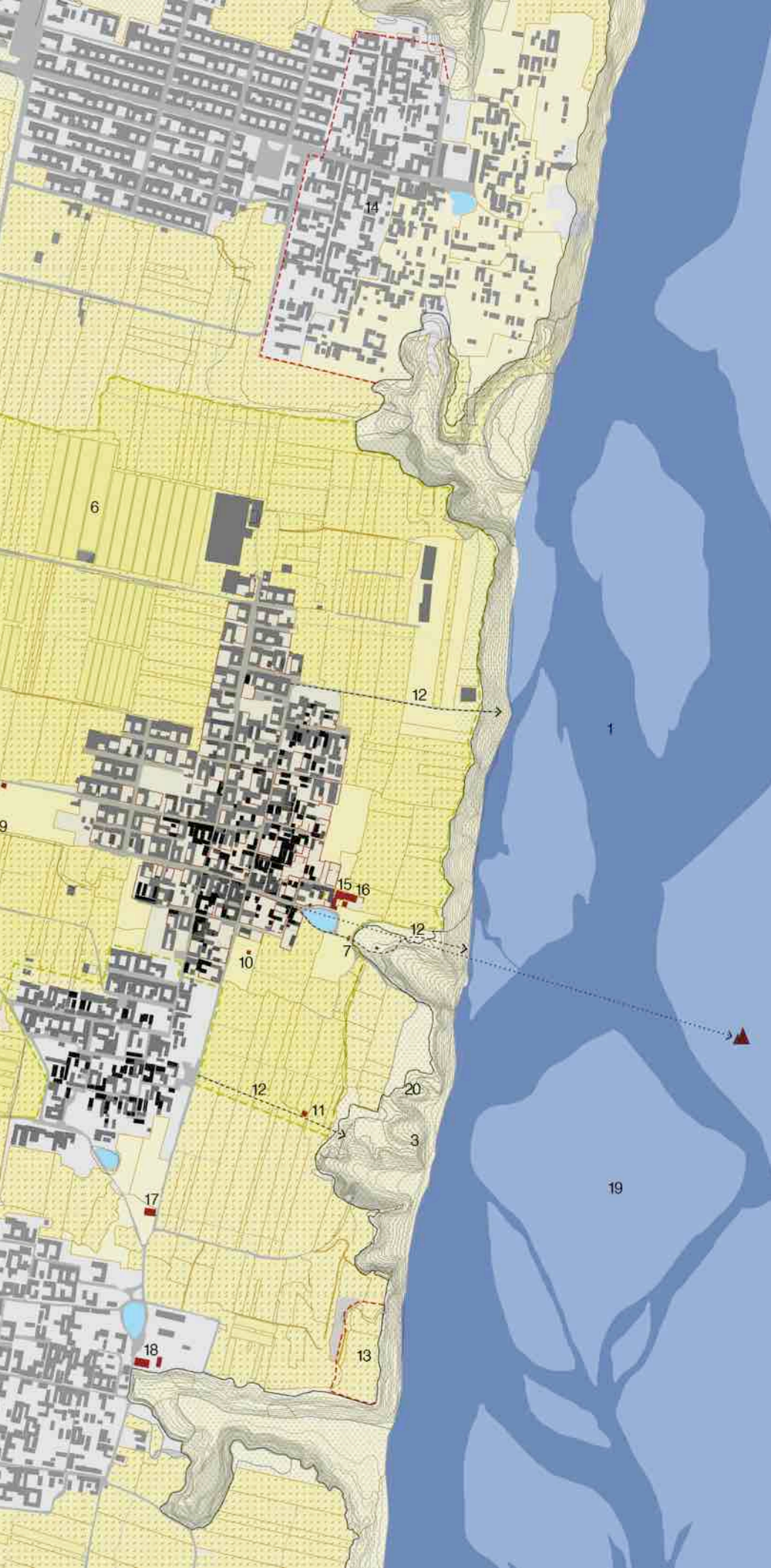


Figure 3-71 Geographical, agrarian and historical elements shaping the features of Zhangdaicun Village's settlement structure and its anthropised habitat. Source: Elaborated by the author.

3.3.2.3 Latent structure of Bi-Wen Peninsula geomorphic unit

Let us return to the peninsula scene in the 1960s. Ravines, farmland, villages, cliffs, the Yellow River, towering pagodas and distant mountains, etc., together weave a wonderful and magnificent traditional rural scene. And in the depths of this beautiful picture scroll, there is a certain peculiar law behind the landscape of the earth faintly.

The well-defined ravines enrich the spatial hierarchy of the agricultural landscape in the horizontal direction. The settlements are distributed along the edge of the peninsula, and Zhangdaicun Village is located in the southeast (fig.3-70-I). The area of the settlement is proportional to the area of farmland owned by the settlement (fig.3-70-II). The crops of the farmland are distinguished according to the agricultural grid in the north-south direction, and the average area of the grid is larger than the area of the current agricultural grid (fig.3-70-III). Roads in farmland are mostly east-west, consistent with the slope of the terrain (fig.3-70-IV); the direction of the main road is parallel to the Yellow River or parallel to the ravine (fig.3-70-V). The east-west roads used for agricultural production are almost equally spaced in the north-south direction, and the dimension of the distance 'a' is about 280 meters. These parallel lines have strong regularity. They are the most obvious latent feature in the rural landscape of the peninsula and beyond (fig.3-70-VI). Furthermore, the distance between the two north-south main roads in the peninsula is about '4a'.

3.3.3 III- Analysis of morphological characteristics : the form of the village's plan

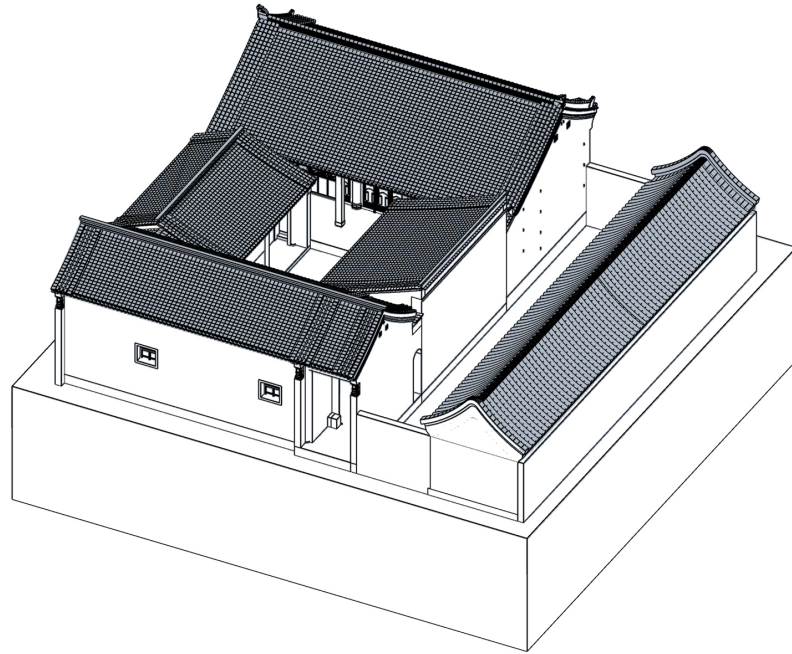
3.3.3.1 Rural landscape elements of Zhangdaicun Village

Fig. 3-71 illustrates the geographical scope of Zhangdaicun Village and the basic situation of its surrounding environment. Some basic landscape elements are inseparable from the shaping of the rural landscape characteristics of Zhangdaicun Village. These elements include:

-Courtyard: The traditional houses and ancestral halls of Zhangdaicun Village are almost all courtyard houses, and some have stables on the side of the courtyard houses. The basic form of the courtyard is composed of four parts of buildings: the gatehouse on the entrance side, the hall opposite the entrance (the highest ridge height), and the wing room buildings on both sides of the hall.

-Temples: Temples in Zhangdaicun Village are all located on the east side of the village. In the Hancheng area, there are many temples in the form of two consecutive east-west buildings, and a large and continuous space is obtained through this paradigm.

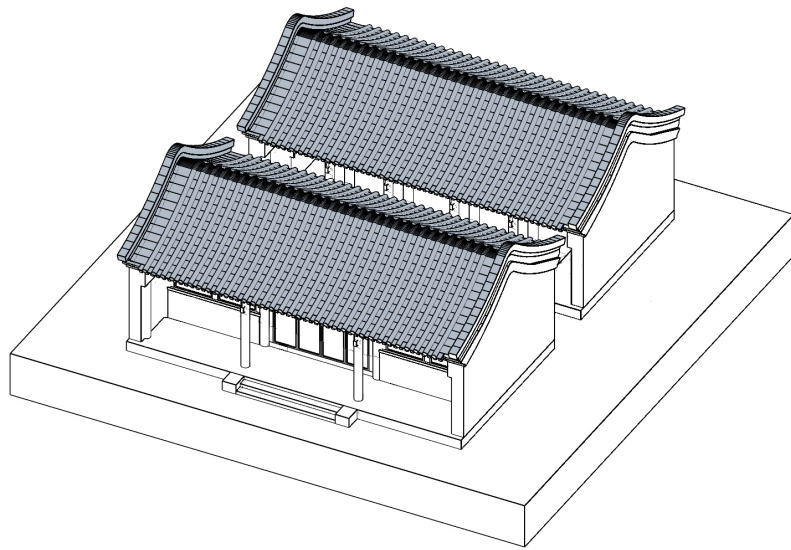
-The Yellow River: The erosion of the cliffs of the Loess Plateau by the Yellow River is the main reason for the fragile geological environment in this area. At present, the distance between the Yellow River cliff in the east of Zhangdaicun Village and the village buildings is 20 meters at the nearest point and 110 meters at the farthest point. The cliffs in the distance collapse almost at a rate of one meter every two years. In the past 100 years, the Huayuan Village on the north side of Zhangdaicun Village has completely disappeared due to land collapse, and two-thirds of the area of the fortress built by Zhangdaicun Village, Wangdai Village, and Shidai Village on the south side has also collapsed and fell into the Yellow River bed. The



Courtyard



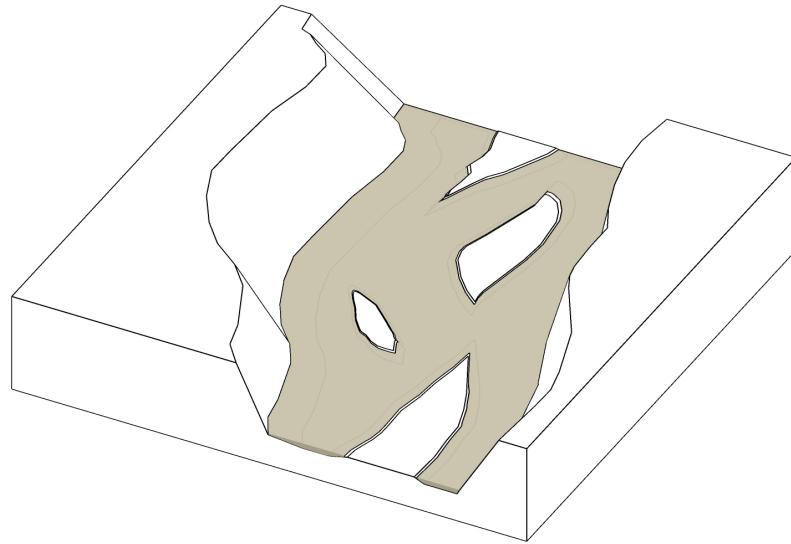
Figure 3-72 Diagrams and photos of the courtyard in Zhangdaicun Village. Source: Elaborated by the author.



Temple



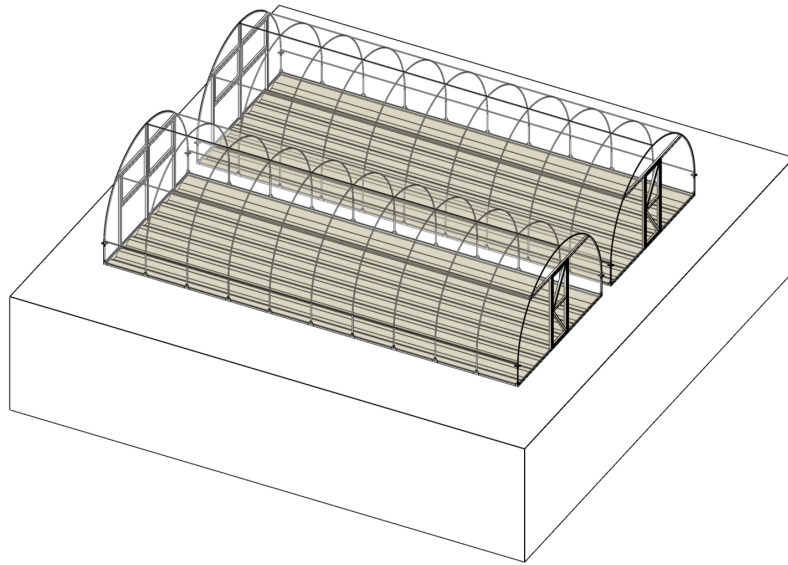
Figure 3-73 Diagrams and photos of the main type of temple building in Hancheng. Source: Elaborated by the author.



Yellow River



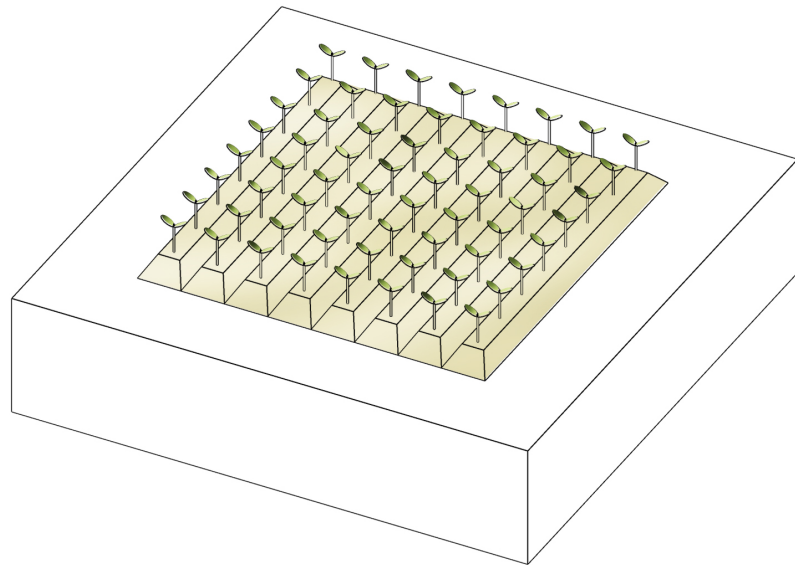
Figure 3-74 Diagrams and photos of The section of the Yellow River near Zhangdaicun Village. Source: Elaborated by the author.



Vegetable Greenhouse



Figure 3-75 Diagrams and photos of the vegetable greenhouses in Zhangdaicun Village. Source: Elaborated by the author.



Farmland

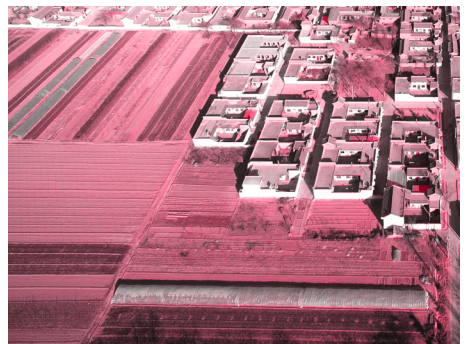


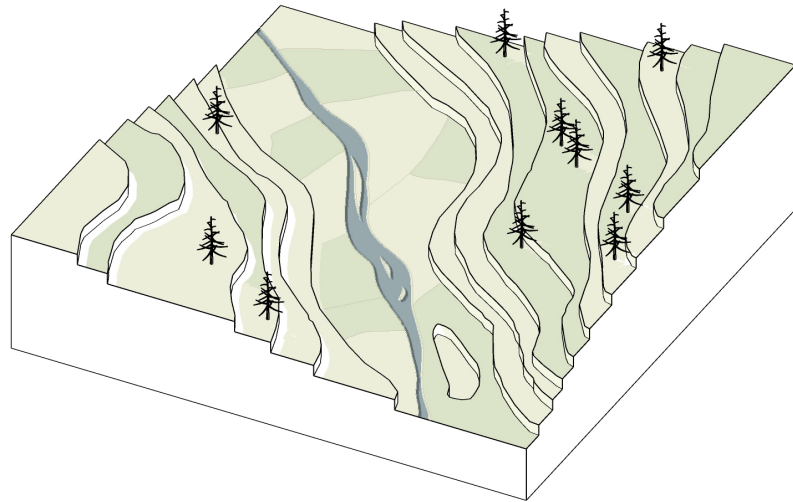
Figure 3-76 Diagrams and photos of the cultivated land in Zhangdaicun Village. Source: Elaborated by the author.



Waterlogging pond



Figure 3-77 Diagrams and photos of the waterlogging pond of Zhangdaicun Village. Source: Elaborated by the author.



The Bi River Gully



Figure 3-78 Diagrams and photos of the Bi River Gully. Source: Elaborated by the author.

locals call this collapse phenomenon "beng(崩)".

-Vegetable greenhouses: In order to increase vegetable production, in the past ten years, villagers have built some vegetable greenhouses on the west side of Zhangdaicun Village. The emergence of vegetable greenhouses has greatly disturbed the traditional agricultural landscape.

-Cultivated land: Compared with the 1960s, the changes in the landscape of cultivated land are mainly reflected in the increase in crop types and land patches.

-Waterlogging pond: The waterlogging pond of Zhangdaicun Village is located at the easternmost end of the village (the lowest part of the terrain), and it has the function of flood discharge and water storage. The outline of the waterlogging pond is approximately elliptical, with the length of the long axis about 40 meters and the length of the short axis about 22 meters. Water flows in from the west, and the overflow is located in the southeast of the waterlogging pond. There is a low-lying land with an area of about 2,000



Figure 3-79 The photos of Zhangdaicun Village streets and the external environment (pictured above) correspond to the shooting locations on the map. Source: Elaborated by the author.

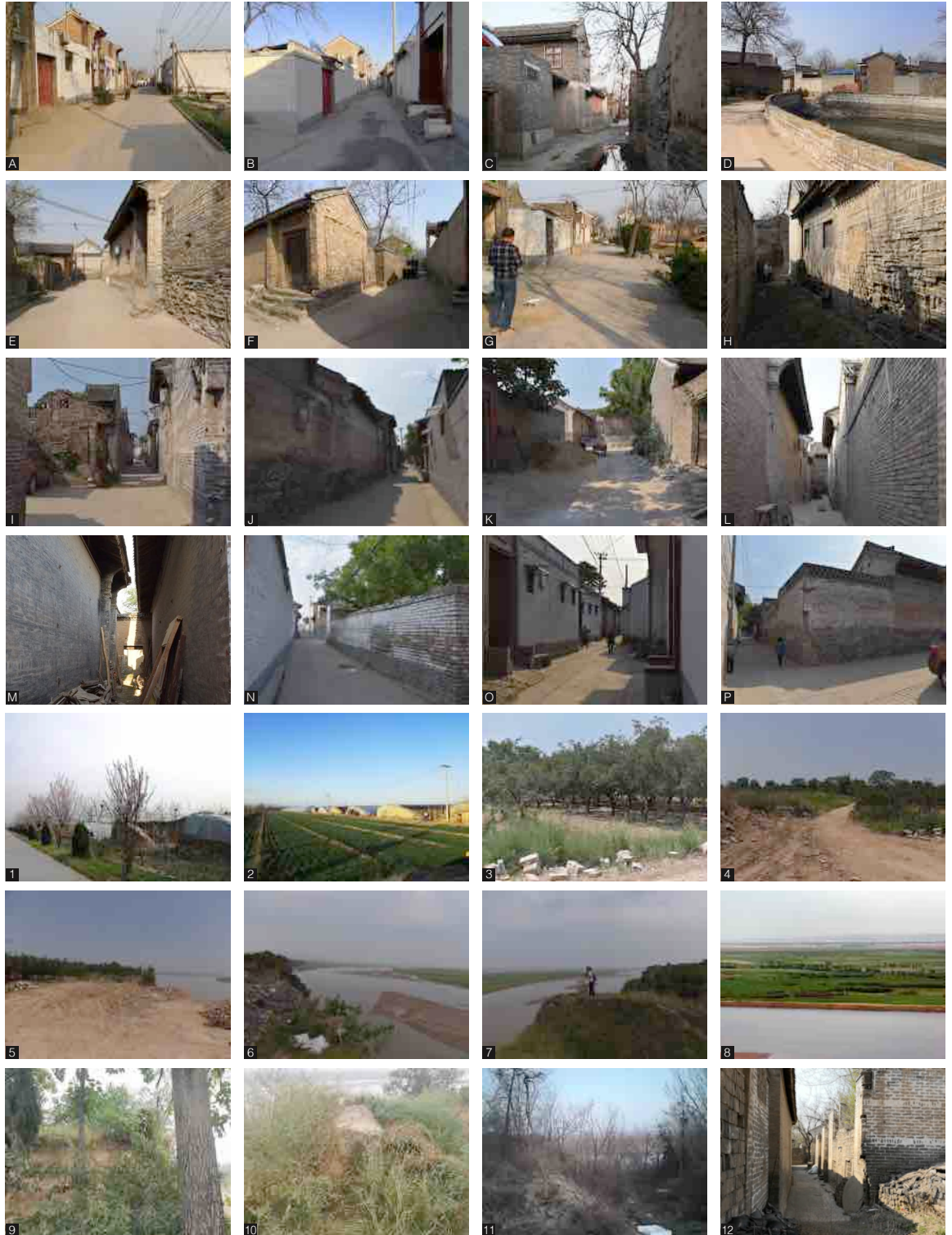


Figure 3-80 Photos of Zhangdaicun Village's streets and the external environment. Source: Photos taken by the author.

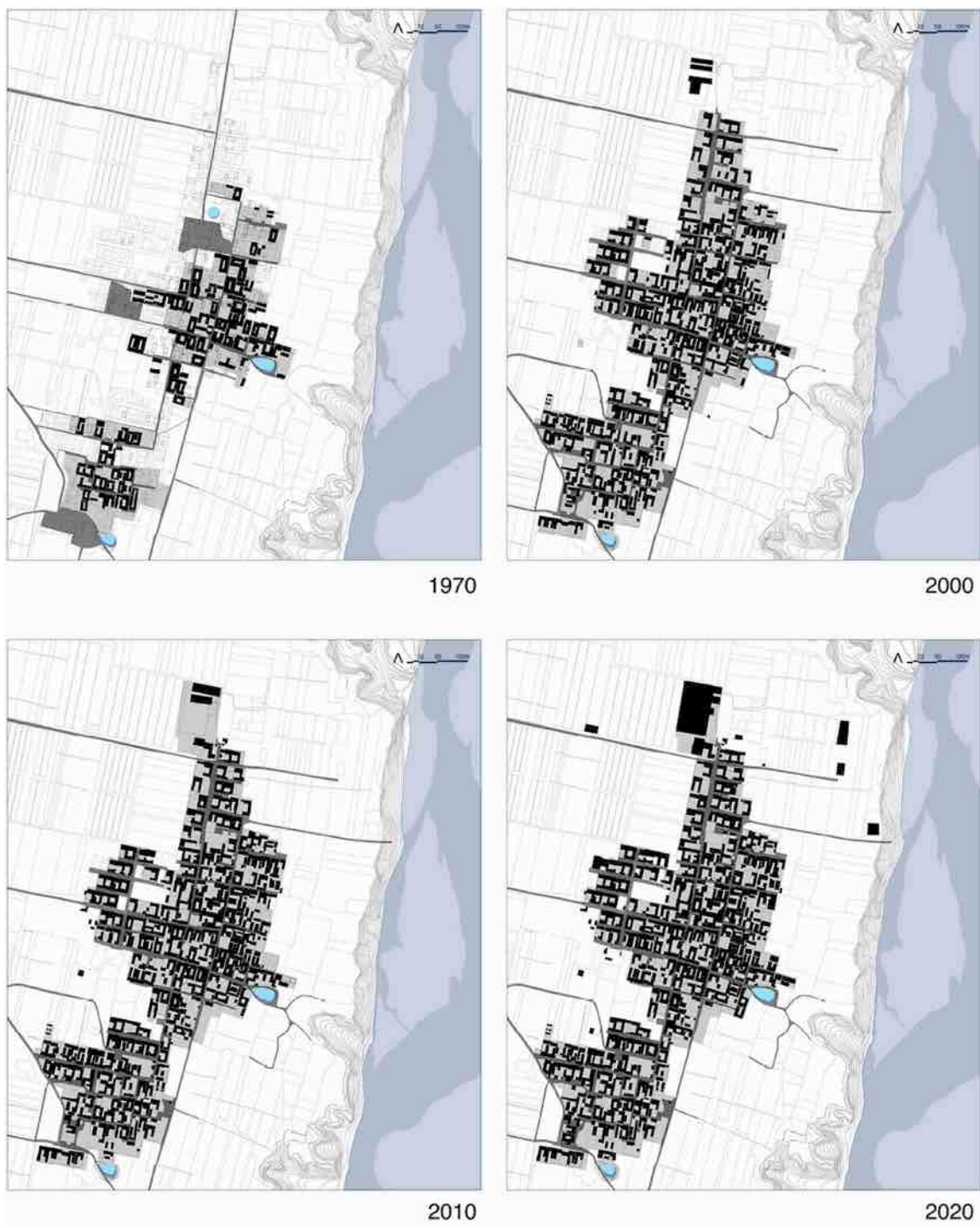


Figure 3-81 Plane of Zhangdaicun Village (settlement in the north) and Wangdaicun Village (settlement in the south). The yellow area indicates the constructed area, which is different from cultivated land). Source: Elaborated by the author.

square meters on the south side of the waterlogging pond. When the water level of the waterlogging pond is higher than the overflow, the excess water will first be discharged from the waterlogging pond to this low-lying land, and then follow the terrain to flow into the beach of the Yellow River. 30 meters to the east of the waterlogging pond is a deep U-shaped gully cliff that leads directly to the Yellow River bed. From the village, you can walk along a path to the gully and then to the Yellow River bed.

-Bihe River gully: Bihe River (actually a small stream) currently has relatively small water volume. The ravine on the west side of Zhangdaicun Village has a width of about 400 meters and a depth of about 50 meters. There are two bridges built in the north of this ravine, one is a railway bridge and the other is a highway bridge. In the southern part of the gully, there is a road built along the terrain that crosses this ravine. It is the only way from Zhangdaicun Village to the downtown of Hancheng.

3.3.3.2 Basic information: survey on fabric and scale, building materials, building age, building floors, building quality

The built-up area of Zhangdaicun Village in 1967 was about 4 hectares, and the built-up area increased to 10 hectares in 2020 (fig.3-81). Due to the construction in the past few decades, the settlement borders of Zhangdaicun Village and Wangdai Village have bordered each other. Therefore, in the next series of analysis diagrams describing the current situation of the village, Zhangdaicun Village has not been analyzed separately, and it and Wangdai Village are considered as a whole for analysis. Based on the USGS (United States Geological Survey) Cold War satellite map (Base map Declass 1 (1996), DS1102-2135DA120 1967), combined with field surveys, we can determine the built-up area of Zhangdaicun Village before the 1960s.

The following diagrams shows the current situation of Zhangdaicun Village from several aspects such as building roof materials, building layers, building quality, and building construction years.

1) Building materials

In fig.3-82, the roof materials of the village buildings are classified in different colors. Compared with the 1970s, the roof material form of the buildings in the yellow area in the picture has changed from the original 100% tile-sloped roof to three forms: tile-sloped roof, cement flat roof and color steel tiled roof.

Based on the projected area of the plane, I calculated the proportions of different types of roofs: 38.7% of roofs with tiled slopes, 46.8% of cement flat roofs, and 14.5% of blue colored steel tiled slopes. Through these quantitative statistics, we can intuitively see that the changes in roof forms have greatly changed the overall appearance of Traditional Villages.

2) Building floors

The traditional houses in Hancheng have one storey (although from the cross-section, houses often have a mezzanine on the upper part used as storage space, the height of the cornice of the building is almost similar to that of a newly built single-storey building, therefore, the number of floors of these traditional buildings is still calculated as one floor). In the construction after the 1990s, two-story buildings appeared. At present, the total number of two-story buildings in the village accounts for about 8% of the total number of houses (fig.3-83).

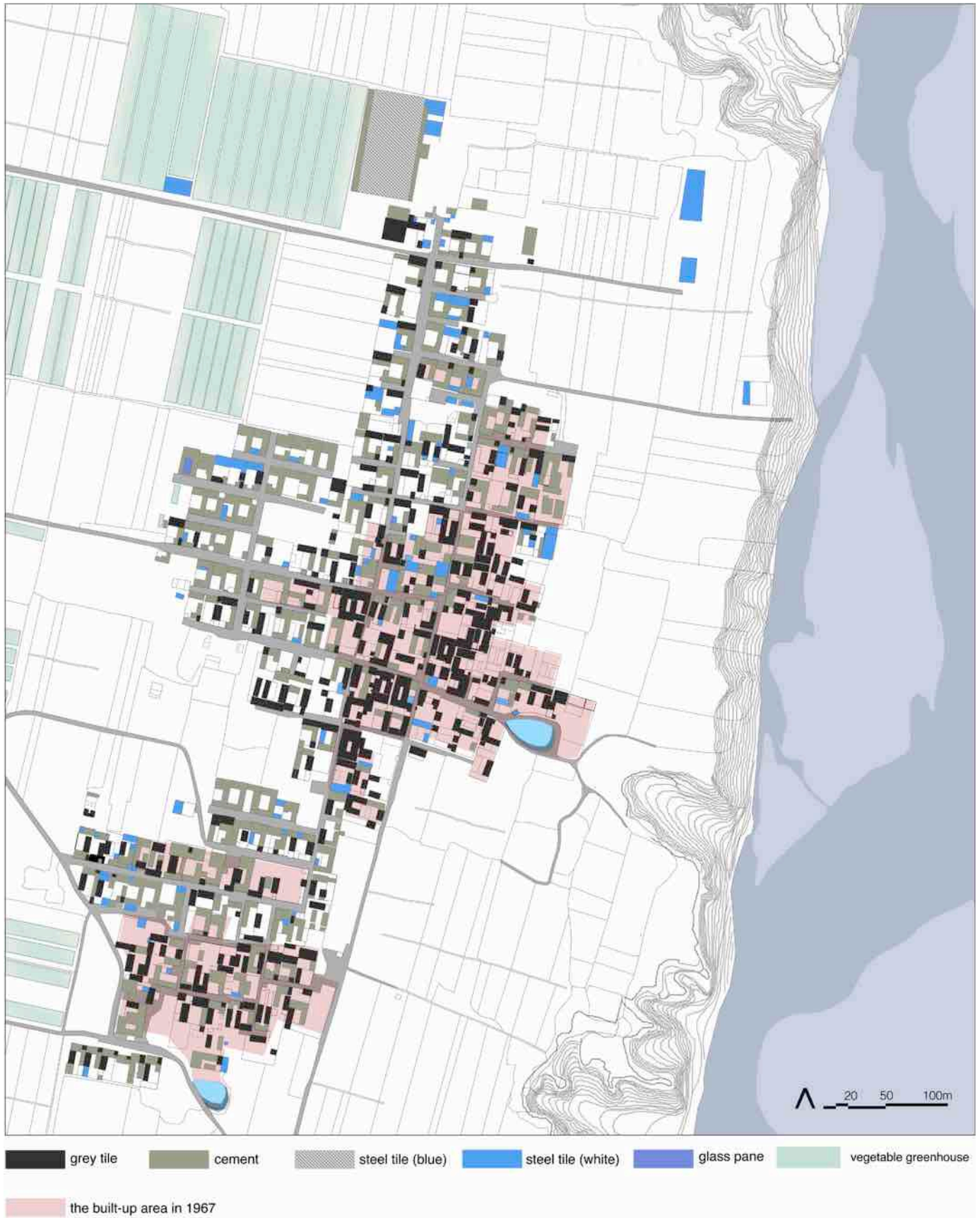


Figure 3-82 Plane of Zhangdaicun Village and Wangdaicun Village, Building material analysis. Source: Elaborated by the author.

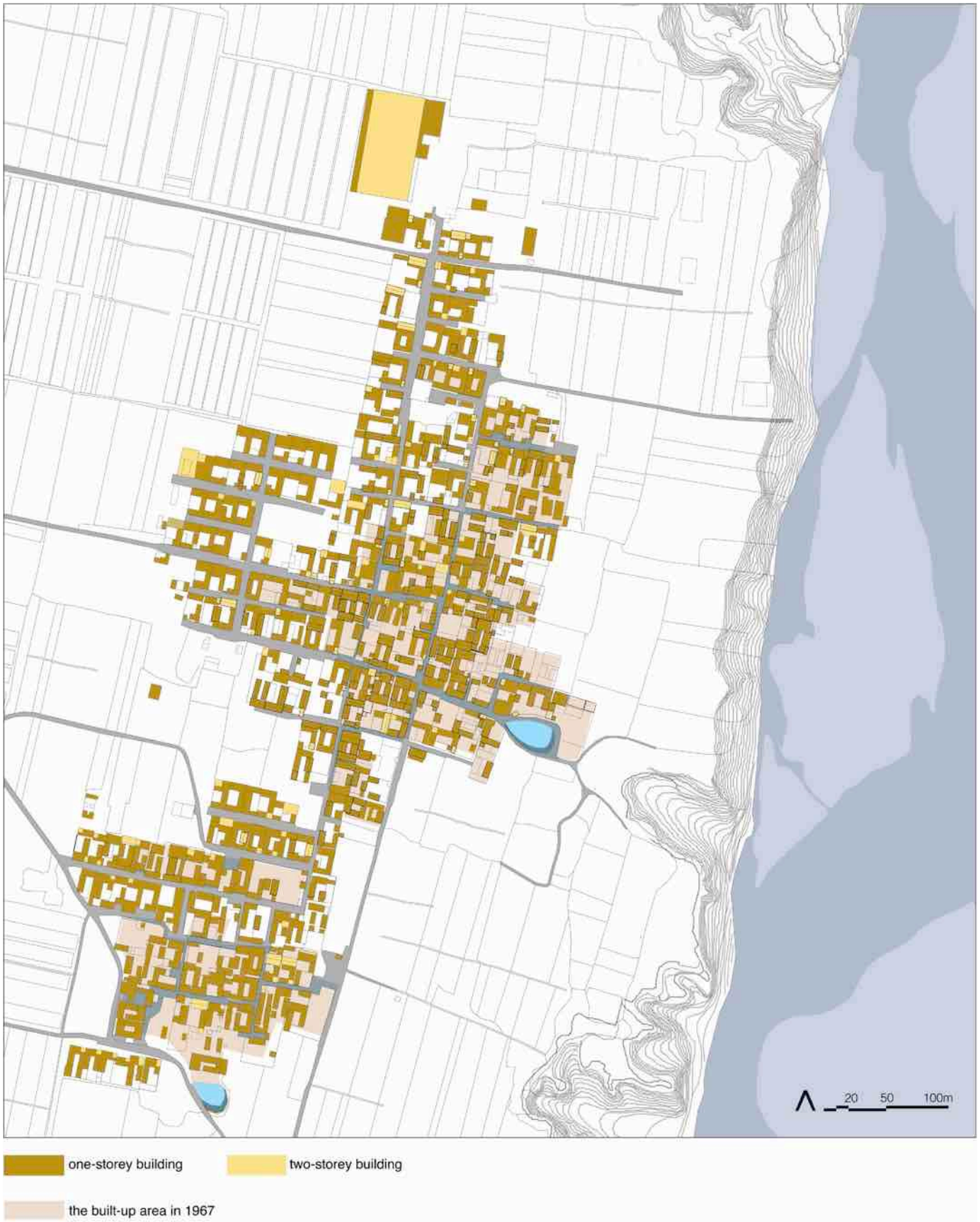


Figure 3-83 Plane of Zhangdaicun Village and Wangdaicun Villag, Building height analysis. Source: Elaborated by the author.

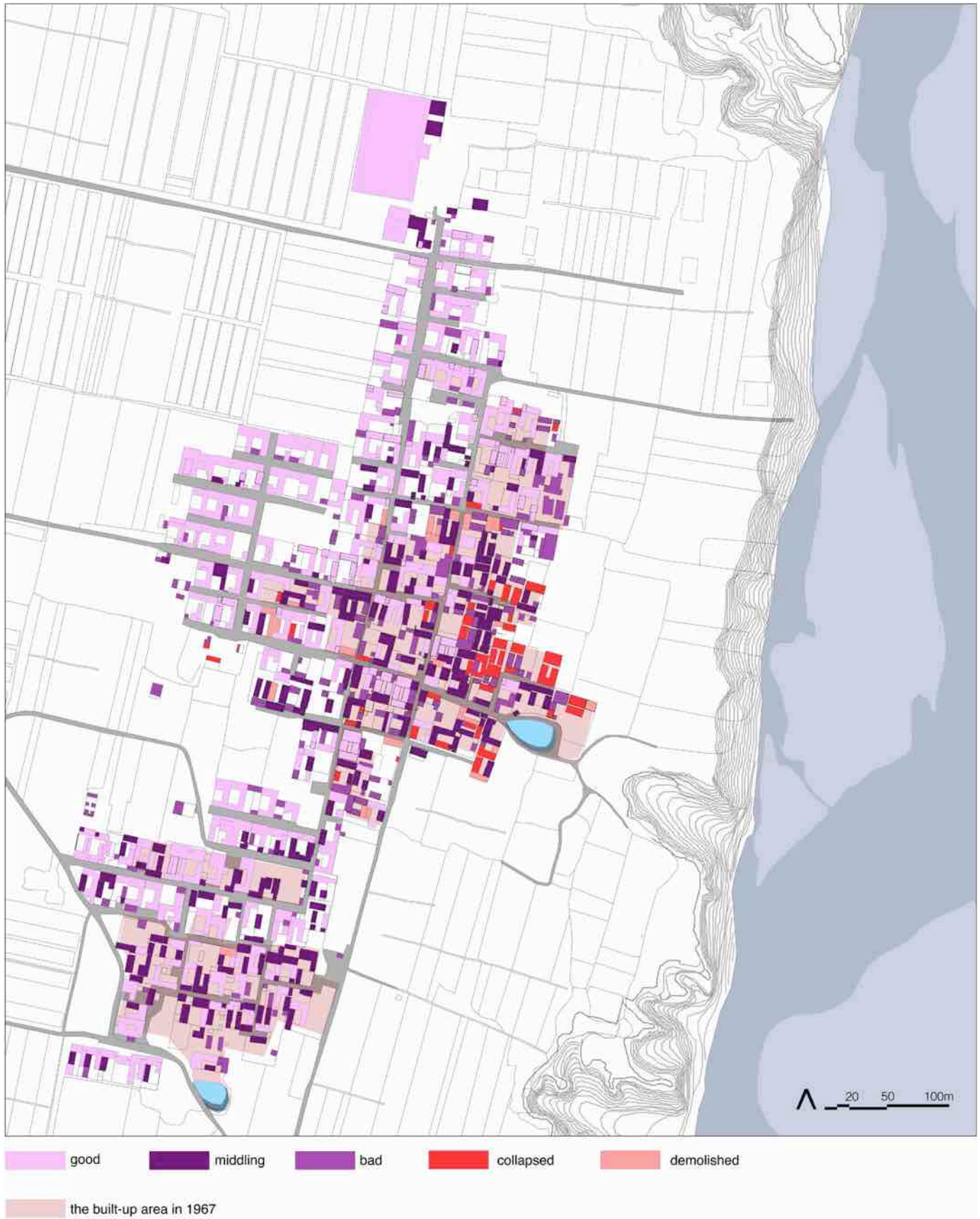


Figure 3-84 Zhangdaicun Village Plane, Building quality analysis. Source: Elaborated by the author.

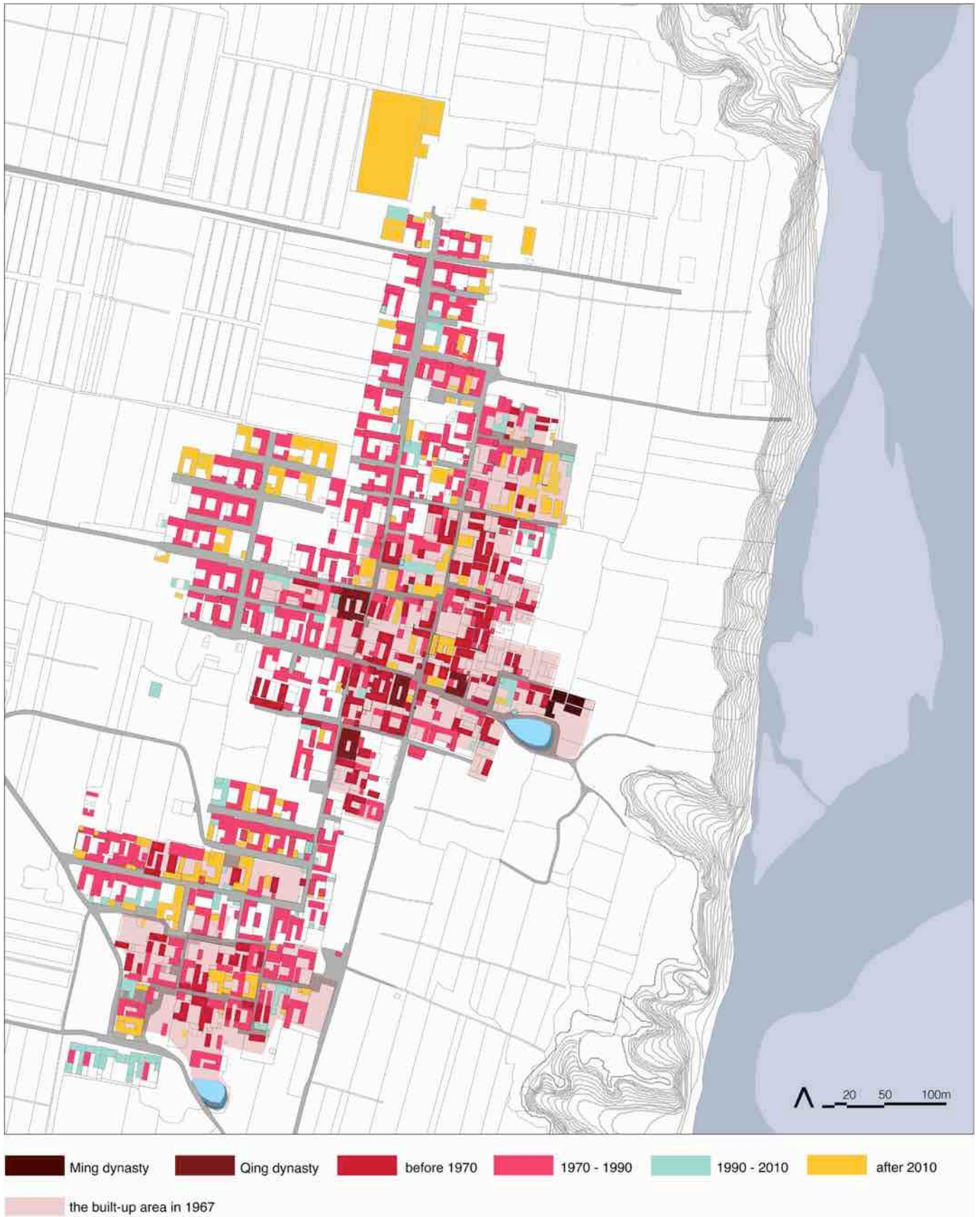


Figure 3-85 Zhangdaicun Village Plane, Building age analysis. Source: Elaborated by the author.



Figure 3-86 The Ming Dynasty "Ti Ji" on the lower surface of the wooden beam inside the Buddhist Temple in Zhangdaicun Village. Source: Photo taken by the author.

3) Quality of the building

Building floors Obviously, a large number of houses with better construction quality appear on the periphery of the historical area of the village (fig. 3-84). Combining fig.3-86, we will find that the construction quality of newly built brick-concrete houses after the 1970s is generally better. The durability of these new building structures is much better than traditional wooden structures. Due to the lack of effective maintenance, some houses with traditional building structures have experienced decline in construction quality or even collapsed. These buildings are mainly distributed in the historical area of the village.

4) The age of the buildings

Usually, when the ancient Chinese were constructing a building, they would record the time when the component was placed on the building with words on the main wooden components. This kind of written

record (inscription) is usually called "Ti Ji"(in Chinese: 题记). Through investigation, I found that the earliest Chinese "Ti Ji " in the religious buildings in Zhangdaicun Village are located under the main beam on the west side of the Buddhist Temple: "大明洪熙乙酉岁陝西西安府同州韩城县德津乡",these words correspond to the year 1405 AD. In addition, the earliest "Ti Ji" in the residential buildings in Zhangdaicun Village is located under the main beam of the main house in the courtyard named "Jingshudi". The recorded time is "the 30th year of Qianlong", and the corresponding time is 1765 AD.

According to the known "Ti Ji" in residential courtyards, I identified some (not all) buildings built in the Qing Dynasty. Most of the new houses built in the past 50 years are located on the West and north sides of the village. In addition, there are many new buildings in the historical area, which were built in situ after the demolition of traditional buildings.

3.3.3.3 Typological plane and semantic unit

The above plans only reflects the outline of the roof, but they cannot help people understand the specific types of buildings in the settlement, and the information they convey are limited. Therefore, the author also drew the first floor plan of Zhangdaicun Village as a whole in the 1960s and the current, as a basis for studying the semantic and morphological units of Zhangdaicun Village. After the 1960s, construction activities have greatly changed the built environment of the village. Based on the low resolution satellite images (USGS decrypted files) of the 1960s and interviews with villagers, the author draws the overall plan of Zhangdaicun village in the 1960s (the first floor) as a conjectural plan. Fig. 3-89 reflects the superimposed relationship between the 1960s floor plan and the current floor plan. It clearly reflects the development and changes in the scale of the village, as well as the division of farmland around the settlement and the changes in roads. In order to more clearly identify the juxtaposition relationship between modern and traditional buildings, that is, the replacement of traditional building materials by modern building materials, the author further distinguishes building materials in the current building plan (fig.3-89). This map not only reflects the locations where different building materials (and the structural forms behind them) appear, but also shows the different types of spaces corresponding to different types of materials.

As mentioned in Chapter 2, Pezzetti inherited Samonà's concepts of "morphological systems" and "semantic unities" on the basis of the Italian research tradition, and developed conceptual tools and historical research. The morphology and operational interpretation of the structure provide conceptual and operational tools for reading urban facts and landscapes. This method provides a methodological reference for this study.

By combining the historical structure research of the generative structure with the type and morphological analysis of fabric development, the potential structure of the landscape and its subdivision of different morphological meaning units can be identified. The clarification of the structure and texture of the settlement will also enhance the cultural awareness of architects and people, and reconcile history, memory and subjective perception of the landscape. Conservation plan should be based on the determination of these units and their structural organization, which is much more complex than the concept of settings or buffer zones.

As can be seen from fig.3-90, the characteristics of the evolution of the settlements in Zhangdaicun Village from the 1960s to the present are:





Figure 3-87 The plan of Zhangdaicun Village in 1967(according to the results of the survey and interview). Source: Elaborated by the author.





Figure 3-88 The plan of Zhangdaicun Village in 2020. Source: Elaborated by the author.



 the ground floor plan of the buildings in 1967



 the ground floor plan of the buildings in 2020




Figure 3-89 The superimposition plan of Zhangdaicun Village, plan of the 1960s and current.

Source: Elaborated by the author.



 traditional wooden structure building

 brick-concrete structure building


 built-up areas of villages in the 1960s



Figure 3-90 Overall ground floor plan of Zhangdaicun Village (Distinguish the building structure form).

Source: Elaborated by the author.



A **organic morphology**
Courtyard cluster in the traditional combination morphology.

B **semi-organic morphology**
In the process of space production, the traditional combination morphology transitions to the simplified morphology.

C **non-organic morphology**
Simple spatial production patterns in the past.



Morphology
 Production caused by changes in land supply
 at 50 years.

Figure 3-91 Morphological semantic units analysis for Zhangdaicun Village. Source: Elaborated by the author.

1. The settlement scale mainly expands northward and westward;
2. The newly built courtyard, all face to the south, and the gates are arranged in the southeast corner of the courtyard. Their building type is very single and distinct from the traditional courtyard;
3. The form of newly constructed courtyard clusters is mainly row houses, which are different from the organic form in the 1960s.

It is a terrible mistake to protect Traditional Villages without respecting the traditional regional structure and morphological relationship, because it will have consequences for the landscape and the streets themselves. Without an understanding of the relationship between urban form and agricultural form and the resulting landscape, any protection or new high-quality buildings cannot make up for the loss of urban form and its rural landscape meaning.

The plane form of Zhangdaicun contains different morphological and semantic units (fig. 3-91). The differences in these units essentially reflect the influence of traditional culture, economic conditions, construction materials and construction techniques when human beings build a certain area in the settlement, and also reflect the change in people's attitudes towards saving farmland.

-A. Organic morphology

In the first-floor plan of the village in the 1960s, the courtyards are closely united. There are both north-south courtyards and east-west courtyards in a cluster. At the same time, the entrances of the courtyards are also very diverse and do not stick to a fixed location. This combination of courtyards reflects people's awareness of conservation of cultivated land. In contrast, the houses in the West and north of the village, which were mainly built in the 1990s, are all located in the southeast corner of the courtyard due to the single building type, so roads must be set before each row of courtyard.

The area corresponding to the courtyard in the 1960s floor plan is recognized as organic morphology units. The use of land in these units is very intensive, and there are many internal connecting channels between adjacent courtyards. In addition, in areas where such morphological units are concentrated, the roads that divide the units also have obvious characteristics: the roads are not straight lines, but a tortuous road with advancing and retreating boundaries, reflecting the spontaneity of the construction process and the game process of land ownership. If we observe carefully, it is not difficult to see that there are no standard intersections at road intersections in this area. Almost all intersections are in the shape of "T". This arrangement is derived from the rules caused by the concept of Feng Shui.

Take the morphological semantic unit A-3 as an example. In the past, the families who lived here were from the first branch of the Zhang family. Only a few decades ago, three of the courtyards were sold to families from other branches of the family. This shows that A-type semantic units are not only physical morphological units, but also social family units.

-B. Semi-organic morphology

This type of morphological semantic units is distributed in the north and west edge areas of the built-up area in the 1960s. After the 1970s, courtyards built in the fringe area and scattered traditional courtyards formed new blocks. In these units, traditional organic forms are juxtaposed with modern courtyards, and there are a few East-West courtyards. In the process of spatial production in these areas, people consciously

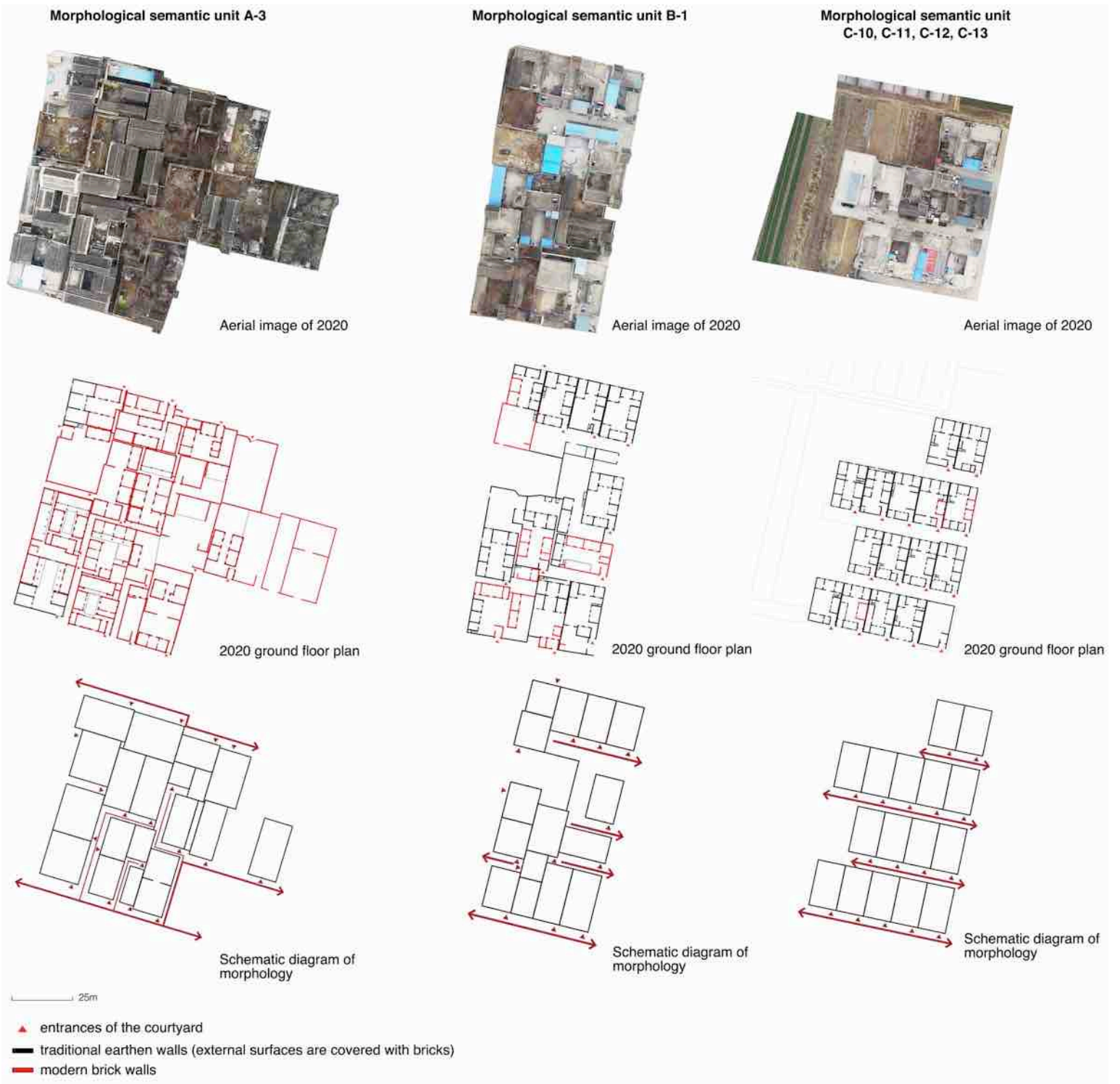


Figure 3-92 Morphological semantic units. Source: Elaborated by the author.

constructed relatively complete blocks and continued some traces of terrain that existed in the past.

-C. Non-organic morphology (modern buildings)

The C-type semantic unit is composed of modern residential buildings. The residential buildings are still in the form of courtyards, and the size of courtyards is basically similar to that of traditional courtyards but is more consistent. The uniform size of the courtyard is attributed to the government's standard for the area of homesteads.

In 1986, the People's Republic of China promulgated the "Land Administration Law" for the first time, which stipulates that provinces shall establish standards for the area of rural housing sites. In 1987, the Shaanxi Provincial Government issued the "Implementation Measures for Land Management in Shaanxi Province". This policy document stipulates that if the land for rural residential construction is located in valleys or Loess Plateau, each household's homestead shall not exceed 0.3 mu (200m²); in mountainous and hilly land, each household shall not exceed 0.4 mu (267m²)⁹². According to the field survey, the size of the residential courtyard in the C-type semantic unit is roughly 12.5m~14.3m wide and 20m~23m long. The area of the courtyard is roughly 270m², which is about 0.4 mu.

In addition to legal provisions, the courtyards in this area also have the following morphological characteristics: the basic building type of the courtyard is that houses are built on the south, east and north sides of the courtyard; the courtyard is rectangular in plan, and the entrance is arranged at the east end of the south side of the courtyard without exception; the house on the north side of each courtyard consists of three rooms. The above characteristics are due to collective consciousness.

The local villagers believe that they have inherited the Feng Shui tradition very well when constructing these houses. As for why the gate was arranged at the east end of the south wall, the villagers gave the following reasons:

1. Opening the door to the position of the "xùn"(巽) in the Tai Chi Eight Diagrams is the tradition of Hancheng;
2. Catering to the idiom of "The Purple Air comes from the east" (a propitious omen), they believe that opening the door at the east end will bring good luck to the family.

However, the author believes that the above two explanations indicate the rupture of the traditional organicity of courtyard morphology. The residential Feng Shui theory comes from the "Book of Changes", which is a theory about "change". From the first floor plan of the 1960s, the gate position of the residential courtyard is not limited to the southeast side, it is the embodiment of "change". The misunderstanding of the concept of "Feng Shui" by modern villagers led to the solidification of the gate position. In addition, the combination of courtyard and courtyard is also rigid row house.

92. Standing Committee of Shanxi Provincial People's Congress, *Implementation Measures for Land Management in Shaanxi Province*, 1987. 陕西省土地管理实施办法.

3.3.3.4 Public and spiritual buildings in the village

The waterlogging pond of Zhangdaicun village is located in the most eastern part of the village, which is also the lowest part of the village. According to villagers, this waterlogging pond has two main functions: one is to store water to prevent the village from being waterlogged, and it also provides water for agricultural production and construction projects; the second is its role in acoustics.

According to the memories of the village elders, in the past, before the stage (numbered 4 in fig.3-94) was demolished, when there were drama performances, the waterlogged pond played a role in optimizing the sound effects of the drama. Because the stage is adjacent to the waterlogging pond, the waterlogging pond increases the reverberation time of the opera performance sound. However, this statement has not yet been experimentally verified.

Fig.3-94 shows the distribution of public buildings in the village in 1967. At present, among all the buildings numbered in the figure, only the Buddhist temple numbered "1" is still preserved (fig.3-94). The Guandi temple numbered "2" collapsed, the building components are still in the original site, and the rest of the buildings or structures no longer exist.

In a stone stele in Zhangdaicun Village titled "Record of the earth mound construction by the northern community of Zhangdaicun Village(张代村北社筑土墩记)" carved in 1817, we found the construction record of the earth mound numbered 8 in fig.3-94: "茲與村西相地勢觀來脈因築土墩奉財神以補之高一丈四尺....." It means: "After observing the terrain and topography on the west side of the village, build a mound to worship the God of Wealth. The height of the mound is about 4.7 meters." The mound was destroyed during the Cultural Revolution in the 1960s, and no photos of it before the destruction have been found. The earth tower numbered 9 in fig.3-94 also no longer exists. It is said that the ancient custom of building earth towers in Hancheng originated from the recognition of those who passed the provincial civil service examination, and was built to commemorate or reward a certain individual. Now in some villages in Hancheng, we can still see the remains of some earthen towers (fig.3-95).

The landscape of Zhangdaicun Village can be read by cutting east-west specific landscape sections, which reveal the complex semantic and visual relationships between its components.

3.3.4 IV- Analysis of morphological characteristics: reading of recessive forms, the law of formation of courtyards and groups

From the current overall first floor plan of Zhangdaicun Village we can see at a glance that this village is composed of many rectangular courtyards, which constitute the basic unit of the village space. At the same time, the internal space division of each courtyard is also clearly displayed.

In addition, it is not difficult to find that traditional wood-structured buildings are mainly distributed in the southeast of the village near waterlogging pond, while the new-style courtyards with brick-concrete structure are mainly distributed on the west and north sides of the village.

Further observation, we will find that in the area built in the 1960s (that is, the historical area of the village), the residential buildings appeared in the form of clusters. The size of each courtyard is similar but there are still obvious differences, and the orientation of the courtyard is more diverse. The angles of the

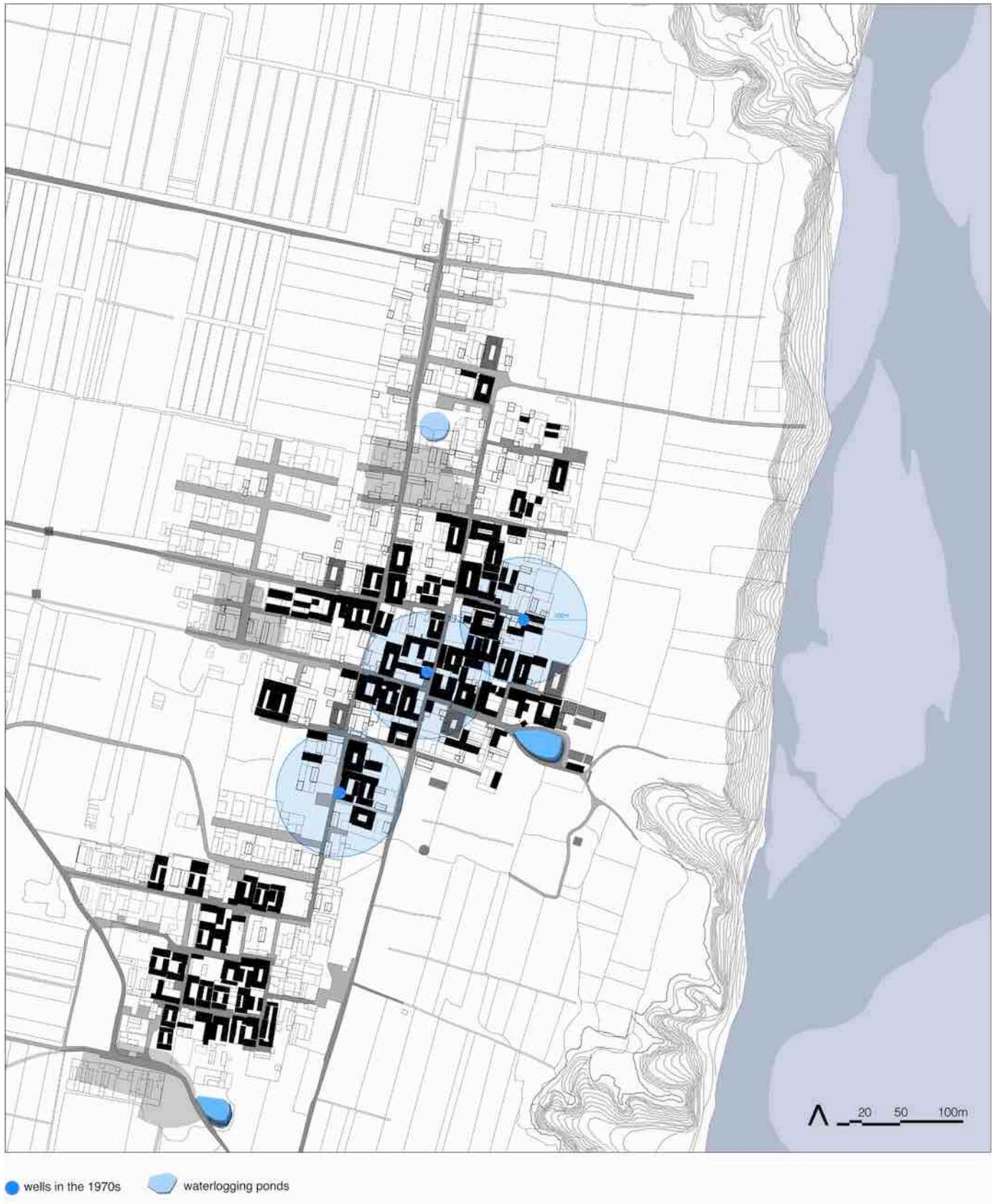


Figure 3-93 Wells, ponds in Zhangdaicun Village in 1967. Source: Elaborated by the author.

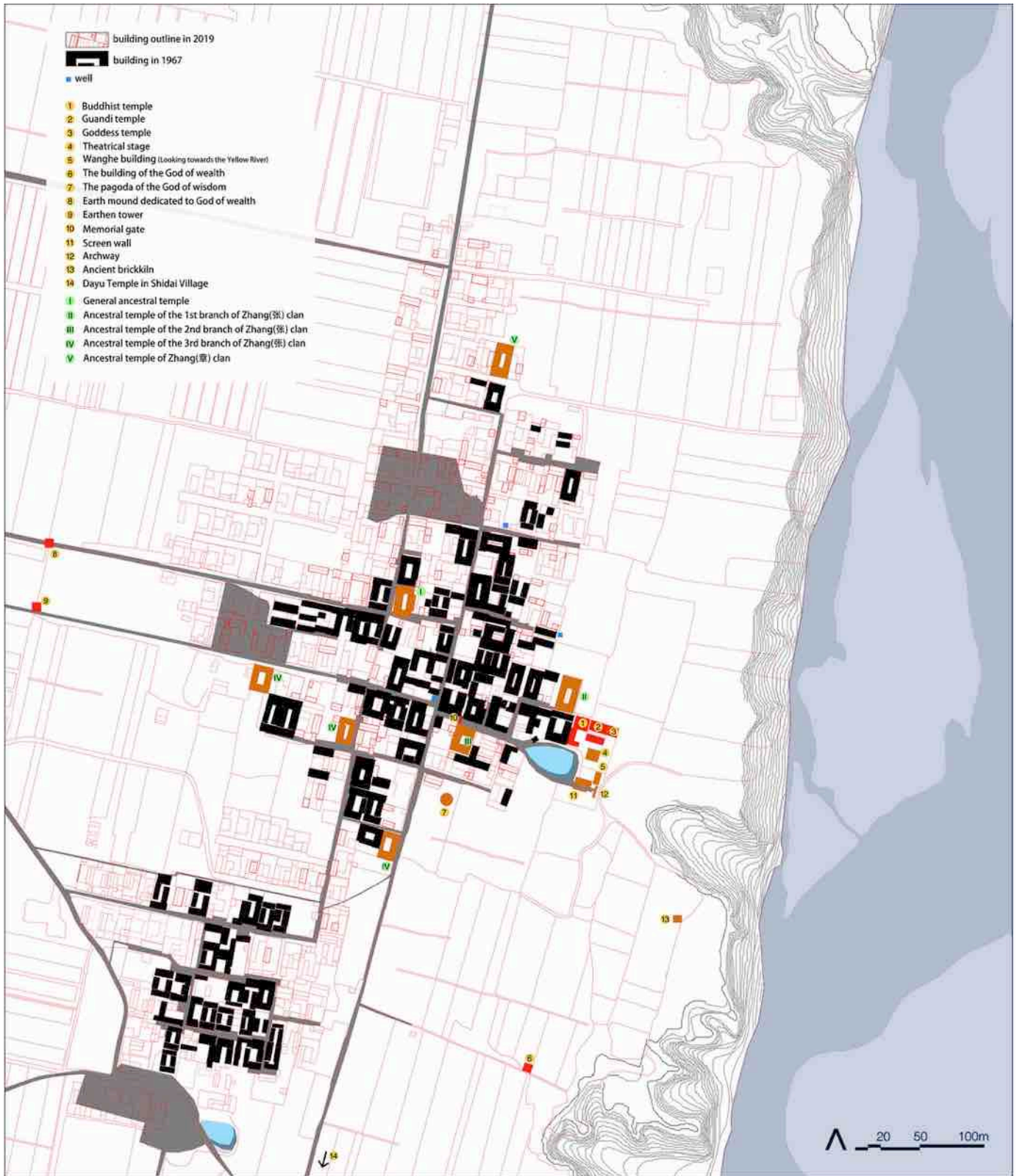


Figure 3-94 Ancestral temples, religious and spiritual buildings in Zhangdaicun Village in 1967. Source: Elaborated by the author.



Earth tower in Xiagan'gu Village
(Jin dynasty)



Earth tower in Dapeng Village
(Ming dynasty)



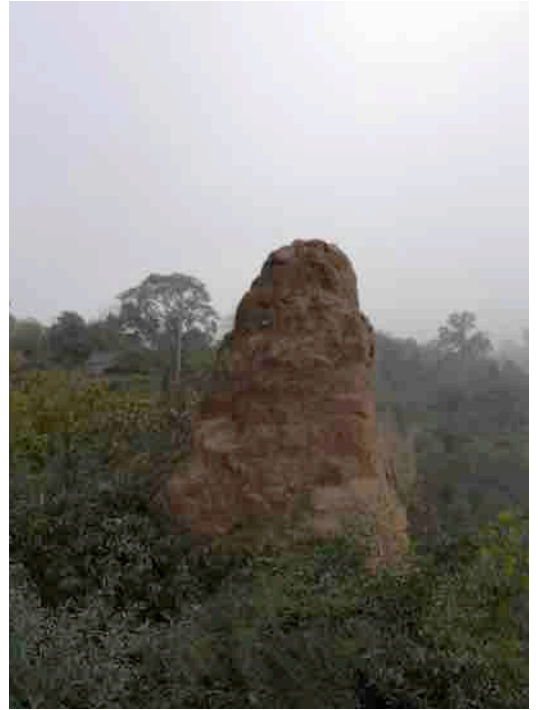
Earth tower in Dapeng Village
(Qing dynasty)



Earth tower in Yaojiazhuang Village



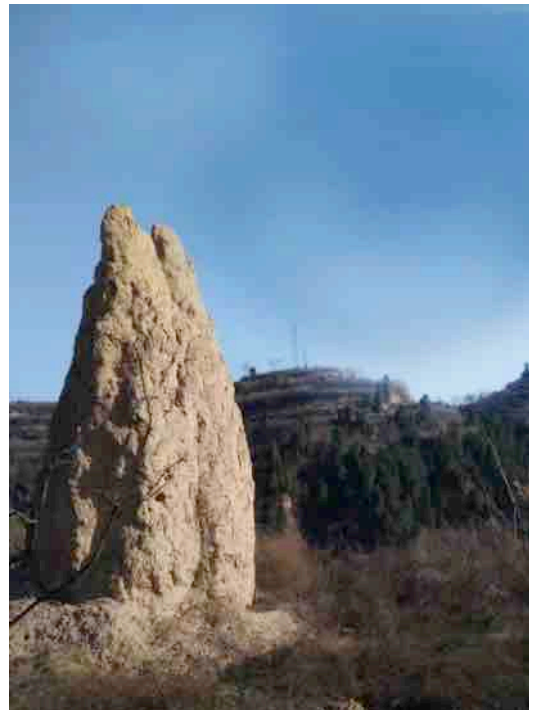
Earth tower in Xiyuan Village



Earth tower in Goubei Village
(Qing dynasty)






Earth tower in Aitie Village



Earth tower in Jiakelao Village

Figure 3-95 The existing Earth Pagoda in Hancheng. Source: Photographed by Xie Xiangjun.



-  religious (spiritual) buildings that disappeared before 1967
-  the location of the religious (spiritual) buildings
-  the location of the ancestral halls

After China's 1966 Four Olds Movement, all the ancestral halls were no longer used and all the buildings related to Chinese traditional ritual system and religion have been abandoned. The buildings represented by the numbers are as follows:

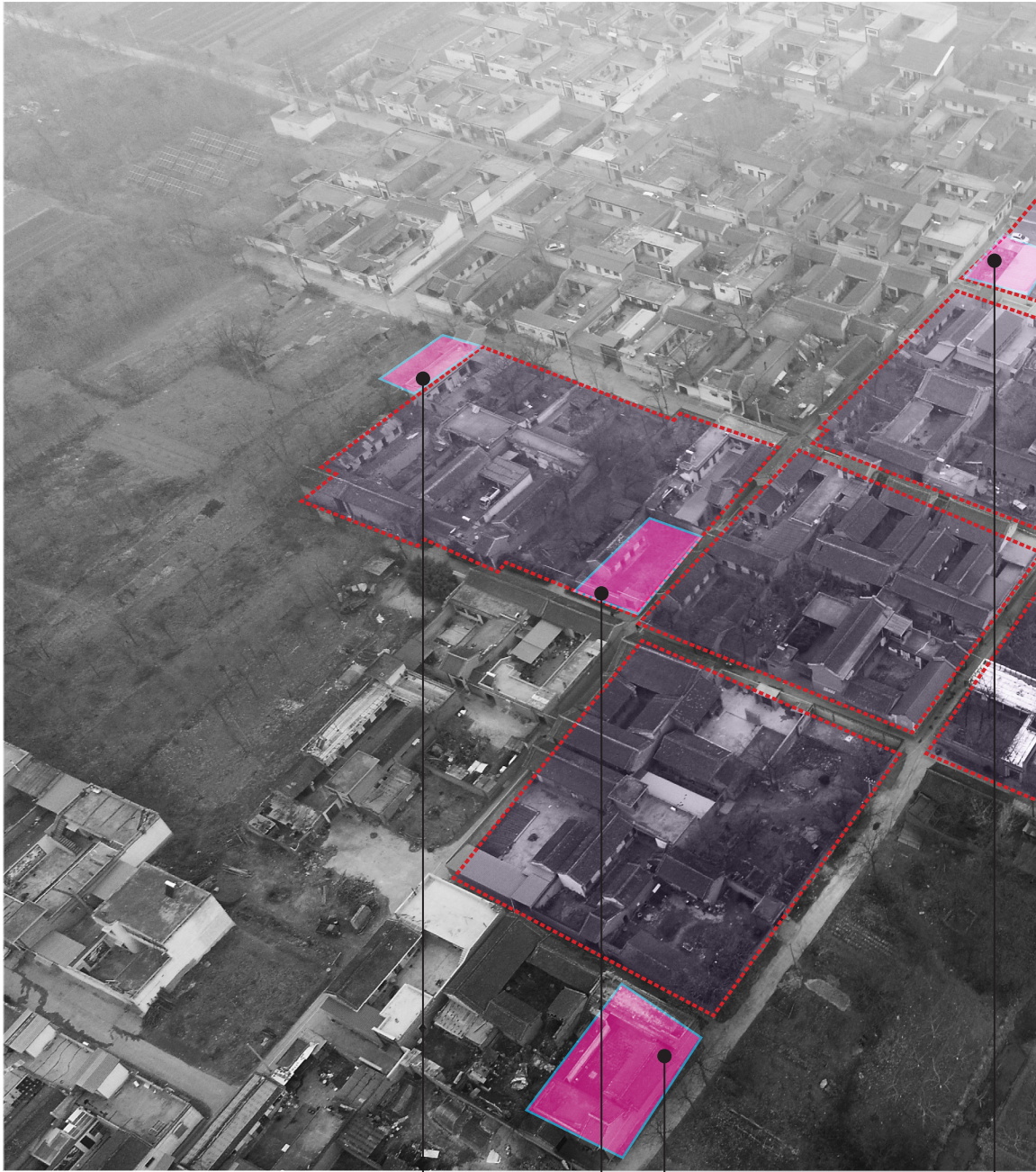
1. General ancestral hall of the Zhang (张) family
2. Branch ancestral hall of the 1st branch of the Zhang (张) family
3. Branch ancestral hall of the 2nd branch of the Zhang (张) family

4. Branch ancestral halls of the 3rd branch of the Zhang (张) family
5. Ancestral hall of the Zhang (章) family
6. Buddhist Temple in Zhangdai Village (佛爷庙)
7. Guandi Temple in Zhangdai Village (关帝庙)
8. Goddess Temple in Zhangdai Village (娘娘庙)
9. Drama stage
10. Building for looking forward the Yellow River(戏楼)



- ang (张) family
- 11. Archway
 - 12. Memorial gate
 - 13. The pagoda of the God of wisdom (文星塔)
 - 14. Earth mound dedicated to God of wealth (土墩)
 - 15. Earth tower (土塔)

Figure 3-96 Typological map of public buildings in Zhangdaicun Village in 1967. Source: Elaborated by the author.



Site of General
ancestral hall of Zhang

Site of ancestral hall
3rd branch of Zhang

Site of ancestral hall
3rd branch of Zhang

Site of ancestral hall
3rd branch of Zhang



Figure 3-97 The location of temples and former location of ancestral halls in the semantic unit of category A. Source: Elaborated by the author.

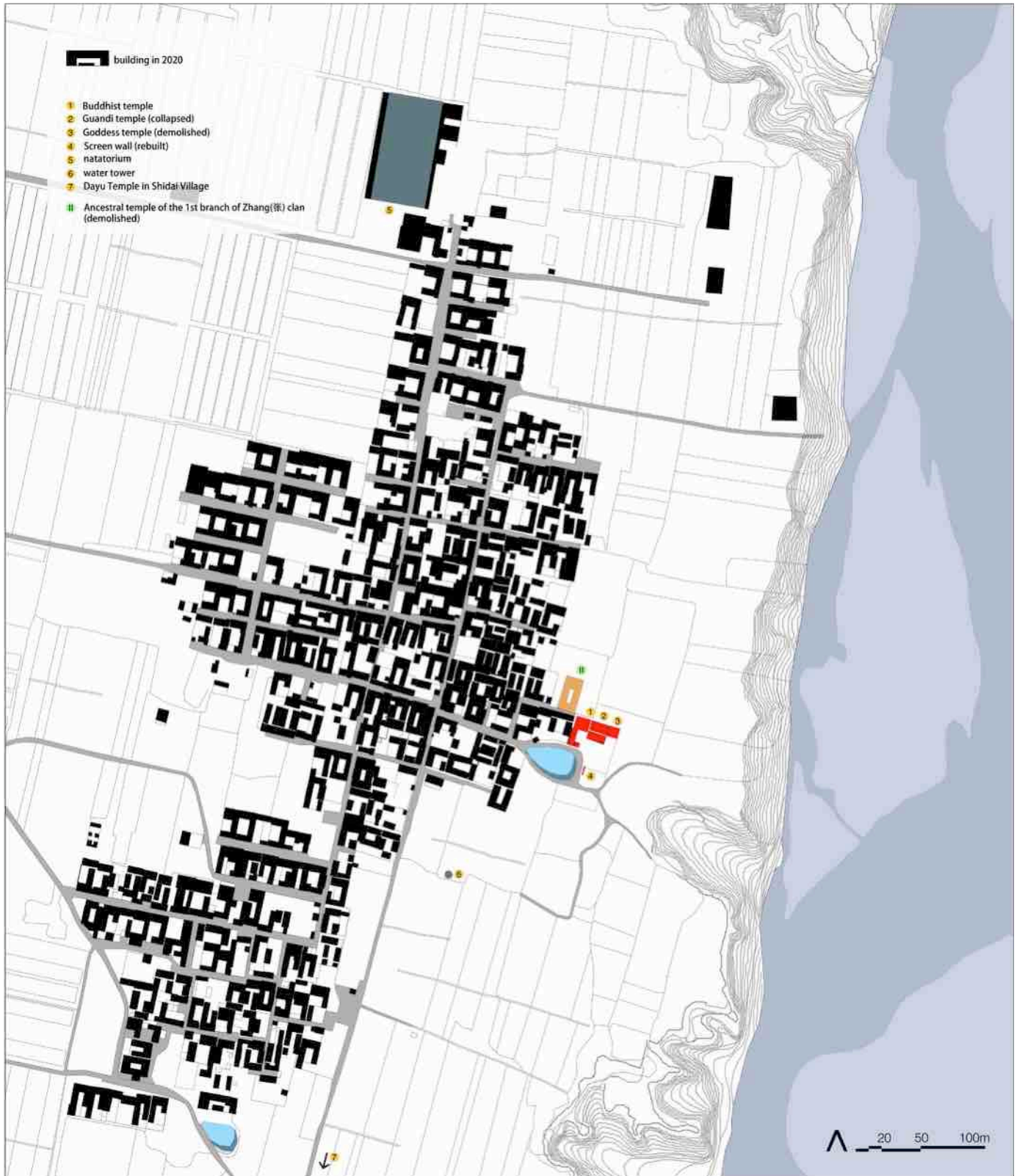


Figure 3-98 Ancestral temples, religious and spiritual buildings in Zhangdaicun Village in 2020. Source: Elaborated by the author.

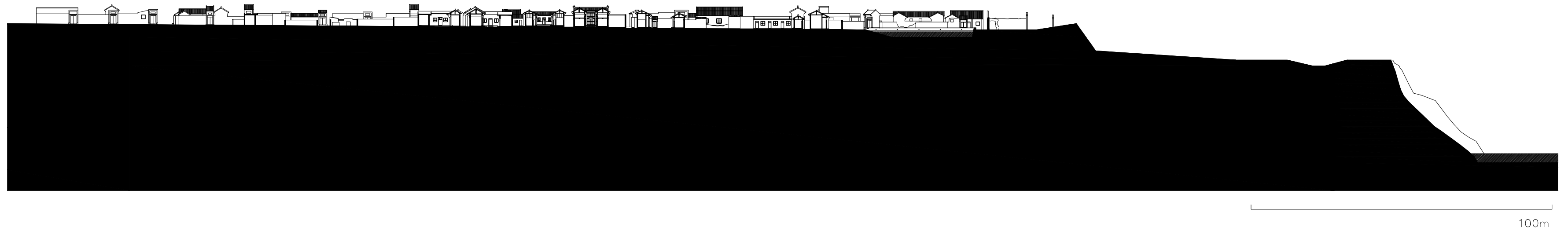
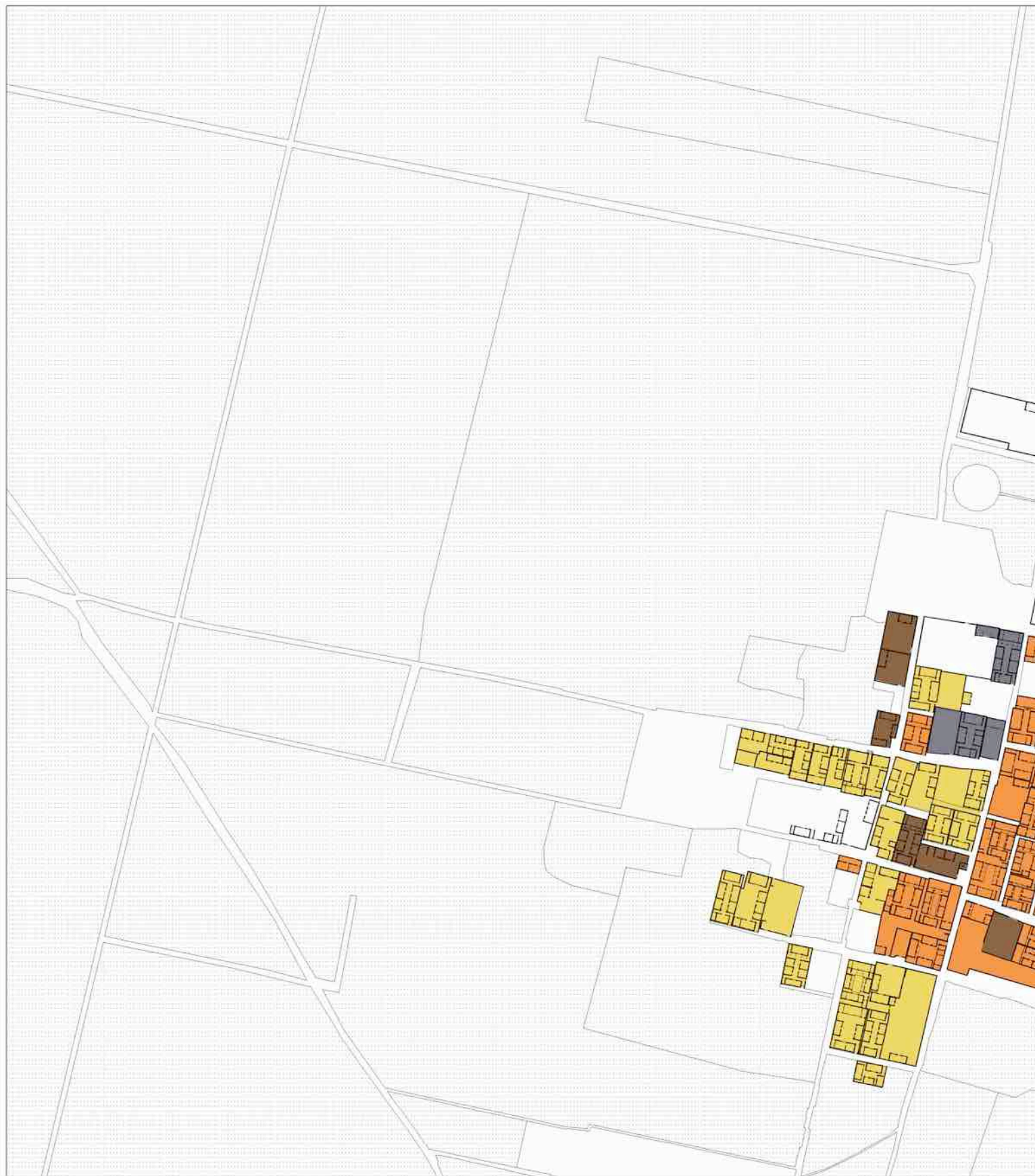


Figure 3-99 The section of Zhang-Dai-Cun village. Source: Elaborated by the author.



homestead of the 1st branch of Zhang (张) family

homestead of the 2nd branch of Zhang (张) family

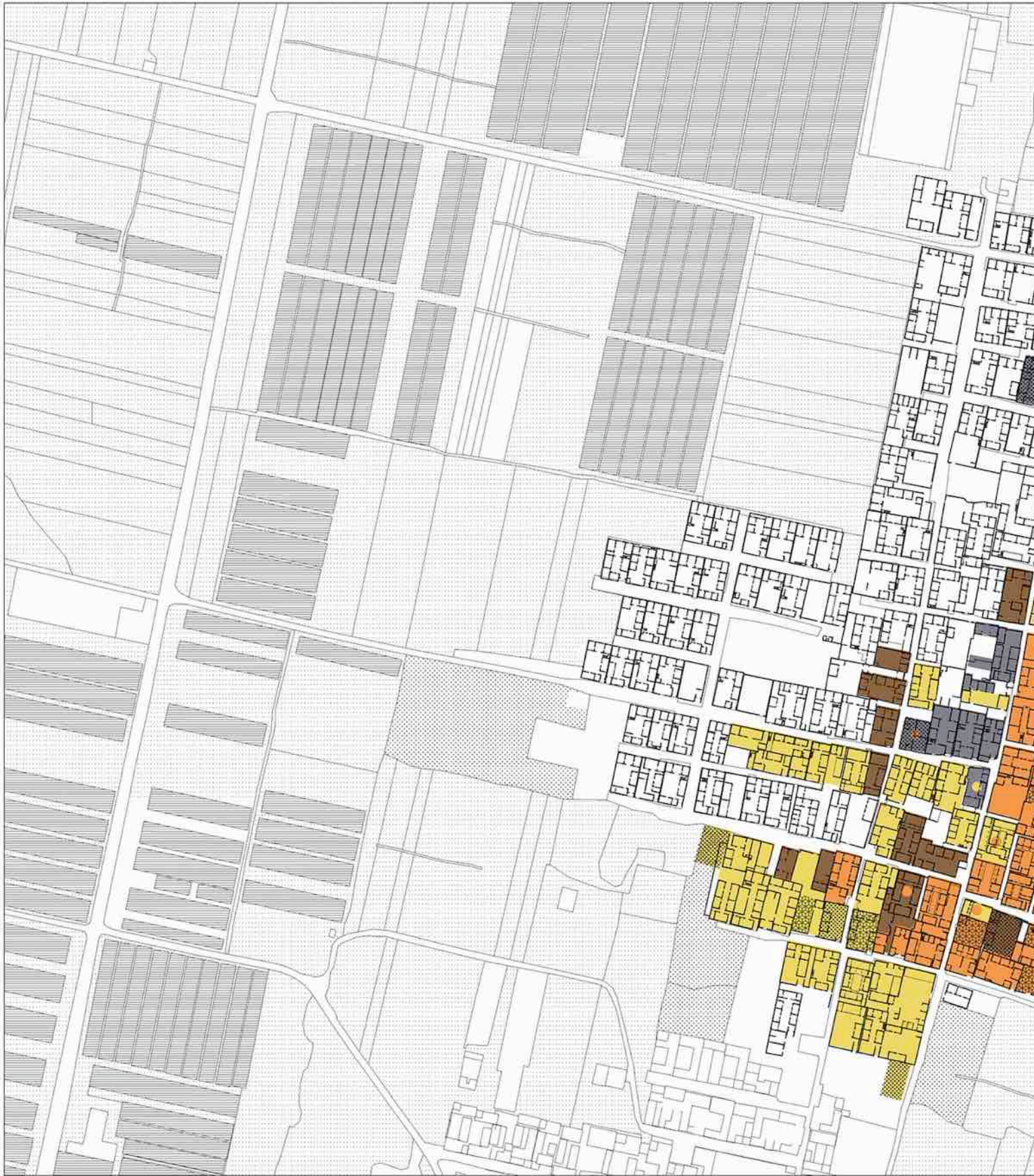
homestead of the 3rd branch of Zhang (张) family

homestead of Zhang (章) family (extraneous family, moved to Zhangdai Village from other places)

religious and spiritual buildings and structures



Figure 3-100 Distribution of Clan and Family Branches in the Plan of Zhangdaicun Village in 1967.
Source: Elaborated by the author.



- | | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
|  homestead of the 1st branch of Zhang (張) family (currently) |  homestead of the 2nd branch of Zhang (張) family (currently) |  homestead of the 3rd branch of Zhang (張) family (currently) |  homestead of Zhang (章) family (currently) |  the location of the former ancestral hall |
|  Zhang's (章) homestead was originally from the 3rd branch of Zhang (張) family |  2nd branch's homestead was originally from the 3rd branch |  3rd branch's homestead was originally from the 1st branch of Zhang (張) family |  Zhang's (章) homestead was originally from the 1st branch of Zhang (張) family |  the location of the former stables |



Figure 3-101 Distribution of Clan and Family Branches in the Plan of Zhangdaicun Village in 2020.
 Source: Elaborated by the author.



Figure 3-102 Typological diagram of Building Structure of the semantic unit A-3. This semantic unit is a cluster of the first branch of the Zhang family. The courtyards in the group are connected by a lane, and there are small doors between adjacent courtyards to connect each other. Source: Elaborated by the author.

walls of adjacent courtyards are roughly the same but there are slight differences. Similar to the urban form in the Middle Ages in Europe, the cluster form of the historical center of Zhangdaicun Village presents an organic continuity, from which traces of organic growth in space can be seen. The "group" reflects the cohesion of the blood of the traditional family in form, and the closeness of blood is directly reflected in the spatial relationship (fig.3-99).

However, the combination of a large number of new brick-concrete houses on the west and north sides of the village is much simpler. The courtyard and the courtyard are connected in a row, and the orientation of the courtyard is exactly the same. It can be said that in terms of spatial form, the ancient "group" and the modern "belt" are the main differences between the old and new forms of Zhangdaicun Village.

To study the shape of a region, we must study the reasons for the formation of the shape of the territory, and summarize the general law of the formation of the form. This law can be called latent form. I will explain the latent form of the Zhangdaicun Village courtyard groups.

3.3.4.1 The courtyard and building orientation follow an orthogonal azimuth system

Orientation is an important cultural element in ancient architecture. The concept of azimuth in ancient China can be explored from two pedigrees. One is the azimuth system that is found in Confucian classics and is officially recognized. Fig.3-103 depicts the ancient officials in charge of the four regions of the east, south, west, and north of the country recorded in ancient Chinese books in the 10th century BC. Xi Zhong (羲仲) lives in the east and is responsible for the time service of the vernal equinox; Shu Xi (羲叔) lives in the south and is in charge of the time service of the summer solstice; He Zhong (和仲) lives in the west and is responsible for the time service of the autumnal equinox; He Shu (和叔) lives in the north and is in charge of the time service of the winter solstice.

This is an azimuth system based on the orthogonal direction and also includes the oblique direction, which contains the unity of various cultural elements such as azimuth, seasons, colors, music, and five elements in ancient China (table 3-7). At the same time, there are many ritual meanings such as guest and host, elders and children, monarchs and ministers, men and women, superiors and inferiors, and respect, etc., which have become the core content of ancient Chinese culture. Second, it is mainly hidden in the yin and yang techniques and Fengshui concepts that are related to the housing orientation and are circulated among the Chinese folks⁹³.

Table 3-7 Correspondence between orientation and other traditional Chinese cultural elements.

Five directions	East	West	Centre	South	North
Five colors	Cyan	White	Yellow	Scarlet	Black
Five tones	So	Re	Do	La	Mi
Five Virtues	Benevolence	Righteousness	Courtesy	Wisdom	Trust
Five Elements	Wood	Metal	Earth	Fire	Water
Four Mythical Creatures	Blue dragon	White tiger		Linnet	Black tortoise
Four Seasons	Spring	Autumn		Summer	Winter
Divinatory Symbols	Chen	Tui		Li	Kan

Source: Guixiang, Wang, "Discussion on the Orientation of Ancient Chinese Architecture," in *Proceedings of International Conference on Chinese Architectural History IV*, ed. The Architecture Society of China's Division of Architectural History, Tongji University (Tongji University Press, 2007), 232-243. Translated by the author.

93. Guixiang, Wang, "Discussion on the Orientation of Ancient Chinese Architecture," in *Proceedings of International Conference on Chinese Architectural History IV*, ed. The Architecture Society of China's Division of Architectural History, Tongji University (Tongji University Press, 2007), 232-243. 王贵祥, "中国古代建筑方位问题探讨," in *全球视野下的中国建筑遗产——第四届中国建筑史学国际研讨会论文集(《营造》第四辑)*, ed. 中国建筑学会建筑史学分会, 同济大学(同济大学出版社, 2007), 232-243.



Figure 3-103 Ming Guan Shou Shi Tu. Source: Sun Jianai, Qin Ding Shu Jing Tu Shuo. Da Xue Tang Bian Shu Ju, 1905. 孙家鼎, 钦定书经图说. 大学堂编书局, 1905.

Since ancient times, people have continuously demolished old buildings and built new ones, so the shape of China's rural settlements is always changing. However, some morphological features have remained stable for quite some time, such as the main roads of the village and certain specific axis relationships.

The concept of urban planning in ancient China was mainly influenced by two kinds of ideas. The first is the "Symmetrical and Centering Theory" (《择中论》) based on Capital Regulation, Office of Winter: Kao Gong Ji, Rites of Zhou (《周礼·考工记·王成制度》); the other is the "Theory of Terrain" (《因势论》) based on Guan Zi⁹⁴ (《管子·乘马·立国》). The former theory emphasizes ritual and hierarchy, and reflects the rigor of geometric relations in the planning pattern". The latter theory emphasizes the concept of "take the law of the nature of things as the law" (《舍己而以物为法》), "Conforming to the season and the terrain" (《因天时,就地利》), "city is not necessarily completely square and the road is not necessarily straight" (《城郭不必中规矩,道路不必中准绳》). Guanzi believes that the idea of adapting to local conditions should be embodied in the planning, and a more free urban axial structure should be established in accordance with the objective environment and the mountain-shaped terrain.

Observing the plan of Zhangdaicun Village, we can find that its layout not only reflects the characteristics of "Symmetrical and Centering Theory", but also reflects the "Theory of Terrain".

"Symmetrical and Centering Theory" is mainly reflected in that all roads in the village are roughly orthogonal, and the orientation of each courtyard conforms to this orthogonal road relationship. However, unlike the ideal city depicted by "Wang Cheng Tu" (fig.3-104), the geometric center of Zhangdaicun Village has no important public buildings. The most important public buildings in the village, temples and stage are all located in the east of the village.

"Theory of Terrain" is reflected in the fact that all roads and buildings are not facing north and south, but are inclined at a certain angle (10° to 20°). This is a manifestation of conformity to the natural topography, consistent with the slope of the site.

3.3.4.2 The influence of Fengshui concept on courtyard orientation and courtyard entrance position

The theory of Fengshui is a complex and profound theory. Not only in the modern era, even in ancient times only a few people can truly understand and master it. This ancient theory combines disciplines and concepts such as astronomy, geography, philosophy, numbers, orientation, and calendar. Ultimately, it points to the balance between Yin and Yang, and forms a set of guiding principles to avoid evil or disaster. Fengshui can be considered as the art of adapting the residence of the living and the dead so as to co-operate and harmonize with the local currents of the cosmic breath⁹⁵. Here we analyze the two characteristics of the village form under the influence of Fengshui concept.

94. The Guanzi (Chinese: 管子) is an ancient Chinese political and philosophical text that is named for and traditionally attributed to the 7th century BCE statesman Guan Zhong, who served as Prime Minister to Duke Huan of Qi.

95. Chatley Herbert, "Fengshui," in Encyclopaedia Sinica, ed. Samuel Couling (Shanghai: Kelly and Walsh, 1917), 175.

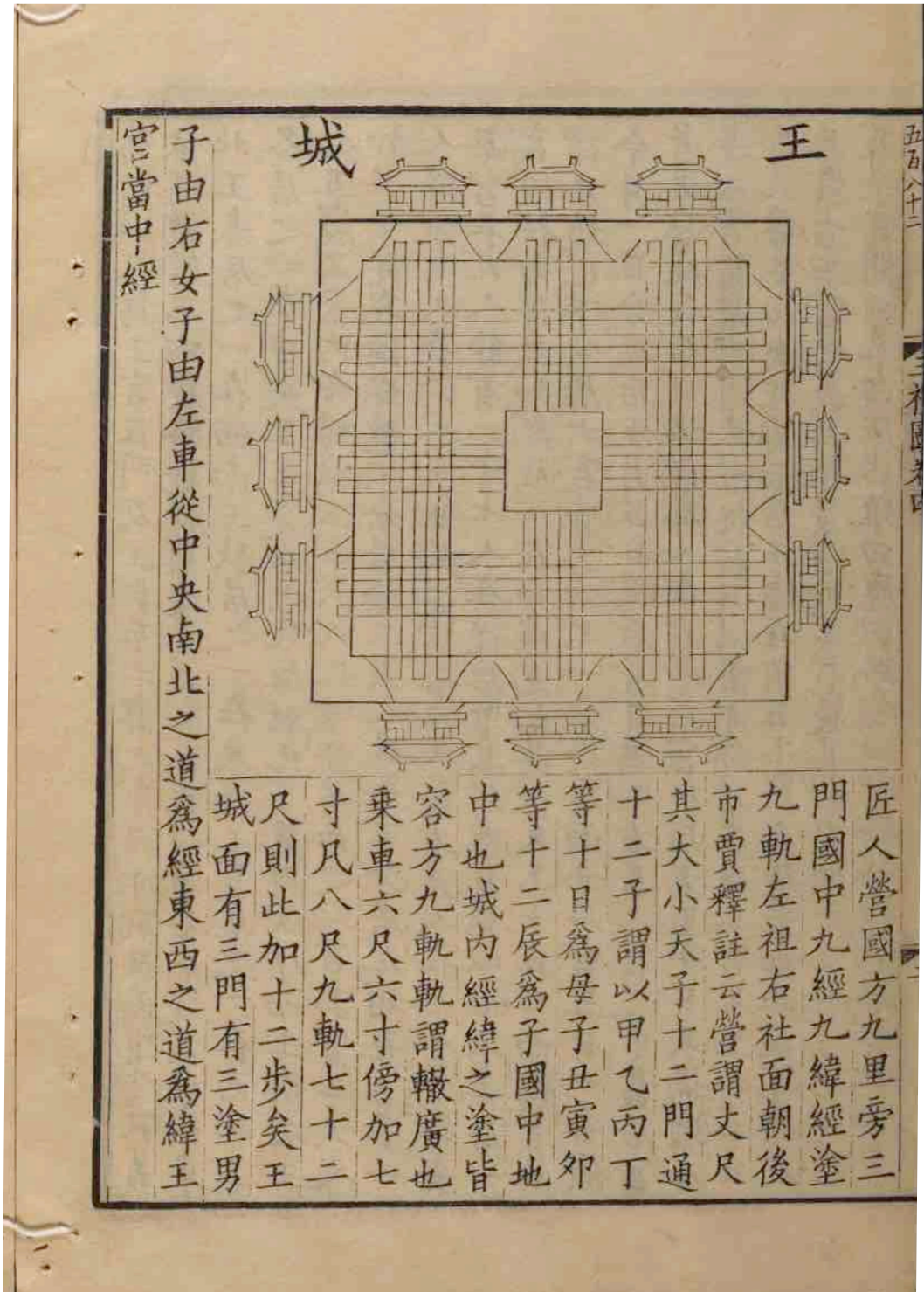


Figure 3-104 The Sketch of Zhou Dynasty Capital by Nie Chongyi (10th century), an ideal Layout. Also known as "Wang Cheng Tu". Source: Chongyi Nie, San li tu, (Beijing: Tong zhi tang, 1673), 66.



Figure 3-105 Road system of Zhangdaicun Village (left) and Xuecun Village (right). Source: Elaborated by the author.

The first is the road structure at the overall level of the village. The road in the historical area of the village does not have a straight checkerboard path. The road system usually consists of tortuous main roads and some dead end branch roads (fig.3-105). The non-linear tortuous air duct allows the wind speed of Traditional Villages to be reasonably controlled. At the same time, a certain pressure difference can be formed on the windward and leeward sides of each building, which is very beneficial to the formation of a relatively uniform and peaceful wind environment⁹⁶. This phenomenon is consistent with Fengshui theory.

The second is the layout characteristics of the courtyard on the meso level. According to the "Ten Books of Yangzhai"(阳宅十书) in Ming Dynasty of China: If a house (which can be composed of several

96. Wang, Xuesong, and Cao, Yubo, "Research on "Cang Feng Ju Qi" and the Wind Environment of Traditional Villages and Towns: The Case of Pianyan Ancient Town, Chongqing," Architectural Journal, no.9 (2012) :21-23. 王雪松, 曹宇博, "藏风聚气"与传统村镇风环境研究——以重庆偏岩古镇为例,"建筑学报, S2 (2012) :21-23.



Figure 3-106 a. Cao's Grand Courtyard, Taigu, Shanxi Province; b. Wang's Grand Courtyard, Lingshi, Shanxi Province; c. Zhou's Grand Courtyard, Yongzhou, Hunan Province. Source: <http://piao.wanbula.com/10209.html>.; https://www.sohu.com/a/329455524_120028939.; <http://www.cnll.gov.cn/cnll/llfg/201511/a0c0446993d54fafa73950a84feb3da3.shtml>.

courtyards) is divided by walls and there a courtyard door on the wall, then *Jiuxing*⁹⁷ will rise from this individual courtyard and has nothing to do with other (adjacent) courtyards.....Therefore, different families in a house (small families in a large family) live in separate courtyards, and each family can arrange the plane of the courtyard in a *Fengshui* auspicious manner⁹⁸. This sentence shows that a mansion can be composed of several courtyards. One way is that the owner living in each courtyard can make the courtyard auspicious through the layout. How the layout is beneficial to the fate depends on the birthday of the owner of the courtyard. This is one of the reasons why the residences of large families in traditional Chinese houses are generally divided into multiple independent courtyards by walls(fig.3-105). Of course, there is another reason related to ancient laws.

During the investigation, an old carpenter told me that the layout of houses in Hancheng was mainly based

97. *Jiu Xing* in Chinese is '九星'. It originated from the ancient people's natural worship of stars in the ancient times, and is the product of the combination of ancient mythology and astronomy. The *Jiuxing* in *Fengshui* is rooted in *Zhouyi*(周易), which can be used to judge the good and bad of geographical *Fengshui*.

98. In Chinese: 其法凡宅中有墙隔断, 墙间开有门, 其九星即当从此院起, 与别院并无干涉..... 故一宅之内各分各院, 各取吉凶. Cfr. Wang Jurong. Illustrated Ten Books of Yangzhai. Hualing Publishing House. 2009. 王君荣. 图解阳宅十书. 华龄出版社, 2009.

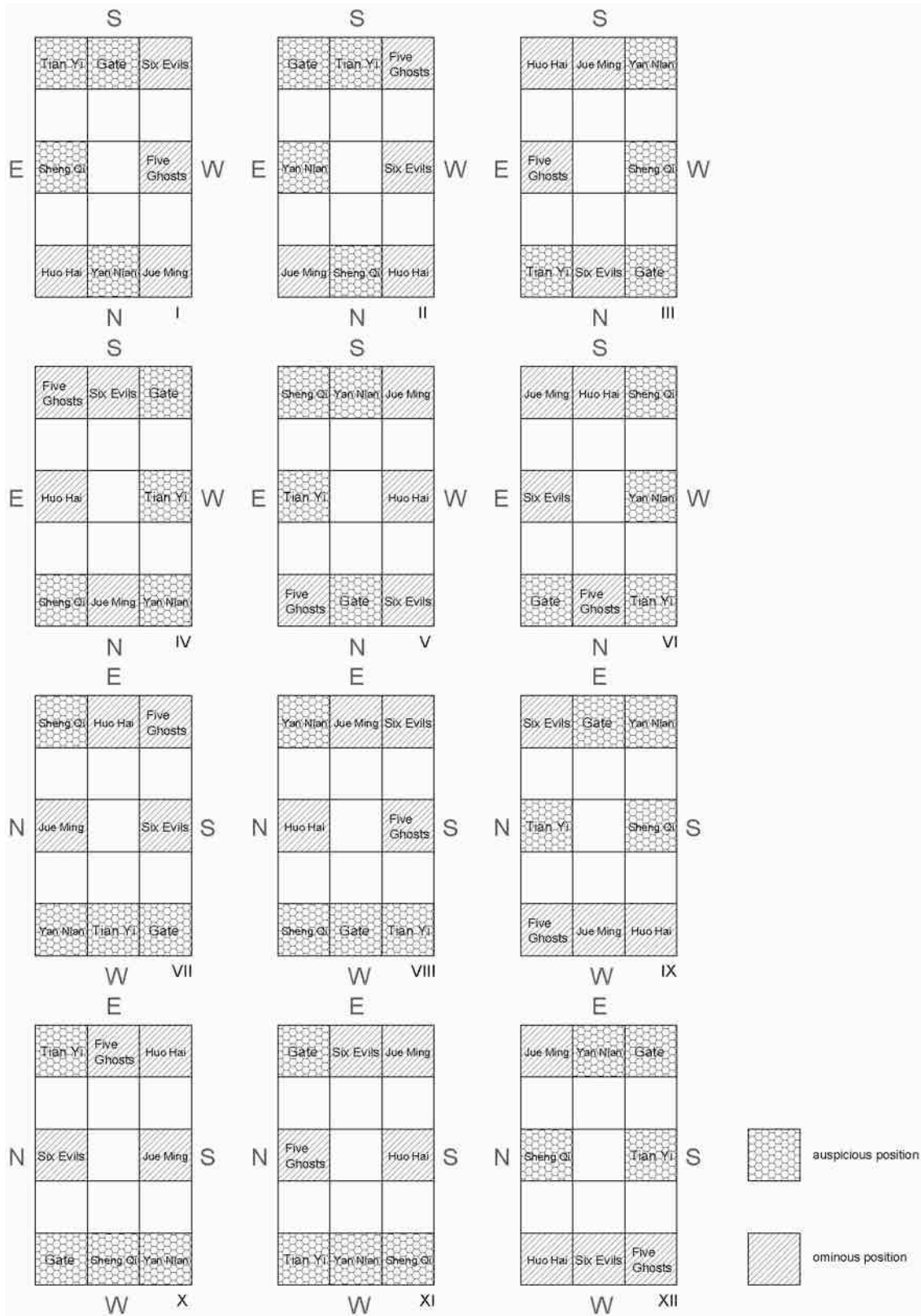
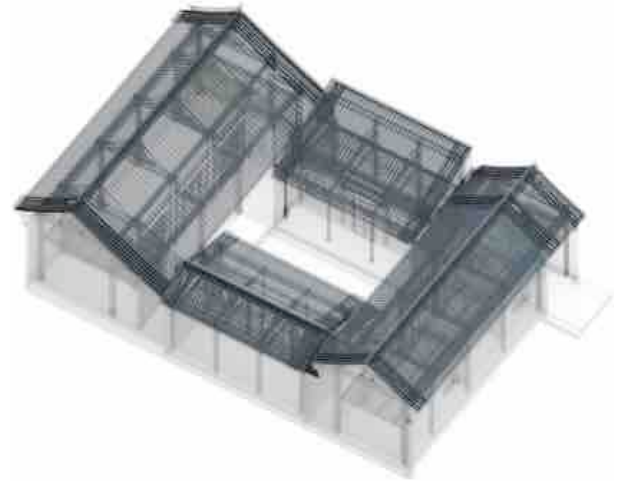
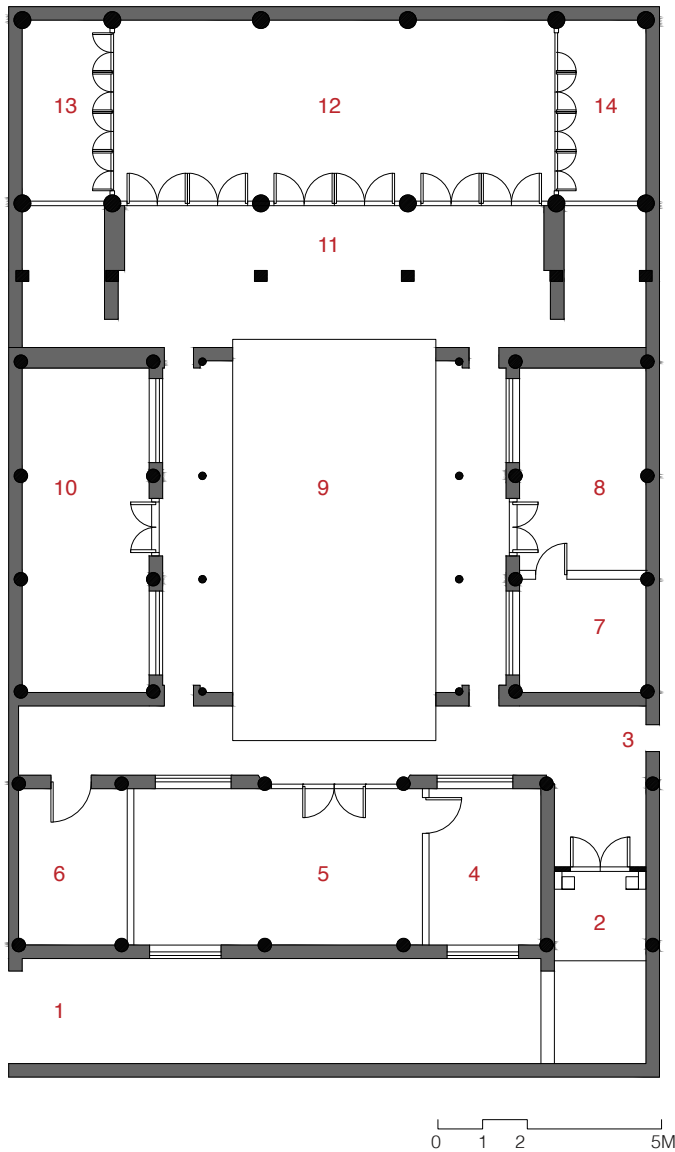
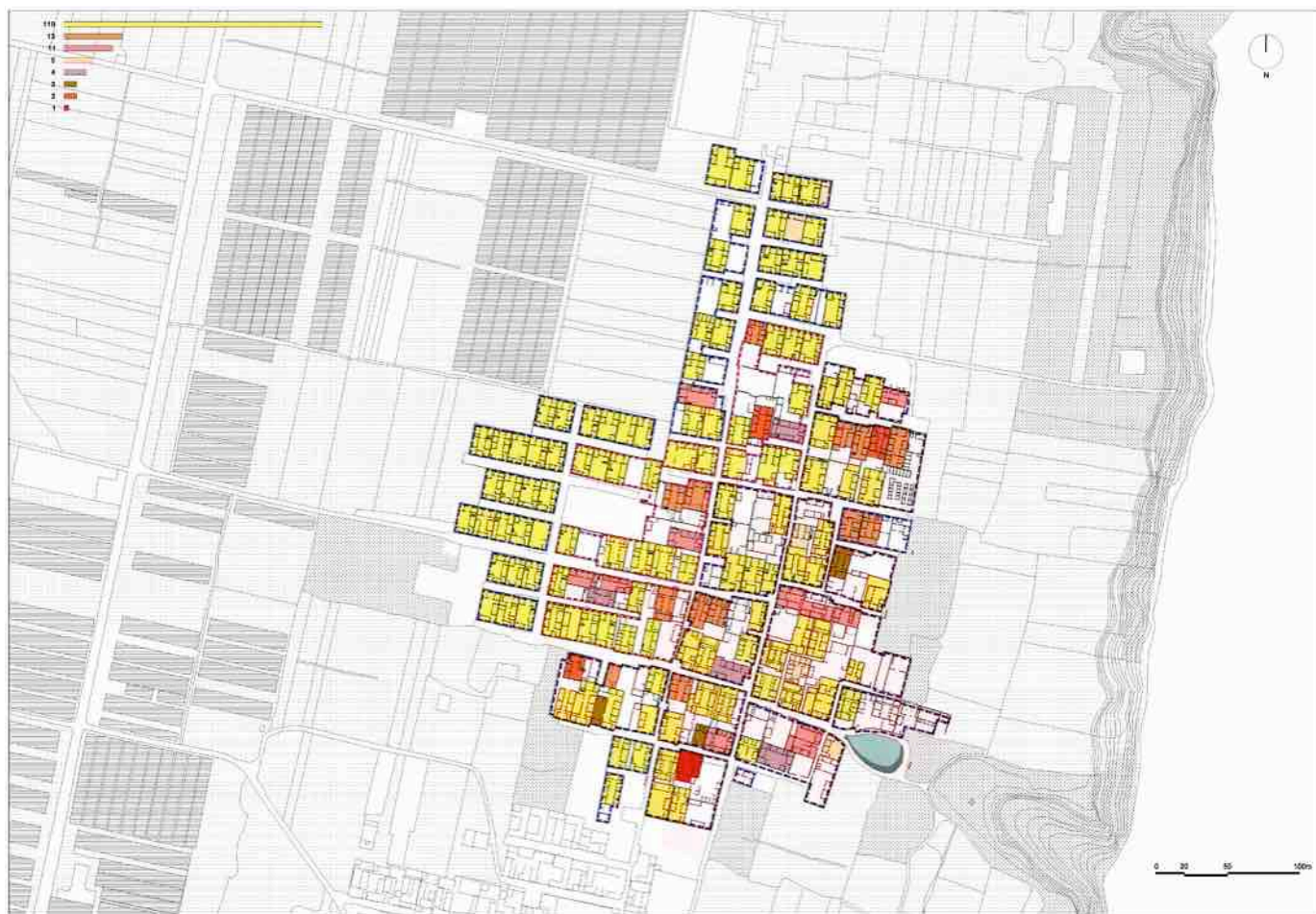


Figure 3-107 Twelve illustrations of courtyard layout in "Eight House School Fengshui". Source: The author redraws it according to the following documents. Li Shaojun. Illustrated the Yellow Emperor's House Classic: Understanding the Way of Living in China. Shaanxi Normal University General Publishing House.2010. 李少君.图解黄帝宅经:认识中国居住之道.陕西师范大学出版社,2010.



- | | |
|------------------------------------------------|---------------------------------|
| 1 laneway | 7 kitchen in the east wing |
| 2 gate of the courtyard | 8 the bedroom in the east wing |
| 3 the small door leading to the adjoining yard | 9 the yard |
| 4 the bedroom in the gatehouse | 10 the bedroom in the west wing |
| 5 the living room in the gatehouse | 11 porch under the eaves |
| 6 lavatory | 12 main hall |
| | 13,14 darkroom |

Figure 3-108 The plan and the transparent axonometric drawing of the courtyard "Jing Shu Di" in Zhangdaicun Village. The main halls in the private residential houses of Zhangdaicun, which were built both in Qing dynasty, are never used for people to live. The main purpose is to provide places for worship or be used as a storeroom. When there are weddings and funerals, they are places to receive guests. Source: Elaborated by the author.



- | | | | | |
|------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|
| A The courtyard facing south, and the gate is in the southeast. | B The courtyard facing south, and the gate is in the south. | C The courtyard facing north, and the gate is in the north. | D The courtyard facing north, and the gate is in the northeast. | E The courtyard facing north, and the gate is in the northwest. |
| F The courtyard facing south, and the gate is in the southwest. | G The courtyard facing east, and the gate is in the southeast. | H The courtyard facing east, and the gate is in the northeast. | □ Morphological semantic units. | |

Figure 3-109 Types of courtyard orientation and entrance location in Zhangdaicun Village. Source: Elaborated by the author.

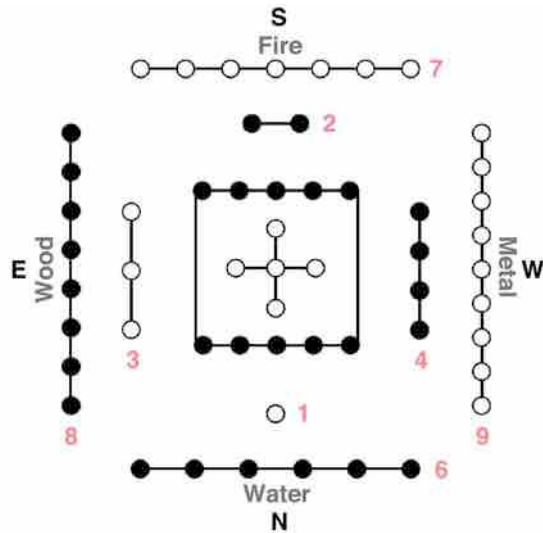


Figure 3-110 Types of courtyard orientation and entrance location in Zhangdaicun Village. Source: Elaborated by the author Based on the illustrations in the book "Di Li Zhi Gui" (地理指归).

on the "Eight House School" concept of Fengshui⁹⁹. Intuitively, each residential courtyard in the village of Hancheng is axially symmetrical on the whole (partially asymmetrical), and is composed of basic units such as gate room, reversely-set rooms, wing rooms, and hall. But further observation, we will find that the ancients paid great attention to the orientation and position of the entrance, stove, well, bedroom, and living room in the courtyard. According to the Eight House School, the location of these elements is determined through a complex set of rules based on the orientation of the courtyard (usually related to the direction of the road) and the birth date of the head of the household when the house was built. This mechanism can be seen as the dynamic principle of courtyard morphogenesis in traditional Chinese dwellings. In other words, the arrangement and combination of a series of courtyard function layouts correspond to the eight fate attributes corresponding to the birthday of the head of the household (corresponding to the eight directions of the Book of Changes and Eight Diagrams).

99. Eight House School Feng Shui, also called Ba Zhai (Ba Chai) Eight Mansions Feng Shui is one of the easier and more common Feng Shui methods used to determine the auspicious and negative positions of a building, to examine whether you are well-suited with the building and to find out your good and bad individual locations that promote efficiency at work and in relations, good health and fruitful academic pursuits. The simplest method of calculating your own Gua, according to the year you are born identifying your four positive and four inauspicious directions as well as identifying your building trigram and locating the four auspicious and four inauspicious locations within your building. The classical texts, Di Li Quan Cheng Lian Huan Ji (地理全成連環記) a compilation of Feng Shui key texts on Di Li (which could be translated in a modern way by the term geography) published in 1739 by Zhang Binglin, and the Ba Zhai Ming Jing (八宅明鏡, Eight Mansions Bright Mirror) published in 1790 by Gu Wulu during the Qing Dynasty, give us the necessary information to understand this system.



Figure 3-111 The height ratio between the attic floor and the ground floor of the building in the courtyard "Jing Shu Di." in Zhangdaicun Village. Source: Elaborated by the author.

Fig.3-107 shows an example of the layouts of the Fengshui courtyard of the Eight House School. Usually, the gate, bedroom, and living room are arranged in the "auspicious position", and the kitchen and bathroom are arranged in the "ominous position". This set of illustrations provides people with a flexible way of layout, brings diversity to the layout of different courtyards, and also brings diversity of entrance positions.

In this way, the uniformity of the courtyard forms is avoided, and the slight difference under the unified scale and harmonious texture is formed. It should be pointed out that the Eight House School is only one of many Feng Shui schools, and it is only widely adopted in the Hancheng area. Different Feng Shui schools have different specific methods when guiding residential construction, but their goals are clear and consistent: That is, first, through the summary of natural laws (topography, climate, etc.), a set of construction rules are formed to create a living environment that is beneficial to human physical and mental health; secondly, under the established social rules and construction methods, create the diversity of the combination of spatial plane forms.

Almost all dwellings in Zhangdaicun Village are in the form of courtyards. For example, the layout of the courtyard of "Jing Shu Di" (fig.3-108) corresponds to the type "II" in fig.3-107. Further, I marked the orientation and the type of entrance position of each courtyard in Zhangdaicun Village in fig.3-109 . Most of the courtyards face south and the entrance is located at the southeast corner of the courtyard (type A in fig. 3-109), which corresponds to type "II" in fig. 3-107.

The micro-architectural dimensions are also affected by the concept of Fengshui. During the investigation, the local carpenter told me that the height of the floor and the size of doors and windows in the traditional houses in Hancheng area were not determined randomly. There is a set of local rules for determining the height of buildings. The height of the building is in "Zhang¹⁰⁰" as the unit, and the last two digits are

100. The zhang (Chinese: 丈) is a customary Chinese unit of length equal to 10 chi (Chinese feet). Its value varied over time and place with different values of the chi, although it was occasionally standardized. In 1915, the Republic of China set it equal to about 3.2 meters or 3.50 yards. In 1930, this was revised to an exact value of 3½meters.

determined according to the azimuth shown in the "River Map (He Tu)"¹⁰¹ (fig.3-84). The last two digits of the building height are 3 and 8 for the east building in the courtyard, such as 1.38 zhang, 1.038 zhang, and 0.938 zhang; the west building is 4 and 9, such as 1.49 zhang, 1.049, and 0.949 zhang; the last two digits for the height of the south building are 2 and 7, such as 1.27 zhang, 1.027 zhang, 0.927 zhang, the last two heights of the north building and south house are 1 and 6, such as 1.6 zhang, 1.16 zhang, 0.916 zhang.

This rule provides a reason and basis for the diversity of building heights, and also makes the settlements on the building heights staggered and rhythmic. This ancient architectural custom from the East reminds me of the method Westerners use to determine the height of a room. Andrea Palladio introduced three different methods of determining the height of a room in Chapter 23 of the first book of his "Four Books of Architecture". Palladio's method is to provide multiple possibilities of building height under the geometric logic.

There is also a set of numbers that control the shape of the buildings in Zhangdaicun Village. Most residential buildings have attic floors for storage. The ratio of the height of the attic floor (from the floor to the bottom of the beam) to the height of the lower floor is 7:8, and the locals call it "up seven (chi, Chinese feet) and lower eight (chi)" (fig.3-111).

3.3.4.3 The ancient law and the concept of Fengshui jointly affected the courtyard form

The basic unit of ancient Chinese urban form is courtyard. The layout of the courtyard is based on traditional Chinese numerology. In addition, ancient laws and regulations have also restrained the shape of the courtyard. In the contemporary urban construction industry, all design and construction are complied with the minimum requirements on building safety, quality and function, which so called building code are proposed by the government authorized institutions. The early construction industry standard of Shaanxi province in modern times was in 1932, the "Xi'an city building rules" (《西安市建筑规则》) compiled by the Xi'an municipal government (ROC) which had a profound influence on the architecture form and the transformation of the city form from the traditional to the modern. In Italy Roman Palazzine are a result of the substitution of one word "villino" by "palazzine" in the Roman building regulations of 1931, and allowing the multitude of suburban cottages of the post-unification building boom to be replaced by 3-5 stories apartment buildings¹⁰². The law deeply influences our urban form. Before the emergence of modern

101. He Tu (river chart, in Chinese: 河图), Originated from the stars in the sky, it is a product of ancient civilization. The images, numbers, and principles of He Tu are profound. Its origin is an eternal mystery in the history of Chinese civilization. Tai Chi, the Eight Diagrams, the Book of Changes, Liuja (the six combinations beginning with the first Heavenly Stem of the sixty combinations of the ten Heavenly Stem and the twelve Earthly Branches), fengshui, etc. can be traced back to He Tu. He Tu is originally a star map, containing a profound code of cosmic stars, known as China's "cosmic Rubik's Cube". The "He" (River) in "He Tu" refers to "Star River". "Hetu" was first included in "Shangshu" in the existing literature. "He Tu" was first included in "Shangshu"(also called Book of History) in the existing literature.

102. Cf. Léon Krier, *Architecture: choix ou fatalité*. Editions Norma, 1996. Francesco Montuori, "L'edilizia a Roma dal 1920 al 1969: dal villino alla palazzina," About Art Online, (2019). <https://www.aboutartonline.com/architetti-ingegneri-la-trasformazione-di-roma-dal-1920-al-1969-fabbricati-villini-e-palazzine-parte-1/>

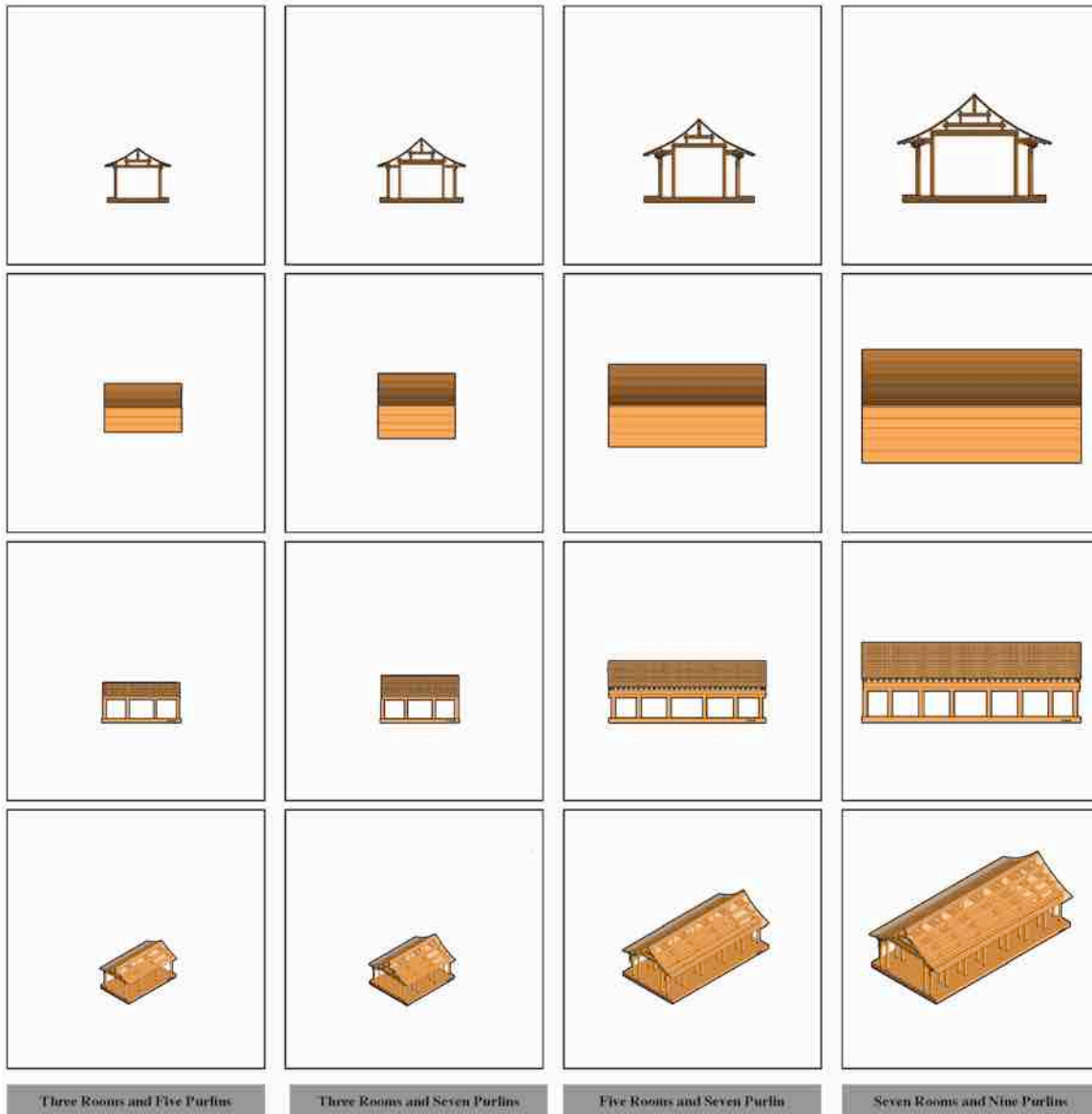


Figure 3-112 Typological diagram of Building Structure in *The Great Ming Code*. The first column of illustrations on the left is "three rooms and five purlins", which is the largest architectural prototype that can be built among the lowest-level (ordinary people) residences stipulated in the Ming Dynasty law. Source: Elaborated by the author.

urban laws, ancient Chinese laws had already begun to affect the urban and rural morphology. In ancient China, there were related laws in different dynasties to regulate the construction activities. The main purpose was to distinguish grades from classes.

In the course of the evolution of Chinese residential houses over thousands of years, courtyards have met the ever-changing natural and social needs in different types, and have become the most basic spatial elements of residential houses everywhere. Many traditional Chinese residential buildings, no matter exquisite or magnificent, contain a clear spatial order inside: this order reflects the relationship between family members and their interaction with the outside world. The adjacent indoor and outdoor spaces create different levels of spatial sequence with various relationships between each other. Ronald G. Kanapp believes that the Ming Dynasty laws and regulations stipulated the material standards for residential buildings, which promoted the development of Chinese residential buildings in the direction of standardization and unitization¹⁰³.

Most of the historical houses in Hancheng were built in the Qing Dynasty, and very few houses were built in the Ming Dynasty. According to the social stratum of the owner of the house, based on the social hierarchy, the regulations divide the residential to different grades. The Ming Dynasty is divided into five grades: the duke and marquis' house, the first and second class officers' house, goods, the third and fifth class officers' house, the sixth and ninth class officers' house, the common people's house; The Qing Dynasty it was divided into four grades (without the rank of duke and marquis, the other being the same as the Ming Dynasty). The regulations clearly stipulate the size of individual buildings, the architectural decoration, and the color of building components that are permitted for different levels of people when building a residential courtyard. The northern courtyard houses in China are made up of basic units such as concierge, wing room and hall building. The width of the courtyard is generally determined by the width of the hall (the main building). According to the provisions of 1393: "The premises(房舍) in which ordinary people live cannot exceed three rooms and five purlins." In 1402, "the number of premises in which every household lived was not limited, but each building could not exceed three rooms." No matter how large the size of the house site is, no matter how many building units form a residential courtyard, none of the individual buildings can exceed three rooms. At the same time, the mechanical properties of the wood and economic factors also limit the scale of the building. Therefore, these rules directly control the building density and settlement texture of all urban and rural settlements in China, thus profoundly affecting the settlement pattern. The regulations in 1447 have been adjusted: "The restrictions on the number of the common people's premises' purlins have been removed, but the number of rooms of single buildings is still in accordance with the previous regulations."¹⁰⁴ Since then, until the Qing Dynasty, the government cancelled the restrictions on residential housing in the depth direction.

In Dingcun village, Shanxi Province, there are some precious private houses of the Ming Dynasty which have been included in the World Cultural Heritage Tentative List together with Hancheng Dangjiacun

103. Ronald G. Kanapp, Chinese Houses: The Architectural Heritage of a Nation, Tuttle, 2005.

104. Cf. Collected Statutes of the Ming Dynasty, Volume 62. (大明会典卷之六十二).

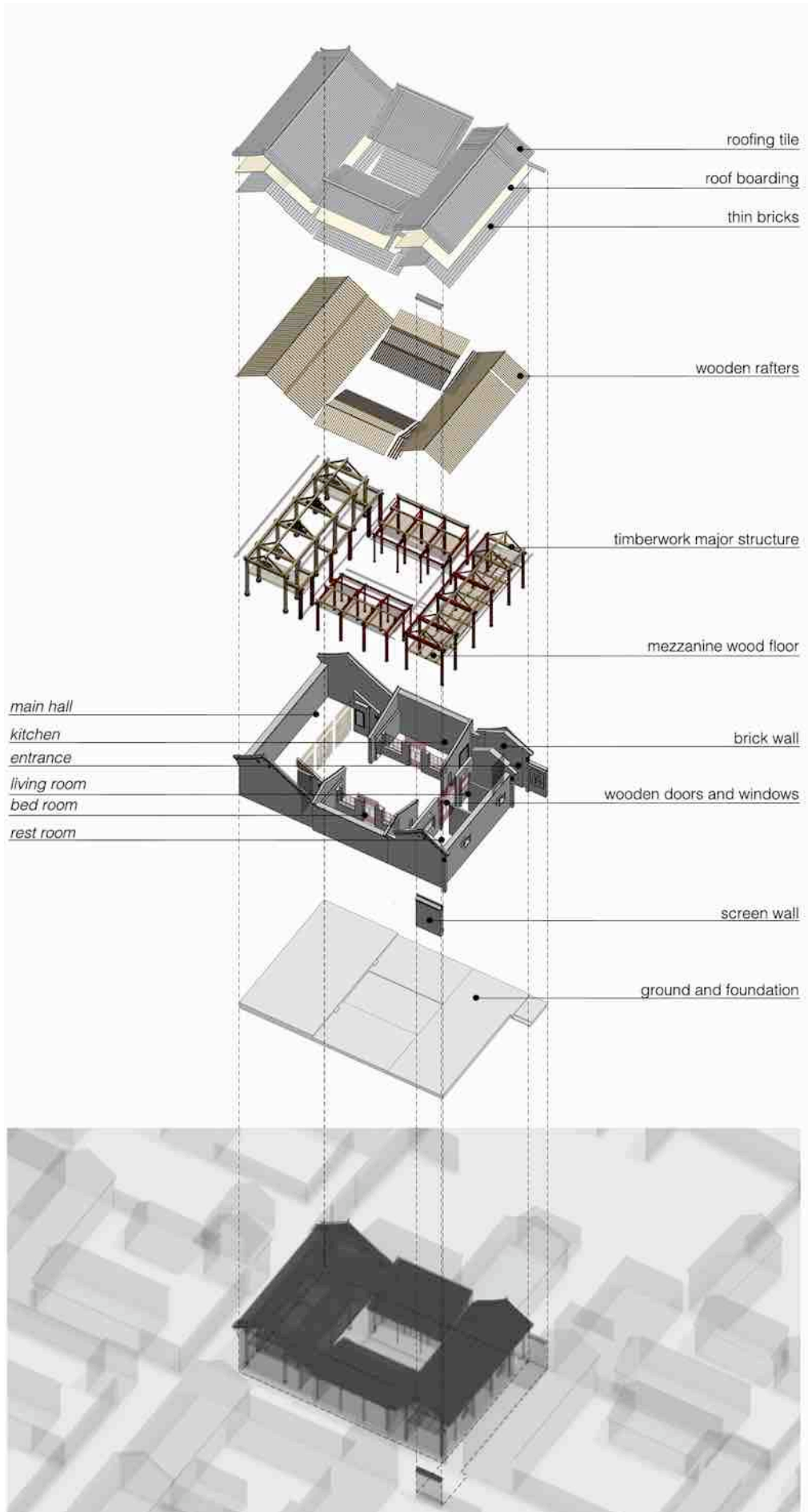


Figure 3-113 Tectonic analysis on the courtyard ("Jing Shu Di") in Zhangdaicun Village. Source: Elaborated by the author.

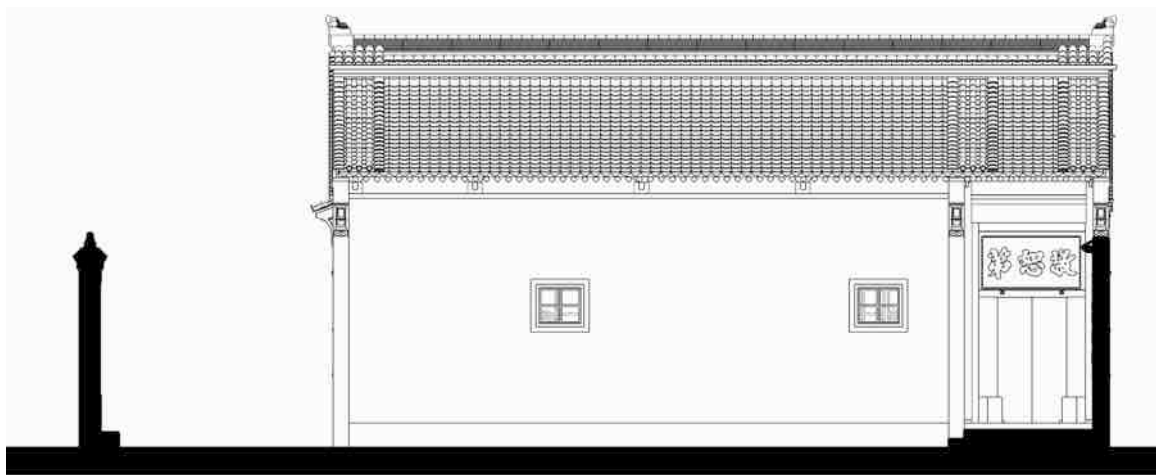
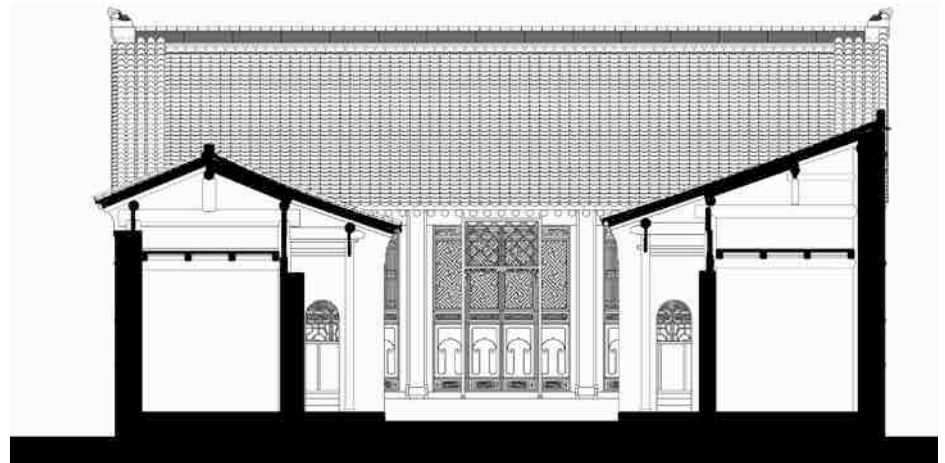
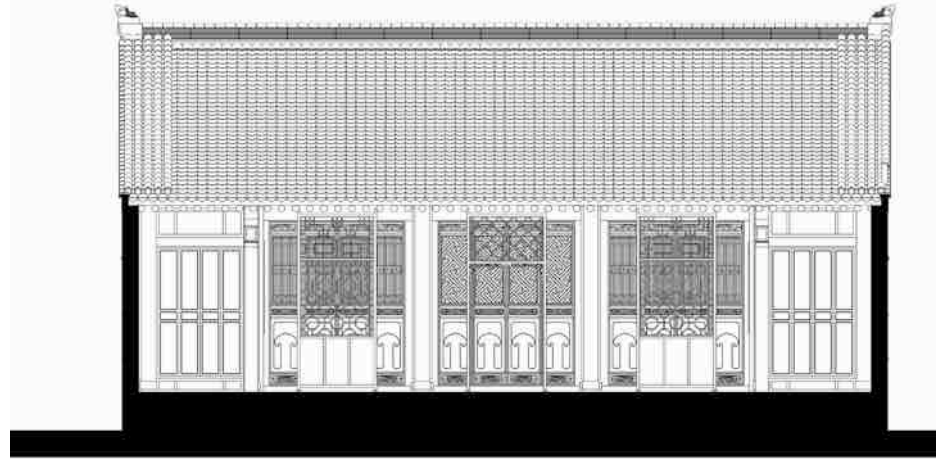
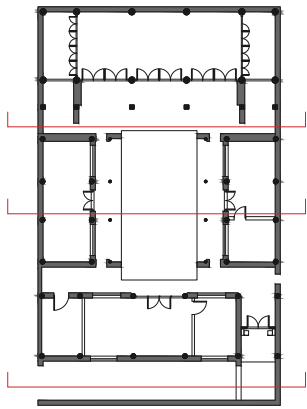


Figure 3-114 Sections of the courtyard ("Jing Shu Di") in Zhangdaicun Village. Source: Elaborated by the author.

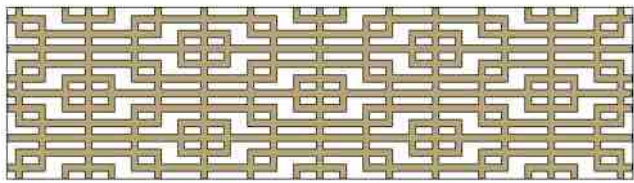
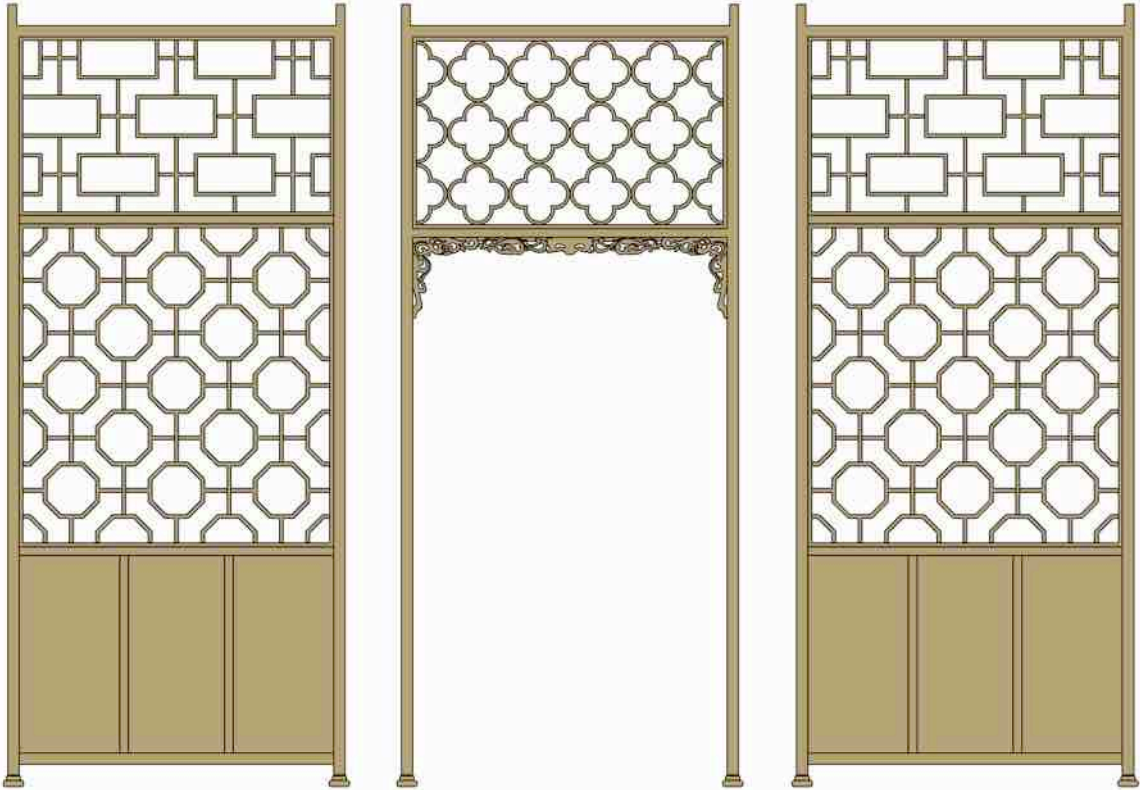


Figure 3-115 Details of the wooden door covers, doors and windows of the main hall of the courtyard "Jing Shu Di" in Zhangdaicun Village. Source: Elaborated by the author.

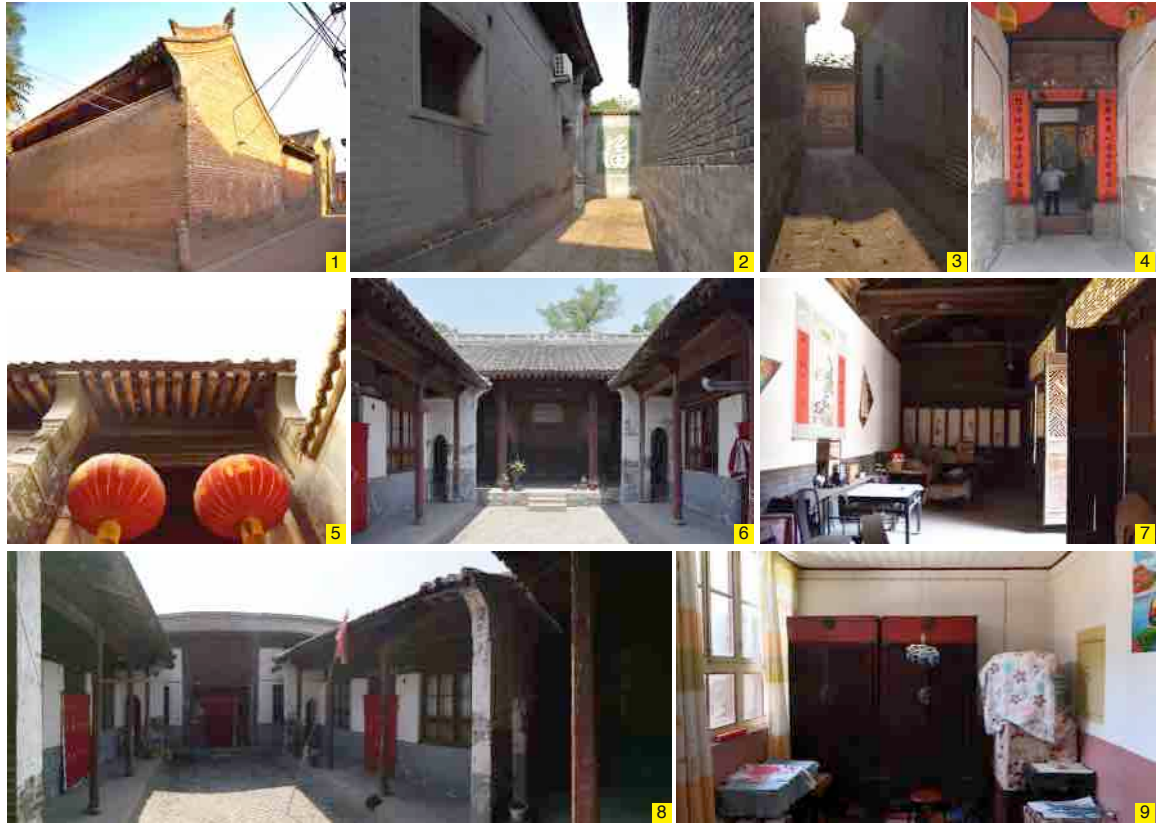


Figure 3-116 Photos of "Jing Shu Di" courtyard gate: 1. Outside the courtyard, shot from the northeast; 2. The narrow alley in front of the courtyard (the courtyard gate is on the far left); 3. The narrow alley in front of the courtyard and the a screen wall on the west side; 4. Courtyard gate; 5. The upper part of the courtyard gate; 6. The main hall on the north side taken from the courtyard; 7. The interior of the main hall; 8. View from the main hall to the courtyard; 9. The interior of the east wing bedroom. Source: Taken by the author.



Figure 3-117 The hall and two wings of the courtyard "Jing Shu Di" (rendered image). Source: Elaborated by the author.

Village¹⁰⁵. All the buildings in the courtyard houses of Dingcun Ming Dynasty residences are not larger than the "three rooms and five purlins" (table 3-8). This finding can prove the effectiveness of the code. In addition, Dingcun village's Qing dynasty houses appeared in the form of "five rooms". The emergence of new forms was related to changes in the law, and these forms larger than the "three rooms" also appeared in the Qing dynasty houses in Zhangdaicun Village.

In the "Law of the Qing Dynasty" (*大清律*, 1644-1912), sub-item "The Law of the buildings(户律·市廛)" stipulated: "The hall (堂舍) in which the people are living shall not exceed three rooms and five purlins." The "hall"(堂舍) here and the Qing Dynasty regulations are different from "premises"(房舍) in Ming Dynasty regulations. "The premises" refers to all the buildings in the residential courtyard, while the "hall" can be understood as the "main building" (also called "parlour") in the courtyard. We can understand that the Qing Dynasty regulations removed the restrictions on the room number of buildings except the hall building in the house. This change in regulations directly led to changes in the building form and the length-width ratio of the courtyard. However, since the overall width of the courtyard is limited by the width of the hall building, the most economical way to increase the number of houses is to increase the number of wing rooms on both sides. Therefore, the shape change of the courtyard is mainly to a narrow and long type.

In order to facilitate the understanding of the profound influence of ancient Chinese laws on urban morphology, I will show a set of comparison photos at the same scale. The comparison between the "historical center" of Xi'an and Florence in the middle of the 20th century: the urban tissues are all composed of the important basic units of the "courtyard", but the difference in the scale of the courtyards between the two is amazing.

Table 3-8 The number of rooms in the courtyard-dwellings built in Ming and Qing dynasties in Dingcun village.

Serial number of the courtyard	Year of construction	Number of rooms in the courtyard				
		gate builing	the building opposite the main hall	left wing building	right wing building	hall building
No.3	1593, Ming dynasty	1	3	3	3	3
No.30	1602, Ming dynasty	1	3	3	3	3
No. 2	1612, Ming dynasty	1	-	3	3	3
No.16	1620, Ming dynasty	1	3	3	3	3
No.19	1723, Qing dynasty	1	3	3	3	3
No.12	1730, Qing dynasty			3	3	3
No.8	1731, Qing dynasty	1		3	3	3
No.13	1750, Qing dynasty	6		3	3	3
No.5	1754, Qing dynasty	1	3	3	3	3
No.10	1841, Qing dynasty			3	3	5

Source: Elaborated by the author based on the data source from Shanxi Culture Relics Bureau. <http://wwj.shanxi.gov.cn/e/action/ListInfo?classid=710>

105. "Ancient Residences in Shanxi and Shaanxi Provinces" in World Cultural Heritage Tentative List (Ref.: 5322). <https://whc.unesco.org/en/tentativelists/5322/>.

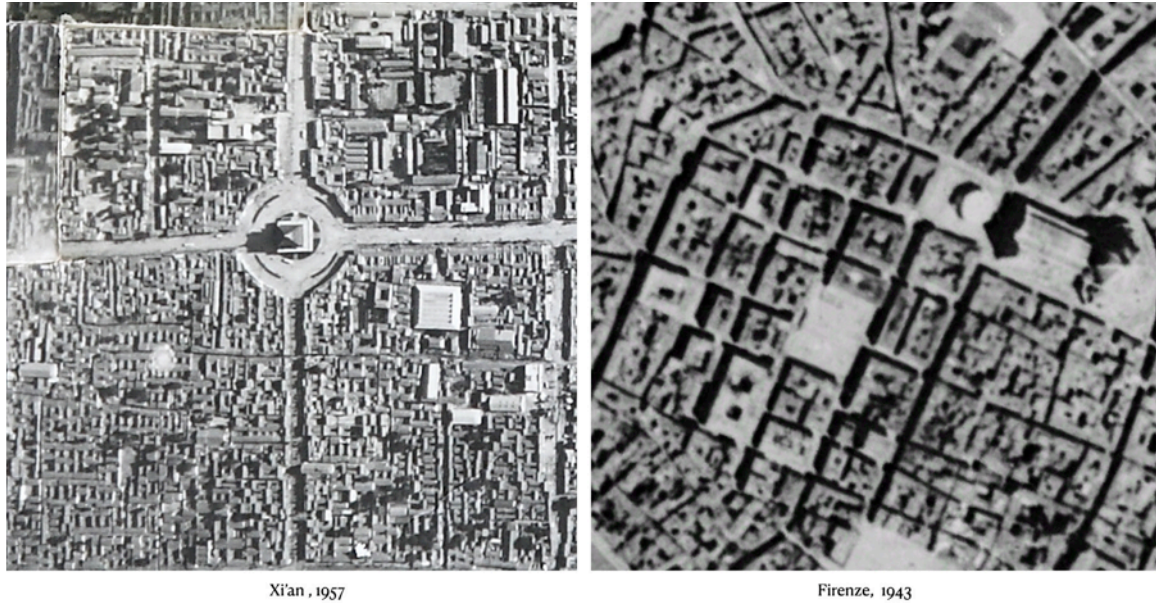


Figure 3-118 Partial aerial images of the historical centers of Xi'an (1957) and Florence (1943). Source: Google Maps.

As can be seen from the aerial photographs of Zhangdaicun village, each traditional courtyard is almost surrounded by four separate buildings. The scale of each building is determined by the combination of material components and components under the constraints of laws and construction customs at the time, and ultimately affects the size and shape of the entire courtyard.

On the architectural scale, type is a concrete invariant. Pezzetti pointed out in the study of Fenghuang Ancient Town that the narrow courtyard type as the structuring invariant of morphology, and the type is related to the specific invariant or the spatial layout of the function, and the specific invariance obtained in its historical evolution is described and described how the building develops in the physical environment. The above analysis of the traditional courtyard houses in northern China, especially in Zhangdaicun Village, fully explained the influence of the concept of Fengshui and ancient laws on the formation of courtyard types, and undoubtedly pushed the specific invariant to a deeper level of interpretation.



Figure 3-119 Beijing Yi he yuan he ba qi bing ying (in Chinese: 北京颐和园八旗兵营图). Source: Library of Congress Geography and Map Division Washington, D.C. 20540-4650 USA dcu. <http://hdl.loc.gov/loc.gmd/g7824b.ct002439>





Figure 3-120 Palaces and gardens in the painting "Beijing Yi he yuan he ba qi bing ying (in Chinese: 北京颐和园八旗兵营图)". Source: Elaborated by the author based on the original painting. Library of Congress Geography and Map Division Washington, D.C. 20540-4650 USA dcu. <http://hdl.loc.gov/loc/gmd/g7824b.ct002439>

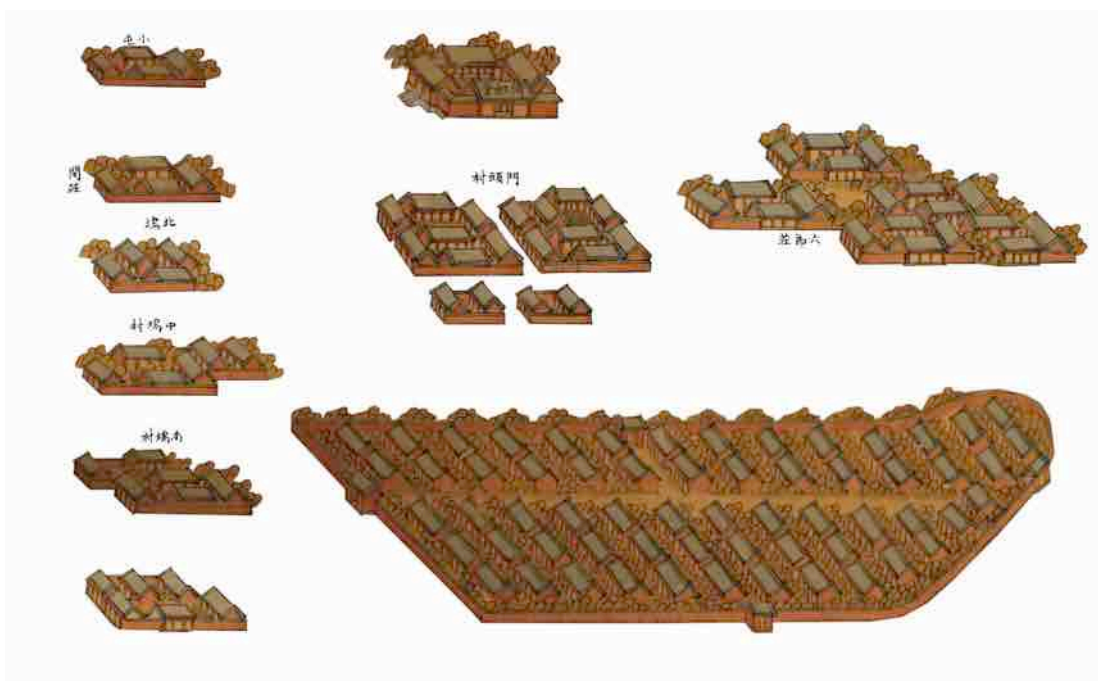


Figure 3-121 Villages and populated areas in the painting "Beijing Yi he yuan he ba qi bing ying (in Chinese: 北京颐和园八旗兵营图)". Source: Elaborated by the author based on the original painting. Library of Congress Geography and Map Division Washington, D.C. 20540-4650 USA dcu. <http://hdl.loc.gov/loc/gmd/g7824b.ct002439>



Figure 3-122 Buddhist monasteries in the painting "Beijing Yi he yuan he ba qi bing ying (in Chinese: 北京颐和园八旗兵营图)". Source: Elaborated by the author based on the original painting. Library of Congress Geography and Map Division Washington, D.C. 20540-4650 USA dcu. <http://hdl.loc.gov/loc/gmd/g7824b.ct002439>

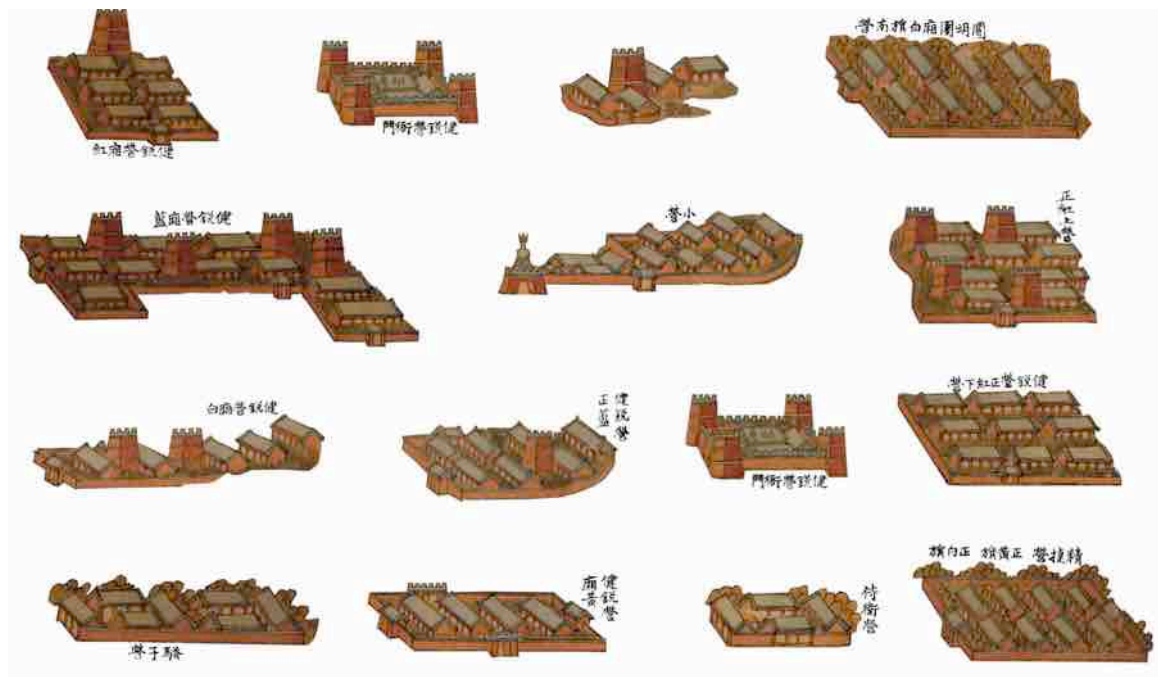


Figure 3-123 Barracks in the painting "Beijing Yi he yuan he ba qi bing ying (in Chinese: 北京颐和园八旗兵营图)". Source: Elaborated by the author based on the original painting. Library of Congress Geography and Map Division Washington, D.C. 20540-4650 USA dcu. <http://hdl.loc.gov/loc/gmd/g7824b.ct002439>

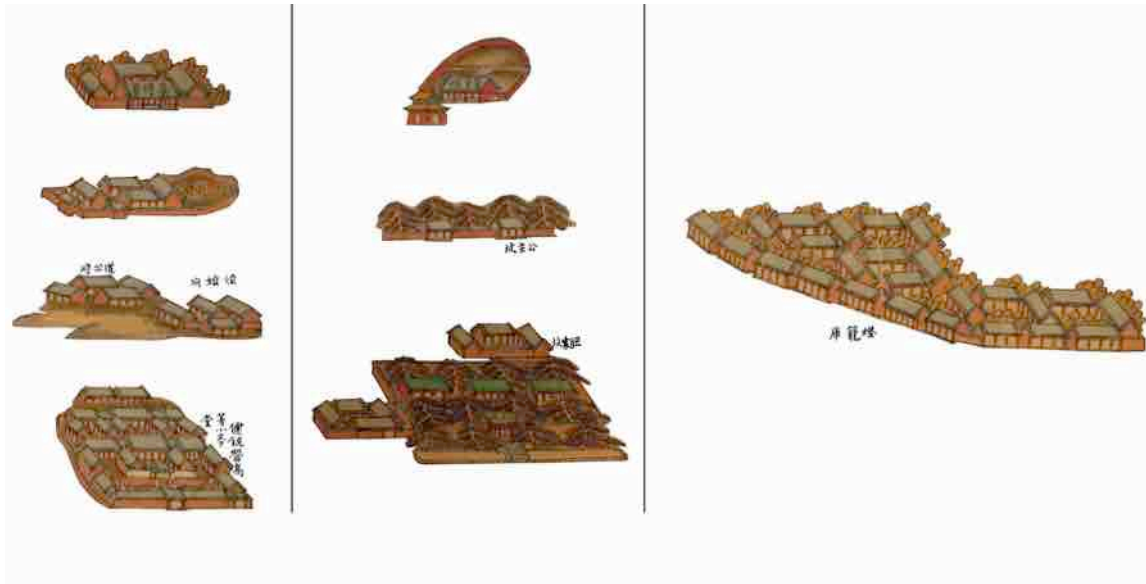


Figure 3-124 Government buildings, cemeteries and workshops in the painting "Beijing Yi he yuan he ba qi bing ying (in Chinese: 北京颐和园八旗兵营图)". Source: Elaborated by the author based on the original painting. Library of Congress Geography and Map Division Washington, D.C. 20540-4650 USA dcu. <http://hdl.loc.gov/loc/gmd/g7824b.ct002439>

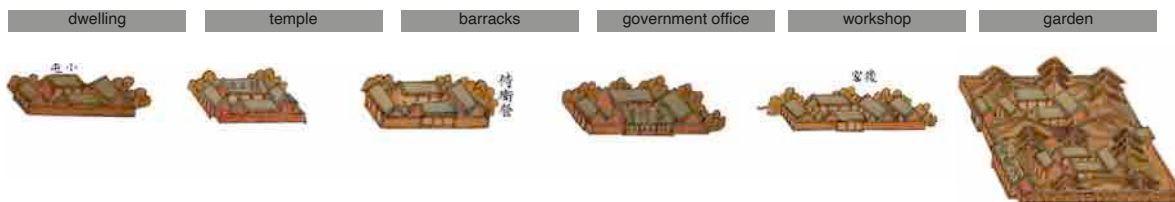


Figure 3-125 The smallest unit of different function types in the painting "Beijing Yi he yuan he ba qi bing ying (in Chinese: 北京颐和园八旗兵营图)". Source: Elaborated by the author based on the original painting. Library of Congress Geography and Map Division Washington, D.C. 20540-4650 USA dcu. <http://hdl.loc.gov/loc/gmd/g7824b.ct002439>

3.4 Analysis of the formation mechanism of morphogenetic field formation and change

3.4.1 Settlement morphology under the view of macro-history

3.4.1.1 Superficial characteristics of traditional Chinese Architecture

From the appearance, there are two basic intuitive features of traditional Chinese residential buildings. The first feature is about the form of building combination. The mainstream combination form of traditional dwellings is the rectangular courtyard composed of walls and buildings. The second basic feature is about the materials and the connection of materials. The main structural form of Chinese traditional architecture is timber frame structure system. In this structural system, timber components are connected by mortise and tenon.

I will present my inference in the following text on the reasons for the second feature later. As for the first feature, we can regard the courtyard as the basic unit of traditional Chinese settlement or building complex. As a kind of "type", this unit is completely people's choice in form, and it does not belong to a particular kind of function. That is to say, a basic unit composed of courtyards is not necessarily a residential function. It may be a dwelling, a government office, a buddhist monastery, a barracks, even a cemetery etc. We can prove this point by a 19th century painting.

This painting, named " Beijing Yi he yuan he ba qi bing ying" shows Beijing's eight banners, bridge barracks, temples, villages, bridges, mountains, and the summer palace. The painter symbolically expressed the villages, barracks and buddhist monasteries around the summer palace. Many villages were represented by a courtyard. In this painting, the courtyard is both concrete and symbolic. The concreteness is reflected in the architectural details of the courtyard, while the symbolism is reflected in its symbolic expression. As a symbol, a courtyard was used to express a settlement.

By extracting "settlements" or architectural clusters from the painting and classifying them, we can find a rule that the "courtyard" unit in the painting is the smallest and most basic unit of different functional types of buildings.

3.4.1.2 Assumptions about the essential characteristics of Chinese traditional settlements

In the impression of many people, the most basic features of traditional Chinese architecture are the sloped roof and wooden structure system. However, this generalization is more general and not convincing. Because when looking through Rudofsky's Architecture without Architects, it is not difficult to find that traditional settlements composed of wooden buildings also exist in Europe, and the roofs of the buildings there are also sloped roofs. In order to provide a clearer explanation, Liang Ssu-ch'eng pointed out that the characteristics of Chinese architecture are also the beam-column structural principles, the use of

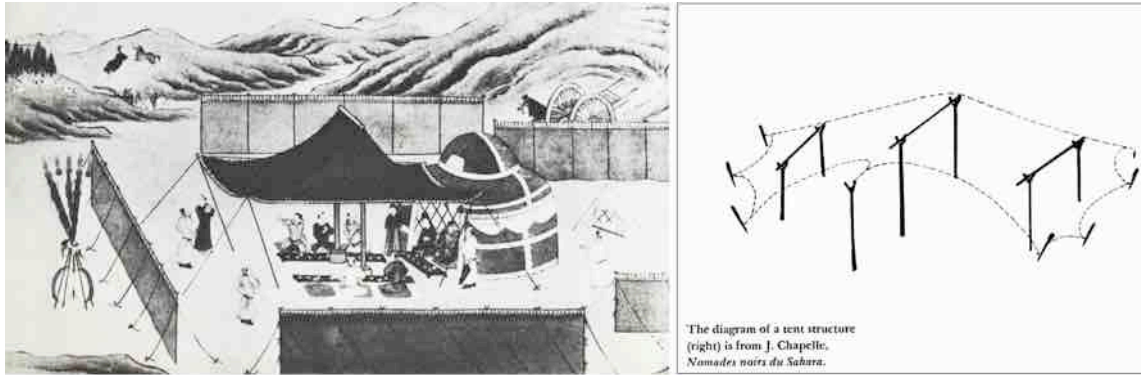


Figure 3-126 Illustration of a tent in "Architecture without architects, an introduction to nonpedigreed architecture". Source: Rudofsky, Bernard. *Architecture without architects: a short introduction to non-pedigreed architecture* (UNM Press, 1987).

Dougong(斗拱), and the peculiar external contours¹⁰⁶. But taking the problem one step further, what are the reasons for these characteristics?

We have analyzed the cultural factors that affect the characteristics of the settlement morphology. However, we have not yet explained the reasons for the formation of the essential characteristics of the settlement morphology. That is, why is wood used as the main building material in traditional Chinese settlements, and the connection method is a special mortise and tenon joint? And why is the basic residential unit in a traditional settlement a courtyard rather than a separate building? Why do Chinese courtyards pay much attention to the corresponding relationship with the geographic orientation?

These problems have plagued the Chinese architectural historian. We have countless examples to prove the tradition of the above characteristics, but it is difficult to clearly explain the root cause.

Regarding the question of why the ancient Chinese used wood as the main building material, Liang Ssu-ch'eng gave an explanation that the ancient Chinese artisans lacked understanding of the mechanical properties of stone, which led to the failure of the stone method, and the concept of "do not expect the original to be preserved permanently"; Zhao Chen (2007) argued in "The Misunderstanding of Facade" that the question "Why do Chinese architecture use wooden structures" is a question that people who are based on the classic Western architectural concept will inevitably arise when facing the big question of Chinese architecture. However, Zhao believes that the perfect answer to this question is impossible to find¹⁰⁷. Chen Wei (2003) believes that the reason why wooden structures became the mainstream of ancient Chinese architecture was "the result of the ancestors" choice of an advanced technology and social consciousness."

106. Cfr. Ssu-ch'eng Liang, *History of Chinese Architecture* (Tianjin: Baihua Edition, 1998), 13-17. 梁思成, *中国建筑史* (天津: 百花文艺出版社, 1998), 13-17.

107. Chen Zhao, *The Misunderstanding of Facade: Architecture-Theory-History*, Beijing: SXD Joint Publishing Company, 2007, 91. 赵辰, "立面"的误会: *建筑·理论·历史*, (北京: 生活·读书·新知三联书店, 2007), 91.

In short, it is a result of choice and thinking. Chen also pointed out that there is a correlation between the popularization of wood construction technology and the spread of rice cultivation. She believes that the ancient Chinese chose wooden structures not because of environmental pressure, but because of their wisdom and enterprising, as well as the result of following and even grabbing advanced¹⁰⁸.

However, I have different opinions on the above views. Although the ancient Chinese wooden structure embodies the advanced nature of technology and consciousness, I believe that the formation process of this choice is not unrelated to the natural environment and the pressure caused by the environment.

Here I propose two basic assumptions: First, Wood and mortise and tenon joints are the essential morphological characteristics of traditional Chinese settlements. Second, in traditional China, regardless of social class, building a courtyard is the basic ideal of every Chinese family. The construction technology and scale of the courtyard are restricted by the human and financial resources of the family unit, and the courtyard form is jointly restricted by the characteristics of materials, family financial resources, cultural traditions and legal regulations.

Next, I will explain to the first question, that is, why traditional Chinese architecture uses wood as the basic material, and why the mortise and tenon joints is chosen as the basic linking method of the material.

3.4.1.3 Long-range transport

1) About the tent

Regarding the characteristics of Chinese architecture, there is a rather interesting argument that was put forward by the German architect Gottfried Semper, who believed that Chinese architecture originally came from tents. Semper spent six years in the UK between 1849 and 1855, and in 1853 he gave a speech at the Malborough House in Oxford, proposing that among all the existing architectural forms in all countries, the gap between Chinese architecture and nomadic tent forms is the smallest. At the same time, he also suggested that Chinese architecture is the most basic form of architecture besides the Caribbean house (Carib Hut).

In the early nineteenth century, the Dutch philosopher Cornelius De Pauw (Cornelius De Pauw) compared China with Egypt¹⁰⁹. De Pauw believes that the ancient Egyptians settled on the Nile River, where the climate was suitable for building multi-storey buildings. On the contrary, the Chinese originated from nomadism, so their early homes were probably mobile homes such as nomadic tents, which is also in line with their constant migration habits.

Later, Antoin Quatremere de Quincy inherited and developed De Pauw's views¹¹⁰. He proposed that the

108. Wei Chen, "Wooden structure as the choice of advanced technology and social consciousness," *Architect*, 12(2003):70-88. 陈薇, "木结构作为先进技术和社会意识的选择," *建筑师*, 12(2003):70-88.

109. Cfr. Pauw, Cornelius. *Philosophical dissertations on the Egyptians and Chinese*. Vol. 1. T. Chapman, 1795.

110. De Quincy, Antoine Chrysostôme Quatremère. *De l'architecture égyptienne, considérée dans son origine, ses principes et son goût, et comparée sous les mêmes rapports à l'architecture grecque*. An xi, 1803.

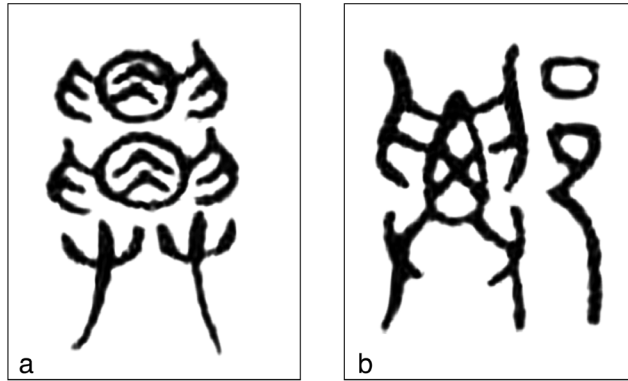


Figure 3-127 The character "Qian" in the "Santi Shijing" in the Han Dynasty (a), and the character "Qian" in the bronze inscription (b). Source: <http://www.guoxuedashi.com/xiangxingzi/830kw/>

environment of primitive society determines the origin forms of architecture, and these forms can be classified into three types: First, the ancient Egyptians settled in the fertile lands of the Nile Delta and lived on fishing and hunting; Second, Chinese nomads are mainly distributed in plateau areas, and they must move continuously to obtain sufficient food and pasture; The last category is those peoples who live on animal husbandry and agriculture (the most famous example is the Greeks). Quincy proposed that it was in these three social forms that three primitive architectural forms were born: the thatched cottage in Greece, the cave dwelling in Egypt and the tent in China.

Both de Pauw's and Quincy's views above emphasize the migration characteristics of Chinese architecture, but their reasons are related to nomadic activities. Here, however, I'm going to make another case for migration, which is not nomadic, but flood.

2) "Macro-history" proposed by Ray Huang

Ray Huang pointed out in *China: A Macro History* that floods and water conservancy have a great influence on the formation and development of Chinese society. The Yellow River is the mother river that gave birth to Chinese civilization. The flowing water of the Yellow River carries a lot of sediment (usually, 5% of the sediment contained in the water of the river is quite large. The Amazon River in South America may be as high as 12% in summer, and the Yellow River has a record of 46%). Therefore, the Yellow River often has the silted riverbed, causing the flooding of the embankment, and the possibility of massive loss of life and property. The water volume of this river varies greatly during floods and low water periods, which often worsens potential crises. Therefore, Huang believed that ancient China needed a centralized power located in the upper reaches of the Yellow River, and had the prestige to mobilize all resources and command the people concerned, so that it could give due security under the constant threat of the Yellow River¹¹¹. The

111. Cfr. Ray Huang, *China: A Macro History*. An East Gate Book, 1988.



Figure 3-128 Schematic diagram of the relationship between the road in the village and the entrance of the residential courtyard.
 Source: Elaborated by the author.

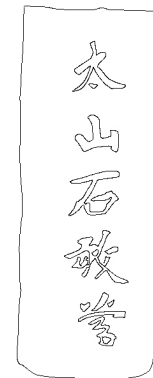


Figure 3-129 .The " Taishan Shigandang " stele embedded in the courtyard wall. Source: Photo taken by the author.

above view supports the fact that the Yellow River and its tributaries often flooded in ancient times.

There is a legend about 4,000 years ago in China called "King Yu tamed the flood". According to the legend, King Yu did not go home for three years in order to manage the floods. In the end, he successfully managed the floods and created the Xia Dynasty, the first country in Chinese history. There is a legend in China about King Yu's water management. According to the legend, Yu hadn't returned home for three years in order to control the flood. In the end, he successfully managed the flood and created the first country in Chinese history. A paper published in Science a few years ago confirmed the existence of the Yellow River flood in 1920 BC, and speculated that its occurrence time coincided with the time of King Yu

's flood control¹¹². The paper also speculated that the super catastrophe caused the China Major League to go south. In addition, according to The Book of Rites (《礼记·礼运》), in remote ages, the former king did not have a palace. In winter, he lived in cave, and in summer he lived in Zengchao¹¹³. It is possible that the ancients lived in high places to avoid the threat of flooding caused by heavy summer rains.

Mencius is a collection of conversations, anecdotes, and series of genuine and imagined interviews by the Confucian philosopher, Mencius. The text is believed to have been written during late-4th century BC. There are 11 mentions of water control in the book, which shows the importance of dealing with floods in ancient China. In the book there is a dialogue between Mencius and the King Hui of Wei (400-319BC) in the fourth century BC. King Wei said, "I'm doing my best for the country! When there is a natural disaster on the west bank of the river, I will move the people there to the east side of the river, and at the same time transfer the food from the east side of the river to the west side of the river. When a famine occurred on the east bank of the Yellow River, I did the same." The words of King Wei conveyed a message that there was a large amount of population migration in a short period of time, and such migration was relatively frequent. In my opinion, this kind of frequent migration must have sufficient technical support. One of the most important points is that after the migration, people must be able to build their own homes in a short time.

3) Ancient inscriptions

Let's look at the "Qian" (in Chinese: 迁, its basic meaning corresponds to "move" or "migrate" in English) in ancient China. There are many ways of writing this character in ancient times, but these hieroglyphs have a common rule, which shows that the hands and feet are operating and moving. In the "San Ti Shi Jing" (in Chinese: 三体石经) of the Han Dynasty, "move" is like six hands passing two bird's nests. The bird's nest refers to home, which means migration (fig.3-127-a). In the inscriptions on ancient bronze objects, the word "Yi" (in Chinese: 邑, its basic meaning corresponds to "city" or "town" in English) is added next to the glyph of transfer and transportation, which indicates that the family will move to other cities (fig.3-127-b). Therefore, we can speculate that the meaning of "Qian" in ancient times was home moving. And this kind of move is likely to move the entire house away.

If the above argument is valid, then the question of the choice of wooden buildings by the ancient Chinese becomes easier to answer. The reason is to adapt to frequent migration under natural disasters, and in order that the building can be reused and quickly built after migration, so the tenon-and-mortise connection method has become an inevitable choice.

4) Possibility of transportation

We can imagine: When the ancients were forced to migrate, they might disassemble all the wooden components and transport them with human or animal-powered vehicles. Because the wood is connected by mortise and tenon joints, the building components are as easy to disassemble as Lego toys. For general

112. Wu, Qinglong, et al. "Outburst flood at 1920 BCE supports historicity of China's Great Flood and the Xia dynasty." *Science* 353.6299 (2016): 579-582.

113. Zengchao (Chinese: 增巢), one type is said to be one of simple wooden summer houses built on mounds. Another kind of summer house is a "nest", which is a summer house built on a big tree.



Figure 3-130 Traditional homestead (left) and contemporary homestead (right) in Zhangdaicun Village. Source: Photo taken by the author.

residential buildings, the length of large wooden components such as beams and columns does not exceed three meters, so long-distance transportation can be achieved. After arriving at the new settlement, people can take local materials, deal with the foundation, and then reassemble the wooden components. Next, take the soil on site to make adobe bricks, and use the adobe bricks to build the walls between the wooden structural columns as the exterior walls of the building. In order to ensure safety, avoid being attacked by wild animals and enemies, and form an outdoor space with a comfortable wind environment, people may build a circle of walls with soil around the outside of the house, so the yard is formed. After a certain number of yards are gathered together, if a circle of walls to ensure collective safety is built around the yard clusters, the city (or village) wall will be formed. Since the wall is made of soil, it can be rammed in a short time. The wood of the roof is covered with mud and straw. If more durable materials are needed, people can get the soil nearby and burn the soil to make tiles to cover the roof. When moving again, people only need to dismantle the wall made of soil and only take away the wooden components. If migrating along the river, these wooden components can also be transported through the river, because the wood can float on the water.

3.4.2 Five types of human interventions that affect settlement morphology

From another perspective, we can regard the morphological process of Traditional Villages as the result of comprehensive human intervention. Of course, this series of interventions were initially stress responses to solve the problem of human survival. But then, as described above, cultural, political, and economic factors also joined in, making the intervention complicated. Here, I decompose and summarize this comprehensive intervention into five aspects.

The first intervention is migration and orientation (frequent migration and order establishment). As mentioned earlier, the theory of migration is proposed under the historical perspective. The concept of orientation is to establish a kind of humanistic order. The reason for this concept is not the focus of this thesis.

The second intervention is Feng Shui concept (Law of Survival). The concept of Fengshui is deeply rooted in ancient Chinese thought, deriving from a basic understanding of the universe, the natural environment and the place of humans within them. Much of it integrates consciously with known laws of nature. Fengshui covers the entire process of the built environment from town planning to interior design¹¹⁴. It is also a Chinese traditional architectural theory for selecting a favourable site for dwellings and provides a theory of building layout and design associated with domestic architecture¹¹⁵. Furthermore, it concerns the perception of places and cultural patterns expressed in the landscape¹¹⁶. Although there are some non-causal qualities in Fengshui that cannot be yet explained with modern science¹¹⁷, it is a grave misunderstanding to suggest that such a set of beliefs used and appreciated by the people of a great civilization for at least two millennia is simply an illusion or does not respond to some real factor in human nature¹¹⁸. Joseph Needham saw Fengshui not so much as a superstition or evil practice to thwart modern progress, but rather as a pseudo-science. It was not true science, in his estimation, but represented a movement in that direction.

Regardless of whether Fengshui itself is scientific or not, its influence on traditional Chinese settlement patterns is huge. The layout of the village, the relationship between street organizations, and the layout of the courtyard are all affected by the concept of Fengshui. Take Zhangdaicun Village as an example. The disappeared Wenge Tower (also known as Fengshui Tower) that was demolished in the 1970s was originally located in the southeast of the village. Since the village is located on a terrain high in the northwest and low in the southeast, the Fengshui concept believes that a tall tower needs to be built in the low-lying southeast to balance the overall height of the site. For another example, the entrances of all the residential courtyards in the village do not directly face the depth of the road. Moreover, at the T-shaped intersection, a stone engraved with "Taishan Shigandang" is usually embedded on the courtyard wall facing the road to ward off evil spirits(fig.3-129).

The third intervention is law and rules, including the ancient building form requirements related to the hierarchy, saving farmland, fire prevention requirements, etc. For example, the law of the Ming Dynasty stipulated that, with the exception of the residences of meritorious statesman living in the capital, there should not be much empty space around the residences of other officials and common people¹¹⁹. Under the combined effect of this regulation and the aforementioned regulations on the scale of houses, the houses in urban and rural settlements can only be compact courtyards.

The fourth intervention is land supply system (from natural economic behavior to planned economic behavior). The premise of the spatial organicity between traditional courtyards (fig.3-130 left) is that ancient laws protect the free sale of land. In contemporary China, the law stipulates that rural homesteads

114. Michael Y. Mak and S. Thomas Ng, "The art and science of Fengshui: A Study on Architects' Perception", *Building and Environment* 40, no.3 (2005): 427-434.

115. Sang Hae Lee, "Fengshui: its context and meaning" (PhD diss., Cornell University, 1986), 226.

116. James E. Mills, "Western Responses to Fengshui", *Middle States Geographer* 32, (1999): 71-77.

117. Andrew L. March, "An appreciation of Chinese geomancy." *The Journal of Asian Studies* 27.2 (1968): 253-267.

118. Jeffrey F. Meyer, "Fengshui" of the Chinese City", *History of Religions* 18, no. 2 (1978): 138-55.

119. Cfr. Collected Statutes of the Ming Dynasty, Volume 62. (大明会典卷之六十二).

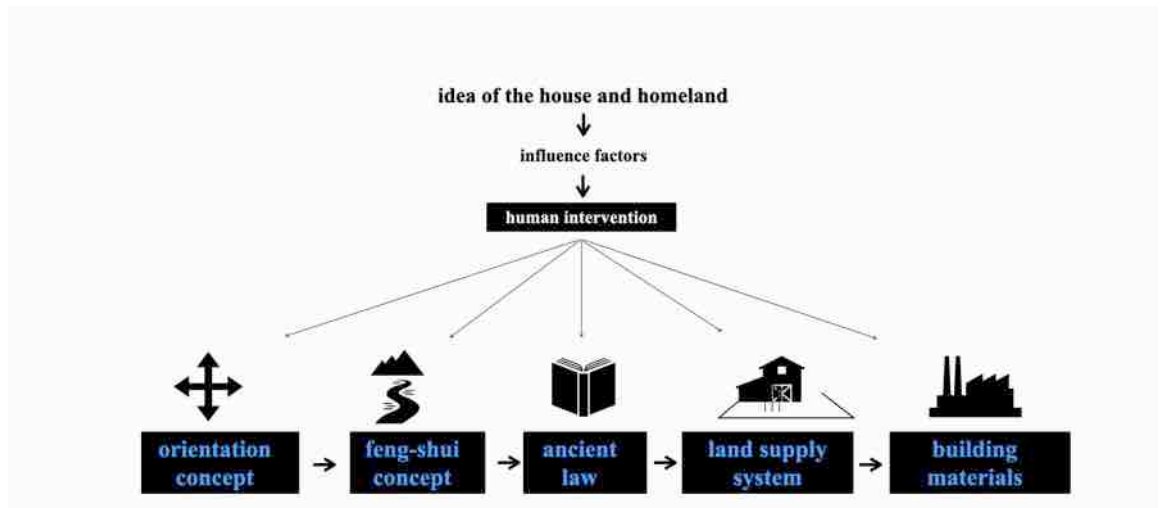


Figure 3-131 Five kinds of human interventions that affect the generation and evolution of settlement patterns. Source: Elaborated by the author.

should be acquired by farmers without compensation¹²⁰. Therefore, most contemporary rural homestead planning is simple and monotonous (fig.3-130 right), and the diversity of homestead forms and the organicity among parcels have disappeared.

The fifth intervention is the choice of materials. The building materials in the traditional society are relatively organic (except for bricks and tiles, but still reusable) and conform to the principle of ecological sustainability. However, most contemporary building materials are reinforced cement and bricks, which are difficult to be recycled.

The first two interventions are to strengthen the relationship between man and nature, the third kind is pre-stressed in the steady state of man and nature, and the latter two interventions have extended the relationship between man and nature.

Based on the above understanding, the author believes that we should try to find a series of intervention measures to achieve the following goals: 1. Respect the premise of Traditional Village development, and regard improving villagers' income and quality of life as important goals; 2. Continue to preserve the core characteristics of Traditional Village form Its value (so that the first three intervention modes can be continued); 3. Repair the relationship between man and nature (weaken the negative effects of the fourth and fifth interventions).

120. Cf. Kun Li, "Changes in Land Use in Rural Areas," in *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rural Landscape*, Laura Anna Pezzetti. (Tongji University Press, 2019), 56

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4. Strategy for the Conservation and Development of the Traditional Villages

4.1 Critical thinking on the "integrity" in conservation of Traditional Village

- 4.1.1 *About the memory of the village*
- 4.1.2 *The significance of historical environment protection for integrated conservation*
- 4.1.3 *Quantitative evaluation of the historical environmental integrity of Traditional Villages*

4.2 Formulate a reasonable protection fund allocation system and Traditional Villages regeneration model

- 4.2.1 *Issues about conservation funds*
- 4.2.2 *Exemplary conservation projects led by design enhancement*

4.3 Preservation strategy: design enhancement-led positive interventions

- 4.3.1 *An integrated restoration and design enhancement framework based on morphological feature investigation*
- 4.3.2 *Narrative design: the dialectical relationship between old and new*
- 4.3.3 *Rewriting the structure of the settlement matrix and reshape the settlement morphology*
- 4.3.4 *Principles and criteria for a plan integrating preservation, revitalisation and design enhancement*

4.4 Illustrative schemes on the contemporary architectural design insertion

- 4.4.1 *The necessity of pilot project design research*
- 4.4.2 *Preservation, transformation, reconstruction and "derivation of prototype"*

*"And tell me, people of Orphalese, what have you in these houses?
And what is it you guard with fastened doors?"*

Have you peace, the quiet urge that reveals your power?

*Have you rememberances, the glimmering arches that span the
summits of the mind?*

*Have you beauty, that leads the heart from things fashioned of
wood and stone to the holy mountain?*

Tell me, have you these in your houses?

*Or have you only comfort, and the lust for comfort, that stealthy
thing that enters the house a guest, and then becomes a host, and
then a master?"*

*Ay, and it becomes a tamer, and with hook and scourge makes puppets
of your larger desires.*

— — From The Prophet (Knopf, 1923). On Houses, Kahil Gibran.









4.1 Critical thinking on the "integrity" in conservation of Traditional Village

4.1.1 About the memory of the village

The Italian architectural theorist Umberto Eco believes that there are three systems in architecture: a formal system, a functional system and an anthropological system. This anthropological system is centered on cultural customs. Alan Colquhoun also believes that customs and institutions are the key to the study of architectural evolution. However, today, after the baptism of the Cultural Revolution, many customs in Chinese rural society have disappeared or are declining.

In the context of the loss of rural population in the process of urbanization, some customs that exist in memory have gradually disappeared with the passing of the elderly. For example, my grandfather died in the 1990s, and he was also the emcee of the funeral in the village. At the funeral, the person at the front of the parade held a complicated white streamer made by paper-cutting. At that time, only my grandfather could make this kind of paper streamer in his village. After his death, this traditional technique was lost. Under the influence of the ideology of the Cultural Revolution, he believes that this custom is a



- | | | | | | | | |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
|  | homestead of the 1st branch of Zhang (张) family (currently) |  | homestead of the 2nd branch of Zhang (张) family (currently) |  | homestead of the 3rd branch of Zhang (张) family (currently) |  | homestead of Zhang's (章) family (currently) |
|  | Zhang's (章) homestead was originally from the 3rd branch of Zhang (张) family |  | 2nd branch's homestead was originally from the 3rd branch |  | 3rd branch's homestead was originally from the 1st branch |  | Zhang's (章) homestead was originally from the 1st branch of Zhang (张) family |

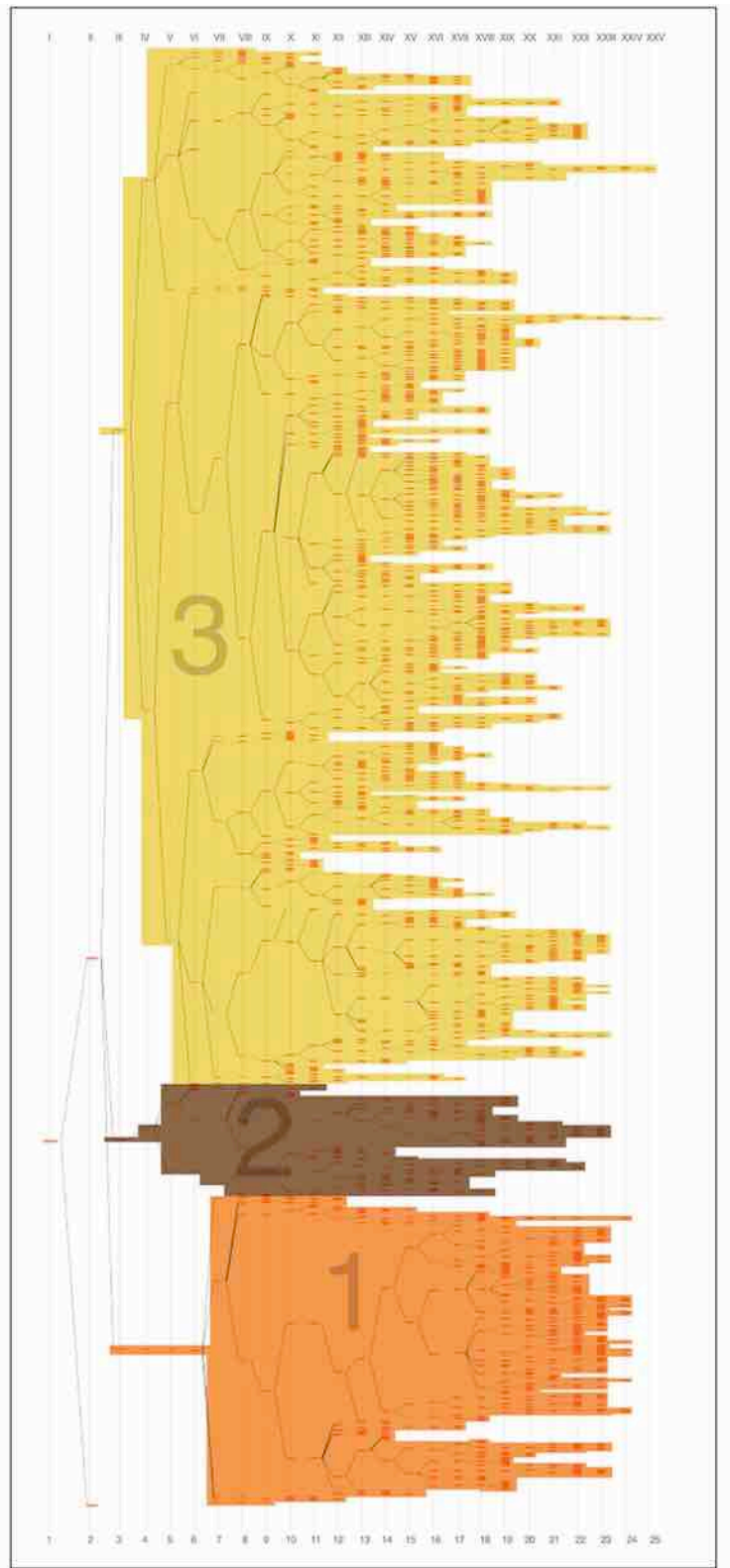


Figure 4-1 The pedigree diagram of the Zhang family branch in Zhangdaicun Village and the distribution map of each family branch. Source: Elaborated by the author.

manifestation of backward thinking, and he made this kind of streamer only to meet the needs of the form of the old people who are not advanced in thinking. Therefore, he is unwilling to teach his children the craftsmanship of making paper streamers, which symbolizes "backwardness". Of course, the memory of traditional rural architecture construction methods and rituals also faces the same crisis. Therefore, we need to realize that the preservation and salvation of traditional Chinese rural customs requires not only recording and preserving the materials and rituals that exist in reality and memory, but also the reconstruction of the ideological and cognitive level.

Memory is closely related to the protection of settlement heritage. According to the European Charter of the Architectural Heritage issued in 1975, architectural heritage should be passed on to future generations in its authentic state and in all its variety as an essential part of the memory of the human race. Otherwise, part of man's awareness of his own continuity will be destroyed. In 1982, "Tlaxcala Declaration on the Revitalization of Small Settlements" emphasized that if small settlements are to overcome the difficulties caused by economic crisis, reliability must be placed in the cultural achievements of the past and in the material forms of expression of our collective memory. In 1983, Washington Charter stated that the preservation of cultural properties that constitutes the memory of mankind, however modest in scale, should be encouraged. The essential contribution made by the consideration of authenticity in conservation practice is to clarify and illuminate the collective memory of humanity⁰¹. Also the goal of preserving memory and its cultural manifestations must be approached by aiming to enrich human spirituality, beyond the material aspect⁰².

This is an important period in which most historical villages in China urgently need to transform and develop from recession. We need to re-understand the basic attributes and essential characteristics of historical villages, and improve the environmental quality of rural areas through Traditional Village protection, design intervention and planning management. Historical villages are the storage places of personal memory and collective memory. The protection of intangible cultural heritage in Traditional Villages depends on the villagers' ability to remember the past. Therefore, both the collective and individual memories of the village need to be protected, just like the "Protecting people and houses together" proposed in the seminar about The Social Cost of the Conservation of Historic Centres held in Bologna in 1974. In his book "La Mémoire Collective", Maurice Halbwachs proposed that society can have collective memory and this memory depends on the "infrastructure" or framework of a group in society⁰³. There are not only personal memories, but also group memories that exist outside the individual and live outside the individual. Therefore, the individual's understanding of the past is closely related to this group consciousness. This memory concept of Halbwachs believes that commemorative activities provide collective memory for society and its ideas, where social monuments and rituals fix and confirm the collective. According to Walter Benjamin, memory is not a tool to survey the past, but a stage of the past. Memory is a medium that can still be seen. Just like land is a medium, inanimate rural settlements

01. ICOMOS, Nara. "The Nara document on authenticity." Proceedings of the ICOMOS, Nara, Japan (1994): 1-6.

02. ICOMOS, America. "The Declaration of San Antonio: Authenticity in the Conservation and Management of the Cultural Heritage (ICOMOS National Committees of Americas)." (1996).

03. Cfr. Halbwachs, M. *La mémoire collective*. Paris: P.U.F., 1968.

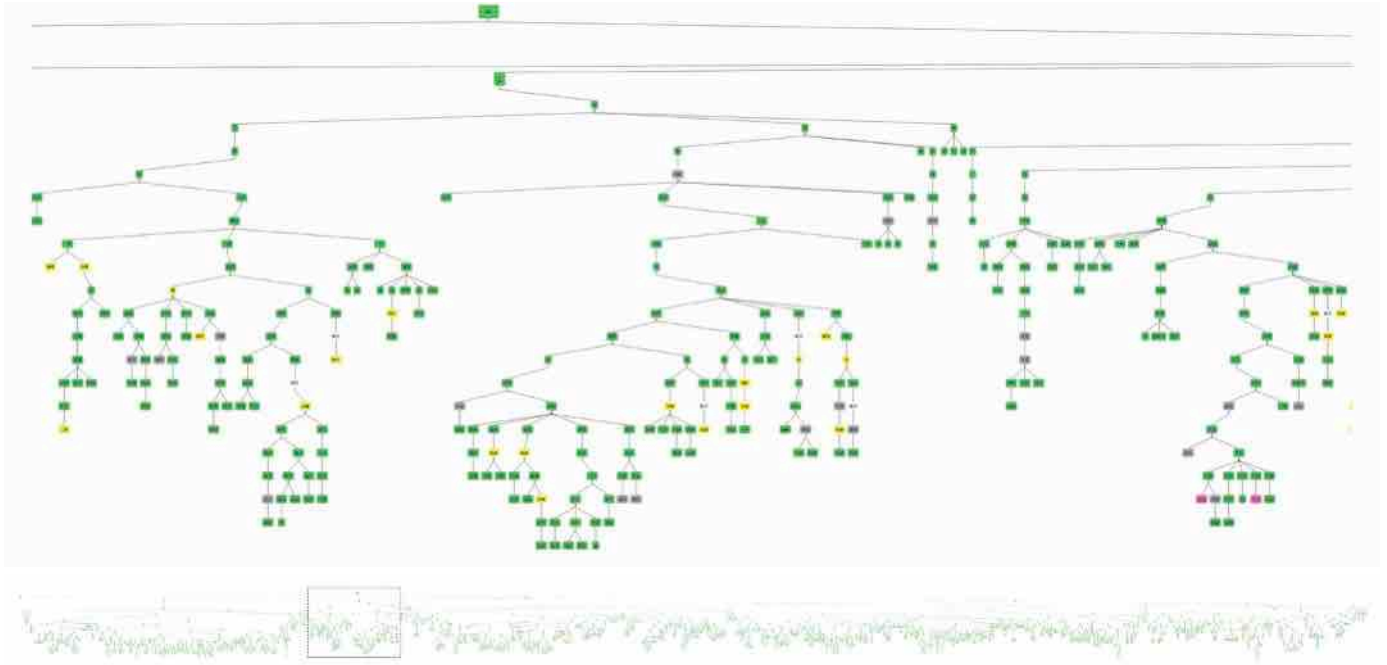


Figure 4-2 Part of Zhangdaicun Village Family Tree Diagram. Source: Elaborated by the author based on the genealogy.

will collapse on the ground or be buried. Therefore, in the conservation of rural heritage, "memory" is an important part of the integrity of rural heritage. The recording and research of "memory" is a necessary work for the survival of "nostalgia" and an indispensable content in the comprehensive conservation of Traditional Villages.

In the fieldwork, I conducted a job trying to reconstruct collective memory. I talked with the elders in Zhangdaicun Village and used non-structured interviews to determine the family branch of each courtyard family in the traditional area. Since many courtyards in the village are in an uninhabited state, we can only ask other villagers in the village for the names of the actual owners of these properties, and combine them with the family pedigree diagram (fig.4-1) I compiled before to determine the ownership of the courtyards The family branch to which the person belongs. Then I compiled a family branch distribution map (fig.4-2).

From this picture, we can find the characteristics of family branch distribution. First of all, the first branch is currently the most concentrated, followed by the third branch, and the second branch and the Zhang (章) family, known as "houhu"(in Chinese: 后户), are the most scattered. Secondly, the ownership of homesteads has historically changed between different branches. Many homesteads that once belonged to the first branch were sold to other branches in the past century. Third, the courtyards of the first branch are mainly distributed to the east of the main alley of the village, and are the closest to the religious buildings in the village and the waterlogging pond. Fourth, the third branch once had the largest number of ancestral halls. This may be related to the fact that this branch has a larger population in history. However, the distribution of this branch is mostly close to the edge of the traditional area.

4.1.2 The significance of historical environment protection for integrated conservation

The typo-morphological and historical-structural study of Zhangdaicun Village, a traditional Chinese village, revealed the primitive interaction between man and nature, agricultural production and settlement behavior. In the long process of the formation of Traditional Villages, the material environment, social ideology, development of productivity and many other cultural factors interact closely. In terms of tangible assets, the protection of Traditional Villages should not be limited to the settlement itself, but the cultural and natural landscapes surrounding the settlement should be included in the research scope and protected area.

The surrounding environment of historical heritage is usually called "historical environment", which includes not only the artificial built environment around historical heritage, but also the natural environment, as well as the intangible remains of regional culture, production and living skills. In the past researches on Chinese historical villages and towns, there are two kinds of explanations for the scope of historical environment: one is a historical area, which has obvious historical and cultural value; the other is a controlled area, which is the area around the cultural relics⁰⁴. From the perspective of epistemology, the various elements in the historical environment are a unity of interconnectedness⁰⁵. The historical assessment of the heritage environment is an assessment of the historical value and integrity of the surrounding environment of the heritage.

Scope and definition of heritage as promulgated by the various charters across the globe⁰⁶. Relevant terms and conditions over the years, especially the *Convention Concerning the Protection of the World Cultural and Natural Heritage* (UNESCO, 1972), classified it as cultural and natural heritage. Through the statistics of policies and events on rural heritage conservation from different international organizations (UNESCO, ICOMOS, etc.), we find that the recognition of rural heritage has been covering a growing range: from the earliest single element to the current holistic integration. In our opinion, the heritage of rural landscape has a broad sense of meaning, all the tradition which was handed down from the past and is inherited from the ancestor can be seen as heritage. Furthermore, according to the ICOMOS-IFLA latest principle Concerning rural landscapes As Heritage in 2017, the concept of heritage has been further extended: "... All rural areas can be read as heritage", which confirms that highlighting the heritage preservation in the progress of rural planning is appropriate and reasonable. The guidelines also believe that all rural areas have cultural meanings given to them by people and communities: all rural areas are landscapes, all rural areas can be regarded as excellent and ordinary traditional cultural heritage, and rural landscapes are regarded as

04. Zhou Lyu, "Conservation of Cultural Heritage Environmen." *Essays on the History of Architecture (11th Series)*. (Chinese Architectural Society,1999),12. 吕舟, 历史环境的保护问题. *建筑史论文集(第11辑)* (中国建筑学会, 1999),12.

05. Yisan Ruan, Licong Cheng, and Xin Gu. "Establishing the legal system of historic environmental protection in China." *Journal of Tongji Universtiy (Social Science Section)*,3(1999):78-83. 阮仪三,程俐聰,顾新."建立我国历史性环境保护的法律体系." *同济大学学报(社会科学版)*,3(1999):78-83.

06. Yahaya Ahmad, "The scope and definitions of heritage: from tangible to intangible." *International journal of heritage studies* 12.3 (2006): 292-300.

ubiquitous heritage⁰⁷. Therefore, the historical environment surrounding Traditional Villages and towns is a collection of historical landscapes, cultural landscapes, and cultural landscapes. It also has ecological attributes. It is the result of the long-term interaction between man and nature and the testimony of the development of regional civilization and local knowledge. Today, it has become an international consensus that the historical environment is an important carrier of the heritage value of Traditional Villages and towns. The historical assessment of the surrounding environment of Traditional Villages and towns is the basis of the overall protection of the historical environment of heritage and the premise of scientific management and planning. It should be an important content in the protection of rural settlement heritage.

From the perspective of historical environment, economic development, and ecological sustainability, the "integrated" protection approach emphasizes attention to the interdependence of agricultural landscapes and historical villages. The scientific quantitative assessment method of historical environment will make up for the lack of measurement standards for human activities and other diachronic dynamic impacts in the current assessment tools.

4.1.3 Quantitative evaluation of the historical environmental integrity of Traditional Villages

4.1.3.1 Experience from Italy

The research on the overall protection of rural historical settlements in China is mostly from the perspective of epistemology and policy formulation. However, it cannot be ignored that the protection of rural heritage is the same as other types of protection. On the basis of the gradual improvement of laws and regulations, it also protects the planning. Science and enforceability should also receive equal attention.

Italy and China are both major cultural heritage countries with rich heritage of rural landscapes. Like China, the Italian government has paid more and more attention to the revitalization of rural areas and the protection of rural heritage in recent years. In the "Rural Development Programme (National) (2014-2020)" adopted by the European Commission in 2015, the "Environmental and Rural Landscape" was specifically designated as a special item for the entire project⁰⁸.

In recent years, while the Italian rural landscape heritage continues to develop, it still bears the testimony of its historical origin and plays an active role in society and economy. These landscapes are inseparable from traditional farming methods, culture and natural heritage⁰⁹. Unlike China, the Italian government does not have a special list of "historical and cultural towns" or "Traditional Villages". Instead, the protection of historical villages and their environment is implemented in different protection systems, such as "national historical villages". Landscape and "protected natural areas". In this article, the author briefly introduces

07. Lionella Scazzosi, "Rural Landscape as Heritage: Reasons for and Implications of Principles Concerning Rural Landscapes as Heritage ICOMOS-IFLA 2017," *Built Heritage*, 3(2018):39-52.

08. MIPAAF. Italy - Rural Development Programme (National) [EB/OL].

09. Cf. Mauro Agnoletti. *Italian Historical Rural Landscapes: Cultural Values for the Environment and Rural Development* (Netherlands: Springer, 2013).

the experience of the "national historical rural landscape" in the historical and environmental integrity of Italy.

4.1.3.2 A brief introduction to the Italian National Historical Rural Landscape

With the promulgation of Decree No. 17070 of 2012 "Relativo All'istituzione Dell'osservatorio Nazionale Del Paesaggio Rurale, Delle Pratiche Agricole e Conoscenze Tradizionali"¹⁰, the Italian Ministry of Agriculture, Food and Forestry Policy began to establish the "National Observatory for Rural Landscapes, Agricultural Practices and Traditional Knowledge". The observatory is responsible for investigating rural landscapes, agricultural practices and traditional knowledge of specific value, protecting biological and cultural diversity, and promoting research activities related to the conservation, management and planning of rural landscape values. At the same time, in the same year, in cooperation with the Ministry of Agriculture, Food and Forestry Policy and the University of Florence Landscape and Cultural Heritage Laboratory (CultLab) and 13 other universities and some international research institutions, the Italian government has enacted the Applicable to the registration of historical rural landscapes¹¹, the National Standards and the Creation of the National Rural Landscapes for a National Register. Up to now, the catalogue has published 123 national historical and rural landscapes and 15 preliminary lists in 20 regions of Italy. It should be noted that the 138 historical rural landscapes appearing in the catalogue do not refer to historical villages, some of which are agricultural and forestry landscapes that are weakly associated with historical settlements, and some of which contain rural landscapes of historical villages. Therefore, the landscape is not named directly by the name of the place but is formulated by evaluating the conditions of the landscape resources. In addition, the registration criteria also require that the area occupied by the historical rural landscape area must be greater than 50% of the total recommended area. This approach allows the natural villages to be included as much as possible within the protection of the overall historical environment.

4.1.3.3 Rural landscape historical environment assessment

According to the National Standards for the Registration of Historical Rural Landscapes, the assessment of the national historical rural landscape is an assessment of historical significance (ie value), which mainly includes three aspects: 1. Settlement and infrastructure structure (road network) , hydraulic facilities and irrigation networks, centralized settlement and scattered houses, spatial organization of agricultural activities); 2. distribution, shape and size of irrigated agriculture; 3. cultivation and reproduction of vegetation. Specific indicators include: historical persistence, uniqueness and integrity. It is worth noting that the Standard requires that the assessment of historical environmental integrity must be carried out in two quantitative calculations. First, according to VASA (historical environmental assessment, Italian: Valutazione Storico Ambientale; English: Environmental Historical Evaluation) Analytical methods

10. Decreto del Ministro n. 17070 del 19 novembre 2012 - Osservatorio Nazionale del Paesaggio Rurale. <https://www.politicheagricole.it/flex/cm/pages/ServeAttachment.php/L/IT/D/9%252Ff%252F8%252FD.a17c677602d6caacde19/P/BLOB%3AID%3D5832/E/pdf>.

11. Criteri Per La Candidatura Delle Aree Del Registro Nazionale Del Paesaggio Rurale Storico, https://www.reterurale.it/downloads/Criteri_candidatura.pdf.

to analyze the integrity of the land use structure, through the GIS platform to compare and analyze the historical period (the 1950s) and the current land use damage, to obtain a historical index based on different areas of land use (Historical index); The second is based on the comprehensive integrity level calculation of VASA's historical landscape. According to the guidelines for assessment guidelines issued by the Italian Ministry of Agriculture, Food and Forestry Policy, the VASA assessment methodology is divided into seven steps: I. Mastering the historical period (1954) and current land use (land use map); II. Creating historical periods and Current land use forms and histograms; III. Dynamic changes in land use (intensive, extensive, natural afforestation, artificial afforestation, deforestation, artificialization, etc.); IV. Cross-analysis of dynamic changes; V. Linear elemental plaques; VI. Calculation and comparison of landscape evaluation indicators; VII. Calculation of historical indices.

4.1.3.4 Comparison of the evaluation index system between Italy and China

Compared with the "China's historical and cultural towns (villages) evaluation index system" (2004) and the "Traditional Village evaluation and identification index system (trial)" (2012), the evaluation content of the Italian "National Standards for the Registration of Historical Rural Landscapes" And the method presents the following different characteristics: 1. Emphasis on the evaluation of historical value; 2. In addition to the investigation and evaluation of the preservation, long-term and use of material elements (architectural elements, other infrastructure, surrounding landscapes, sights, etc.), It also requires investigation and evaluation of animal and plant factors, social and economic activities, and social perception; 3. In addition to qualitative assessments such as landscape uniqueness, aesthetics, and qualitative analysis of city characteristics, and quantitative assessment of historical long-term material elements. It is also particularly strong in delineating the boundaries of the overall historical environment; 4. Mandatory requirements for the quantitative evaluation of the historical environmental integrity of rural landscapes, and the corresponding clear technical procedures and calculation methods as a technical platform for the surrounding environment of the settlement Recording, evaluation, testing, and management provide a practical and feasible path. This is obviously different from the qualitative scoring model of "harmony between settlement and natural environment" and "village and surrounding natural landscape environment" in the evaluation criteria of historical villages in China. Therefore, the establishment of the "historical rural landscape" evaluation standard in Italy has implemented the application of "holistic" protection ideas in rural heritage protection from the perspectives of historical environment, economic development and ecological sustainability, emphasizing the agricultural landscape and history. The concern of the village's dependence. The Xi'an Declaration (2005) pointed out that "the definition of the surrounding environment requires an understanding of the history, evolution and characteristics of the surrounding environment of the heritage resources". To a certain extent, the VASA assessment method has put the above spirit into a specific technical level. Therefore, the author believes that the above Italian experience is a useful reference for the protection of rural historical settlements under the background of rural revitalization and continuous urbanization in China.

The essential difference between rural and urban areas is whether land use is dominated by the primary industry. At the same time, the agricultural landscape is also a core element of the rural landscape. The agricultural landscape heritage and the built heritage together form the core of the rural landscape heritage, and the historical agricultural landscape has an important part of the historical environment surrounding

the heritage of the village. Therefore, when delineating the scope of protection, you can try to consider the protection scope of Traditional Villages, and the surrounding basic farmland protection areas and nature reserves, and repair the already degraded agricultural landscape areas, and set up special "Traditional Villages". Agricultural protected area".

At present, China's heritage protection community has accepted the concept of "holistic protection", but it still lacks effective tools for quantitative evaluation of historical environment. Environmental assessment has not been implemented in the technical route of assessment, planning and management, and there is no practical operation. The specific methods of quantitative analysis, evaluation and management to effectively protect the historical environment of "urban and rural historical and cultural settlements". Therefore, it is necessary for us to learn from Italy's protection experience and refer to the historical environmental assessment method in the National Standards for the Registration of Historical Rural Landscapes to promote the construction of scientific "evaluation" – "strategy" – "planning" – "implementation" "The protection system." At the same time, the author proposes to further improve the content of the planned environmental impact assessment in the overall planning of historical and cultural cities, and join the historical environment in addition to the original atmospheric environment, water environment, acoustic environment, solid waste environment, ecological environment and socio-economic impact assessment. Impact evaluation.

In addition, when formulating the financing and distribution plan for protection funds, relevant departments and agencies should repeatedly consider the factors of the overall protection of the historical environment, avoiding the accumulation of advantages of individual historical settlements in areas with densely distributed Traditional Villages, thus creating a historical environment. The overall protection is out of control.

4.1.3.5 Evaluation of historical environmental integrity of Zhangdaicun Village

The investigation of the land use change and historical index of the surrounding environment of Traditional Villages is the first step in understanding the environment of heritage sites. This quantitative research tool breaks through the level of perceptual cognition and can be regarded as the basis for the evaluation of the preservation of Traditional Villages. At the same time, it is also one of the foundations for carrying out all protection work and formulating strategies. Referring to the VASA investigation method, this study makes a quantitative analysis of the historical environment of Zhangdaicun village. Considering factors such as geographical environment, topography and landscape characteristics, the scope of the analysis is determined to be the southern part of the Bi-Wen Peninsula and the Loess Plateau Peninsula where the "Four Dai One Hua" landscape unit is located.

In Chapter 3, I have compared the land use in this area in the 1960s with the status quo. Here, based on the land use maps of the two periods, the author further completed the land use dynamic change map (fig.4-3). Dynamic mapping in order to define the degree of protection and integrity of historical landscape. The two maps are then superimposed in the GIS environment through an overlay operation, with the consequent creation of a new information layer, consisting of a new cartography and a new database. The database that is created for each polygon will report the land use present in 1967 and the land use present at present. Depending on the change that the original land use has undergone, a particular evolutionary dynamic

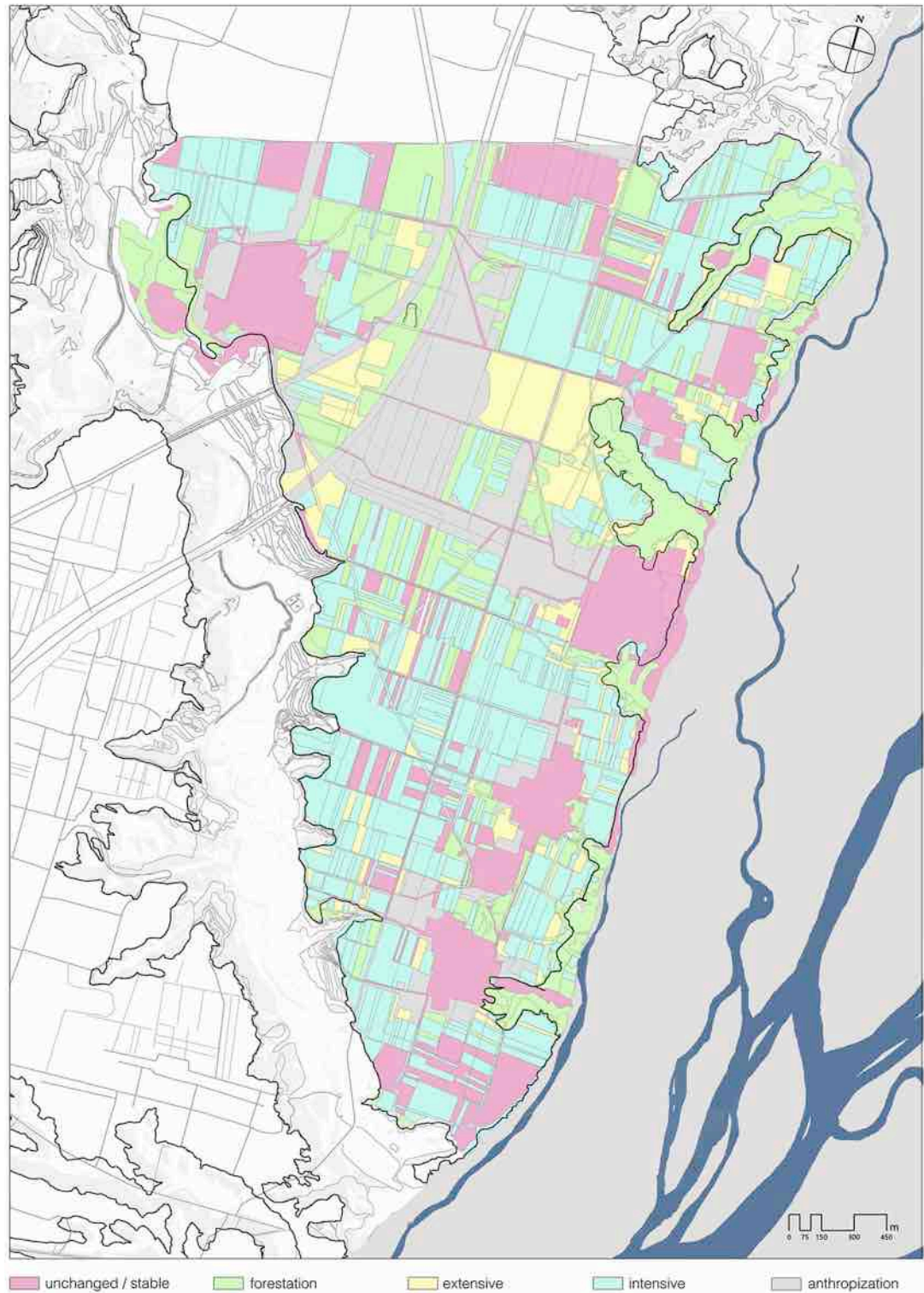


Figure 4-3 Historical Index map showing the persistence of historical land use. Source: Elaborated by the author and Xue Shirui.

will then be associated with the polygon, which will constitute a new attribute within the table¹². In the method of vasa in Italy, land dynamic change can be classified into seven types: unchanged, intensification, extensification, forestation, coniferation, deforestation, anthropization¹³. The dynamics map will therefore have a legend based on the items previously illustrated and will show the changes and portions within the area that instead preserve a more intact historical landscape. In fact, from 1967 to 2020, there are no two phenomena of coniferation and forestation in the dynamic changes of the surrounding environment of Zhangdaicun Village. Therefore, the other five dynamic changes in land use are analyzed in the evaluation.

According to the VASA method, in table 4-1, the numbers reported within the grid correspond to the value in hectares of the surfaces of certain land use transformations, from the use reported in the corresponding column to that reported in the corresponding row. Each number shown on the grid is then highlighted by a color corresponding to one of the seven landscape transformation dynamics. By adding the values highlighted by the same color and comparing them with the total value of the surface of the area, we can calculate the percentages of each evolutionary dynamics and build a summary pie chart.

12. Cf. Italian National Standards for Registration of Historical Rural Landscapes, Annex 2.

13. Ibid. The explanations for the seven types of dynamic changes are as follows:

- unchanged: when the main type of land use has remained constant; it is not by chance that we speak of the main type, as the passage from coppice of Turkey oak to chestnut wood or from tree pasture to bushy pasture must also be classified as unchanged).

- intensification: the transition from low "consumption" land uses (in terms of biomass extraction, work, mechanization, fertilizer and pesticides), such as meadows, pastures or traditional crops, to land uses characterized by a high level of specialization and a high need for energy inputs, such as occurs for monocultures (eg from arable land with olive tree to olive grove; from arable land with olive tree to simple arable land; from pasture to simple arable land).

- extensification: the opposite process to intensification, which however is only rarely linked to a return to traditional land uses, but more often occurs in the presence of phenomena of abandonment of agricultural land or pastures (e.g. from simple arable land to pasture ; from simple arable land to vine-olive tree association).

- forestation: natural process that occurs by secondary succession, in which arboreal or shrub formations occupy pastures or cultivated areas.

- coniferation: process that often has origins and causes related to human activity, such as reforestation, especially of conifers.

- deforestation: loss of wooded land to obtain areas intended for agricultural crops or pastures.

- anthropization: expansion of urban areas, or in any case of anthropogenic origin, on land once affected by crops, meadows or pastures.

Table 4-1 Cross tabulation for the dynamics 1967-2020.

UDS 1967	UDS 2020									
	area anthropized	simple arable land	mixed arable land	facility agriculture	economic woods	mixed woods	arbuscule	uncultivated land	road network	Total
area anthropized	64,1835	0.2845	0.0290	-	1,2845	2,1594	2,8008	3,0016	0.0967	73,8399
simple arable land	87,4702	65,7106	55,7941	30,7386	187,4109	93,7340	29,8764	37,7653	33,2558	621,7558
mixed arable land	-	-	-	-	-	-	-	-	-	-
facility agriculture	-	-	-	-	-	-	-	-	-	-
economic woods	-	-	-	-	-	-	-	-	-	-
mixed woods	-	-	-	-	-	-	-	-	-	-
arbuscule	-	-	-	-	-	-	-	-	-	-
uncultivated land	4,1323	1,3299	0.0142	-	11,5783	43,5640	16,7732	16,3632	0.4882	94,2433
road network	6,3761	2,3579	1,3954	0.5884	5,0918	3,8629	1,3468	1,3198	4,4733	26,8124
Total	162,1620	69,6829	57,2327	31,3270	205,3655	143,3202	50,7972	58,4498	38,3140	816,6514

Source: Elaborated by the author and Xue Shirui.

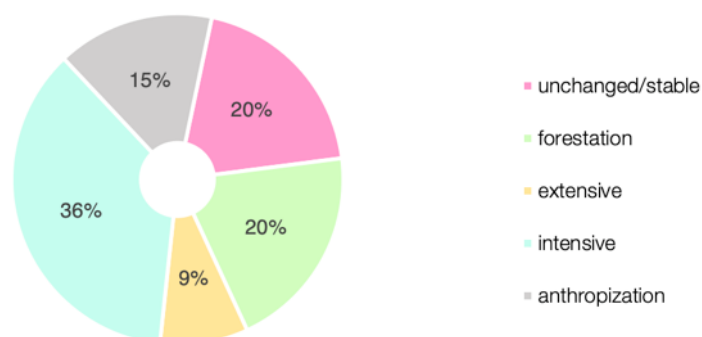


Figure 4-4 Pie chart summarizing the dynamics for the period 1967-2020 of Zhangdaicun Village based on the VASA method.

Source: Elaborated by the author and Xue Shirui.

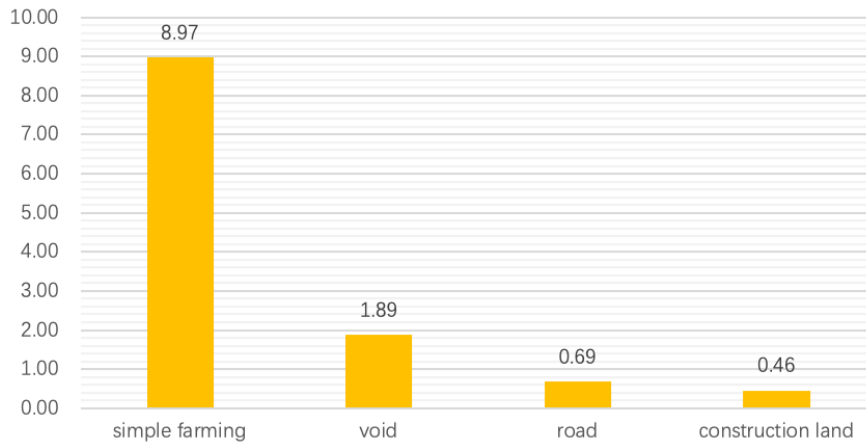


Figure 4-5 Histogram of land uses ordered according to the Historical Index value Source: Elaborated by the author.

Also according to the VASA method, I will complete the Calculation of the Historical Index, histogram and cartography of the surrounding environment of Zhangdaicun Village. The use of a Historical Index (HI) makes it possible to obtain a value for each use of the land, according to the risk of their disappearance, in order to identify what are the "landscape emergencies", that is the land uses that have the most seen to reduce its surface and therefore require careful management for conservation and recovery purposes. The applicability limit of this index is given by the fact that it does not consider land uses or elements that do not present any current diffusion, that is, those that have already disappeared. The historical index is calculated according to the following formula¹⁴: $HI=Hp_v \times Hgd/Pgd$

The calculation of the Historical Index therefore allows to obtain a value for each land use, with higher values for the land uses at greatest risk of disappearance. Land uses must then be sorted in a histogram, in descending order.

Over the past half a century, the surrounding environment of Zhangdaicun Village has undergone tremendous changes. The scale of the agricultural grid around the settlement has been greatly reduced, and the original rural agricultural landscape has changed astonishingly. From the Historical Index map, we can easily see that the overall historical index in the research area is extremely low. This research also reflects a crisis faced by Traditional Villages, that is, the historical integrity of the surrounding environment of the settlement is not sufficient to reflect the overall historical landscape characteristics of the village. Therefore, in the future conservation plan of Zhangdaicun Village, the restoration of the historical agricultural landscape will become a very urgent task.

14. Cf. Italian National Standards for Registration of Historical Rural Landscapes, Annex 2.

Hp_v = historical persistence value of the element, given by the Hp / Tr ratio, whose value will oscillate between 0 and 1, where Hp is the historical persistence of the element considered measured in years and Tr corresponds to the overall time interval. In the case of only two dates (1954 and actuality, this value will always be equal to 1. Hgd = extension in hectares of a type of land use at year t_1 (1967). soil per year t_2 (status quo).

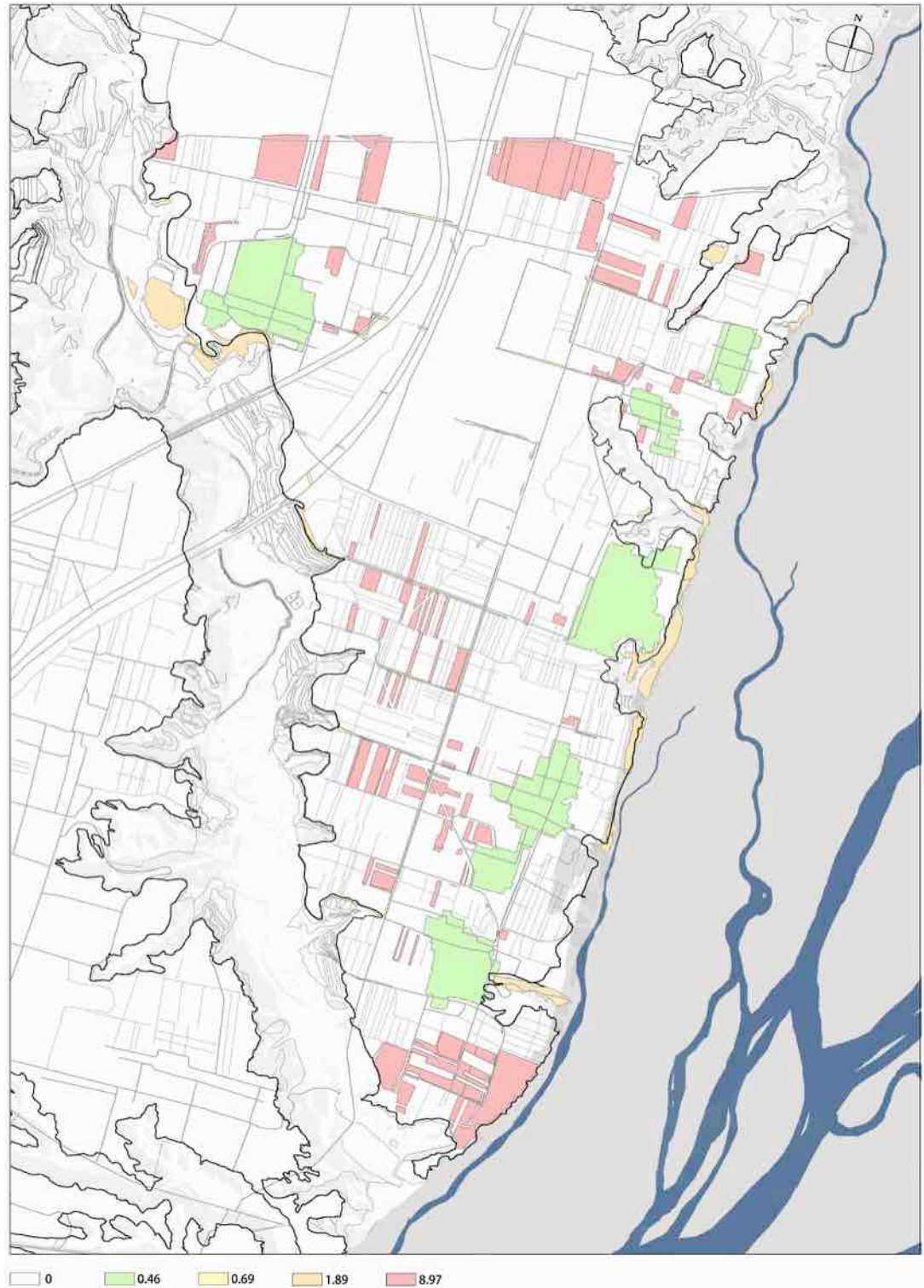


Figure 4-6 Historical Index map showing the persistence of historical land use. Source: Elaborated by the author and Xue Shirui.

4.2 Formulate a reasonable protection fund allocation system and Traditional Villages regeneration model

4.2.1 Issues about conservation funds

The main sources of funds for heritage protection include central special funds, special subsidies for local protection, funds for supporting protection of cities and counties, and private capital investment. The main objective of the use of protection funds is to improve the protection system, improve the construction level and effectiveness of protection facilities. When formulating the allocation plan for protection funds, local governments tend to tilt protection funds to a small number of key protection units (such as famous villages and famous towns), compared with those that are large in size and poorly preserved. Protected units (such as national and provincial Traditional Villages) receive much less financial support. From the perspective of quickly building famous towns and villages and Traditional Village brands and accelerating the development of tourism economy, this approach has obvious effects. On the other hand, there is a certain potential risk in this mode of distribution, that is, the units that have been well preserved are more and more funded; and those that are generally protected by the funds are supported. It has been in a weak state for a long time, and even made some protection work unsuccessful. At the same time, from the perspective of the overall protection of the historical environment, the distribution of protection funds in the Traditional Villages in a regional geographic unit is uneven, which will seriously affect the rural nature of the regional geographical unit, which consists of traditional settlements and their environment. And the overall protection and restoration of the cultural landscape.

Sources of protection funding for CHCFV and CTV include the following: a) Central government subsidy funds, b). Local governments invest funds, c) Village collectives and villagers invest funds, d) Other social investment funds. Compared with investment from villagers, village collective organizations and other social organizations, the government's protection funds are more stable and reliable. However, the government's investment in protection funds for CHCFV and CTV varies greatly.

Taking Shaanxi Province as an example, in the budget report of the government's total expenditure on protection of historical villages and towns between 2015 and 2020, CHCFV's protection funds accounted for 42% of the total budget, while CTV's protection funds accounted for only 14%¹⁵. Furthermore, the details of Hancheng are as follows. In the "13th Five-Year Plan" for the construction of the protection facilities for famous towns in the famous historical and cultural towns of Shaanxi Province, there are three types of settlements of Hancheng historical and cultural villages, traditional Chinese villages and provincial Traditional Villages. The average protection fund budget for each village is 2.141 billion yuan, 0.147 billion yuan and 0.079 billion yuan, showing a cliff-like fall. The author refers to this phenomenon of uneven distribution of protection funds as the "Matthew effect" of protecting fund allocation, that is,

15. Shaanxi Provincial Housing and Urban Construction Department, "The 13th Five-Year plan for the protection of famous towns and villages in historical and cultural cities in Shaanxi", 2017.

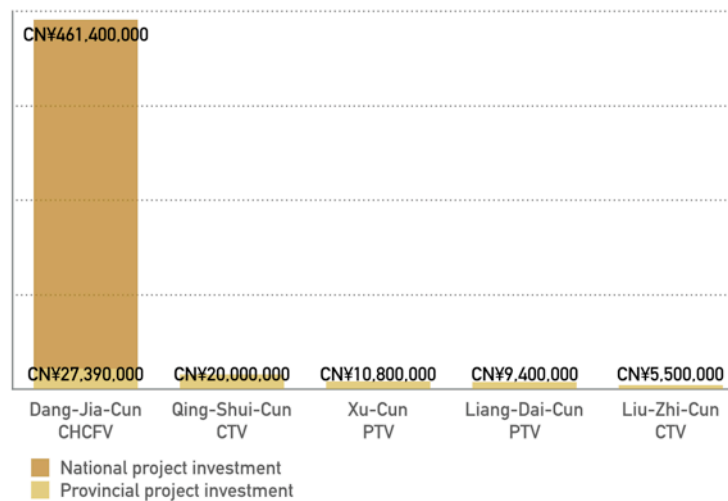


Figure 4-7 Investment budget for protection facilities construction of some villages in the list of CHCFV, CTV and PTV (Provincial Traditional Village) in Shaanxi Province, China, 2015-2020 Source: Elaboration by the author based on the 13th Five-Year plan" for the protection of famous towns and villages in historical and cultural cities in Shaanxi, 2017.

the accumulation of advantages of protecting resources. On the other hand, there is a certain potential risk in this mode of fund allocation, that is, the officially protected sites that have been well preserved, the funds are more and more supported. However, the protection funds from the government that the general protection units can obtain are in a state of being longer in a lesser state, and even making some protection work unsuccessful. Thirdly, from the perspective of the overall protection of the historical environment, unequal distribution of protection funds in Traditional Village groups in a regional geographic unit (not the quantitative imbalance, but the unscientific and unfair distribution) will seriously affect the integrity protection and restoration of rural natural and cultural landscapes.

Since 2014, the central government has formulated a budget for rural environmental improvement funds¹⁶. This budget is used to support the protection of CTV. According to documents issued by the Ministry of Finance of China¹⁷, the budget funding standard is 3 million yuan per village. It is worth noting that the area and population size of CTVs are different. Take the two CTVs in Hancheng as an example. According to 2018 statistics, the population of Xiyuan Village is 3964, and the population of Wangfeng Village is 1851. The population of the former is twice that of the latter, and of course its village area is also larger than the latter. In fact, many CTVs are smaller and have fewer populations. But the funds allocated to each village are indeed the same. This seemingly average funding model is not fair.

16. State Council Information Office of China (SCIO), "327 Chinese Traditional Villages Were Included in the First Batch of Central Financial Support in 2014", 2014.

17. Ministry of Finance, "Notice Regarding the Release of the 2019 Budget for Rural Environmental Improvement Funds (Traditional Village Protection)", 2019.

In addition, while increasing public financial investment, Traditional Village conservation work should guide social capital and financial capital investment, and mobilize the enthusiasm and initiative of villagers to participate.

In the cultural sphere, a leading role is played by private institutions (foundations, associations and non-profit organizations), characterized by a great variety of interests, strategies and organizational forms, not attributable to a few and defined types of action. Some of these organizations have played and continue to play a leading role in the enhancement of Italian culture in the world and in the promotion of cultural exchange and cooperation¹⁸. The introduction of the foundation model makes it possible to leverage and amplify benefits based on the guidance and demonstration function of financial funds, improve the investment and financing mechanism of Traditional Village derivative industries, and promote social capital investment in Traditional Village derivative industries. Providing financial support for the protection and development of unified villages with market-oriented and specialized operations can promote the integration and structural adjustment of Traditional Village resources. Therefore, as a carrier to promote the exchange of different knowledge, experience and culture, the role that the "foundation" may play in the protection of traditional Chinese villages in the future should not be ignored.

4.2.2 Exemplary conservation projects led by design enhancement

On the one hand, the problem of unfair supply of protection funds needs to be resolved through a top-down approach; on the other hand, bottom-up, in the case of limited government funding, how to guide farmers to consciously protect these precious traditional buildings? The author believes that the solution of the problem needs to start from the economic point of view. At present, among most Traditional Villages surveyed, farmers' income sources mainly depend on the primary industry. The heritage value of traditional dwellings has not been passed down into economic value. In addition to pride, farmers with traditional dwellings do not have more enthusiasm and ability to protect traditional dwellings. Therefore, how to help farmers increase their income through dwelling heritage to improve farmers' enthusiasm for heritage protection is an urgent problem to be solved.

In this case, it is necessary to promote a concept of a composite sustainable and slow-developing tourism industry, in order to avoid the consumption of land and the plundering of the real resources of rural communities. In addition, the staged goal setting is of practical significance for the protection and development of Traditional Villages. It is precisely because of the lack of funds that we are required to attract more stakeholders to the protection of Traditional Villages.

It is necessary for heritage practitioners to engage with the range of stakeholders and other authorities who attach importance to heritage places. This ensures a shared understanding of the collective values of a place and helps produce better conservation outcomes. The values and priorities that interests attribute to heritage places are at times in conflict, and heritage professionals must try to facilitate a resolution that

18. P. Gagliardi, E. Quinté, *Fra tradizione ed innovazione: il ruolo della Fondazione Cini*, in "Economia della cultura", 2 (giugno 2007), pp. 225-230.

is in the interest of conservation¹⁹. The stakeholders involved will mainly include: villagers, grassroots governments, heritage protection experts, village protection development planning units designated by regional governments, regional tourism management departments, regional land management departments, regional planning management agencies, regional agriculture. Development management agencies, local companies (or consortia), investment oriented foreign companies or individuals. This subsection will discuss the role of each of the above stakeholders in the protection of Traditional Villages, as well as different appeals. Combine with the policy research in the previous chapters to explore a collaborative model that mobilizes the enthusiasm of all parties and optimizes the effects of heritage conservation and sustainable development.

Therefore, the planning and design enhancement project for the preservation and restoration of valuable morphological and semantic units in Traditional Villages based on the authenticity of heritage protection, as a blueprint recognized by villagers and rural grassroots government decision makers, needs to be put on the agenda.

In the era of internet economy, the formation of influential demonstration projects and the widespread media dissemination are of positive significance for the development of tourism in Traditional Villages. The protection and enhancement of Traditional Villages in Zhangdaicun Village can be divided into three steps:

In the first stage, promote a number of demonstration residential protection and utilization projects, cooperate with villagers and investors, and transform the functions of some traditional residential houses from residential or abandoned state to boutique design homestays, thereby expanding the social influence of Zhangdaicun Village.

The second stage is to improve the quality and infrastructure of the Traditional Village cultural space, drive the homestay industry, scale up the development of rural tourism, improve the overall environment of the village and revitalize the industry, and become a regional tourist destination.

In the third stage, the experience of Zhangdaicun village will be promoted to build a historical village tourism destination cluster along the Yellow River in Hancheng, and form a continuous Traditional Village tourism route and continuous agricultural landscape belt.

19. The Getty Conservation Institute, *Heritage Values, Stakeholders and Consensus Building*, 2010. https://www.getty.edu/conservation/our_projects/field_projects/heritage/

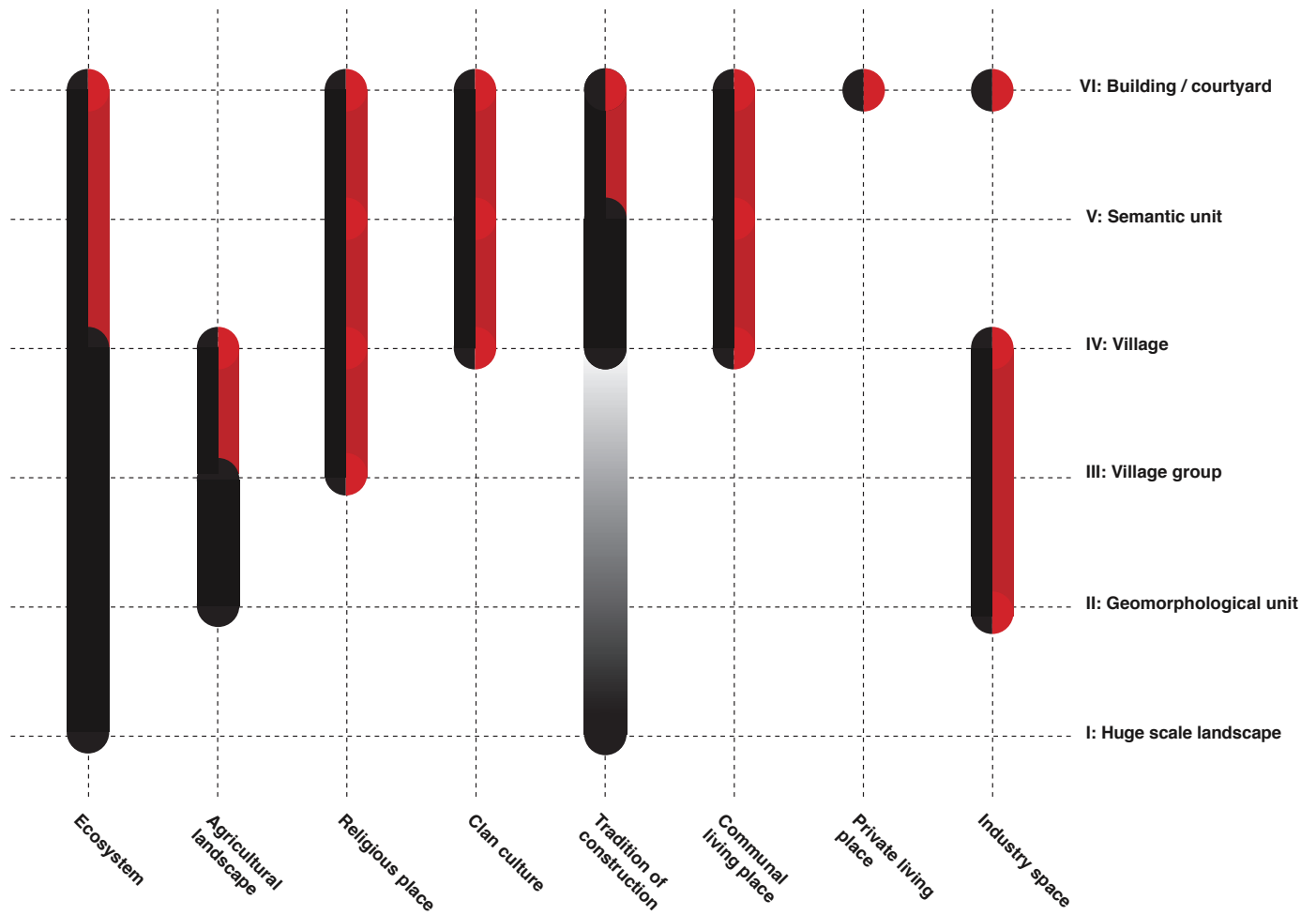


Figure 4-8 An integrated restoration and design enhancement framework. Source: Elaboration by the author.

4.3 Preservation strategy: design enhancement-led positive interventions

4.3.1 An integrated restoration and design enhancement framework based on morphological feature investigation

The integrated conservation strategy proposed in this study emphasizes the investigation and protection of the morphological characteristics of Traditional Villages, which is also a key issue for the protection of the tangible content of historical rural landscapes in the context of architecture. Just like the author's analysis in Chapter 3, this morphological analysis is a reading method but it is by no means a general explanation, but can be disassembled into different levels of interpretive reading.

Through the hierarchical analysis method, the morphological characteristics of at least 6 different scale levels are presented. The six levels are:

- I. Huge scale landscape: the observation range is 50 kilometers in diameter. Under this scale, the relationship between villages and cultural mountains, rivers, etc. is studied;
- II. Geomorphological unit: the villages in this unit are interdependent and can be regarded as an ecological community under a cooperative relationship, and their rural landscapes are homogeneous;
- III. Village cluster: refers to the village cluster composed of Zhangdaicun Village and its neighboring Wangdaicun Village, Shidaicun Village (south side), and Liangdaicun Village (north side);
- IV. Village: the administrative boundary of Zhangdai Village, including the building group and surrounding environment;
- V. Semantic unit: the morphological spatial unit of the built environment (building cluster) influenced by the same construction language; VI. Separate courtyard or building.

1) Ecosystem

Level I: Control air pollution and restore the sight connection between the villages along the Yellow River in Hancheng and Jiwang Mountain and Gu Mountain;

Level II: Vegetation restoration; prevention and response to the erosion phenomenon of loess cliffs on the west bank of the Yellow River;

Level III: Formulate daily garbage collection and removal plans; promote environmentally friendly lifestyle products to reduce garbage;

Level IV: Construct an incentive mechanism for environmental protection;

Level V: Road paving and drainage system repair and upgrade.

2) Agricultural landscape

Level II: Restoration of historical agricultural grid-scale (restoration of the large-scale grid);

Level III: Restoration and display of traditional agricultural landscape (partial);

Level IV: Restoration of historical agricultural landscapes: drying and threshing ground, irrigation canals, etc.; design enhancement of scattered farmland within the settlement.

3) Religious place

Level III: Restoration and display of folk sacrificial rituals across villages;

Level IV: Protection, restoration and utilization of religious buildings and places; the display of the religious space system in the village and the marking of religious space nodes and monuments;

Level V: Renovation of religious buildings and surrounding spaces and environmental improvement;

Level VI: Architectural heritage protection and design enhancement.

4) Clan culture

Level IV: The restoration of the ancestral hall system; the display of genealogy culture;

Level V: Renovation of religious buildings and surrounding spaces and environmental improvement;

Level VI: Architectural heritage protection and design enhancement.

5) Tradition of construction

Level I: Maintain the sight corridor between the village and the mountain;

Level II: Repair the traditional land-use balance between the built-up area and the cultivated land; in fact, in the past few decades, the rural resident population has been steadily lost, but the built-up area has been continuously expanded;

Level IV: Maintain the traditional layout of the village and the scale of streets and lanes;

Level V: Keep the traditional street and lane scale in the semantic unit;

Level VI: Try to use traditional techniques to repair and maintain traditional building components.

6) Communal living place

Level IV: Protection and display of the traditional public space of the village;

Level V: Design enhancement on public spaces to meet today's needs;

Level VI: Protection and design enhancement of traditional public service facilities; implantation of new building types.



Figure 4-9 Strategy for re-structuring the whole village form and landscape. Source: Elaboration by the author.

7) Private living place

Level VI: Protection and design enhancement of traditional residential courtyards; implantation of new building types.

8) Industry space

Level II: Combining natural and cultural landscapes to develop rural tourism;

Level III-: Planning tourist routes for sightseeing agriculture;

Tier IV: Coordinate the development of the secondary industry based on agricultural product processing and the tertiary industry based on hotel industry;

Level VI: Protective use of abandoned residential buildings (design improvement), turning them into family hotels and small agricultural products processing plants.

4.3.2 Narrative design: the dialectical relationship between old and new

In Traditional Villages, most of the historical texture and context still exist. Even if some places are destroyed, there will still be clear order in other places. For the improvement of the environment in rural areas, especially in Traditional Villages, what should be promoted is not to completely overthrow the new rural policies reconstructed in the past. We should find out the original hidden order and key problems in the existing environment and improve it by "acupuncture". Therefore, the planning project of Zhangdaicun Village puts forward suggestions to enhance the typicality of the context, starting from the preservation of the traditional building types and morphological characteristics of the settlement, and further grafting the "new" space types that respond to modern needs.

In the architect's culture, protection and design are not necessarily contradictory or conflicting behaviors. They are a dialectic. In this dialectical relationship, the new and the old are relative to each other in terms of settlement scale or building scale. At the same time, the new building does not sacrifice the material authenticity of the "old" as the premise, and does not sacrifice its due performance in architectural design²⁰. Enhancement does not mean to make the fabric fully adapt to the "original" architectural style, nor does it mean to erase the remaining historical texture, it means the juxtaposition of different forms based on the understanding of different superimposed facts. The new and the old should be harmonious as a whole but clearly distinguishable from each other.

Local identity should be regarded as a sustainable cultural construction, but the premise is that conservation and development should be understood as a holistic conscious act. The revitalization of Zhangdaicun village will be a slow process dominated by planning and design. In this process, we must preserve the authenticity of material traces and materials, constantly read and repair the territory, and introduce creative and appropriate new elements. As an intervention for active protection behavior, it should focus on protecting

20. Laura A. Pezzetti, "Overwriting the Urban Palimpsest: A Regenerative Structure for Historic Public Spaces and Buildings," *New Architecture*, 02(2019): 5-14



Figure 4-10 Diagram of the strategy. Rewrite the traditional form of landscape units in the settlement, while strengthening the connection between the Yellow River and the mountains with cultural significance in the distance; implanting red buildings to complement the decayed traditional form units, emphasizing the traditional spatial scale and morphological characteristics, and reshaping its culture and spirit significance. Source: Elaboration by the author.

the overall environment of Zhangdaicun Village, and at the same time introduce design strategies to provide local residents with a vision of a sustainable future. The contents include: firstly, new grafting in the village fabric, restoration of traditional buildings and traditional landscapes, and integration of the possibility of reuse of traditional buildings; second, dig deeper into the morphological characteristics of settlements, and reconstruct, semantically and morph the settlement form; Third, to support local production and create new employment opportunities for local villagers, we should restore the environment and landscape of the rural areas of historical settlements, integrate the service system to promote the development of tourism, and integrate into the functional places such as B & B hotels, rural areas, teahouses and villagers' activity centers.

According to the method of organic development, the new and old houses, farmland and natural environment of Zhangdaicun Village should be re-read according to the morphological relationship of their deep historical structure, and become a system of interconnected and co-evolutionary system again²¹. In order to formulate the basic principles of a comprehensive protection, revitalization and design enhancement plan project, we need to go beyond the general three boundaries of the "conservation plan" (ie protection core zone, buffer zone and coordination zone), and follow the unique structural of Zhangdaicun Village matrix and its meaningful form. The process of re-structuring the whole rural form and landscape in Zhangdaicun Village is actually a process of re-meaning the place. In the strategy for re-structuring the whole village form and landscape, the entrance road in Zhangdaicun Village's history has been re-emphasized. At the same time, from the entrance to the waterlogging pond and then to the Yellow River bank, the mounds, earth towers, ancient wells, and archways a series of public spaces that once existed in history, such as, Laochi, and temples, have been re-meaning and systematized.

4.3.3 Rewriting the structure of the settlement matrix and reshape the settlement morphology

In her research on the ancient town of Phoenix, Pezzetti quoted André Corboz's point of view, who compared the territory to the palimpsest (rewrite), that is, the ancient scrolls of the Middle Ages: although they have been scratched and rewritten many times, they still remain Traces of the past²². The "relationship

21. Coevolution is a concept derived from biology and economics and has been introduced into the field of cultural landscape and historic preservation in recent years. Related to Darwinian processes affecting species, coevolution is a powerful metaphor that helps to understand issues related to time and changes. The difference between coevolution and adaptation is: in adaptation the thing has no influence on the environment, in coevolution the environmental evolution is influenced by the presence of the living thing. Coevolutionary thinking could be an effect on the understanding of the past, fuelling a taste for hybrid, complex and layered images, which helps to develop a community-centred approach works on the user's background to build an experience that could be more intriguing just playing on the richer keyboard constituted by the legacy of a deeply investigated evolution. Cf. Della Torre, Stefano. A coevolutionary approach to the reuse of built cultural heritage. In *Il Patrimonio Culturale in mutamento. Le sfide dell'uso*. Arcadia Ricerche, 2019: 25-34.

22. Cf. Laura A. Pezzetti, *Layered Morphologies and Latent Structures: Reading, Decoding and Rewriting to Enhance Historic Rural Landscape*. (Tongji University Press, 2019).



Figure 4-II Pilot-Projects in the landscape structure based on the the east-west green axis (from the entrance of the village to the bank of the Yellow River) and organic structure and semantic units: 1. The village gate; 2. Earth mound; 3. Earth tower; 4-6. Hotel project: enhance the comfort and quality of the well-preserved traditional residential courtyards; 7-26. Rehabilitation and rewriting to make residential courtyards available in the potential hotel market, at the same time, the projects will benefit the restoration of the morphological features of semantic units; 27-28. Reconstruction: Ancestral Hall (Cultural Facilities); 29. Reconstruction: Theatrical stage and Wanghe building; 30. Reconstruction: The pagoda of the God of Wisdom; 31-36. Pilot-area: Multifunctional Agricultural Park with new low-carbon prototypes; 37. Reconstruction: The building of the God of Wealth. Source: Elaboration by the author.

between facts and descriptive methods" itself is a method of studying cities and territorial organisms. The palimpsest of history constitutes the current material and cultural materials. When they establish a cognitive relationship with the context, they in turn will inspire new designs. The "rewriting" on palimpsest is a kind of syntactic reading and a process of hermeneutical reconstruction of meaning and interpretation²³. On the other hand, the key to regeneration is to allow the increasingly marginalized, scattered, and hollow territorial settlement heritage and its folk culture to be planned and designed with appropriate functions and integrated into modern social life. In the protection and regeneration design, respect and adapt to the characteristics of the terroir environment that has been gradually formed over the centuries, and the various rational and emotional factors behind it. To realize the new and old collage and "to be new with the ancient", it is necessary to deeply study the archetypal image of "ancient" and its transformation possibility²⁴.

The strategy of "rewrite" the traditional form of landscape units in the settlement based on the investigation of Zhangdaicun village's layered form and the analysis of architectural typology, weaves the declining traditional form unit, restores the traditional street atmosphere and spatial scale, and strengthens the continuity of public space, organic form and rural landscape. The farmland landscape on the cliff of the Yellow River on the east side of the village was reorganized by the soft foundation footpath and bicycle path connecting the north and south. In this strategy, near the intersection of the trail system and the extension line of the village road, new prototype buildings based on the study of traditional building types are arranged. These buildings, together with the trail system and farmland landscape, constitute the agricultural park along the Yellow River. In the future, the footpath and service facilities system will be extended to other villages along the Yellow River to promote large-scale continuous agricultural parks.

In the past 50 years, under the impact of economic changes, the farmland structure in most of the plains of Italy has undergone consolidation²⁵, the agricultural grid has become larger, and mixed crops have decreased²⁶. However, in the Loess Plateau region of Hancheng, China, the change in the farmland grid is just the opposite: the variety of crops increases, and the division of land becomes more fragmented. This change is one of the most obvious changes in the rural landscape of Hancheng. In the farming society, there is an interdependent relationship between settlements and farmland. Therefore, the protection of Traditional Villages should also include the restoration of the farmland landscape around the village.

The land reform that began in the late 1940s, under the influence of political factors, changed land ownership and further induced changes in farmland grid division. After the reform and opening up, the policy of "the fixing of farm output quotas for individual households with each on its own" has further encouraged farmland units with households as a unit, which has further reduced the farmland grid.

23. Cf. Laura Anna Pezzetti, "Rewriting Urban Strata in China: Reading, Interpreting, Recoding Xi'an Xiaoyan Ta's Historic Urban Landscape." *Il Poligrafo*, 2020.

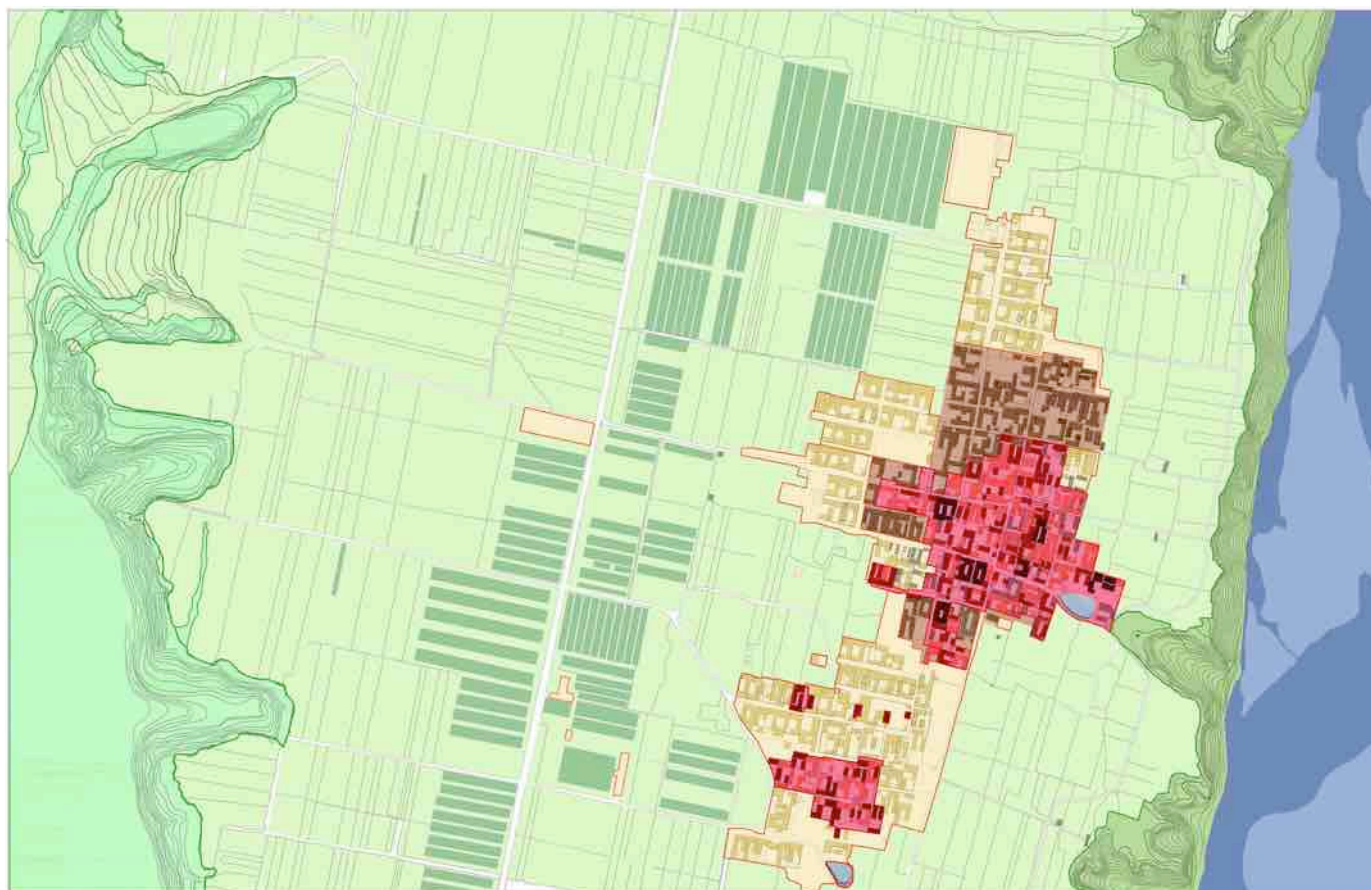
24. Qing Chang, "Future of the Past: Critical Review and Practice of the Built Heritage." *Architectural Journal* 4 (2018): 8-12.

25. De Bernardi A., D'Attorre P.P. (a cura di), *Il lungo addio. Modernizzazione e declino della società rurale italiana*, *Annali della Fondazione Giangiacomo Feltrinelli*, Milano, 1993.

26. Monacci F., "Le trasformazioni del paesaggio perfluviale", in Magnaghi A., Giacomozzi S. (a cura di), *Un fiume per il territorio. Indirizzi progettuali per il Parco fluviale del Valdarno empoiese*, Firenze University Press, Firenze, 2009.



Figure 4-12 The rural landscape re-morphology project is based on traditional farmland forms and morphological units. Source: Elaboration by the author.



- | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A Core protected area of traditional village</p> <ul style="list-style-type: none"> ■ Key protected complete traditional courtyards and important buildings ■ Buildings that need protection and performance improvements ■ Buildings that need to be enhanced by design | <p>B Morphological protection area of the courtyard</p> <ul style="list-style-type: none"> ■ Courtyards that need to be enhanced by design | <p>C Rural characteristic improvement area</p> <ul style="list-style-type: none"> ■ Design enhancements to courtyard combination forms and buildings |
| <p>D Farmland/Agricultural facilities landscape area</p> <ul style="list-style-type: none"> ■ Design enhancements to facility agriculture | <p>E Natural ecological protection area of the Yellow River bank</p> | <p>F Natural landscape area</p> |

Figure 4-13 The proposed 'Integrated Heritage Conservation, Enhancement and Development Plan', based on morphological semantic and landscape units.
 Source: Elaboration by the author.

This change makes the farmland landscape appear fragmented and disorderly. Therefore, in the design enhancement strategy of Zhangdaicun Village, the farmland grid is merged to a certain extent, and the traditional farmland division boundary is consciously emphasized. This strategy will also promote the integration of farmland resources, which is conducive to the agricultural modernization policy currently advocated by the Chinese government.

The industrial economy is the material basis and can provide the source of power for the sustainable development of the countryside. Social culture is the soul, the continuation of humanity, can guarantee that the memory of the home is not lost, and the feelings of the hometown continue. The space environment is the carrier of industry and humanities. Its architectural and spatial environment itself has certain historical, artistic and scientific values. The three complement each other and are indispensable.

Among them, the appeal of rural areas for tourism and recreation lies firstly in their intrinsic rural characteristics²⁷. Sustainable tourism aims to minimise environmental and cultural damage, optimise visitor satisfaction and maximise long-term economic growth for the region. It is a way of obtaining a balance between the growth potential of tourism and the conservation needs of the environment²⁸. However, like urban or seaside tourism, the appeal of rural tourism lies also in the range and quality of attractions and facilities. Nowadays, the accommodation supply in rural areas is very mixed in terms of size, type, location, catering and activities offered. Accordingly, in order to plan the economic and social development of the certain rural area, it is important to have information on the characteristics and preferences of the consumers of the different types of existing rural accommodations in a particular tourist destination²⁹. Combining the goals of industrial development and land use optimization, it is worth studying the restoration strategies of the landscape around Traditional Villages.

4.3.4 Principles and criteria for a plan integrating preservation, revitalisation and design enhancement

In fact, the analysis of signs and shapes and the observation of the relationship between agricultural spaces and urban areas are the preliminary cognitive operations necessary to determine landscape policies (including regional policies). Only by understanding the real and potential effects of landscape features on different scales can we effectively guide project actions³⁰.

Restoration means regaining the lost things and regaining the missing conditions. This is a usually very complicated action. It must be able to match the respect for the existing (material, form, meaning, history)

27. Kastenholz, E., Davis, D., & Paul, G. (1999). Segmenting tourism in rural areas: the case of North and Central Portugal. *Journal of Travel Research*, 37(May), 353–363; Sharpley, J., & Sharpley, R. (1997). *Rural tourism, an introduction*, London: Internacional Thomson Business Press.

28. Bramwell, B. and Lane, B, Sustainable tourism: An evolving global approach. *Journal of Sustainable Tourism*, 1(2003): 1–5.

29. Pina, Isabel Pilar Albaladejo, and María Teresa Díaz Delfa. "Rural tourism demand by type of accommodation." *Tourism Management* 26.6 (2005): 951-959.

30. Francesco Monacci, Ilaria Tabarrani, "Morfotipologie dei paesaggi agrari dell'ellisse urbana" in Magnaghi, Alberto, and David Fanfani. *Patto città campagna: un progetto di bioregione urbana per la Toscana centrale*. Alinea Editrice, 2010, 141-157.

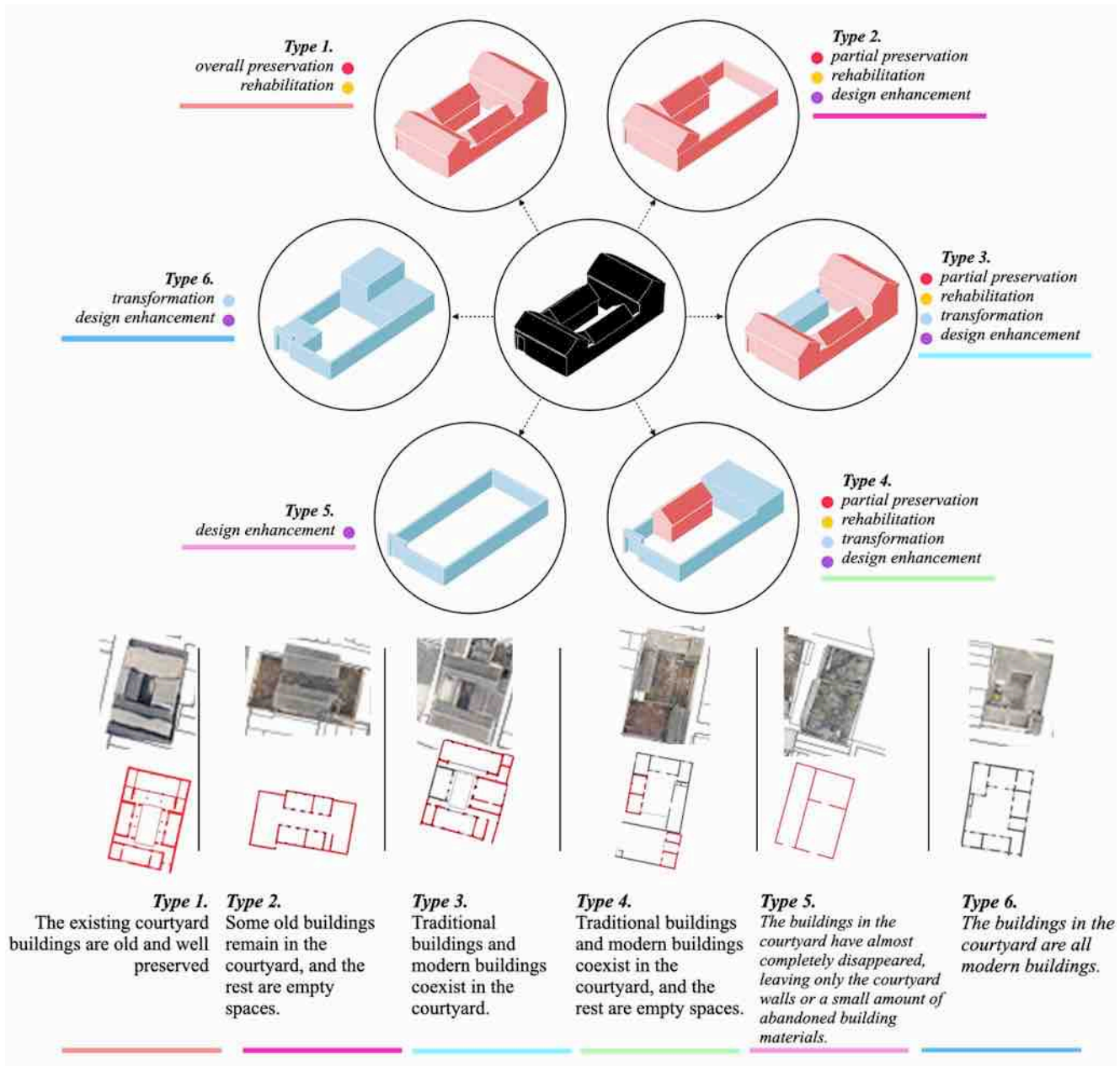


Figure 4-14 Six different types of courtyards derived from the decline of traditional prototypes. Source: Elaboration by the author.

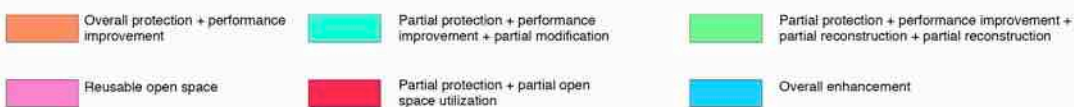
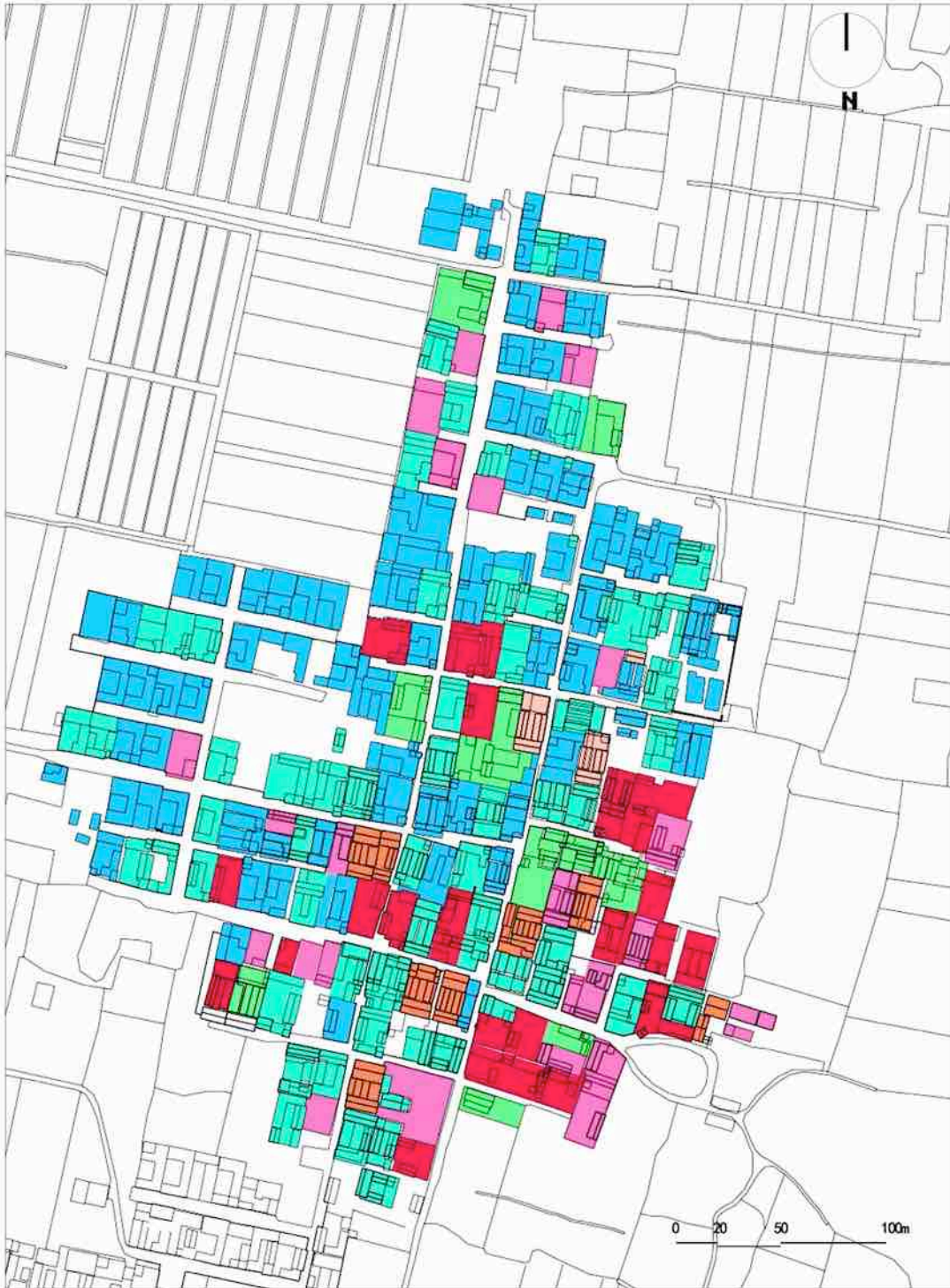


Figure 4-15 Intervention strategies of six different types of courtyards derived from the decline of traditional prototypes. Source: Elaboration by the author.

with the needs of the user. Combining the current situation, considering the available resources and skills, it is necessary to seek a balance between different cases and contributions from different disciplines. Accurate investigation activities (Chapter 3) are the prerequisite for determining the importance of asset value and its reasons.

Based on critical thinking, Principles and Criteria for a Plan Integrating Preservation, Revitalisation and Design Enhancement aims to provide guidance for future conservation and land use projects in Zhangdaicun Village. The plan treats different environments as landscape units, instead of adopting the three-level protection zones that are currently popular in China's protection planning: core protection zone, buffer zone, and environmental coordination zone. The current draft integrated plan has been reassessed for different landscape units, and corresponding protection principles and enhancement strategies have been proposed. Awareness of the need to reduce energy consumption and build in a sustainable manner has become an important design criterion, which has led to the rediscovery and modernization of ancient design methods, enabling existing design methods to be used as valuable resources. The unity and integrity of spaces, buildings and materials in these places are values to be protected, valued and conveyed.

A- Old street and courtyard morphotype protection unit

This protection unit corresponds to the construction area of Zhangdaicun Village before the 1960s, and it is formed by a combination of traditional courtyard types. Under the traditional organic spatial production mode, the courtyards are closely related in morphology, and this connection is also closely related to the family blood relationship and traditional Chinese numerology. At present, some areas of the unit are abandoned, resulting in some unused vacant land. The principles of intervention for this unit are as follows:

First, the clarity of the building type should be preserved, and the traditional materials of the original site should also be preserved. In this unit, any intervention must rely on the precise investigation of the courtyard and its ancillary space (dimension investigation, material investigation and decay analysis), combined with typo-morphology research, and on this basis, protection and restoration according to specific conditions, and then utilization and design enhancements. The reconstruction and demolition of incompatible additional buildings (elements) must be carefully investigated and evaluated. Secondly, awareness of the need to reduce energy consumption and build in a sustainable manner has become an important design criterion, which has led to the rediscovery and modernization of ancient design methods, enabling existing design methods to be used as valuable resources. The comfort and eco-efficiency of buildings are the goals of sustainable design enhancement. Third, the existing historical lanes and paths provide a richer understanding of the village, and the narrow width, materials and atmosphere of traditional lanes and paths should be maintained. Fourth, restore the spatial pattern of public buildings in the temples and stage areas on the east side of the village, and at the same time mark the locations of the disappeared public buildings such as mounds, earth towers, pagoda of cultural prosperity, and God of Wealth Building with new designs, and give them comprehensive functions.

B- Morphological protection and courtyard design enhancement unit

The design enhancement unit corresponds to the edge of the village in the 60s. In these areas, traditional spatial production methods have encountered the intervention of modern spatial production methods. We can find some traces of traditional street features in this unit, but the type of dwellings is already different from the traditional courtyard unit. The intervention of this unit should pay attention to the harmony and

coordination of materials, building scales and the overall building community. It is recommended to use modern rammed earth materials to replace the existing building envelope, and slope roofs to replace flat roofs. On the basis of adopting the basic prototype of the traditional courtyard, modern materials and technology are used to transform and enhance the dwellings in the unit.

C- Rural characteristic improvement unit

The residences in this area are all modern buildings newly built after the 1990s, which belong to the modern fabric, which contradicts the traditional spatial form. However, sustainable design cannot be based on large-scale demolition. Therefore, it needs to ingeniously renovate, reuse and reimagine existing buildings. In the short term, the building facade can be remodeled to harmonize it with the surrounding agricultural landscape.

D- Farmland / Agricultural facilities landscape unit

The rural landscape becomes a testing ground for self-sustainable settlements, which can integrate small-scale and high-quality local food production by mobilizing social capital and regional characteristics to support local typical and cultural tourism (leisure, food, environment and landscape quality). The recognizable rural landscape will become part of the spread of local characteristics. Appropriate integration of the farmland grid to optimize the current fragmented farmland landscape. In the farmland area on the east side of the village near the Yellow River, walking roads will be planted, and a series of comprehensive tourism service facilities will be planned so that visitors can enjoy the magnificent Yellow River landscape.

E/F- Natural ecological protection unit

Maintain the permanence of the natural landscape features. The Yellow River landscape is a key component of Zhangdaicun Village's future attractiveness. Reinforce the cliffs of the Yellow River through physical methods to slow down the collapse of the cliffs due to flooding.

4.4 Illustrative schemes on the contemporary architectural design insertion

4.4.1 The necessity of pilot project design research

From a methodological point of view, in order to further explore the dialectical relationship between the new and the old in a real environment, it is necessary to conduct research on relevant pilot cases through specific themes of design and architecture.

The purpose of the pilot project's tools is to validate and establish formal references that may overcome the modularization of urban planning tools. As a critical analysis, design research helps to identify and evaluate the morphological types and units of the landscape, so that they can be deleted or recombined in the new rural order. In the new rural architectural intervention activities, based on the value concept of preserving

historical traces and continuing the meaning of the place, we should treat the new and the old issues dialectically, and at the same time oppose any approach that only relies on architectural styles to protect traditional villages.

Design is a form of active knowledge that explores meaning in the unique reality of case studies. The design process is not an optional experiment, but a verification of the research content in this paper. In Zhangdaicun Village, public spaces, houses and farmland are all abandoned and "misused" to varying degrees. These "misuses" caused visitors to "misunderstand" the historical environment. Therefore, there are two essential goals for design enhancement. One is to correct this "misreading" phenomenon in the historical "palimpsest"; but to enable "space" to effectively serve contemporary life on the premise of continuing meaning.

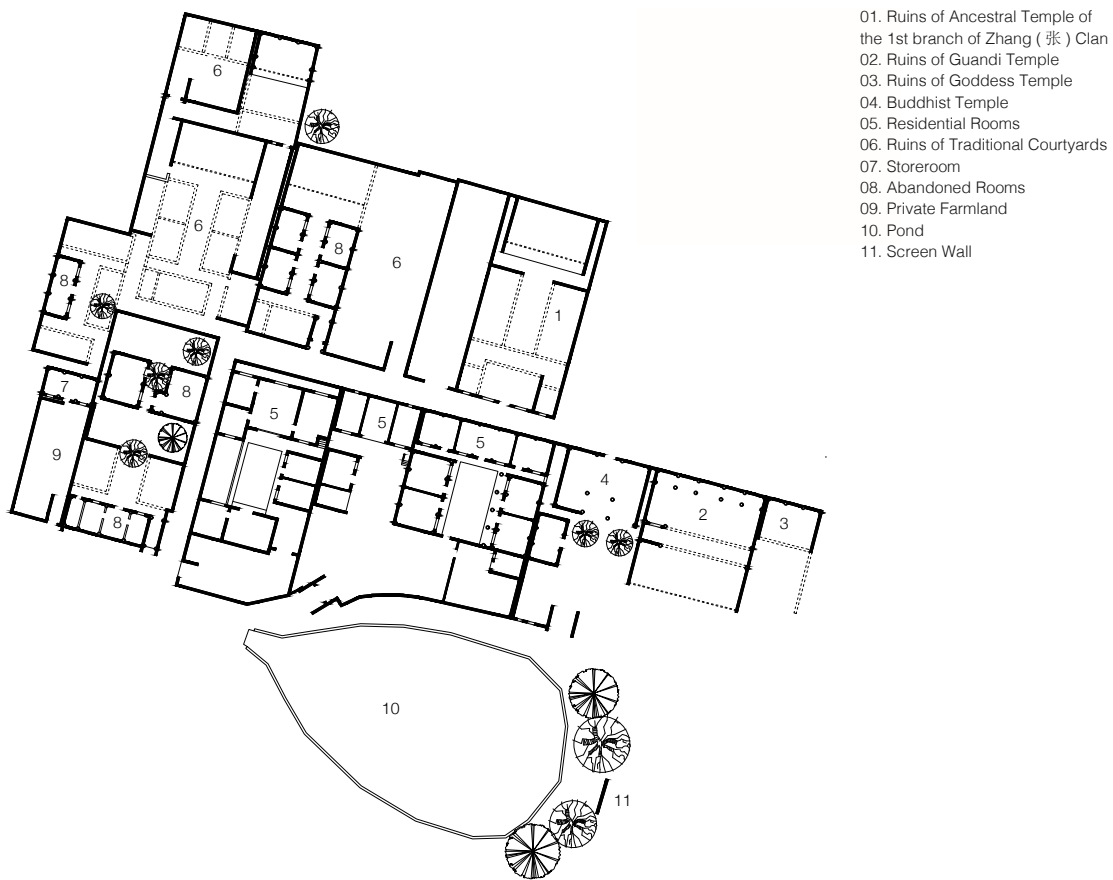


Figure 4-16 The status quo of the design pilot area on the north side of the waterlogging. Elaboration by the author.

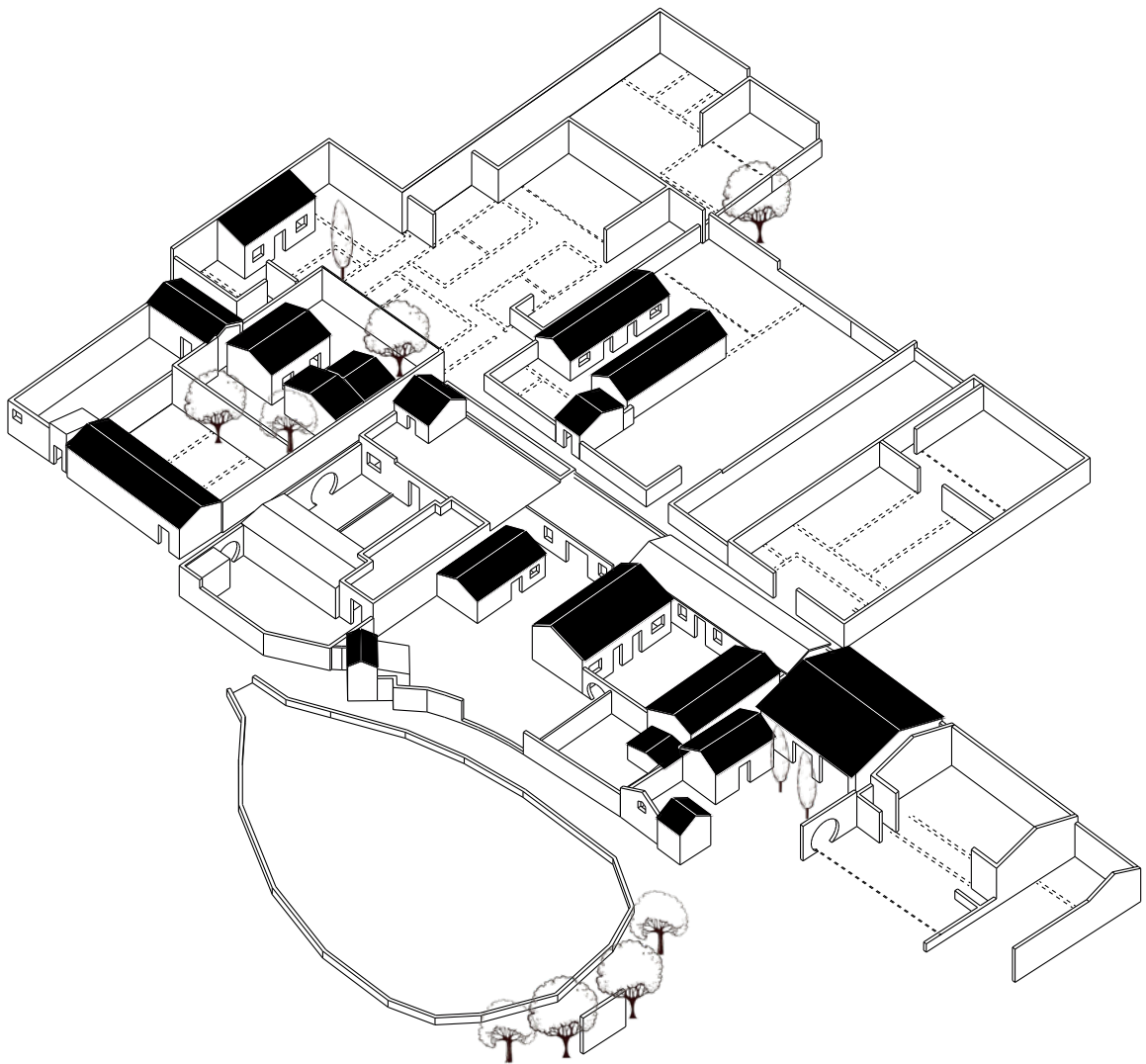


Figure 4-17 Isometric view of the current status of the design pilot area on the north side of the waterlogging. Elaboration by the author and Yang Zexin.



Figure 4-18 Rendering of the modern reconstruction of the abandoned courtyard as a hotel which continues the scale of the traditional courtyard. Elaboration by the author and Yang Zexin.



Figure 4-19 Section of the pilot design area. Elaboration by the author.

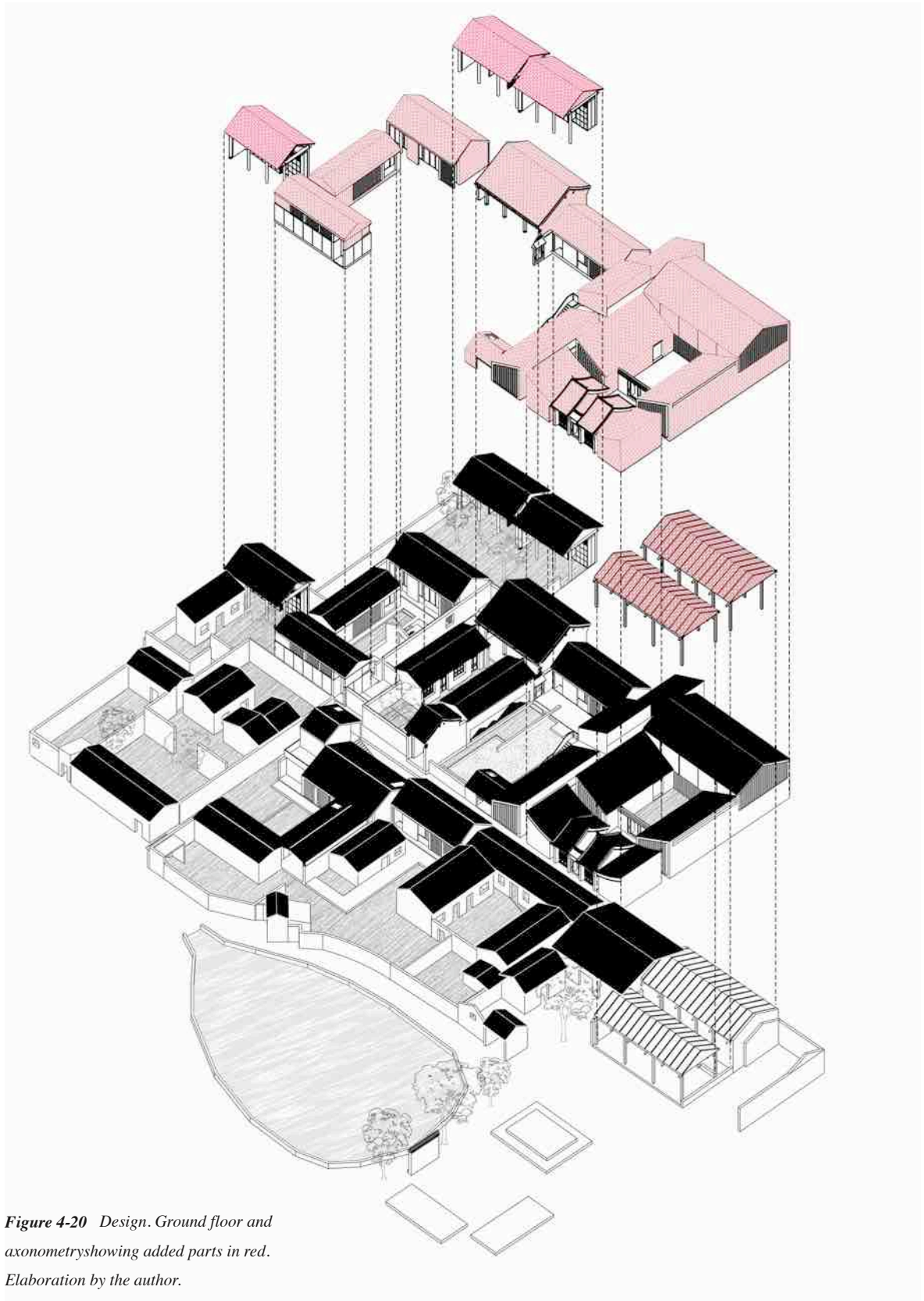


Figure 4-20 Design. Ground floor and axonometry showing added parts in red. Elaboration by the author.



Figure 4-21 Plan of the pilot design project. Elaboration by the author.

Under the guidance of the above two goals, issues such as responding to traditional architectural scales, using local materials, continuing craftsmanship and memory, and reshaping the relationship between intangible cultural heritage and space have become necessary methodological support of design.

4.4.2 Preservation, transformation, reconstruction and "derivation of prototype"

The author selected an area on the east side of Zhangdaicun Village on the north side of the waterlogging pond to conduct a pilot design study. This area belongs to A-1 and A-3 in morphological semantic units. In this area, the complex of buildings presents an organic fabric form. However, many buildings in the area are declining and abandoned, and some of them have undergone spontaneous modernization by villagers.



Figure 4-22 Rendering of the swimming pool courtyard, reconstruction project on an abandoned yard. Elaboration by the author and Yang Zexin.

The Buddhist temple in the northeast of waterlogging pond has been severely degraded, and the Zhang's ancestral hall, Guandi Temple and Goddess Temple have completely collapsed and destroyed.

There are a large number of unused courtyards and Lacuna in the northwest of waterlogging pond . Therefore, it is necessary to solve the problem of respecting the reuse of buildings on the scale of its form units, and combine it with the strategy of enhancing and activating the potential of the rear and its abandoned courtyards. Therefore, to provide more mixed-use economic activities, For example, hotel courtyards, villagers' activity halls, family farms, garden bars, etc., improve the quality of life of villagers while taking into account the development of tourism, so as to promote protection and meet the needs of rejuvenation in mutually beneficial partnerships.

Although Guandi Temple has collapsed not long ago, many original building materials are still scattered on the original site. The short-term design strategy for Guandi Temple is to establish a temporary

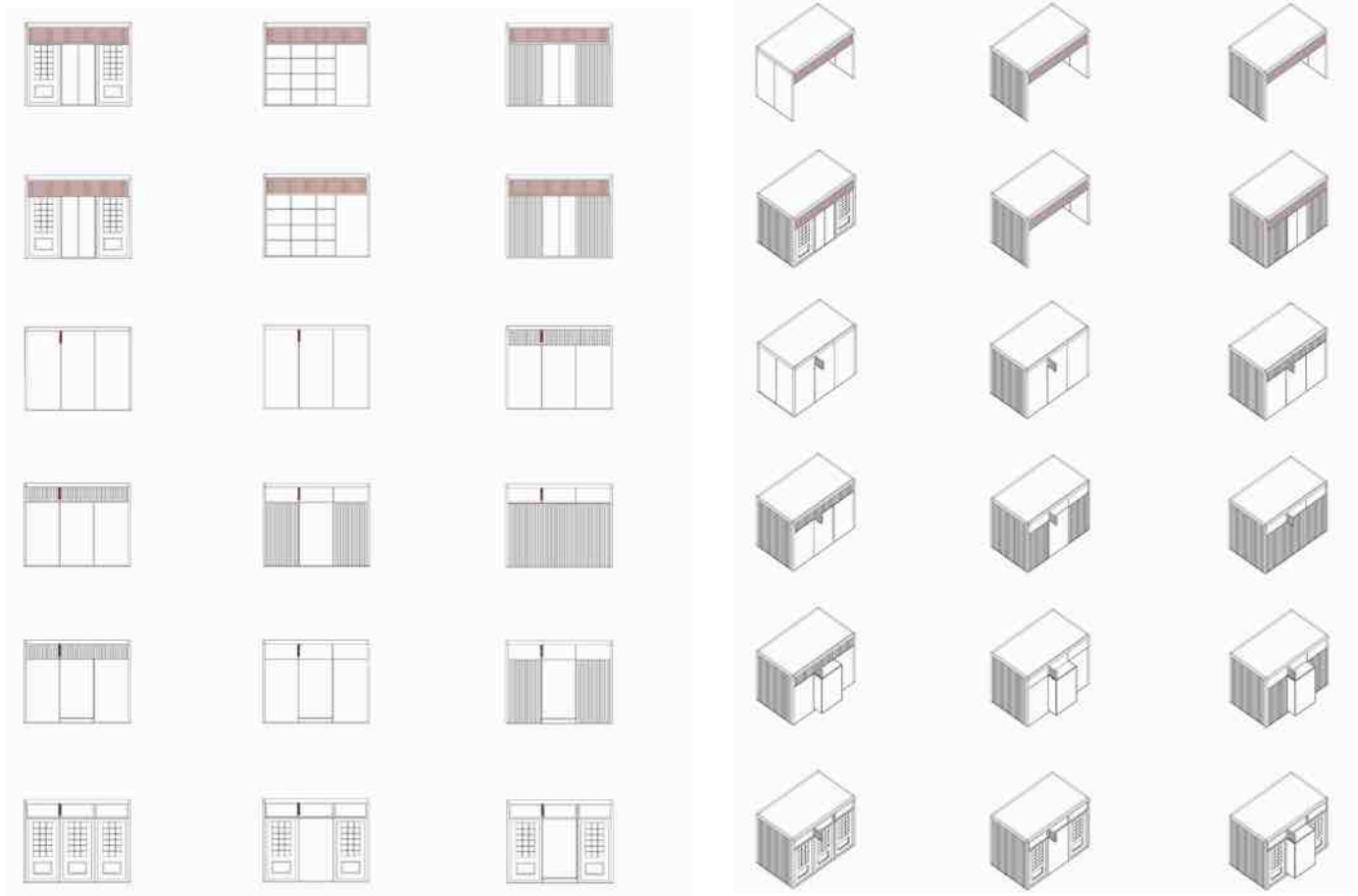
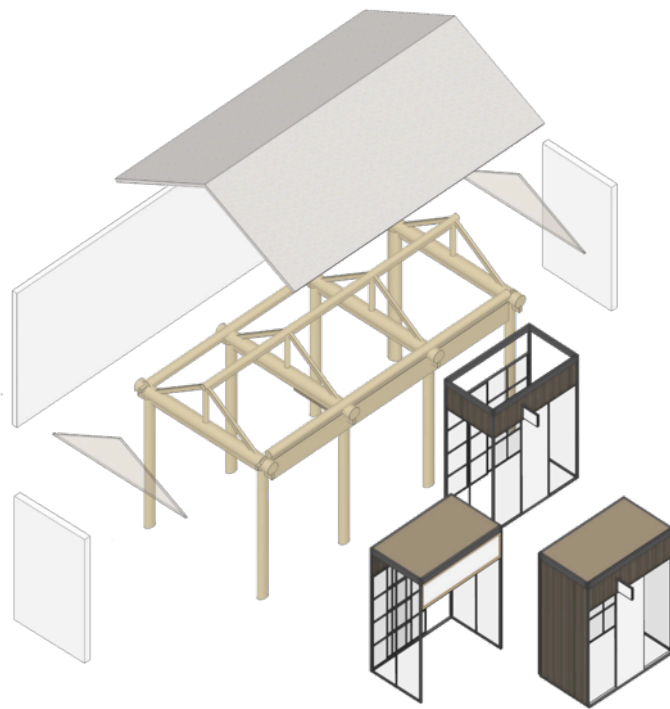


Figure 4-23 "Derivation of prototype". Multifunctional box embedded in the frame of traditional residential structure. The series of elevations and corresponding axonometric drawings below show different box types that accommodate different functions to adapt to changing functional requirements. Elaboration by the author.

archaeological research shed (protection shed), judge the position of the building structure column, wall and roof based on the site conditions and photos, and build a "reversible" protection shed using modern materials . This approach can not only delay the decline of the remaining building materials scattered on the ground, but also provide a place for subsequent temple restoration research work.

Based on interviews with villagers, the author reproduced the basic layout of Zhang's ancestral hall. On the basis of preserving historical traces (remnants and broken walls, etc.), the design used modern materials to create a new architectural space. Similarly, the new building uses prefabricated technology to achieve minimal intervention and reversibility to the base.

In addition, in view of some abandoned formerly narrow auxiliary courtyards, the design puts forward the architectural concept of "derivation of the prototype", creating a bar, tea room and other landscape courtyards. "Derivation of prototype" uses a combination of "architectural prototype" and "new type". In the reconstructed traditional building structure frame, "boxes" with different functions are added. The structural frame is unchanged, and the functions of the "boxes" are diverse. They not only solve functional problems, but also meet the needs of thermal comfort in buildings.

Both "prototypes" and free and flexible "boxes" are realized through assembly technology and customized methods. This attempt can be seen as a continuation of the cultural tradition of Chinese architectural construction.

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05

5. Conclusion

5.1 *Regarding the conservation of Traditional Villages as safeguarding and creation of common values*

5.2 *Re-understanding "tradition" in the current crisis of civilization*

5.2.1 *The issue of architectural style in the future space production of Traditional Villages*

5.2.2 *Business-driven form, style and aesthetic taste*

5.2.3 *Old tradition and new prototype*

5.3 *Conservation strategies based on rural morphological research*

5.1 Regarding the conservation of Traditional Villages as safeguarding and creation of common values

As the architect of the British architectural theorist Alan Colquhoun said, in the traditional system as knowledge and experience, its artistic style as the object of emotional identity have been sparse today, only to reproduce. In the past, it has been difficult to evoke universal cultural identity, so that only by constantly criticizing and transforming can the traditional part of the modern value be internalized in the creative and aesthetic renewal of the building, rather than in the form of history, , The meaning of the past tradition of superficial, reconstruction of the real meaning of the former virtual pastness image⁰¹. In recent years, the Western architectural community on this discourse discussion, is beyond the "critical regionalism" is too focused on the architectural form of exploration of the limitations, such as the US architect Steven A. Moore proposed "regenerative regionalism" theory, and its characteristics can be attributed to eight points: 1) to create a unique local social scene; 2) to absorb the local craftsmen; 3) the process of intervening in cultural and technological integration; 4) to increase the role of knowledge and ecological conditions; 5) advocate universal daily life technology; 6) the technical intervention that makes normative practice normal; 7) cultivate value consensus to enhance local cohesion; 8) Promote local regeneration in critical through the continuous improvement of democratic participation and the level of practice⁰².

In the past few centuries, Europeans have been thinking about the architectural and urban heritage inherited from their predecessors, not only to meet the changing needs of society, but also to be aware of the scarcity of resources. Over the centuries, buildings with different functions have been adapted to the widest range of uses, often changing their shape and meaning. Roman amphitheatres and temples have become fortresses and churches, aristocratic residences have become museums, and monasteries have become universities. Since then, the mode of operation has changed a lot. Current conversions often take into account the compatibility between new functions and the preservation of historical evidence of artifacts, not only for the most prestigious buildings that have been carefully dealt with by disciplines related to restoration, but also involves the recognition of the secondary heritage in terms of economic and historical value⁰³. In China, the protection of rural historical centers has only been a matter of concern in recent decades. But if the European experience is placed in the reality of the secondary historical center of the Chinese countryside, the above argument should also be valid for every existing rural building. In today's reality, we can divide the problems to be solved into three types: one is the restoration of historical environmental features, the other is re-functionalization-the enhancement of buildings and their environment, and the third is to improve the performance of buildings in terms of sustainability and energy conservation.

In the hierarchical theory of needs proposed by Maslow, the sense of belonging is one of the basic human

01. Alan Colquhoun, "Three kinds of historicism." *Architectural Design* 53.9/10 (1983): 86-90.

02. Steven A. Moore. Technology, Place, and Nonmodern Regionalism, edited by Vincent B. Canizaro. *Architectural Regionalism: Collected Writings on Place, Identity, Modernity, and Tradition* (New York: Princeton Architectural Press, 2007), 441-42.

03. Samuele Briatore, *Valorizzazione dei borghi storici minori*. Strategie di intervento (Reggio Emilia: Edizioni Diabasis, 2011), 17.

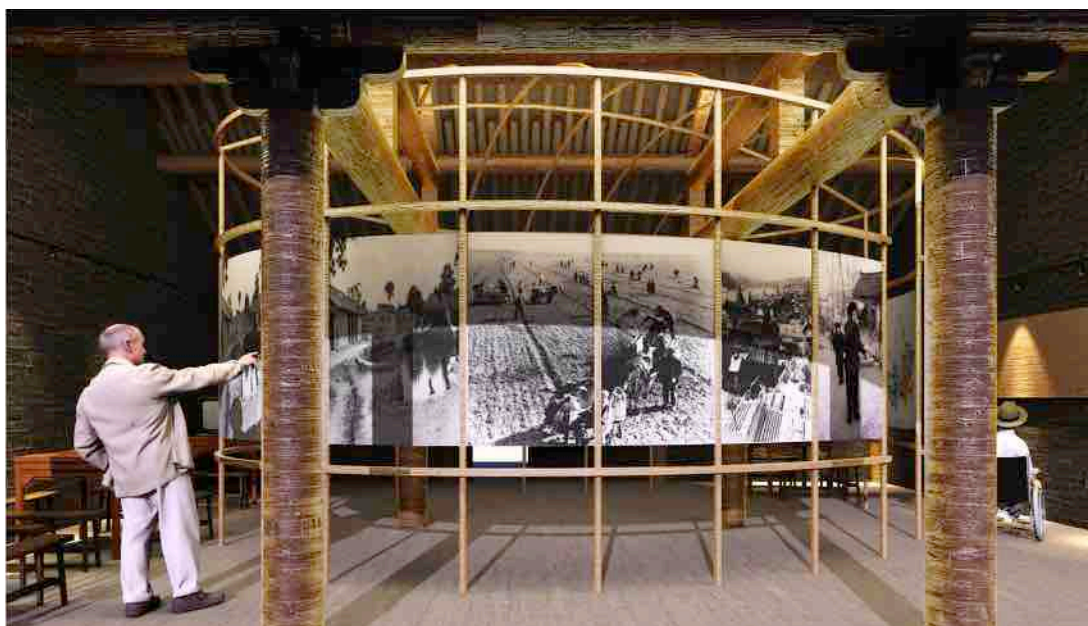


Figure 5-1 The rendering of the exhibition of the clan genealogy of Zhangdai Village in the use of the Buddhist temple. Source: Elaboration by the author and Yang Zexin.

needs. The recognizability of the living environment is an important prerequisite for achieving a sense of belonging. In fact, the construction of spiritual places in the construction of rural settlements in traditional Chinese society is an important tool for creating a sense of belonging. For example, the location of pagoda of cultural prosperity mounds, archways, and waterlogging ponds in the Traditional Villages of Hancheng and its surrounding environment, as well as the composition of the temple complex, all constitute eye-catching symbols or relatively unique and recognizable.

In addition to sustainably complying with the requirements related to the selected function, the success of the reuse project will also be demonstrated by a wealth of co-creation activities. In addition, in the study of the tourism industry, in the logic of the experience economy, co-creation is determined as the key factor of user satisfaction⁰⁴. In this study, the method of layered reading of settlement patterns was used to trace the historical process of settlement pattern formation and excavate the essential characteristics of traditional settlement patterns. These material features are actually a deep cultural feature that exists in the region, and it is part of the common value of the settlement community. Facing the future, only under the premise of preserving the authenticity and meaning of the heritage, relying on the existing value meaning, aiming at the needs of life and development, and creating more common values, can the sustainable protection and development of Traditional Villages be realized.

5.2 Re-understanding "tradition" in the current crisis of civilization

5.2.1 The issue of architectural style in the future space production of Traditional Villages

Landscape not only means "natural beauty", not even the natural beauty inserted into the natural world by humans, nor is it just the natural world, but the territories or environmental shapes created by human communities that have settled down, and nature and people continue to interact⁰⁵. Demolition of the old and new construction is part of the traditional Chinese construction concept, as Liang Sicheng concluded: Chinese architecture "does not seek the endurance of the real thing." Some scholars also believe that the process of using traditional Chinese architecture is essentially a process of sacrifice, that is, in the life cycle of a building, its decay process is rapid and unavoidable. Compared with mainstream western traditional buildings, traditional Chinese houses are a kind of "weak heritage" with poor durability. In Hancheng, the oldest surviving residential buildings were built after the 18th century. Therefore, the architectural conservation work in Traditional Villages must include two aspects: one is to delay the decline of traditional buildings; the other is the reconstruction work in the restoration of settlement form. Correspondingly, we

04. Cf. Pine B.J., Gilmore J.H., *The Experience Economy*, Boston, Harvard Business School Press, 2011.

05.A. Predieri, voce Paesaggio, in *Enc. Dir.*, vol XXXI, Milano 1981, p.506.

must not only preserve the real materials to the greatest extent in the protection of traditional houses, but also avoid creating simulacrum (simulating traditional forms) in the restoration and reconstruction (that is, the production of new spaces).

In the past decade, "Chinese-style" housing has been one of the hot topics in China's housing industry. With the rapid urbanization under the guidance of the policy, and rapid globalization, large and medium-sized cities and New Rural Constructions in China continue to expand and build a large number of residential buildings, such as mushrooming. At the same time, architects are also thinking, in the international context, what is the culture identity of Chinese residential. That is "Chinese-style" residential buildings, which is identifiable, and can reflect China's own identity and characteristics. We can think of Chinese architecture and practice as a cultural phenomenon, and this cultural phenomenon is continuous in the whole modern Chinese architectural history. The different answers to this question are also often important parameters in the division and delimitation of contemporary architects in China⁰⁶.

Urbanus, one of the most active architectural firms in China, interprets this cultural phenomenon as follows: China's current rapid globalization brought about by the loss of the characteristics of regional space environment and the rapid decomposition and transformation of local culture. When people have just warmly cheered the arrival of the information revolution and can not wait to enjoy the "globalization", suddenly they woke up and found that the place of life for generations is also evolved into a strange piece of land. Suddenly they became men of amnesia, inner panic disturbed, and their lives lack the basis and value of the reference. They are eager to find the discourse system that once familiar with, to find the feeling that is surrounded by all the familiar. They looking for an "oasis" in an unfamiliar and fragmented external world. At this time people will naturally go back to the lost cultural traditions. This is the general cultural mentality behind the current "Chinese-style" residential boom. At the moment China's entry into the world economy, Chinese self-confidence began to return in the elite class. At this time to seek a more independent identity has become a demand, and "Chinese-style" living is undoubtedly a immediately trick.

5.2.2 Business-driven form, style and aesthetic taste

Admittedly, the current "Chinese-style" pop has a more profound meaning than the retro-age. At the same time from the perspective of the quality of architectural space, in practice, also emerged as an unprecedented good works. But because of these good works bring "good results", so that the "Chinese style" exploration continues to point to the use and pile up of the historical architectural symbols, while ignoring the traditional Chinese residential's other core characteristics besides the space form.

In a abstract of the Possibilities of "Chinese-Style Housing": A Dialogue between Wang Shu and his Students, the author wrote: Such problems as what is Chinese Style should not be simplified, and there exists actually in our time a basic conflict between simplification and rejection to simplification. An essential premise for human subsistence is diversity. It is especially dangerous that the social system and professional system of our producing and manufacturing, seeming too mature to be questioned or changed,

06. Xiaodu Liu, Meng Yan, Wang Hui, Using "Contemporaneity" to Contemplate and Create "Chinese Style" Time Architecture 3(2006): 22.

are virtually not well-done which results in a shift of the focus to the aspects of style, form and taste and a neglect of the hidden subversive and critical power contained the involved relations between the human race and the society⁰⁷.

It is not difficult to see that Wang Shu's dissatisfaction with the present situation of Chinese residential buildings is mainly due to the cultural identity of most residential buildings and the concrete methods of operation of the majority of Chinese architects who are pursuing "Chinese style". Urbanus argues that the unprecedented interest in residential styles is due to the fact that dwelling styles have in fact played a major role in redefining cultural tastes and social status. The accumulation of China 's national power could have been a good opportunity to study "Chinese - style" housing. Unfortunately, the commercial speculation to make this opportunity bubble into the frivolous fashion, "Chinese - style" has become a cohabitation of a turbid stream, not only shrink the value of good things, but also make the designer no time to calm thinking.

When discussing the "new Chinese-style dwelling", contemporary architects are looking for a way to translate Chinese traditional dwellings, in the design of urban dwellings under the conditions of today's society. However, as Wang Shu said, the focus of the architect's attention seems to be on the discussion of "style, form and taste". Urbanus also denounced the contemporary Chinese style as the self-promotion of the "fashion value" associated with the traditional style and symbol. And that today the architects' Passion of the "Chinese Style" coincide with marketing themes and cultural identity, which is the developers needed for "stuck" their clients. So that the tradition of reproduce tradition, left a shell in the commercial real estate operation. Obviously, it is impossible to solve the problem of the cultural identity of the Chinese residence by discussing the Chinese style residence from the level of traditional form and symbol.

5.2.3 Old tradition and new prototype

The traditional weakness of minor historic centers, generally measured according to the socio-demographic (depopulation and aging), economic and marginal dimensions (low employment levels, low productive investments), as well as the abandonment of the mostly dilapidated housing stock and repulsive, must certainly be fought and eliminated first of all with the construction of precise rules relating to human settlement and the affirmation of a culture of self-government, capable of expressing and strengthening an adequate sustainable project in the direction of a rational governance of transformation processes , useful for "rehabilitating" and "rehabilitating" spaces otherwise refractory to a stable and functional human and productive settlement, within the framework of an overall policy aimed at reasserting as a priority a widespread and varied global sustainability (environmental, territorial, social sustainability , political and economic), which we consider minor historical centers not as organisms in their own right, but as parts of an organically articulated system⁰⁸.

For traditional Chinese villages, in the inevitable space production process in the future, rejecting

07. Shu Wang, Chen Zhuo, Possibilities if "Chinese-Style Housing": A Dialogue between Wang Shu and his Students, *Time Architecture* 3(2006): 36

08. S. Monti, Centri storici minori, in IGM, Italia - Atlante dei Tipi Geografici, Edizioni Istituto Geografico Militare, Firenze, 2004, p. 649.

simulacrum does not mean abandoning traditions. As stated in Chapter 3, courtyards are the basic units of traditional Chinese villages, and the cultural traditions they carry should not only be regarded as their unique architectural styles. Style is a vague concept and not precise. The cultural tradition inherited by traditional houses is, more importantly, the cultural reasons for the style. The "traditional" core values of traditional courtyards are multifaceted, and these values are mainly reflected in: 1. Prefabricated building structure system characterized by migration; 2. The dimensions of building components subject to the characteristics of wood materials; 3. The architectural layout under the influence of Chinese traditional numerology based on the Book of Changes; 4. Building scale bound by ancient laws; 5. The cultural exchange brought about by the migration of craftsmen is reflected in the architectural characteristics. If the above traditional features are combined with modern architectural technology, architects will still have the opportunity to design a new prototype with cultural organicity. The creation of this new prototype is more "traditional" than the so-called simulating traditional forms architecture.

5.3 Conservation strategies based on rural morphological research

Reading and sorting out spatial morphology is an important content of the study of urban and rural settlements. From the perspective of tangible heritage, the extraction and protection of settlement morphological features is of great significance to the overall protection of Traditional Villages. Because the Traditional Village morphology, as an important aspect of the rural landscape, embodies the process and results of human beings adapting to the environment and transforming the environment for a long time, and behind it contains all aspects related to traditional social life, traditional cultural concepts, and traditional construction methods. The spatial morphological features of the village referred to here include both dominant features and invisible features that need to be interpreted. The extraction and protection of the morphological characteristics of Traditional Villages is the basic prerequisite for the protection and development of Traditional Villages facing the future. Therefore, this research takes Zhangdai Village, a traditional Chinese village in Hancheng, as the research object, discusses the problems of destruction and decay faced by Traditional Villages, and uses the research of spatial morphology as the starting point, using the methods of urban morphology and architectural typology to conduct research. Finally, a cross-scale method of comprehensive protection and design improvement is proposed.

This research uses morphological research as the basic method to investigate the spatial structure of Traditional Villages, explores the essential relationship between "type" and "morphological structure", and reveals the hidden order and law under the surface disorder. Through multi-scale combined analysis tools, the morphological structure is analyzed, and different landscape types and morphological semantic units are distinguished. Historical landscape interpretation, design tools and strategies derived from elements such as "protection", "relationship between buildings and settlements", and "landscapes" are systematically integrated. At the same time, this research also faces the reality and trend of the conservation and development of Traditional Villages, analyzes the historical environmental protection work and problems faced by Traditional Villages and towns, and summarizes the specific content of the overall protection

of the historical environment and the shortcomings of the current historical environmental integrity assessment .

In the future, on the basis of this research the author hopes to conduct further research, with the guidance of morphological methods, on issues such as recognition and determination of historical environmental protection scope of historical villages and towns, historical environmental land use analysis, comparison and calculation of historical environmental landscape evaluation indicators will be conducted. Try to construct the concept and method of historical environmental evaluation suitable for the conservation and utilization of Chinese historical villages and towns, so as to promote the optimization of regional Traditional Village protection and development planning technology, and improve the development performance of the intensive development of the regional Traditional Villages and towns. It is hoped that future research can provide a basis for decision-making and policy formulation related to spatial planning, land management and development of Traditional Villages and towns.

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Appendix

Annex I: Evaluation Index System of Famous Historical and Cultural Towns and Villages of China (Trial)

Translated by the author

Index	The split and interpretation of the index	Weight	Specific evaluation criteria
I. values & characteristics		70	
1. The age	(1) Original construction date of existing traditional buildings and cultural relics.	5	At the beginning of the Republic of China, 3 points; in the Ming and Qing Dynasties, 4 points; in the Yuan Dynasty and before, 5 points.
2. Value of cultural relics (degree of scarcity)	(2) The highest level of cultural relics protection units owned by the town (village).	5	County level, 1 point; provincial level, 3 points; national level, 5 points.
3. The degree of influence of historical events and celebrities	(3) Preservation of original buildings in places where major historical events occurred or where celebrities lived.	6	Grade I: 6 points; Grade II: 3 points; Grade III: 1 point. Grade I: The original historical and traditional buildings, buildings and architectural details, and even the surrounding environment are basically intact. Grade II: Although the original building complex and its surrounding environment were partially collapsed and destroyed, the "skeleton" still exists, and some architectural details are well preserved. The original appearance can be restored according to the structure, building construction and style of the preserved material. Grade III: Due to a long history, although the original building (group) and the surrounding environment have collapsed and damaged, it has been restored and restored as it was.
	(4) Ranking of celebrities or historical events	3	Grade I: 3 points; Grade II: 2 points; Grade III: 1 point. Grade I: played an important role in promoting the so-cio-economic and cultural development of the country in a certain historical period; Grade II: played an important role in promoting the so-cio-economic and cultural development of a region (province or a considerable range) within a certain historical period; Grade III: In a certain historical period, it played an important role in promoting local (city, county) social, economic, and cultural development.
4. The area of historic build-ings	(5) The area of existing historical and traditional buildings.	5	Town: 5000-7500 m ² , 1 point; 7501-15000 m ² , 3 points; above 15001 m ² and above, 5 points. Village: 2500-3500 m ² , 1 point; 3501-5000 m ² , 3 points; 5001m ² and above, 5 points.
5. Typicality of historical and traditional buildings (communities)	(6) The number of houses, ancestral halls, post houses, academies, etc. that reflect the characteristics of local traditional architecture.	5	1-2, 1 point; 3-4, 3 points; 5 and above, 5 points. Note: The building area of each house is not less than 500 square meters.
	(7) Construction technology level of traditional buildings.	2	Unique construction technology, exquisite detail decoration, 2 points; Construction process and detail decoration level is average, 1 point.
	(8) The number of historic sites (referred to as city walls, arches, ancient towers, gardens, ancient bridges, ancient wells, ancient trees over 300 years, etc.) owned by towns (villages) that can reflect the typical characteristics of the town (village).	5	2, 1 point; 3-5, 3 points; more than 6, 5 points. (City walls, the proportion of well-preserved parts is greater than 75%, 5 points; 50% -74%, 3 points; 49% and below, 1 point.)

Index	The split and interpretation of the index	Weight	Specific evaluation criteria
6. Scale of historical streets	(9) Number of historical blocks with relatively complete preservation.	4	1-2 streets, 1 point; 3 streets and above, 4 points. (Note: The length must not be less than 80 meters. If there are 3 or more streets, the streets must intersect, otherwise the score will be halved)
	(10) Length of the longest historical block with traditional architectural landscape continuous.	4	300 meters and below, 1 point; 301-500 meters, 2 points; 501 meters and above, 4 points.
7. Landscape integrity, spatial pattern characteristics and functions in the core area	(11) Harmony degree between settlement and natural environment.	3	The natural environment of the settlement is beautiful, 3 points; the natural environment of the settlement is relatively good, 2 points; the natural environment of the settlement is average, 1 point.
	(12) Spatial pattern and functional characteristics.	3	The pattern of streets and lanes remains relatively complete, and traditional functions are still there, 1 point; The planning layout remains very complete, with obvious special functions (firefighting, water supply and drainage, anti-theft, defense, etc.) or can reflect the theory of planning layout characteristics, 3 points.
	(13) Size of core area	3	10ha and below, 1 point; 11-20ha, 2 points; 21ha and above, 3 points.
8. Historical authenticity of the core area	(14) Percentage of land area of existing historic buildings and their environment in the core area to the total land area of the core area.	8	59% and below, 1 point; 60-69%, 2 points; 70-79%, 4 points; 80-89%, 6 points; above 90%, 8 points.
9. Continuity of life in the core area	(15) Proportion of indigenous residents in the permanent population in the core area.	5	60% and below, 1 point; 60% -75%, 3 points; 76% and above, 5 points.
10. Intangible cultural heritage	(16) Number of traditional festivals, traditional crafts and special traditional customs.	2	1-3, 1 point; 4 and above, 2 points.
	(17) Poems, legends, operas, and songs that originated locally and are widely spread.	2	Spread across the country, 2 points; spread within a certain area, 1 point.
II. conservation measures		30	
11. Planning	(18) Preparation and implementation of conservation plan.	8	The plan has been prepared, 3 points; has been approved and implemented according to the plan, 8 points. If the conservation plan is not implemented and new damage is caused, 0 points.
12. Protection and restoration measures	(19) Percentage of historical buildings, cultural relics and historic sites in historical and cultural villages that have been registered and archived for protection.	10	50% and below, 1 point; 51% -80%, 5 points; 81% and above, 10 points. Among them, if the following information is not marked on the signboard, the score shall be halved (the information includes the name of the historic site, location area, construction year, building materials, restoration status, ownership of property rights, protection of the person responsible, etc.)
	(20) Public bulletin boards for protection, restoration and construction planning have been established.	2	A planning bulletin board has been built, 2 points.
	(21) Protective signs with reminders for residents and tourists.	2	If there are, it is counted as 2 points.
13. Guarantee mechanism	(22) Formulation of conservation management measures	2	Measures have been formulated, 1 point; officially promulgated, 2 points.
	(23) Special agencies and personnel	3	There are institutions, 2 points; the government has set up a multi-sector protection coordination agency, 3 points.
	(24) Percentage of funds used for protection and maintenance each year in the town's (village) annual construction funds	3	10% and below, 1 point; 11% -30%, 2 points; 31% and above, 3 points. (Note: The use of funds is limited to the town and village built-up area)

Annex II: Index system for Evaluation and Identification of Traditional Villages (Trial)

Translated by the author

1. Evaluation index system of village traditional buildings

Category	Serial number	index	Index splitting	Weights	Score criteria and interpretation
Quantitative assessment	1	Age	Construction date of the oldest building in existence	4	In Ming Dynasty and before, 4 points; in Qing Dynasty, 3 points; in the Republic of China, 2 points; from the founding of the People's Republic of China to 1980, 1 point.
			The major construction dates of traditional buildings complex	6	In the Qing Dynasty and before, 6 points; in the Republic of China, 4 points; from the beginning of the People's Republic of China to 1980, 3 points.
	2	Rarity	The grade of officially protected site	10	At the national level, 5 points (if more than one, 2 points will be added for each). Provincial level, 3 points (if more than one, 1.5 points will be added for each). City and county level, 2 points (if more than one, 1 point will be added for each). 1 point for those listed in the registration scope of the third general survey of cultural relics (0.5 point for each additional place exceeding 1). Full Score: 10 points.
	3	Scale	Floor area of traditional buildings	20	For more than 5 hectares, 15-20 points; 3-5 hectares, 10-14 points; 1-3 hectares, 5-9 points; 0-1 hectares, 0-4 points.
	4	Proportion	Proportion of land area of traditional buildings to construction land area of the whole village	15	More than 60%, 12-15 points; 40-60%, 8-11 points;
	5	Richness	Types of building functions	10	Residential, traditional business, defense, post station, ancestral temple, temple, Academy, tower and other types. 2 points will be given for each of the above, with a full score of 10 points.
Qualitative assessment	6	Integrity	Preservation of existing traditional buildings (groups) and their architectural details and the surrounding environment	15	<p>1. The original appearance of existing traditional buildings (groups), building details and even surrounding environment is well preserved, the building quality is good and the distribution is concentrated, the style is coordinated and unified, and there are still original residents living in the area, which keeps the activity of the traditional area, 12-15 points;</p> <p>2. The existing traditional buildings (groups), details and even surrounding environment are basically well preserved, with good quality and continuous distribution, and there are still original residents living in use, with few uncoordinated buildings, 8-11 points;</p> <p>3. Some of the existing traditional buildings (groups) collapsed, but the "skeleton" existed, some of the building details were well preserved, with features of a certain period of time, some of the surrounding environment was damaged, and there were many uncoordinated buildings, 4-7 points;</p> <p>4. Most of the traditional buildings (groups) collapsed, and some of the structural components and details remained, with certain historical and regional features, and the surrounding environment was seriously damaged, 0-3 points.</p>

Qualitative assessment	7	Aesthetic value of craftsmanship	The aesthetic value of architectural modeling, structure, material or decoration of existing traditional buildings (groups)	12	1. The existing traditional buildings (groups) have typical regional or national characteristics in modeling (appearance, shape, etc.), structure, materials (configuration comparison, fine processing, regional materials), decoration (wood carving, stone carving, brick carving, color painting, floor laying, door and window partition) with unique construction technology, exquisite architectural details and decoration, high technological aesthetic value, 9-12 Points; 2. Architectural shapes, structures, materials, or decorations have the general characteristics of the local domain, representing local culture and aesthetics, and some buildings have a certain decorative culture with high aesthetic value, 5-8 points; 3. Architectural shapes, structures, materials, or decorations do not have typical national or regional representation. Construction and decoration only reflect local vernacular features, with low aesthetic value, 0-4 points.
	8	Inheritance of traditional construction technology	So far, many traditional techniques are still used to build buildings for daily life	8	1. Up to now, traditional materials, traditional tools and crafts are still widely used in the construction of daily life buildings. The traditional building forms and styles adopted are in harmony with the traditional styles and features, with traditional taboos and other local customs, and become intangible cultural heritage. The technical level is typical of regional, 8-10 points; 2. Up to now, traditional materials, traditional tools and crafts are widely used in daily life building construction. The traditional building form and style are in harmony with the traditional style, with traditional taboos and other local customs. The technical level is regional representative, 5-7 points; 3. Up to now, the traditional materials, tools and crafts of regional nature are seldom used in the construction of daily life buildings, and the traditional building forms and styles adopted or coordinated with the traditional style to a certain extent. The construction features are of regional representativeness 0-4 points.

2. Evaluation index system of village location and pattern

Category	Serial number	index	Index splitting	Weights	Score criteria and interpretation
Quantitative assessment	1	Age	The formation age of the existing site selection of the village	5	Ming and Qing Dynasties and before, 5 points; Republic of China, 3 points; after the founding of the People's Republic of China, 1 point.
	2	Richness	Types of existing historical environment elements	15	Ancient river roads, commercial streets, public buildings, characteristic public activity sites, fortresses, gates, docks, pavilions, ancient trees and other types of historical environment elements. 2 points will be given for each type, with a full score of 15.
Qualitative assessment	3	Integrity of the pattern	Preservation of Traditional Village pattern	30	1. The village maintains a good traditional pattern, with a complete street and lane system, high utilization rate of traditional public facilities, close contact with production and life, complete and coordinated overall style, and no outstanding and uncoordinated new buildings in the pattern system. 26-30 points; 2. The village has basically maintained the traditional pattern, the street and lane system are relatively complete, and the traditional facilities are used in a living state, which has a certain connection with production and life. There are few uncoordinated new buildings in the pattern system, which does not affect the overall style. 16-25 points; 3. The village retains a certain centralized and continuous pattern, maintains a relatively complete skeleton system, and can see the original street and lane system more completely. Traditional facilities are basically not used, and there are many new buildings in the pattern system that are not coordinated, affecting the overall style of the village. 6-15 points; 4. The traditional area maintains a small amount of traditional basic framework system, which can barely see the original street system. The traditional facilities are not used at all. There are many new buildings in the traditional area that are not coordinated, and the style is very chaotic, 0-5 points.

	4	Scientific and cultural value	The scientific, cultural, historical and archaeological values reflected in village location, planning and construction.	35	<p>1. The site selection, planning and construction of villages have typical regional, specific historical background or national characteristics, and the villages and surrounding environment can obviously reflect the profound cultural or historical background contained in the site selection, with high scientific, cultural, historical and archaeological value. 25-35 points;</p> <p>2. The site selection, planning and construction of villages have certain regional and cultural value. The villages and surrounding environment can reflect the profound cultural or historical background contained in the site selection, with high scientific, cultural, archaeological and historical value. 15-24 points;</p> <p>3. The location, planning and construction of the village maintain the common traditional life characteristics of the region. The village and surrounding environment barely reflect the profound cultural or historical background contained in the location. The scientific, cultural, historical and archaeological values are common. 0-14 points.</p>
	5	Coordination	There is a harmonious relationship between the village and the surrounding beautiful natural landscape environment or traditional rural scenery	15	<p>1. The surrounding environment of the village is well maintained and harmonious with the village, clearly reflecting the original site selection concept, 11-15 points;</p> <p>2. The surrounding environment of the village has changed to some extent, but it is relatively harmonious with the village, which can reflect the original site selection concept, 5-10 points;</p> <p>3. The surrounding environment of the village has been seriously damaged, which conflicts with the village construction and can hardly reflect the original site selection concept, 0-4 points.</p>

3. Evaluation index system of intangible cultural heritage carried by villages

Category	Serial number	index	Index splitting	Weights	Score criteria and interpretation
Quantitative assessment	1	Rarity	The grade of intangible cultural heritage	15	World level 15 points; national level 10 points; provincial level 5 points. (multiple items do not add up)
	2	Richness	Types of intangible cultural heritage	5	Provincial level, 1 point for each item; national level, 2 points for each item. Full Score: 5 points.
	3	Continuity	Continuous inheritance time up to now	15	It has been passed on for more than 100 years. 15 points; continuous inheritance for more than 50 years. 8 points.
	4	Scale	Scale of heritage activities	5	The whole village participated. 5 points; more than 30 people. 4 points; 10-30 people. 3 points; less than 10 people. 2 points.
	5	Successor	Whether there is a clear representative inheritor	5	Yes, and above the provincial level. 5 points; yes, and above the municipal level. 3 points; none, 0 point.
Qualitative assessment	6	Liveness	Inherited situation	25	1. Good inheritance with inheritance vitality, 25 points; 2. General inheritance without special management, 18 points; 3. Endangered without vitality, 10 points.
	7	Dependency	The dependence of Intangible Cultural Heritage related rituals, inheritors, materials, crafts and other practical activities on the village and its surrounding environment	30	<p>1. The contents of production materials, processing, activities and their space, organization and management, and process inheritance related to the heritage are closely related to the specific material environment of the village and cannot be separated, 26-30 points;</p> <p>2. The heritage activity space, craft inheritance and village space are interdependent to a certain extent. The activity organization is closely related to the villagers and has folk management organization, 16-25 points;</p> <p>3. The organization of heritage activities and inheritance of crafts are closely related to villages, which are the common characteristic heritage of the local area, with representativeness, 6-15 points;</p> <p>4. The heritage can be kept independent of the village, 0-5 points.</p>

Annex III: Nomenclature

Chinese name	English abbreviation	English name
中国历史文化名城	CFHCC	Famous Historical and Cultural Cities of China
中国历史文化名镇	CFHCT	Famous Historical and Cultural Towns of China
中国历史文化名村	CFHCV	Famous Historical and Cultural Villages of China
中国传统村落	CTV	China Traditional Village
中国景观村落	CLV	China Landscape Village
中华人民共和国文物保护法		Cultural Relics Protection Law of the People's Republic of China
建设部	MOC	Ministry of Construction of the People's Republic of China
财政部	MOF	Ministry of Finance of the People's Republic of China
住建部	MHURD	Ministry of Housing and Urban-Rural Development of the People's Republic of China
文化部	MOCU	Ministry of Culture
国土资源部	MLR	Ministry of Land and Resources of the People's Republic of China
中国营造学社	SRCA	Society for Research into Chinese Architecture
国家文物局	SACH	State Administration of Cultural Heritage of the People's Republic of China
历史文化名城名镇名村保护条例	RPFHC-CTV	Regulation on the Protection of Famous Historical and Cultural Cities, Towns and Villages
中华人民共和国国家标准：传统村落保护与利用（征求意见稿）	GB-PPAV	PRC National Standard: Protection and profit of ancient villages" (draft for comments)

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