Heritage and Evolution of a Hakka Natural Village from the Perspective of Sustainable Development — Case Study of Tangxia Village, Guangzhou City

Shan Chen¹ and Hua Huang²,*

¹ School of Architecture and Urban Planning, Shenzhen University, Shenzhen, 518061, China
² HMD (Shenzhen) International Engineering Consultancy Corp. Ltd, Shenzhen, 518000, China

*626480399@qq.com;

Abstract. At present, the decline and disappearance of natural villages are widespread phenomena in China, with the appearance of problems such as one side of a thousand villages that are not conducive to the sustainable development of villages. China has a vast territory, and natural villages vary greatly in different regions. This study focuses on Hakka natural villages in Zengcheng district, Guangzhou city, Guangdong province. Taking Tangxia Village as an example, this study examines the heritage and evolution of a Hakka natural village space with reference to village site selection, homestead division, residential form, and public space. Several aspects that are not conducive to the sustainable development of villages are summarized in the paper, such as unreasonable site selection and homestead division, decline and vacancy of old buildings and low efficiency of new houses, and disappearance of the traditional style, etc. Comprising the largest proportion of villages in China, to a certain extent the development of natural villages determines the direction of sustainable development of the country’s rural areas. In order to explore the sustainable development path of natural villages, we must fully respect the local traditional culture and living customs, and the government, professionals and local residents should work together to maintain the lasting vitality of these villages.

1. Introduction
The concept of sustainable development appeared in the context of environmental concerns in the World Charter for Nature (UN, 1982), and was primarily an ecological concept[1]. The goal of sustainable development is to strike a balance between the needs of the environment, society and economy in order to maintain a quality standard of life for both present and future generations[2]. From the perspective of sustainable development, there are many problems that are not conducive to the sustainable development of China’s villages[3]. After several decades of development, China has realized significant achievements in urbanization, with the country’s urbanization rate having increased from 17.92% in 1978 to 60.60% in 2019, making China become a country with fastest urbanization[4]-[5]. In this process of rapid urbanization, great changes have taken place in China’s rural areas. On one hand, there has been a very rapid disappearance of villages: between 2000 and 2010, the total number of natural villages in China decreased sharply from 3.63 million to 2.71
millions, approximately 900,000 villages have disappeared[6]. The reasons for this are diverse, including rapid urbanization processes, the impact of relevant policies, the transformation of production modes, etc. For example, the policy of village relocation and combination has directly led to the disappearance of villages, while the massive transfer of the labor force to cities has resulted in the ‘empty-nest’ phenomenon. On the other hand, traditional rural housing is gradually being replaced by a large number of self-built houses with no characteristics, and the phenomenon of “thousands of villages are almost same” seems to be everywhere. In short, villages in China are undergoing decline, which is not conducive to their sustainable development[7]-[8].

According to the forms of building in Chinese villages, the latter can be divided into three types: traditional villages, professional intervention villages and natural villages. The traditional village refers to villages that emerged at an early stage, with rich cultural and natural resources, and those have certain historical, cultural, scientific, artistic, economic and social value, and should thus be protected [9]. In order to maintain such villages and avoid their disappearing in the process of rapid urbanization, some of them have been listed as “China historical and cultural villages”, protected by the government [10]-[11]. A professional intervention village refers to villages with unified planning, design and construction [12]. Against the background of the “beautiful village”, increasing numbers of professionals are becoming involved in rural construction [13]-[14]. Natural villages refer to those that have certain historical and cultural value, but not to a great extent, and that are not protected by government or with professional designers involved. The architecture in such villages is built spontaneously by residents [15]. According to the climate conditions, local customs, residents’ living habits, construction level, and economic conditions, the residents choose the location and construction mode of their housing.

Most of the existing research focuses on traditional villages and professional intervention villages, with topics such as how to enable the survival and protection of traditional villages, and how to plan and design the “beautiful village” [16]. While the study of natural villages is relatively scarce, growing numbers of scholars have recently begun paying attention to them [17]. Natural villages account for the largest proportion of villages in China and form the basis of the country’s rural style. The current construction mode of natural villages seems far away from that of traditional villages. The analysis of the development of natural villages may be seen as helpful in order to identify their internal development logic and the problems they are facing, and find a direction for these villages’ sustainable development.

Thus, the goals of the current study are twofold: (1) to analyze the development of the location of rural housing, homestead division, architectural form, and public space in a Hakka Natural village in Guangzhou, and (2) to explore the problems that are unfavorable to the sustainable development of natural villages and put forward recommendations for their development.

2. Inheritance and evolution of natural village space

2.1. Study Area

China has a vast territory, and natural villages vary greatly in different regions. This study focuses on Hakka natural villages in Zengcheng district, Guangzhou city, Guangdong province. Zengcheng is an area inhabited by Guangfu and Hakka Clans. During the transition from the Ming Dynasty to Qing Dynasty, Hakka people migrated from the east of Guangdong and other Hakka area to Zengcheng on a large scale, and took along Hakka Weilong houses, which was the main form of their dwellings in the original area. The economy of Guangzhou is relatively developed, and the region’s natural villages have changed greatly in the process of rapid urbanization. The phenomenon of “thousands of villages are almost same” exists in Hakka natural villages, but traditional Hakka Weilong houses and housing built in different period can also be found in it [18].

Weilong houses are usually built with hills at their rear and half-moon-shaped water pools or spacious sites in front. Weilong houses can be seen as a combination of house, fort and family ancestral hall in the shape of courtyard. The central part of Weilong houses is the family ancestral hall,
both sides of which execute residential functions. The village usually consists of one or several dragon houses. People of the same family name often live in one Weilong house.

This research took Tangxia village in the southwest of Zengcheng district as a case study. Tangxia village is a medium-sized village with housing built over different years. Many young and middle-aged villagers work in the city, and most of the people living in the village are elderly people and children. Elderly people are unable to take care of a large area of land. Some villagers rent the land, areas of litchi forest, etc., to outsiders for cultivation and care, leaving a small amount of land for daily vegetables. At the same time, the older houses in the village are rented to outsiders. These are common phenomena of Hakka natural villages. Therefore, Tangxia Village may be seen as a typical and appropriate case study by which to analyze the development of Hakka villages. (Figure 1)

![Figure 1. Location of Tangxia village](image1)

![Figure 2. Site selection and homestead division in different periods](image2)

2.2. Site selection and homestead division

The spontaneous growth of villages is often accompanied by changes in family life cycles, the reproduction of family members, the growth of children and the separation of families. In this process, the self-organized construction of natural village houses, including site selection, homestead division, changes in building forms and building materials, etc., drives the growth and change of the whole village.

Like many natural villages, Tangxia village has no professionals involved in its planning or design. Instead, the villagers spontaneously select the location and divide the homestead, and carry out the housing construction. Based on the analysis the fabric of Tangxia village, four types of site selection and homestead division could be found, as follows:

(1) Stage I, site selection of Hakka Weilong houses. The original Hakka Weilong houses were built near hills and faced the East from the West. Although there are no half-moon-shaped water pools in front of Weilong houses, there is a spacious site in front of them. All residents under one family name live in one Hakka Weilong house, and there is no division of the homestead within it.
Stage II, site expansion in the 1970s-1980s. There exists a fish-bone texture in the west of the Weilong houses. In this period, the original space on both sides of the Weilong houses could not meet the demand for population growth. Residents began to expand their land use to the east of Weilong houses, and emphasize the relationship with the residential sections. The gables face Weilong houses, and the homestead is arranged in the north-south direction. The residential space in the north-south direction is about 3-5m. This distance was suitable for Adobe brick houses built in 1970s-1980s, but became narrow for rural housing built since 2000 because residents prefer to grow the second floor 1.5m, thus making the distance in the north-south direction too small. There was no clear homestead division in the early days of this period, and several households shared one adobe brick building. In the late days of this period, the land was divided into homesteads, with there being one homestead per household.

Stage III, site expansion and division of homestead by square grids since the 1990s. In this period, the original homesteads could not meet the needs of population growth and the improvement of residents’ living standards. Residents thus looked for new sites around the original construction land as homesteads. Due to the lack of professional intervention, residents adopted the conventional method of dividing the base into square grids, with the front and back spaced out by 4m, the left and right by about 1m, and the homestead totalling about 80 square meters. However, the common practice of the house was to grow the second floor 1.5m, making the distance between the front and back of the house only about 2.5m. Residents selected their homesteads by drawing lots, with one homestead per household. Such homestead division was quite different from the original village texture.

Stage IV, independent homesteads scattered around the village, with some time overlap with stage III. Some residents were not satisfied with the division of residential space of the original homestead, and built houses on their own land around the village, being especially more inclined to build houses close to Village Road 328. (Figure 2)

### 2.3. Residential form

(1) Hakka Weilong houses

Tangxia village is a traditional Hakka village. There are three Hakka Weilong houses with hills at their rear in the village. When the population increased, the living function of Weilong houses extended to both sides. Through an analysis of Hakka Weilong houses in Tangxia village, it can be seen that there are no spaces for growth. The ancestral hall of Hakka Weilong houses is maintained regularly and well preserved. As the Hakka Weilong houses cannot meet their residents’ current needs, few people live in them at present, and some parts have collapsed. (Figure 3, 4)

| Structure                          | Material                                    | Roof form        | Number of floors | Form of space organization          |
|------------------------------------|---------------------------------------------|------------------|------------------|-------------------------------------|
| Hakka Weilong houses               | Brick wood structure                        | Adobe brick, clay brick, wooden doors and windows | Sloping roof | People with one family name share a Weilong house |
| Adobe brick houses built in 1970s-1980s | Brick wood structure                        | Adobe brick, clay brick; wooden doors and windows | Sloping roof | Several households share a building     |
| Rural housing built in 1990s       | Brick concrete structure/ Frame structure    | Clay brick; no finish, mosaic finish; iron doors and windows | Flat roof   | One household per house                |
| Rural housing built since 2000     | Frame structure                             | Clay brick; ceramic tile finish, aluminum alloy/plastic steel doors and windows | Flat roof; Four-slope roof (foreign house style) | 2-3 floors per house                |

It is rainy in Guangdong. Hakka Weilong houses adopt a sloping roof and a brick and wood...
structure, with stone for lower half of the wall and adobe bricks for the top half, with wooden beams covered with green tiles. Such a construction method is not firm and requires regular maintenance.

(2) Adobe brick houses built in the 1970s-1980s

In the 1970s-1980s, the original space on both sides of the Weilong house could not meet the demand for population growth. Residents began to build adobe brick houses on the east site of the Hakka Weilong houses. Although the form of adobe brick houses does not completely adopt the form of Hakka Weilong houses, it continues its residential aspect. Adobe brick houses continue to use a single-layer slope roof, and brick and wood structures for construction, similar to the building materials and structural forms of Weilong houses. The use of the space use has also been continued. Several families share a building, and different rooms belong to different families. The toilet and kitchen are separated from the residential part, which brings inconvenience to the residents. (Figure 5,6)

![Figure 3. Plan of Weilong houses & adobe brick houses built in 1970s-1980s.](image)

(3) Rural housing built in the 1990s

In the 1990s, with the improvement of the residents’ economic conditions, changes in the way of life and production, as well as advances in construction technology, a large number of rural houses were constructed in a new mode. The residents would no longer share one building with several households, but each household gained its own homestead. Great changes also took place in terms of the architectural form. The housing changed from having a sloping roof to a flat roof. There is mainly
a single floor in this period. The toilet and kitchen are no longer separate from the housing. Brick concrete or frame structures are used, instead of brick and wood structure. The walls are made of clay brick, with cement or mosaic facades, and the doors and windows are mostly made of iron. (Figure 7)

Figure 7. Rural housing built in 1990s

Figure 8. Rural housing built in 2000s

Figure 9. New house built in 2010s

Figure 10. Plan of rural housing built in 2000s

Figure 11. Rural housing of Tangxia village in different period

During this period, a large number of buildings were built that continued the construction mode of the previous period in terms of texture, but changed significantly in terms of the architectural form, architectural structure, building materials and spatial organization form.
Since 2000, more rural housing has been built with flat roofs and 2-3 floors. According to the needs of residents and local customs, the layout of building functions is implemented by the residents and construction team. The building function is better than that of the previous period, with a double living room, multiple bathrooms, a large kitchen with two kinds of stove – a firewood and a gas stove. The housing continues to use a frame structure, and the enclosing structure and decoration materials are more advanced. The houses are finished with ceramic tiles and aluminium alloy doors and windows.

In recent years, due to the fact that villagers’ economic conditions have improved, and that urban residents’ living habits were absorbed in urban work, the urban housing form has appeared in Tangxia Village, such as copying the form of the urban villa, using foreign architectural style like the four-slope top and column type, etc. This marks quite a different construction mode from the traditional architectural style. (Figure 8-10) (Table 1)

2.4. Old housing replaced by the new
Using Google map to compare the satellite images of Tangxia village in 2010 and 2019, the disappearance of old houses and the construction of new ones can clearly be seen. (Figure 11) (1) Part of Hakka Weilong houses collapsed/disappeared. There are not a few houses collapsed in the past 10 years. Currently, there are few people living in the Weilong houses. The residents have chosen these sites to build new houses, and few people have repaired the collapsed houses. (2) New residential buildings have emerged on the land far away from the village center (ancestral hall of Weilong houses). (3) Due to the poor construction quality and the functional layout, some adobe brick houses built in the 1970s and 1980s were demolished, and new houses were built on their original sites. With the process of old housing being replaced by the new, the village is growing, but the rural characteristics are disappearing. (Figure 12-13)

2.5. Ancestral halls as the core public space of the village
The ancestral hall of a Weilong house is the most special building in a Hakka village. The ancestral hall is the center of the village and the place to deal with various major affairs and worship. Although people have moved away from the Weilong house and the residential parts have collapsed due to their disrepair, the renovation and use of the ancestral hall by the residents continue. Clan and kinship are important ties for maintaining interpersonal relationships. No matter the residents who still live in the village or the residents who leave, they still come back for sacrifice rituals on important days. At the same time, the open space in front of the ancestral hall is also a place of public activity in the village, such as weddings and funerals. The public space in front of the ancestral hall has become the most frequent place for residents’ daily public activities. The government also set up a basketball court, table tennis table and fitness facilities for residents to use. (Figure 14)

3. Discussion: The dilemma of sustainable village development
Sustainable development emphasizes a balance between the economy, society and environment, and the maintenance of a quality standard of living for both present and future generations. Tangxia village
presents a state of residents’ self-organization and development. However, there are many aspects that are not conducive to the sustainable development of villages like this one.

1) Unreasonable site selection and homestead division. The distance between houses was too narrow in site expansion stages II & III, especially in stage II, causing poor ventilation and lighting in many rural houses (although this is quite common in rural areas).

2) Decline and vacancy of old buildings and low efficiency of new houses. There has been a continuation of the ancestral hall aspect of Hakka Weilong houses, and a decline in the residential part. Compared with the overall decline and disappearance of villages in other regions, the ancestral hall of natural villages in Guangdong still presents a more vital aspect due to the maintenance of its clan and blood force. The ancestral hall aspect often gathers together the strength of both the residents and the government for maintenance and repair. The residential part is not maintained, showing a declining process. Adobe brick houses built in the 1970s-1980s have a certain vacancy rate, and some of them have been replaced by new houses. Due to poor quality and unreasonable functional arrangements, such as the toilet and kitchen being separated from the residential part, only the elderly live in these houses, or they are rented to outsiders with poor economic conditions. It can be seen that in the near future, these houses may become vacant or increasingly be replaced by new ones. There is also a low efficiency of new houses: rural houses are generally built with 2-3 floors, but the living population is decreasing. Many residents work in the city. The houses are thus inhabited by the elderly and children, with residents returning to the village only during holidays.

3) Disappearance of the traditional style. No matter the village texture or residential form, the characteristics of the traditional village form have disappeared over its decades of development. With regard to site selection and homestead division, links can be seen in terms of site expansions between stages I & II, but cannot be seen between stages II & III. Regarding residential form, the adobe brick houses built in the 1970s-1980s manifested a continuation of the shape of Hakka Weilong houses. Since the 1990s, whether relating to architectural form, structure or building materials, the relationship between the new housing and traditional housing is decreasing. Comparing the current rural architectural form with Hakka Weilong houses seems to show two totally different architectural forms.

In exploring the development process of the case study village, the current study demonstrates that the phenomena that are not conducive to the village’s sustainable development are widespread. However, it is hard to deny that its existence has a certain inevitability, such as the quality of traditional residential buildings, whereby the functional layout makes it difficult to meet the current residents’ demand for quality of life. At the same time, from the perspective of the development process of Tangxia village, certain factors can be seen that ensure the sustainable development of the village. For example, clans and consanguinity play an important role in maintaining the development of villages. Although Hakka Weilong houses and adobe brick houses built in the 1970-1980s have fewer and fewer residents, or have even collapsed, the Hakka Ancestral Hall and its surrounding areas remain a core space in the village, with villagers continually engaged in repair of the ancestral hall.

4. Conclusion
Comprising the largest proportion of villages in China, to a certain extent the development of natural villages determines the direction of sustainable development of the country’s rural areas. The factors that are not conducive to the sustainable development of natural villages require the intervention of government and professionals in order to reduce their negative impact, such as how to divide the residential base more reasonably, how to guide the architectural style to avoid the appearance of foreign architectural forms, etc. At the same time, it is more necessary still to support the factors conducive to the sustainable development of these villages, such as strengthening the ties between clans and consanguinity, and through the intervention of the government and professionals to strengthen the vitality of the village experience and attract people to return to the countryside, among other strategies. In order to explore the sustainable development path of natural villages, we must fully respect the local traditional culture and living customs, and the government, professionals and local residents should work together to maintain the lasting vitality of these villages.
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