Analysis on macro distribution characteristics of traditional settlements along the key line of Meiguan-Wujing ancient road

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Abstract. This paper makes a comparative study on the distribution characteristics of traditional settlements along the two key ancient roads in Nanxiong basin, including landform, language division, settlement elevation, settlement scale and the relationship between settlements. Through the comparison of various characteristics, this paper reveals the reasons of the differences between the two ancient roads.

1. Introduction
Nanxiong is located in the northeast of Guangdong Province. It borders Jiangxi Province. Meiguan-Wujing ancient road is an important transportation route connecting North and South China in history. The ancient roads brought the prosperity through the commercial and cultural exchanges, it also brought some war-torn immigrants. These immigrants came here to settle down along the ancient roads, forming a variety of Hakka settlements.

2. Introduction to key routes of Meiguan-Wujing ancient road
Meiguan ancient road starts from Nanxiong County, passes through Dayu ridge, connects Zhuji Town, Nanxiong, Guangdong Province and Dayu County, Ganzhou, Jiangxi Province. The length of the key ancient road in Nanxiong is 28.2km. It was an important ancient traffic line connecting the Pearl River and the Yangtze River. In the Tang Dynasty, Zhang Jiuling was ordered to dig the ancient Meiguan Road. The ancient road paved with bluestones is still exist nowadays. Wujing ancient road is combined with waterways. It also starts from Nanxiong county and along the upper Zhenshui river. In Wujing Town, it changes from waterway to land, connecting Xinfeng County in Jiangxi Province. The length of key lines is 63.8 km (50.6 km for waterway and 13.2 km for route. It was built in the Eastern Han Dynasty and the Three Kingdoms period. According to the annals of Nanxiong Prefecture written in Jiajing period of the Ming Dynasty, Wujing road leads to Xinfeng, Jiangxi Province. It takes two days by land and three or four days by water to reach Ganzhou river. It is North and South thoroughfare before Yu ridge. The two ancient roads are called Meiguan-Wujing ancient road, they intersect at Nanxiong county and the length is about 92 kilometers long.
3. Analysis of settlement distribution characteristics

The traditional settlements within 3 km along the two ancient roads were being selected for research. The selection principle have to meets two of the following three conditions: (1) the settlements included in the traditional villages or historical and cultural villages in Guangdong Province; (2) the traditional buildings in the settlements account for more than 60% in total; (3) being recorded by the historical materials such as Shaoguan gazetteer. After screening, there are 28 settlements along Meiguan ancient road and 49 settlements along Wujing ancient road meet the requirement.

3.1. Landform characteristics of settlements

The elevation of the northern and southern landform is higher than the middle. The northern and southern mountains are surrounding the intermediate basin. There are platforms, low hills and other geomorphic types in the southwest northeast trending strip-shaped Red Rock Basin[1]. Due to the limitation of natural conditions, the ancient road should be dug in the middle lowland of the mountain area, or goes through the hills and basins by using rivers as a part of the route. The settlements on Meiguan ancient road are distributed in two kinds of landforms: low altitude small undulating mountains (4, accounting for 14%); and low altitude denudation platforms (24, accounting for 86%). The settlements on Wujing ancient road are distributed in four landforms: low altitude small undulating mountains (9, accounting for 18%); low altitude medium undulating mountains (2, accounting for 4%); low altitude hills (1, accounting for 2%); and low altitude denudation platform (37, accounting for 76%). It can be seen that the settlements along the ancient road are relatively balanced and distributed along the ancient road. There is a positive correlation between the number of settlements and the distribution area of several landforms, which is the most in the low altitude denudation platform, followed by the low-altitude medium and small undulating mountains, and only sporadic in the low-altitude hills. Wujing ancient road has more settlement landform than Meiguan ancient road.

3.2. Language characteristics of settlements

Nanxiong belongs to the Hakka culture sub region. However, Nanxiong is a multi-languages region. It can be divided into four areas: Chengguan dialect (which is popular in the city center and suburbs), Shangfang dialect (represented by Wujing dialect), Xiafang dialect (represented by Hukou dialect, including Zhuji and Meiling), and Beishan dialect (passing in Baishun, Maofeng and other mountainous areas)[2]. In the three areas where Shangfang dialect, Xiafang dialect and Beishan dialect are used, most of the settlements were founded by the settlers, and the phonetic features are similar as hakka. Furthermore, Chengguan dialect, also known as Nanxiong dialect, formed its own language system. The local people who speak this dialect believe that it neither belongs to Cantonese nor Hakka[3]. Except for Beishan dialect area, the two ancient roads pass through the other three language areas. According to the quantitative statistics of the settlements in the language areas, there are 3 settlements in Chengguan dialect area and 25 settlements in Xiafang dialect area among the Meiguan ancient road, about 11% and 89% of the total; the number of settlements of Wujing ancient road in Chengguan dialect, Xiafang dialect and Shangfang dialect area is 15, 11 and 23, accounting for 31%, 22% and 47% respectively. It can be seen that most of Meiguan ancient road is dominated by the Xiafang dialect culture, Wujing ancient road connects three language and cultural areas owing to its long route.

3.3. Elevation characteristics of settlements

There are differences in the altitude of traditional settlements along the two ancient roads. Arrange the digital elevation map of settlements from north to south, it is shown as follows: the overall trend of the line is downward, and the altitude of the settlements along the two ancient roads is above 100 meters and below 250 meters. The average altitude of the settlements along Meiguan ancient road is 166 meters, and the difference between the maximum value and the minimum value is 137 meters. Among the 28 settlements, 5 settlements were above 200 meters, 13 settlements were in the range of 150-200
3.4. Scale characteristics of settlements
The scale of settlements along the ancient road is closely related to the available living resources. After measured the scale of the settlements, the elevation maps were generated as following. According to the data, there is no obvious linear correlation between the settlement scale and the altitude (elevation value) on the same ancient road. In addition, compared with the two ancient roads, the average size of settlements on Meiguan ancient road is 5.15 hectares, while Wujing ancient road is 5.90 hectares. As a result, the settlement scale along Wujing ancient road is generally larger than that along Meiguan ancient road.

3.5. Characteristics of spatial relationship among settlements
There are some similarities in the distribution of settlements along the two ancient roads. Their settlement forms can be divided into two types: beaded and agglomerated layout. The beaded type is shown as follows: settlements are distributed linearly in two or three pairs, and generally appear in the narrow mountain valley in the north of the ancient road; while in the middle of the basin, the settlement is forming as an agglomerated layout, showing that the distance between the settlements is slightly widened and evenly distributed in the same block. At the same time, in the basin, the settlement will also form a beaded layout by following rivers. Some settlements in Meiguan ancient road can be developed into centers and even become market towns (such as Zhuji town). These settlements are distributed along the ancient roads, and the distribution distance is between 1.6 km and 2.6 km. According to the reference, the location of some settlements among the Meiguan ancient road are just the same as ancient post shops. A map comes from the chorography of Nanxiong written in the Qianlong period of the Qing Dynasty shows that along the ancient Meiguan Road, there are eight post shops, like ‘Hongmeipu’ (now Meiling Village) and ‘Xiaolingpu’ (now Zhongzhan Village), ‘Huojingpu’ (now lingtan Village), ‘Lidongpu’ (Lidong Village), ‘Shitangpu’ (Shitang Village), ‘Shashuipu’ (now Zhuji Village), ‘Changjingpu’ (Changjing Village), Changtingpu (near Changjing Village). According to scholars’ research, the principle of ‘one post shop in ten miles’ had been setting since the Tang Dynasty. In Song dynasty, the government reinforce the management by adding more
4. Analysis and conclusions

4.1. Analysis on the formation of macro distribution characteristics of settlements

The formation of the macro distribution characteristics of these settlements along the ancient roads is related to two factors: one is the natural geographical factors; the other is the migration time and origin of immigrants. The following will analyze the causes of several characteristics:

1. Landform characteristics: in the traditional farming society, the construction of settlements is closely related to land and water resources. Wujing ancient road was excavated earlier than Meiguan. The families who moved from Wujing ancient road had a long history, such as Xintian village in the Western Jin Dynasty. Most of the pioneers who came first (Song Dynasty and before the Song Dynasty) came from the official families of Central Plains. They migrated with the whole family. Thus, they set up the villages in mountainous where have sufficient water and cultivatable land, and the locations of the settlement also can avoid the war. Later, the opening of Meiguan ancient road made the center of migration move to the West. In this stage, immigrants came from southern Jiangxi, Western Fujian, they migrate with several individual families. At the meanwhile, the valuable land resources was occupied already, the individual families can only reclaim the arid intermontane basins or hills. Later, thanks to the construction of local water conservancy facilities and the introduction of yellow tobacco planting technology suitable for red soil in the basin, the settlements along the ancient Meiguan road could develop and grow[5].

2. Language characteristics: multi dialect partitions can represent the cultural differences. The Shangfang dialect is similar to Wujing dialect. This area mainly inherits the culture of Central Plains, and the Family Name Festival is popular. Xiafang dialect area is mainly in Zhuji, Meiling. Different settlers were living in a harmony way and gradually forming the multi-surnames mixed habitation phenomenon. Chengguan dialect area contains Nanxiong County town and the surrounding. This area absorbs Guangfu, Hakka and other cultures, forming a multi-cultural place[5]. The culture along Meiguan ancient road is mainly composed of the Xiafang dialects, while the Wujing ancient road has three regional cultural characteristics.

3. Elevation and scale characteristics: the unique topography of Nanxiong basin causes the settlement elevation in the north of the ancient road is larger than the South; as mentioned in the previous chapter, Wujing ancient road accepted clan immigrants, while Meiguan ancient road accepted family immigrants. This is the reason why the average settlement scale of Wujing ancient road is relatively large.

4. Characteristics of spatial relationship among settlements: because the distribution of the settlements being restricted by the mountain, these settlements tend to distributed in the accessible areas. Therefore, the organization of the valley settlements is similar as the beaded shape; besides, in the south of the ancient roads, most of the villages distribute on the cultivatable land of the basins. Accordingly, they are loosely distributed in the same plot unit, which is conducive to occupying farmland separately. At this time, the river resources will have a linear traction force on the settlement distribution, which makes the settlement develop into a beaded layout conforming to the river. The settlement evolved from the post shop in Meiguan ancient road have a certain agglomeration effect. The reason is that business activities near the official post shop are under the government's control. The soldiers who patrol the post shop maintain the safety of the merchants and residents here. Therefore, it can attract more people to live in this area. Based on the stable and safe environment, the settlement could develop into a commercial street and market town. There is no rule of distance...
between the settlements formed by ferries and markets on Wujing ancient road. The reason is that in ancient times, the official didn't set up post shops at equal distance as Meiguan ancient road. The formation of ferries and markets was spontaneous. They distributed at the slow flow of river, water land transition, mountain foot flat or mountain valley. As time went by, the Zhenjiang river channel silted up, the traffic navigation capacity became weak, some ferries and markets also declined, so the agglomeration effect was weakened.

4.2. Conclusions
Through the comparative study on the macro distribution characteristics of traditional settlements along the two ancient roads from Meiguan to Wujing, it reveals that even in the same geographical unit, various natural and cultural conditions can also cause the distribution differences, which is the embodiment of the settlement diversities.

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