

Study on the morphological evolution of Chinese urban cemeteries in the process of rapid urbanization: a case study of *Nanjing*

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Abstract

As an important element of fringe belt, urban cemetery has been studied by urban morphologists to reveal the evolutionary process of urban expansion. In China, with the reform of housing system in 1990s, Chinese cities have entered into a period of mushroom growth. Urban cemeteries, which were originally located on urban fringe belts, have been surrounded by new accretions, and then, inevitably, migrated continuously under economic pressures and planning controls. Taking Nanjing as a case study, this paper aims to study the general migration characters of urban cemetery in China with the concept of fringe belt and then analyze its motivations in context of economy, policies, social psychology and cultural customs. The study reveals that the migration of urban cemeteries in China has shown diversity and complexity: as fixation line features, large urban cemeteries had limited the free urban expansion in the Oriental concept of life and death but, under the great pressure of the last round of urban development, they have been broken through and disintegrated, then formed and acted as elements of new fixation lines after migration. The gap of morphological study in urban cemetery between China and the West is mitigated in this paper.

Keyword: urban cemetery, fringe belt, fixation line, morphological evolution, Nanjing

Introduction

Cemetery in the urban has long been regarded as a neglected land property and rarely as an important aspect of morphological research. China's funeral system has undergone a long process of reform, with a gradual transition from burial to cremation starting in 1956. Spatially, there are some differences in the speed of policy implementation across the country. For Nanjing, which is the case of this study, the cremation rate basically has reached 100% by the end of the 20th century. In China, crematoria are often separated from cemeteries as an attached part of funeral parlour. Therefore, cemetery as defined in this paper refers to the place where bodies or ashes are buried, which varies in different times. 'cemetery' is widely distributed in cities, and it is the main space for the living to pay homage to the dead. It reflects the long-term changes in the space of life and death in the city. With the rapid development of society after the 1990s, the increasing demand for land has made the cemeteries gradually surrounded by urban areas face the pressure of relocation. In Chinese culture, where the presence of a stable burial place is considered important, a change is considered unlucky. People's respect for the dead makes that when cemeteries have to be developed, the government often chooses to carefully place the original remains and transfers them to other cemeteries at

a lower price. This is significantly different from the continuous accumulation of new tombs on the basis of the original cemeteries in the Middle Ages in Europe.

Urban cemetery is an important part of fringe belt in urban morphology. Referring to the definition of fringe belt by British geographer Conzen (first defined by H.Louis in 1936), fringe belt is a heterogeneous land use zone formed in urban built-up areas due to stagnant or relatively slow development. In the West, Kolnberger creatively linked the fringe belt with the cemetery form, described the change of the cemetery form in Europe, and pointed out that the cemetery can be used as the index fossil of the urban fringe belt (Kolnberger, 2018). Because of the special social background of China, the change of cemeteries is different from that of western countries. But few scholars have studied the diachronic nature of Chinese cemeteries under the background of morphology. This paper attempts to fill in the gaps in the research field.

Therefore, this paper mainly discusses two aspects. One is that the cemetery, as an element of fringe belt, is inaccessible and immobile due to people's psychological exclusion to "death" under the influence of the isolation between life and death in the eastern culture. Cemeteries have a close relationship with the concept of 'fixation line' (Carter and Wheatley 1979; Conzen, 1960); Secondly, under the great pressure of urban development, the fringe belt elements represented by cemeteries have undergone strong alienation, contraction and translation, and show different characteristics due to China's institutional factors. Taking Nanjing, an important historical city in China, as an case, this paper focuses on the period of rapid urban development at the end of the 20th century to explore the relationship between cemetery migration and the historical geographical pattern of urban morphology.

Methodology : Development of Nanjing City Cemetery

Nanjing is an important capital city in Chinese history. In the 10th century, the city wall was built on the north side of Qinhuai River to surround the south of the city, which formed the core of Nanjing (Yao, 2006) and leaved behind the plot features of relatively dense buildings and high-intensity utilization. Expansions on the north and east sides in the Ming Dynasty in the 14th century resulted in the well-preserved Ming city wall, which still plays an important role in the evolution of the urban form today. About 25 km away from the city was another earthen wall (Yang and Wang, 2008), which provided a more secure and extensive territory for the Ming rulers to surround the capital, and today only some parts of the city are left morphological marks. Before urban cemeteries were planned for the beginning of the 20th century, burial sites were located in the north-west suburbs of the city wall. Due to the relatively close distance to the densely populated southern area of the city, the Yuhuatai area outside the south gate also became an important centralized burial place (Compiling Committee for Nanjing Gazetteer, 1994).

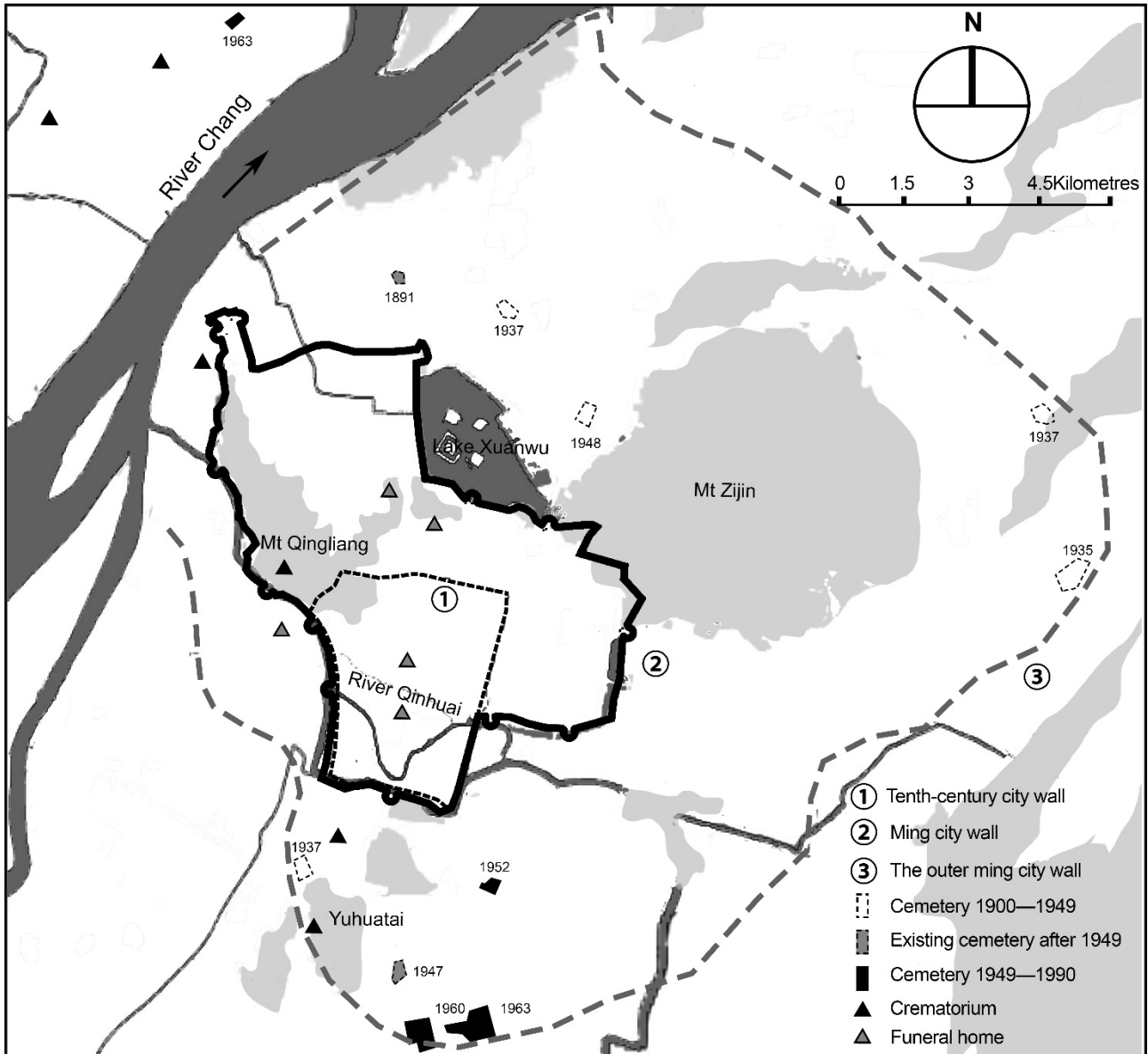


Figure 1. The distribution of large urban cemeteries and funeral service institutions in Nanjing before 1990s. Based on Compiling Committee for Nanjing Gazetteer (1994), (2009) and Hydrological and topographic map of Nanjing.

Before the founding of the People's Republic of China in 1949

China has a traditional idea of "being buried in the ground for rest", so Nanjing has been using earth burial for the dead in the long feudal society period (Compiling Committee for Nanjing Gazetteer, 1994). At that time, Nanjing was under the rule of the government of the Republic of China, and Land remains in private ownership. There were often a large number of spontaneously formed earth burial sites near the residential areas, so a unified funeral system was not formed. At the government level, cremation was only an appeal, burial was still the mainstream. In order to facilitate management, the government planned unified cemeteries on the east, south and north sides of the Ming city wall, and set up several funeral parlours engaged in funeral services in the city (Figure 1). At the beginning of the 20th century, there was still a large amount of unbuilt farmland on the northern and eastern areas of the city. It was not until the 1970s that the built-up area filled the whole area of the Ming Wall (Whitehand and Gu, 2017). At that time, the road

connecting the inner and outer city had not yet been built, so the large area between the Ming Wall and the outer City wall still existed as the fringe belt. The cemetery did not play the role of fixation line, but only strengthened the characteristics of the fringe belt of Nanjing. Later, due to the outbreak of the Anti-Japanese War and the collapse of the government of the Republic of China, many of these urban cemeteries were destroyed by war or abandoned because of no management.

1949-1990s

After the founding of the People's Republic of China in 1949, due to the increasingly significant shortage of farmland and backward funeral customs wasted manpower and material resources, Nanjing government in the 1960s carried out funeral reform, setting up five cemeteries in the city's southern suburbs and north of the Yangtze River (figure 1). In the mid-1980s, the Nanjing government strengthened the restrictions on ground burial. Funeral homes began to meet the needs of more crematoriums. The newly added crematorium sites were moved from the inner city to the edge of the city due to residents' aversion and air pollution.

With the restrictions of the Yangtze River in the west and Jubao mountain in the south, Nanjing's urban planning strategy was to develop from north to east (Compiling Committee for Nanjing Gazetteer, 2008), so until the 1980s, the southern suburbs were still large tracts of farmland and natural green space with less development intensity. In the planning of the cemetery, the vast hilly area in the south of the city was taken into account, so the fringe belt with single land use nature, sparse road network and huge land area was formed in the south of the Ming city wall. Another important phenomenon was that Nanjing entered the housing construction period at this time, and the large-scale reconstruction of the old city inside the Ming city wall basically cleared the original tombs and funeral facilities. The expansion of the city did not compete for the cemetery land for the time being, and the new cemeteries were moved outside the city wall but still surrounded by the second earthen city wall of Nanjing.

Cemetery planning period in 1990s

After the 1990s, on the social level, with the increase of population base, the death population increased (Figure 2). The capacity of the early built cemeteries was close to saturation, and the existing area could not meet the needs of people for cemeteries. Therefore, Nanjing Funeral Management Office has successively built 18 urban cemeteries. Meanwhile, in order to protect the farmland in the suburbs, the government stipulated that no new cemetery land area would be added for a period of time in the future.

On the other hand, at the policy level, the reform of the housing system had transformed the collective distribution of housing into free purchase. As a result, people's demand for commercial housing was increasing day by day, and the selling price was also soaring (Figure 3). The lucrative nature of the housing market had allowed property companies to develop abundant land on the edge of cities; The government

auctioned land through land finance to raise funds, thus driving the expansion of the city and forming a cycle of funds. The conflict between cemeteries and urban development was becoming more and more intense due to the large amount of housing construction.

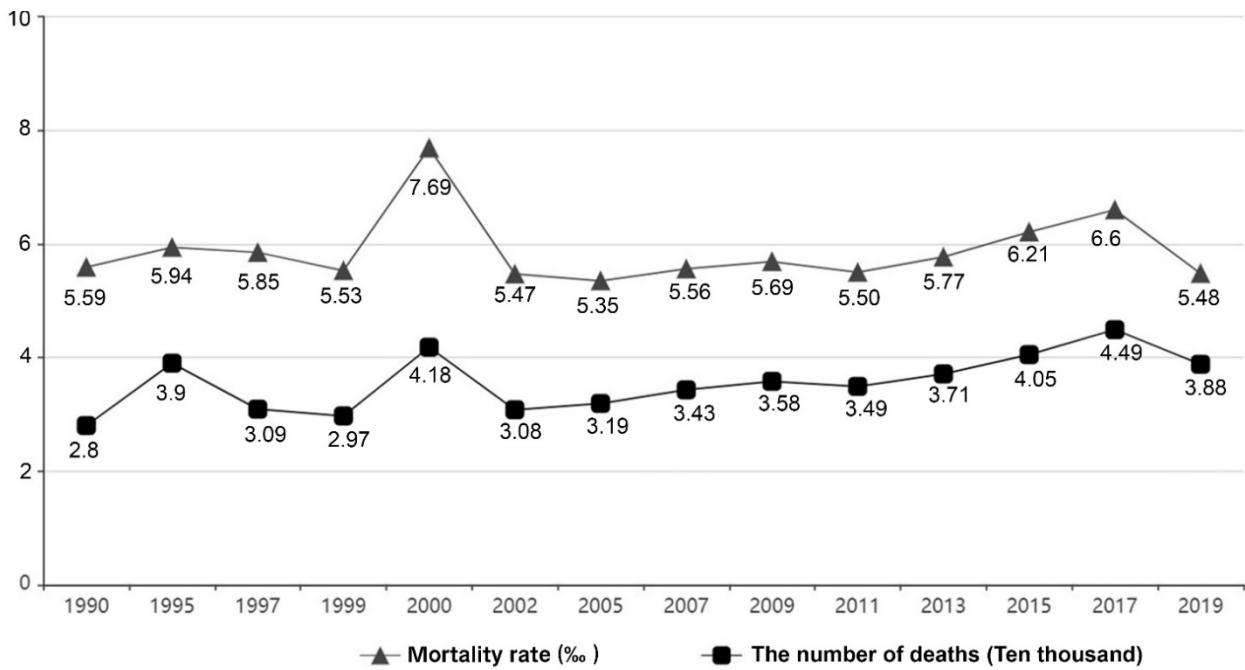


Figure 2. Mortality rate and death population trend in Nanjing since 1990s. Based on Nanjing Bureau of Statistics, Nanjing Statistical Yearbook.

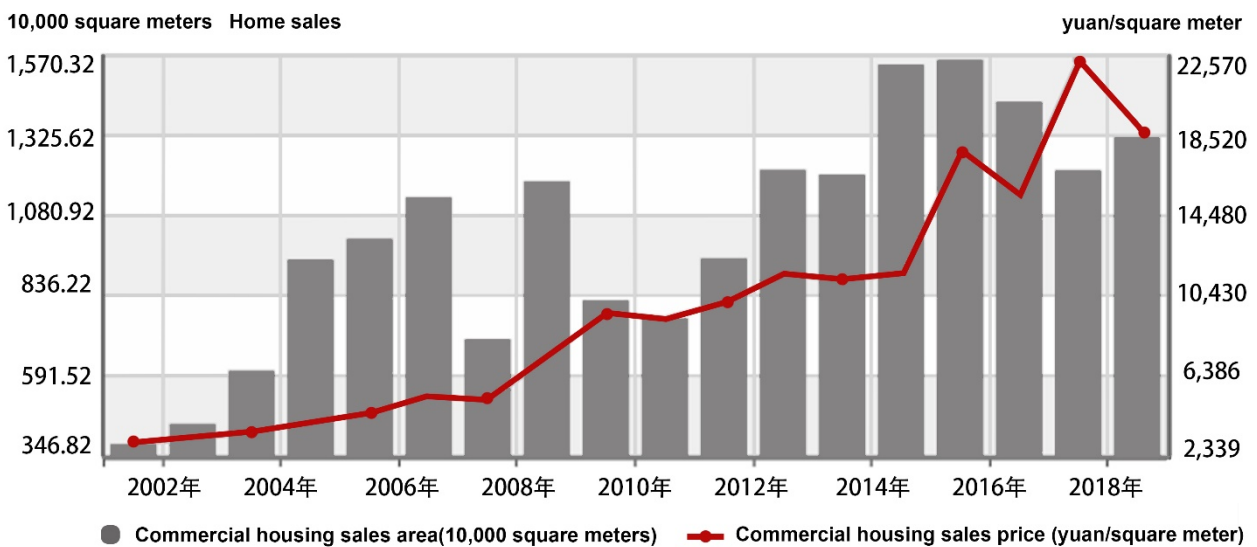


Figure 3. The price of commercial housing has been rising since the 1990s. Based on Nanjing Real Estate Yearbook.

Therefore, in order to reserve enough land for urban construction, the new planned cemetery withdrew from the scope of the second city wall, approached and gradually broke through the ancient natural barrier of the city -- Niushou Mountain and the Purple Mountain Range, and began to develop northward across the Yangtze River. Most new cemeteries at this time were located in natural mountains (Figure 4), which was due to the traditional geomantic view of ancient Chinese and the consideration that mountains are relatively stable and not easy to change. As a result, the cemeteries were once again at the edge of the city, surrounded

by a stronger fixation line, the Nanjing Ring Expressway, which was built later. The urban cemeteries, expressways and the vast land surrounding them formed the new fringe area of the city.

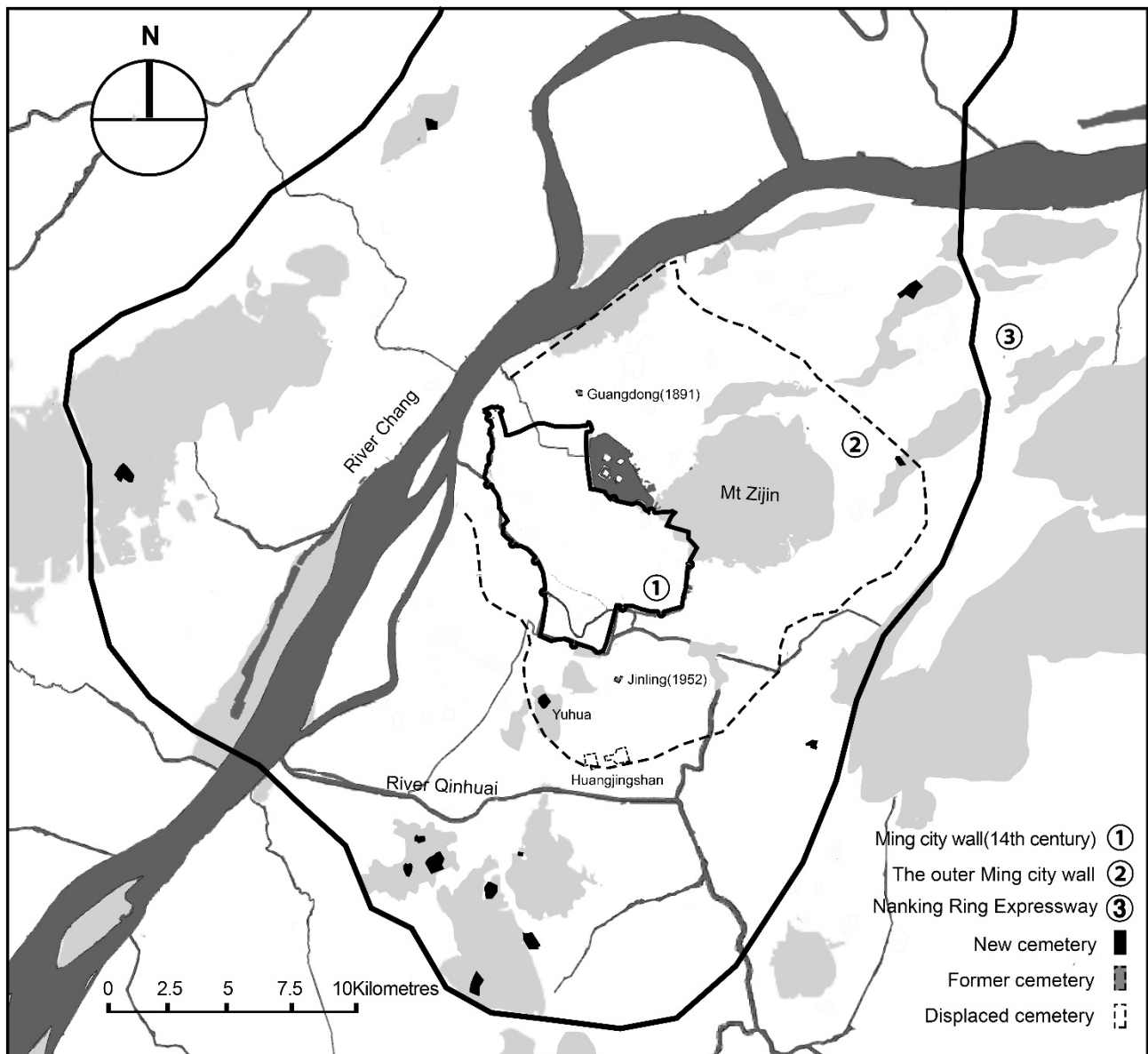


Figure 4. The distribution of urban cemeteries after 1990s. Based on Compiling Committee for Nanjing Gazetteer (1994) and Hydrological and topographic map of Nanjing.

In addition, for the cemetery built before 1990s, with the increasingly dense highway network connecting the southern towns, the rolling hills and dense water network outside the southern gate had been gradually eroded by urban construction. Land alienation occurred in the fringe belt areas along the highway, and the construction of housing and tertiary industrial land quickly filled up the open space between the road network. However, while land prices within the ring road (the original second wall) had skyrocketed due to its proximity to the main city, the area near the cemetery had developed significantly more slowly. This was due to the strong social psychology of isolation between life and death of the Chinese people. Therefore, cemeteries had actually acted the role of fixation line, restricting the balanced development of the city.

Since the existence of cemeteries greatly affected the construction of the main city, many newly built roads ran through the tombs, and the value of the surrounding land had been greatly reduced due to people's "NIMBY mentality" towards the tombs. Under the pressure of policy and capital, in 1996 the government departments issued a circular on the removal of tombs in key areas, stipulating that tombs on both sides of the ring road, new airport road, Weiba road, Ningliu road, Shanghai-Nanjing highway, Ningzhen highway, Ninghangzhou highway and Ninghe highway should be cleaned up (figure 5). This strategy promoted the radiating development of Nanjing city along the ring radial road network to the surrounding areas, and Nanjing was rapidly connected with its satellite towns.

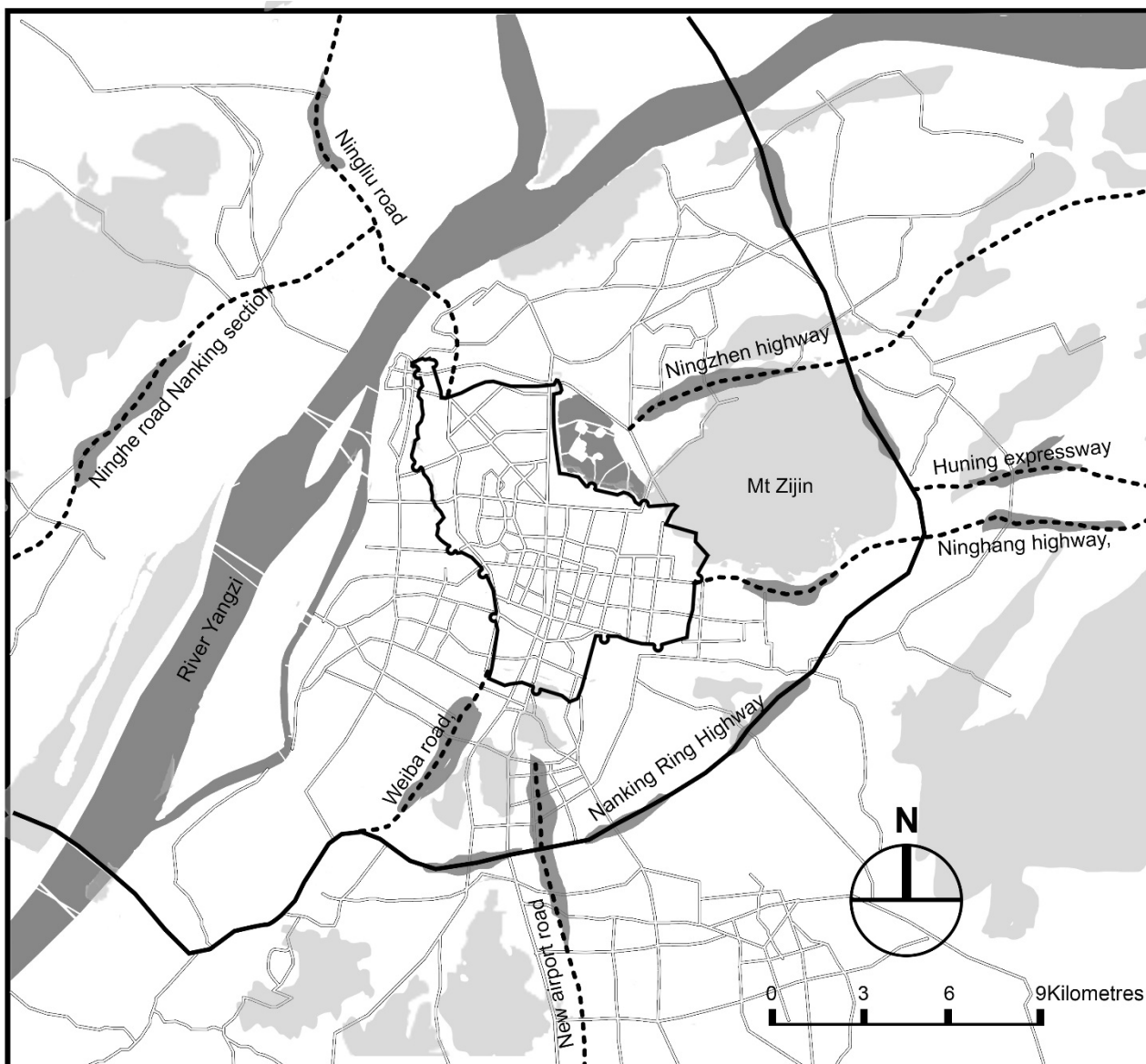


Figure 5. Range of tomb improvement works along key roads, 1996. Based on Nanjing Bureau of Urban Planning, Map of Nanjing in 1996.

21st century cemetery relocation period

In the 21st century, Nanjing's urban area was further integrated surrounding villages and towns, and the population boom accelerated the pace of housing construction. The southwest and southeast areas of the city that originally belonged to the countryside were transformed into Hexi New City and Jiangning Development Zone with high-rise residential buildings. The cemeteries left from the previous morphological period are only the four cemeteries within the scope of the highway in the southern suburb and several smaller tombs of overseas Chinese, vaguely hinting at the edge of the city before the 1990s. Its form had been limited to the increasingly crowded urban areas, and due to its special land use nature, it still continued to influence the transformation of surrounding plots.

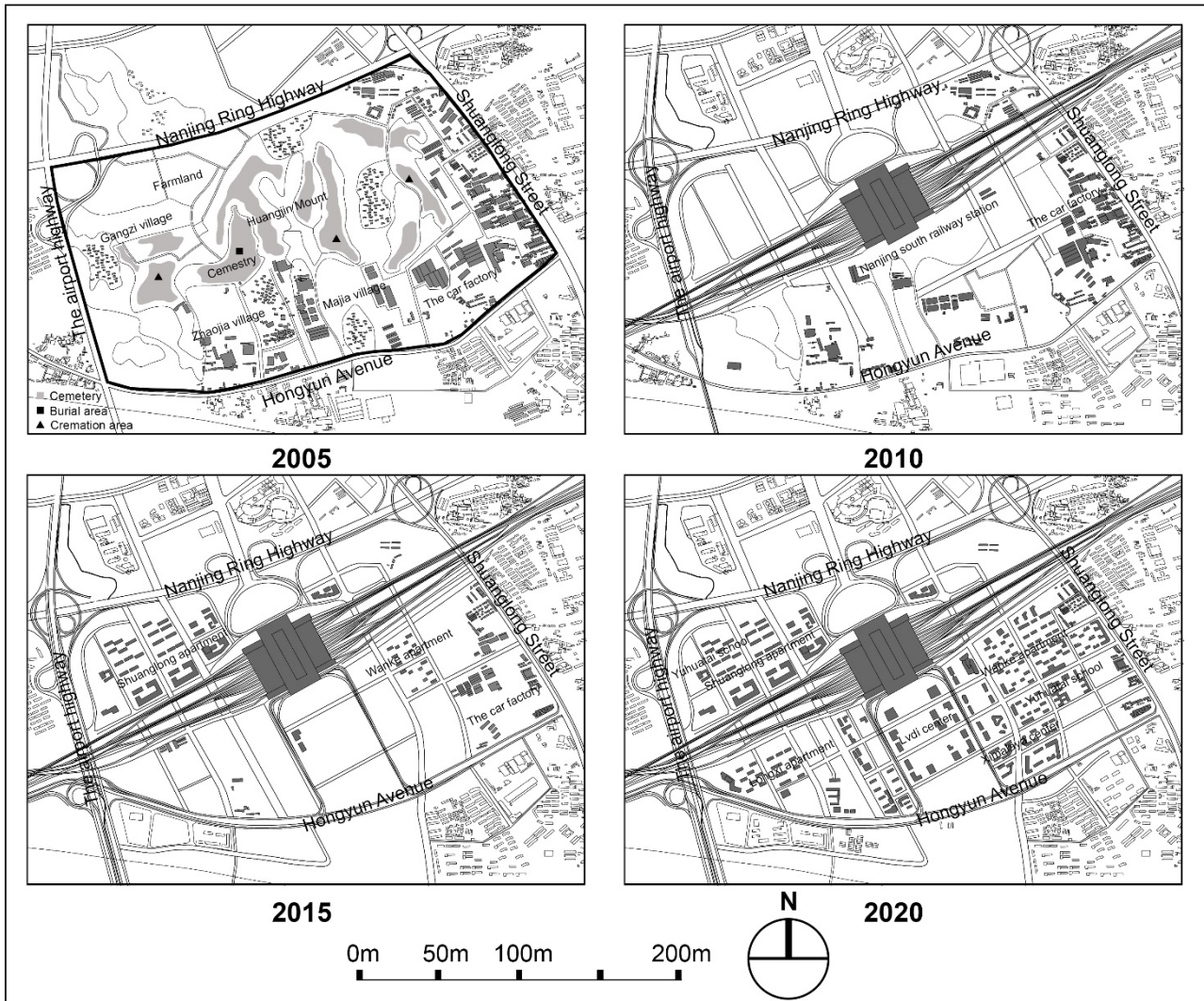


Figure 6. Morphology changes of Huangjinshan Cemetery before and after relocation from 2005 to 2020. Based on Nanjing Bureau of Land Survey.

Road construction after the 1990s had driven the rapid development of the city, leaving previously built cemeteries close to the city in danger of being uprooted. Most notable of all is the construction of the Nanjing section of the Beijing-Shanghai railway. In order to bring Nanjing closer to Shanghai, planners believed that the city would develop mainly to the southeast in the future (Compiling Committee for Nanjing Gazetteer,

2008). So, the new station was chosen near Huangjinshan, the site of one of Nanjing's largest cemeteries. Figure 6 shows the morphological changes of Huangjinshan Cemetery before and after relocation (Figure 6).

Huangjinshan used to be a collection of Huangjinshan, Gangzi Village and Flower Temple cemeteries. Due to the backside of mountain land, low land utilization rate, serious mass burial phenomenon and scattered zoning, the plot had no obvious morphological boundary. In 2005, the land parcel was in a complex land use state with a mixture of factory, village, mountain area and tomb area, with a wide range of unused land. In 2010, villages and cemeteries were basically bulldozed and moved elsewhere, leaving only the factory buildings in the southeast. Later, the railway Station Road was re-planned to build a grid of road skeleton connecting the surrounding roads. At the beginning of the construction of the new district, residential development first occupied most of the land, which was completed and put into the market at a very fast speed. And the remaining land was constructed for commercial office buildings with high commercial value. This shows that when the land use is released again, the fringe belt produces alienation phenomenon, which is absorbed by different functional land, usually residential buildings. Until now, there is still undeveloped land in the South Railway Station area, and its development intensity is far less than that of Hexi New City, which was planned and designed in 2002. The original morphological imprints of the cemeteries were lost in the replanning of the area.

It is important to note that not all cemeteries are eliminated in the urban expansion. There are still three early 20th-century cemeteries in the main city—Yuhua, Guangdong, Jinling overseas Chinese permanent cemetery, which remained within the first fringe without expansion for political and cultural reasons, and reached a relatively stable balance state with the present urban area. The nature of the surrounding land reflects that the cemetery plays the role of the urban fringe belt as an intangible fixation line (Larkham,1991) in the social psychology: industrial parks with slow construction, land still in storage, and a vast range of factories surrounding these "gloomy" and "difficult to use" lands. The collective phenomenon of NIMBY constitutes the special psychological state of Chinese society towards cemetery (Wu Y, Zhai G and Liao L ,2017).

Results and Discussion : Changes of cemeteries in Nanjing along the edge of the belt

Compared with the revival of cremation in the West after the Second World War, China did not begin the gradual reform of funeral and burial until the early 1960s. Due to the traditional concept of life and death in China, people were quite taboo about the city for the dead (Rossi,1981). Therefore, when the urban cemeteries are compared across cultures, there are significant differences between the East and the West. In Christianity, the close relationship between the church and the dead makes cemeteries become a regular part of people's life, and their morphological imprints exist for a long time in continuity. For China, cemeteries have become a taboo but indispensable piece of infrastructure that has always been kept at a discreet

distance and quickly eradicated when it conflicts with the interests of cities. Sociologically, cemeteries have been pushed away from densely populated built-up areas over and over again, and large plots of land left in urban areas often leave no significant morphological imprints (Figure7) .



Figure 7. Comparison of Huangjinshan Cemetery before and after relocation: No morphological marks were left. Source: Compiling Committee for Nanjing Gazetteer (ed.) (1994) Nanjing Civil Affairs Annals and Google.

In the process of studying the temporal and spatial evolution of urban cemeteries in Nanjing, the close correspondence between them and social and economic policies is very interesting. Infrastructure construction, housing commercialization and funeral reform in the 1990s, promoted the city to break through the historic city walls and natural mountain drainage belt toward outward expansion. Even in periods of resistance to development due to the influence of large urban cemeteries, they would be relocated through urban planning to re-establish the boundaries of the city. Until the cemeteries were stabilized in the mountains which were used as natural green land. It is also a common rule that the large cemeteries in Nanjing always rely on the mountains to maintain their stability and low disturbance to the city.

Conclusion

A city is a collection that accommodates people's life, and a cemetery is also a place for people to live after death. The neglect of cemeteries in urban form in China is contradictory to its important sociological significance. A major contribution of this paper is to combine the changes of cemeteries in urban morphology with China's special social system and culture, providing a common basis for comparison with other cultures, and trying to reveal different laws of change. The development of cemeteries in China presents two extreme aspects. Either, they were firmly in the boundary of the form constrained by the environment and never changed, and continued to play the role of fixation line. Or, driven by the power of the state and the pursuit of profit by capital, the cemetery was completely dismantled. This change was revolutionary and often

characterized by discontinuity in morphology. Thus, this paper fills the gap between the eastern and western research on cemetery morphology. In terms of the evolution of time, the information of Nanjing generally lacks the accuracy of the historical records of the city in western countries, and the research is still unable to focus on the specific boundary forms of cemeteries. However, in today's increasingly limited land use, the study on the changes of cemetery form is more conducive to us to deal with the relationship between the space of the dead and the city of the living. Cemeteries should become an important part of future urban morphology research.

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