

# Study on the Morphological Evolution and Characteristics of Mudu Town in Suzhou

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**Abstract:** The material form of traditional towns is both a product of space and time, reflecting a dynamic historical continuity. This study selects Mudu Town in Suzhou as the research subject, utilizing urban morphology analysis methods to divide history into several periods and explore the evolution of its spatial form. By summarizing the morphological characteristics, this research aims to grasp the development and transformation patterns of ancient towns amidst complex changes, providing directional guidance for the future protection and development of these historical towns.

**Keywords:** Historical Town; Urban Morphology; Natural Evolution

## 1. Introduction

Urban morphology refers to the relationship between the various elements within urban space and their interactions<sup>[1]</sup>. Unlike individual buildings, urban morphology typically evolves continuously based on existing structures, demonstrating significant continuity. Prior to modern urbanization, the development of towns was driven by natural conditions and local culture, forming the foundation for sustainable development and serving as an important symbol of urban culture.

In the context of economic development and urban renewal, the preservation and development of historical towns are particularly important. Mudu Town in Suzhou, a historically and culturally significant town in China, is currently facing the impacts of rapid urbanization, leading to dramatic changes in its ancient town morphology. By interpreting the spatial morphology evolution of Mudu Town and awakening historical memories, more scientific evidence can be provided for its preservation and development.

## 2. Research Subjects and Methods

Mudu Town, belonging to Wuzhong District of Suzhou, on the shore of Taihu Lake and at the foot of Lingyan Mountain, has a history of more than 2,500 years. The long history and cultural deposition make Mudu town become “the town of industry and agriculture, the place where merchants and businessmen gather, the place of material distribution, and the area of scenic tourism”, and its historical value and research significance are great.

The time scope of this paper includes ancient, modern and contemporary times, focusing on the evolution of Mudu's town form and its characteristics. The main sources of data for this study include relevant ancient literature and square records, maps, historical maps, historical satellite images and planning texts, as well as secondary data from previous studies.

In terms of data analysis, qualitative and inferential analyses will be mainly utilized to summarize the town morphology of Mudu at each stage. In addition, graphical illustrative methods will be utilized to characterize the morphology.

## 3. Factors Affecting the Development of Mudu Town

### 3.1 Natural conditions

Mudu Town is located in the Taihu Lake Basin, in the hilly area southwest of Suzhou, surrounded by

mountains, and is known as the "Treasure Bowl of Wuzhong". The town has a flat terrain. The Xujiang River flows from Taihu Lake into the ancient city of Suzhou, running through the town from east to west. The Xiangxi River originates from Guangfu Town and flows into the town to join the Xujiang River. There are also Xiashatang and Baita River flowing north through Fengqiao Town into the Grand Canal, and Zoumatang flows south to Dongshan Town. The crisscrossing rivers provide unique development conditions for water transportation.

### **3.2 Economic activities**

Mudu Town is fertile soil ponds, rich in natural resources, and rich in produce, and it was already a high rice production area in Suzhou in the Tang Dynasty. During the Ming and Qing Dynasties, agricultural output was stable, professional workshops gathered, handicrafts such as silk weaving and paper making were developed, and commerce flourished, which was the distribution center of materials for the surrounding townships and became an economically prosperous commercial port<sup>[2]</sup>. After the liberation, it gradually developed its industry and became the main industrial base of Wu County after the 70's. After it was selected as the National Famous Historical and Cultural Town in 2005, it also promoted the protection and economic development of the ancient town with tourism development. Economic activities have had a profound influence on the evolution of Mudu's society and the formation of the town's form.

### **3.3 Humanistic environment**

Mudu has been a scenic tourist area in Jiangnan since ancient times. During the Qing Dynasty, Kangxi made three southern tours and Qianlong visited Jiangnan six times. Every time he passed Mudu, he would abandon his boat and disembark, leaving behind numerous relics such as the Jiejia Pavilion, ancient imperial road, and imperial dock. The elegant living environment has made it a place for officials to retire and for literati to live, while also fostering the prosperity of ancient town culture and the gathering of people. From the eighth year of the Dazhong Xiangfu reign of the Song Dynasty (1015 AD) to the end of the Qing Dynasty, a total of 25 jinshi and over 30 juren were awarded. Famous figures include Fan Zhongyan, Yang Ji, Wu Kuan, Xu Fang, as well as modern figures such as Shen Shou and Yan Jia, who added a strong humanistic atmosphere to the ancient Mudu<sup>[3]</sup>. Throughout the ages, guests and poets have traveled extensively, leaving behind countless anecdotes, songs, and poems in Mudu.

## **4. Morphological evolution of Mudu Town**

Based on the analysis of the factors affecting Mudu's urban development in the previous section, this section explores the evolution of Mudu's urban morphology in combination with existing data and divides the morphological evolution into several periods.

### **4.1 Ming Dynasty and Before**

According to legend, during the Spring and Autumn Period, the King of Wu received a sacred tree from Yue as tribute and planned to build Gusu Terrace. "It took three years to gather materials and five years to complete it", so "wood piles blocked the river", and the name Mudu came from this. During the Three Kingdoms period, people gathered on both sides of the Xu River and trade developed. In the Northern Song Dynasty, Mudu Town was established. "Yuanfeng Jiuyu Zhi" records: "Mudu Town was established in the Northern Song Dynasty and belonged to Wu County. The town was named after Du". In the Ming Dynasty, Mudu Town had begun to take shape. There was a patrol inspection office in the town. It was a famous economic area in the local area, but it was often robbed by Taihu thieves. In the Jiajing period, an enemy tower was built to defend it. Xujiang River is the main passage between the ancient city of Suzhou and Taihu Lake. According to the map in the Jiangnan Economic Strategy by Zheng Ruozeng of the Ming Dynasty, there were waterways and landways running parallel from the ancient city through Mudu Town to Xukou. This earliest land route was also the prototype of West Street, Zhongshi Street and East Street in Mudu Town. During this period, settlements were spread out from a single point along both sides of the Xujiang River, and were distributed in a belt along the river, gradually forming a market. Xieqiao Bridge and Cuifang Bridge span Xiangxi River and Xujiang River, connecting the east and west banks and the north and south banks respectively.

#### 4.2 Qing Dynasty

In the Qing Dynasty, Mudu developed into a prosperous commercial port. In addition, Emperor Qianlong visited Mudu six times during his trips to the south of the Yangtze River. He built the Lingyan Mountain Palace, repaired the imperial wharf, and opened the north-south imperial road, which promoted the development of Mudu's industry and commerce. The painting "Prosperous Suzhou" depicts the grand occasion of Mudu Town during this period (Figure 1). The picture depicts "Slanting Bridge Dividing Water", one of the ten scenic spots of Mudu, shops on both sides of the north and south of the central market, and buildings such as the City God Temple, Suichu Garden, Fayun Temple, and Shecang.



Figure 1: Mudu Town Section in Suzhou Prosperous Map

During this period, the settlement of Mudu expanded significantly to the northwest, north and south. The town had a complete street system, with the river and street parallel as the main feature. Important roads were built close to Xujiang River and Xiangxi River, and were generally east-west and "Y" shaped, including Shantang Street, West Street - Zhongshi Street - East Street, Xiatang Street; secondary roads were north-south, including Xiashatang Street, Shulong, South Street, etc. Bridges connected roads and rivers to form a three-dimensional pattern of water and land interlacing. There were activities such as chatting and trading at the bridge pier, which was an important place for Mudu residents to interact, but large public spaces such as squares had not yet been formed. The houses were all built by the water, with courtyards as units, and the most basic form was a shop in front and a house in the back. Some comprehensive mansions were composed of several courtyards, mainly garden-style. Among them, Suichu Garden on East Street is the most famous, with three vertical axes, seven continuous courtyards on each axis, integrating multiple functions.

So far, Mudu Town, as a mature water-transportation commercial town, has basically established its form and pattern. The intersection of Xujiang River and Xiangxi River is the busiest and the central area of Mudu Town. The Xieqiao Bridge is the core landmark. The east is the commercial market area, the west is the rich mansion area, and the north and south are the common people area.

#### 4.3 Republic of China Period

In the early period of the Republic of China, landlords and gentry gathered in Mudu and invested in industry and commerce. Small factories such as mechanical rice mills and small power plants emerged, and capitalism sprouted. During this period, the settlement extended along the river and gradually expanded inward. The overall form expanded slightly, mainly concentrated in the area north of Zhongshi Street and south of Xiatang Street. The town center shifted from Xieqiao to Zhongshi Street. The street system was further improved and can be roughly divided into three levels: the first level is Shantang Street, West Street - Zhongshi Street - East Street in a "Y" shape, which is an important traffic road connecting many streets, alleys, river ports, and shops; the second level is Xiashatang Street, Shu Lane, South Street, and Cuifang Street, which are generally north-south, connecting the main roads, bridges and many houses; the third level is dozens of deep and winding alleys and lanes to meet the needs of residents to enter the house. They are relatively narrow, such as Zhu Lane, Taying Lane, and Sunjia Lane. With the development of land transportation, the Sumu Highway connecting the ancient city was built on the basis of the original imperial road on the north side of the town.

In addition to ordinary residential buildings, many literati and officials emerged during this period, inheriting and expanding the gardens and mansions of the Ming and Qing Dynasties. There are still more than 10 multi-courtyard mansions that can be verified, such as Feng Qionong's former residence, Yan's Garden, Shaoyu's former residence, Feng Guifen's former residence, etc. The layout and structure of these buildings are well preserved, generally with front halls and back halls, stone gate towers, fire-proof gables, and deep alleys.

#### **4.4 1950s-1970s**

After the founding of the People's Republic of China, Mudu Town seized the opportunity to develop industry, and production cooperatives and factories emerged. Most of the private gardens that remained in the Ming and Qing Dynasties were occupied by factories and warehouses and were almost destroyed. The river in the town had a reduced navigation capacity due to shallow riverbeds, encroachment of riverside houses, and silt blockage. In 1960, the main channel of Xujiang River was diverted to the south of Mudu Town, and an industrial development zone was formed on both banks of the eastern side of the town, which began to take shape.

During this period, the spatial form of the town changed slowly, mainly due to the continuation of the market and street pattern during the Republic of China period. Zhongshi Street and Dongjie Street were widened to meet the needs of the transition from pedestrian traffic to vehicle traffic; Cuifang Street was extended to the south, and the Mudong Highway connecting Dongshan Town was built. The improvement of road transportation level prompted the branch lanes to extend northward and connect with the Sumu Highway, and the settlement showed a trend of expanding northward.

#### **4.5 1980s-2000s**

After the reform and opening up, industry became the pillar industry of Mudu Town, and the urban form ushered in a substantial expansion, forming a new town in the north of the town. With the east-west Zhongshan Road (formerly Sumu Highway) and the north-south Cuifang Road-Jinshan Road as the axis, a large number of factories gathered on both sides of the road. Textile factories, machinery factories, printing and dyeing factories, agricultural tool factories, pharmaceutical factories, etc. were successively built. Large-scale, centralized commodity trading markets such as Mudu Mall, Leather Goods Market, and Trade Market appeared. Public buildings and commercial facilities such as cultural palaces, gymnasiums, shopping malls, bookstores, theaters, banks, and post offices were newly built on both sides of Cuifang North Road. In addition, service supporting facilities such as schools, government offices, and parks are constantly being improved. The town center moved northward, from Zhongshi Street to the commercial districts around Cuifang North Road.

With the demand for housing for population growth and the exploration of new living spaces, a new residential form "residential new village" emerged. This type of residential area has a neighborhood committee, and the residential area is planned uniformly. Each family builds their own houses on the allocated homestead. The overall distribution is neat, but the forms vary greatly from household to household. The ancient town area has been expanded and rebuilt on the basis of the original traditional settlement, and has basically retained its ancient and elegant original style. It can be said that industrialization dominated the spatial expansion of Mudu Town during this period.

#### **4.6 2000-Present**

Since 2000, the government of Mudu Town has conducted an in-depth investigation of the ancient town, compiled the "Mudu Town Historical and Cultural Town Protection Plan", formulated corresponding protection measures, and put forward the strategic policy of "protecting the ancient town and building a new district". In 2005, Mudu Town was selected into the second batch of China's historical and cultural towns, entering a new era of ancient town protection and historical and cultural promotion. The government invested in the construction of the restoration of famous gardens in the south of the Yangtze River, such as Bangyan Mansion, Gusong Garden, Yan Family Garden, and Hongyin Mountain House, completed the "three lines into the ground" of Shantang Street and the environmental improvement project connecting with Lingyan Mountain, and fully dredged the main rivers of the ancient town, Xiangxi and Xujiang River<sup>[4]</sup>. The residential houses in the core area of the ancient town were partially converted into commercial buildings, forming a historical commercial street, accommodation, and commercial villa areas. Under the cultural tourism economy, Mudu's tourism industry oriented to the ancient water town has flourished, and the ancient town has been given new connotations.

The morphology of each stage is shown in Figure 2:

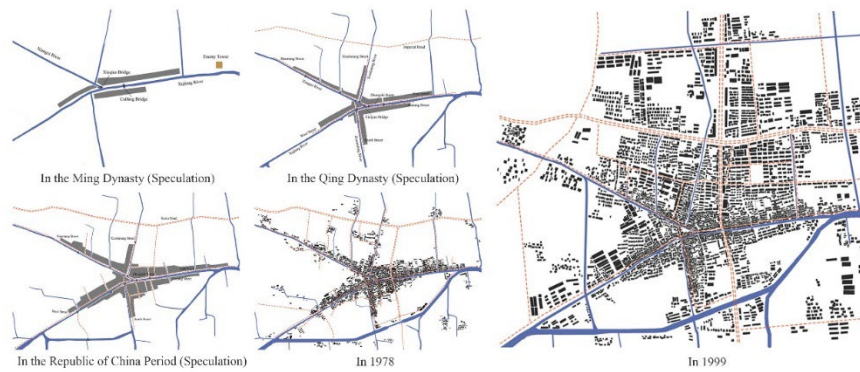


Figure 2: The morphology of Mudu Town in Different Periods

## 5. Characteristics of Mudu Town Evolution

The biggest feature of Mudu Ancient Town is that the town is built by the river and the streets are formed by the water. After the expansion of commerce in the Ming and Qing Dynasties and the expansion of industrialization in the 1980s, the current pattern was formed. In the process of the evolution of the morphology of Mudu Town, there are several characteristics:

(1) The water system has a shaping effect on the form of ancient towns.

The intersection of Xujiang River and Xiangxi River under the oblique bridge can be said to be the origin of Mudu Town and the core area of the ancient town. Looking at the entire evolution process, the convenience of river transportation and the commercial culture are the direct guides for the development of the ancient town along the river and the important driving force for the growth of the form. The water system dominates the main growth direction of the ancient town's form, forming a five-pointed star-shaped pattern in five directions. From a microscopic perspective, the shaping of the riverside streets by the water system was not done in one step. The spatial interaction between the river, streets, and houses has evolved over time. To this day, the diverse "river-street-house" interactions in Mudu Ancient Town are combined with multiple types. The jagged edges of the water system form a coastline with rich interfaces, the nodes along the coast are rich and varied, and the river space is well-organized and rhythmic.

(2) The form of residential areas has shifted from disorderly expansion to orderly construction.

From the Ming Dynasties to the 1970s, the development of residential houses in the ancient town was mainly affected by the water system topography. The shops facing the river side showed a relatively uniform and linear arrangement texture, but the inward expansion was disordered, showing a fragmented puzzle-like texture that squeezed each other. After the 1980s, with the development of transportation roads, the settlement form of "residential new villages" expanded along the road network, and the unified planning points also made the internal geometric characteristics more obvious. After 2000, the multi-story and high-rise residential buildings built in an orderly manner were more uniform and regular. Under the interweaving of the old and the new, disorderly expansion and orderly construction, Mudu Town has formed a residential pattern with diverse forms and multiple combinations.

(3) The street is the most stable element in Mudu Town.

As the most stable morphological element of the urban form, the street and lane system often retains the initial traces and influences the subsequent morphological growth. Even in the face of the transformation of the functions of nearby plots and the replacement of architectural forms, the road system has remained stable during the development of Mudu Town. The "Y"-shaped roads inside the ancient town have been functional since the Ming and Qing Dynasties. Even in the new town area, the main road Zhongshan Road has been developed step by step on the basis of the imperial road in the Qing Dynasty.

## 6. Conclusion

This paper discusses the evolution of the morphology of Mudu Town in Suzhou from ancient times to the present. Based on the analysis of the evolution of the morphology of Mudu Town and its

characteristics, the main conclusions are as follows: First, the overall morphological evolution of Mudu Town is carried out in a "gathering-expansion" manner. Before 1950, it was mainly distributed along the river, and after 1950, it developed northward to the present, forming a scene of common prosperity of the ancient town and the new town area. Second, the river transportation function is an important driving force for the formation and growth of Mudu Town. Under the influence of commodity trade, the "Y"-shaped street system was formed. This spatial pattern is the most important cultural context of Mudu Town and the support of the historical culture of the ancient town.

The significance of analyzing the evolution of historical town morphology is to reveal the historical development process, understand the evolution of towns in history and its influencing factors, and establish a "time and space perspective" for the protection of ancient towns. At the same time, it helps to identify important historical and cultural heritage in towns, provide a basis for the inheritance of urban culture<sup>[5]</sup>, and deepen the awareness of protecting the coordinated development and dynamic balance of natural environment and humanistic construction. On this basis, we will further explore protection paths, improve the spatial restoration of various areas, and promote the gradual and orderly development of ancient towns.

## References

- [1] Zhang Yingzi, Liu Jiaping, Zhao Shichen. *Study on the formation and evolution of basic urban form of Lhasa* [J]. *Urban Planning*, 2016, 40(05): 77-81.
- [2] Mudu Town Chronicle Compilation Committee. *Mudu Town Chronicle* [M]. Shanghai: Shanghai Academy of Social Sciences Press, 1999.
- [3] People's Government of Mudu Town, Wuzhong District, Suzhou City, edited by Wudi History and Culture Research Association. *Ancient Town Mudu*[M]. Shaanxi People's Fine Arts Publishing House, 2005
- [4] Wu Wei. *Research on the Renewal and Development Methods of Traditional Residential Communities in Historical Cities* [D]. Southeast University, 2006
- [5] He Yu, Wang Changsong. *Spatial morphological evolution of historical towns along the Grand Canal: A case study of Hexia Ancient Town in Huai'an*[J]. *Urban Development Research*, 2023, 30(02): 25-30.