

The Renewal Strategy for Ancient Residential Area in Small and Medium-Sized Cities Based on Field Research of Changshu City in China

Yun Zhang, Zhu Wang

Abstract—Renewing ancient residential areas is an integral part of the sustainable development of modern cities. Compared with a metropolis, the old areas of small and medium-sized cities is more complicated to update, as the spatial form is more fragmented. In this context, the author takes as the research object, the ancient town of Changshu City, which is a small city representative in China with a history of more than 1,200 years. Through the analysis of urban research and update projects, the spatial evolution characteristics and renewal strategies of small ancient urban settlements are studied. On this basis, it is proposed to protect the residential area from the perspective of integrity and sustainability, strengthen the core public part, control the district building, and reshape the important interface. Renewing small and medium-sized urban areas should respect the rhythm of their own urban development and gradually complete the update, not blindly copying the experience of large cities.

Keywords—Ancient residential area, Changshu, city renewal strategy, small and medium-sized cities.

I. INTRODUCTION

NEW and old alternation of the residential area, in the process of urban development in China, is a common phenomenon that happens in a city. As a new force in the city, the new area is often supported by abundant labor and financial resources, attracting a large number of urban residents to settle down. At the same time, the ancient area has been on the wane slowly. There are three main reasons for this. The first is the loss of population, due to the great pressure of work and life, young people in the ancient settlement tend to make their own family in the new urban district, pursuing a higher quality of life. As a result, the old district is mainly dominated by the elderly, and the number of people there is gradually decreasing. Secondly, the infrastructure has become obsolete. Since the ancient residential area has a long history, public facilities have often fallen into disrepair, which is inconvenient for the daily lives of residents. In addition, the funding is insufficient. The renovation of the old city settlements requires large sums of money. By contrast, investing in the new urban area will bring the government more income and benefit a wider range of people [1]. In a short time, it can provide urban residents with more work, housing, education, and so on; and therefore, the ancient residential area receives less financial support.

Yun Zhang is with the School of Architecture and Engineering, Zhejiang University, Hangzhou, 310058 China (phone: 86-15869117695; e-mail: 21812115@zju.edu.cn).

Zhu Wang is with the School of Architecture and Engineering, Zhejiang University, Hangzhou, 310058 China (phone: 86-13325716901).

However, the ancient part is the starting point of a city. Its changes record the rise and fall of a city and are the historical treasures for the citizens. The renewal of old urban settlements is an important part of the city's sustainable development and a key part of urban memory and impression. China's ancient urban settlements renewal begins in big cities, such as Beijing and Shanghai. The renewal of these cities has achieved remarkable success under the test of many years of practice. Using them as the template, small and medium-sized cities have carried out their own renewal of old settlements. However, the ancient residential area of small and medium-sized cities is different from the big ones. Blindly copying the experience of big cities brings a series of problems.

The background conditions of the city are different. Metropolises often transform old districts into new commercial and cultural complexes. Small cities do not have enough people flow and spending power to support the transformation. Totally imitating the renewal experience of big cities would lead to commercial failure, and the small and medium-sized cities would lose their own characteristics. The old residential area of small and medium-sized cities is more complex, so the updated measures need to be more detailed [2]. In addition, the area is a fusion, which combines residence, commerce, and landscape. In daily life, the residents taking a few steps out of their houses will see a small shop. Two more steps are the food market, and then crossing one street is the park. If leaving the business and the landscape aside, only talking about the residential building will separate the residents' life trajectory, making the residential renewal become a superficial effort. Therefore, the renewal of the old urban settlements in small and medium-sized cities should be a comprehensive protection process integrating residential, commercial and landscape renewal.

Changshu is a small city under Suzhou City in Jiangsu Province. It is a famous historical and cultural city with more than 1,200 years. The ancient district has an area of 232.3 hectares. It takes only one day walking through every zone of the district. The Changshu government has been carrying out the renewal and protection of the old town settlements for many years. The surrounding big cities such as Suzhou, Shanghai, and Wuxi have good experience in city renovation. In Changshu, we can see the shadow of these successful cases, and we can see some projects with local characteristics as well. These upgrade projects have some successes and failures. Through these projects, we can analyze the unique problems faced by small and medium-sized cities and establish corresponding measures. Then, we can provide more intuitive

and accurate renewal strategy recommendations for the small and medium-sized cities that are common in China.

II. CHARACTERISTICS OF CHANGSHU ANCIENT CITY

The study of the history of Changshu and the evolution of urban form is the basis for the renewal and protection of the old residential areas.

A. The History of Changshu City

During the Xia and Shang Dynasties, Changshu belonged to the territory of Yangzhou and was part of the Northern Wu. Beginning in the Han Dynasty, there was a system of townships. The county was established in the Western Jin Dynasty and was named Haiyu County due to its proximity to the sea. To the Liang Dynasty, it began to be called Changshu. In Chinese, it means that crops ripen easily because Changshu has the fertile land and few natural disasters. In the seventh year of Tang Wude, the city moved to the foot of the Yu Hill, and the location was confirmed. During the Southern Song Dynasty, the royal family relocated the capital of the country to Lin'an. Changshu became a military fortress and built a city gate, taking advantage of the Yangtze River to the north. The outline of the city began to appear. At the end of the Yuan Dynasty, urban construction gradually developed towards the east of Yu Hill. In the Ming Dynasty, the city wall was rebuilt. The perimeter of the ancient city and the structure of the neighborhood in Changshu were basically established during this period [3].

B. The Evolution of Urban Form

In the late Ming Dynasty, the commodity economy began to sprout in Changshu and the urban form began to change obviously.

Changshu is a water town, so the growth of the urban form depends mainly on the river. Its morphological evolution has two characteristics: One is that outside of the various waterways' gates, the form of the city spontaneously radiates outward along the extended maritime public transportation line from the dense center of the old city. A number of river courses have become linear growth axes for land use growth. The other is that the urban form beyond the city walls develops in a circular shape along the moat. In particular, from the south gate as the starting point to the section of the east gate, the fish, bamboo and wood, brick and ash, ceramic and grain shops are all densely arranged along the moat and Yangang, and the two banks are full of markets [3].

In the 1930s, the construction of Changshu City was large. To meet the needs of cultural communication, industry, commerce and military development, the construction of the Shanghai-Wuxi and Suzhou-Changzhou highways was carried out. At the same time, the city's trunk roads were widened, running through the north and south of the city, and the north and south gates were demolished. The roads are still the main trunk of the city. Later, due to the economic recession in Changshu caused by the Second World War, the industries were dying and the urban form changed little. Until the founding of New China, the city began to regain its vitality.



Fig. 1 Map of Changshu City in the Qing Dynasty

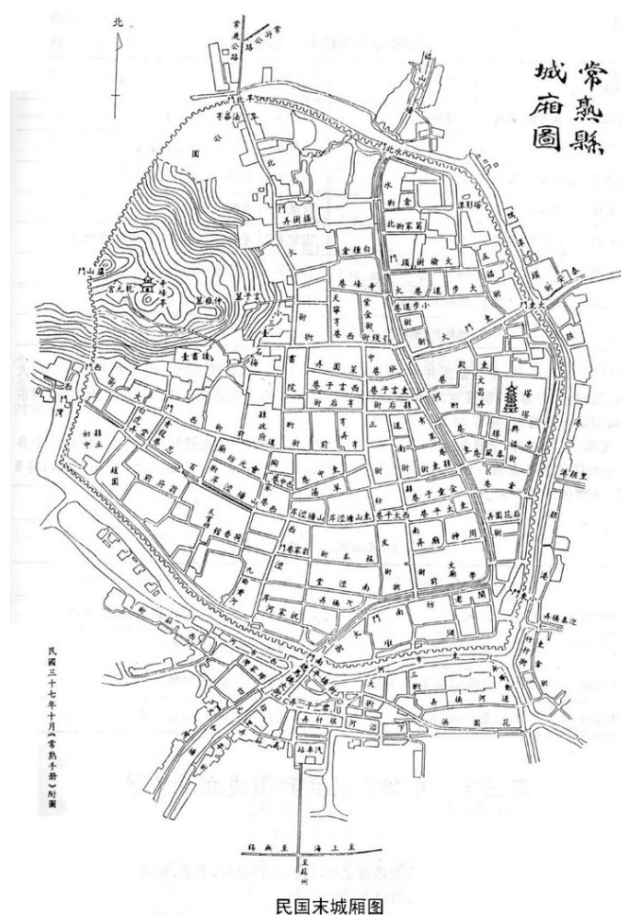


Fig. 2 Map of Changshu City in the Late Republic of China

C. Spatial Characteristics of the Ancient Area

The existing roads, street water system structures, architectural forms, and spatial landscapes of the existing ancient city in Changshu still retain the pattern of the Ming and

Qing Dynasties. These elements constitute the residential space characteristics of the ancient area of Changshu, which is the focus of the ancient city renewal protection and selective retention. It is the entry point for enveloping and creating the memory of the ancient city residents.

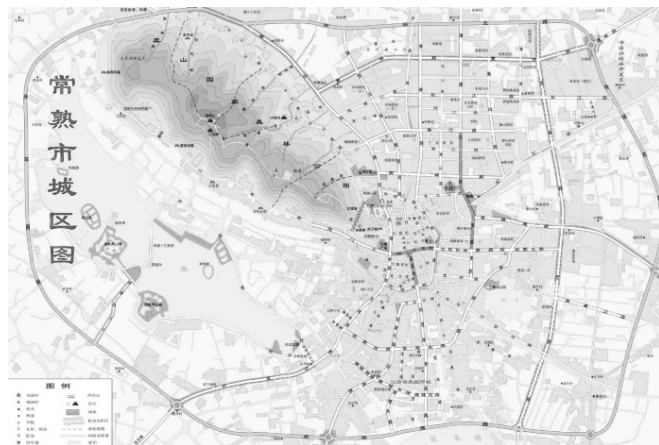


Fig. 3 Map of current Changshu City

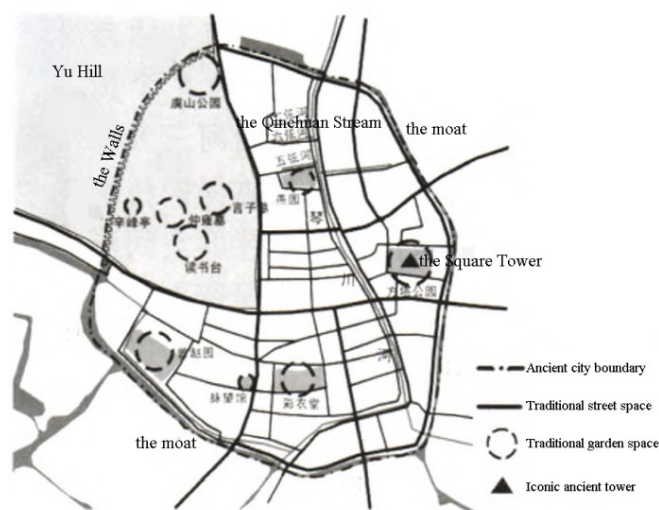


Fig. 4 Map of traditional spatial pattern; Selected from “The continuation of traditional space image in the protection of ancient city scenery——taking the reconstruction of ancient city in Changshu as an example”

The first is the landscape of the ancient city. Changshu ancient city began to integrate the southeast corner of Yu Hill into the city. Based on the natural characteristics of hill and water topography, the height of the city depends on the foot of the hill, and the low level is close to the moat. The seven streams of Qinchuan are like the seven strings of the guqin, a traditional Chinese instrument. These unique landscapes form the urban feature of the ancient city and the integrated pattern of the hill, water, and city.

Second is the ancient city boundary and street space. Changshu was built with the change of natural terrain, and so does the confinement of the urban boundary. Upper the Yu Hill, the wall is built with the rolling and bending of the contour.

Under the hill, the city wall and the moat are built according to the natural watercourse. A unique, flexible, and unconventional characteristic city boundary is formed. The ancient district is rich in natural waterways, communicating with the commercial and trade districts. Convenient water transportation affects the composition of the neighborhood, forming a pattern of houses along the river, connecting markets and paralleling streets. The typical special image of Jiangnan is created, which consists of small bridges, flowing water, and people [4]. Furthermore, landscape space is a characteristic of Changshu. The urban culture has continued to develop for thousands of years, retaining many traditional Chinese gardens, such as the Yan Garden, the Zengzhao Garden, the Square Tower Garden, and the Yu Hill Park. These gardens contain profound historical culture. They are witnesses to the history of the city and are special nodes that make up the urban view. In particular, the tower in the Square Tower Garden was built in the Southern Song Dynasty. The building is square in shape and has a mixed structure of brick and wood. It has high historical and cultural value, and it is also the tallest building in the ancient area. It has become the visual focus and landscape symbol of Changshu.

III. ANALYSIS OF RESIDENTIAL RENEWAL PROJECTS

As pointed out in the previous section, Changshu belongs to small and medium-sized cities. Its ancient residential area is a complex, integrating residence, commerce, and landscape. Therefore, the renewal and protection of the settlements need to take care of these three aspects. Preserving the residents' complete life trajectory is keeping a precious memory of the residents to the ancient city. During the residential renewal process in Changshu for many years, we can see many factors considered in the whole process of the project, such as the history and culture of the ancient city and the living habits of the residents. There are many practical projects that show advantages and disadvantages in the time test, which gives a lot of inspiration and experience to the subsequent update work.

The ancient city is mainly composed of three historical protection areas, namely Qinchuan Stream, Xijingtang, and Nanjingtang. Among them, the Qinchuan Stream area is more typical and close to the city center, which has always been a relatively lively area. This area mainly includes the Beimen Street residential comprehensive block, the Qinghefang residential comprehensive block, and the Square Tower Street commercial block. The three blocks are connected by three main streets, Lead Street, Dongmen Street, and Hedong Street. The interior contains a large number of houses, shops along the street, Qinchuan watercourse, and garden landscapes. The interiors of the Xijingtang area and the Nanjingtang area are relatively dominated by private houses, but there are also many gardens. Therefore, the renovation and protection of the ancient area have basically been done from the three dimensions of residential architectures, commercial streets, and cultural landscape.

A. Residential Buildings Renewal

In terms of residential constructions, hierarchical renewal steps were adopted. Taking the Qinchuan Stream area as an

example, the architectures which were constructed during the Qing Dynasty and the Republic China period, represent the architectural style in a certain period of time, and have a great preserved state that should be strictly protected. The buildings with high historical and cultural values need to be repaired according to the original pattern and style. As well, the green environment around the buildings needs to be protected. At the same time, measures ought to be taken to continue the old spatial scale and emphasize the coordination of the surrounding environment. The traditional buildings with better coordination and historical quality are improved. Because the structure of such houses is basically complete, their appearance and flat shape are not damaged much, and there are not many changes. The main problem is that there are too many internal households and space is unreasonable. For such buildings, the original structural system and the level relationship are maintained in the structure. By moving the partition wall, the internal space is re-integrated and rationally divided into the multipurpose spaces that meets a variety of living needs. For traditional buildings of poor quality and unrecoverable, as well as newly built buildings that are of good quality but not in harmony with traditional features, they are renewed according to the modern layout design. The traditional low-rise courtyard style is used to keep the updated building blended with the original style [5].

In the external space of the buildings, many twists and turns in the interior of the residential area are preserved. Additional parking lots are installed near the junction of the residential area and the main road, reducing the entry of motor vehicles into the area, and thus, making the residential environment very quiet. In addition, some of the original canteens, chess and card rooms, and barbershops in the area are reserved to facilitate the daily life of the residents. It keeps the living habits and life trajectories of the residents. Moreover, these places are often the spontaneous communication space formed by the residents. While barbering, people often chat with each other, which is rare to see in modern settlements. It is an important foundation for the sense of homeland in the neighborhood.



Fig. 5 Residential buildings of the Qinchuan Stream area

Through these measures, the household's living hardware facilities have been updated and the quality of life has improved. The balance is achieved between the old and new buildings.

Preserving the overall views of the ancient residential area can provide basic design elements and design style for later updates. The residents living in the area can also feel the change of history in the details.

B. Commercial Street Update

In terms of commercial streets, both sides of Lead Street and Dongmen Street of the Qinchuan Stream area were originally all shops. The commercial functions are retained in the update. By following the interface and architectural style of the original street, the residents' impression of the original street is preserved. Although the store's business content has been replaced, the overall view of the street has been kept, attracting some new stores, such as hand-made jewelry stores, coffee shops, and photo studios. Since Lead Street and Dongmen Street are major roads in the east-west direction of the ancient area, the original road has been widened and refurbished, and pedestrians and drivers have been separated. In this way, it can provide a smoother road for the vehicle and pedestrians with a slow walking experience. In addition, it satisfies the convenient transportation required for urban development and connects the new city with the old city.



Fig. 6 Dongmen Street



Fig. 7 Hedong Street

Some small commercial streets located inside the settlements have basically retained their original appearance. The gas and electrical pipelines have been inspected and renovated. For example, some old noodle shops, cake shops, cloth shops and

lock shops on Hedong Street are completely preserved and still open for business. In the long-term operation, these stores have become local specialty ones and memory points for the residents, which has been part of the history of urban development.



Fig. 8 Square Tower Garden



Fig. 9 Commercial area around Square Tower Garden

For the local commercial cluster combined with the cultural landscape, a comprehensive renovation is adopted. Taking the commercial area around the Square Tower Garden as an example, it is a relatively famous cultural landscape, located in the residential area. As the surrounding residents often go for a walk near the garden, many shops are gathered here accordingly. During the renewal, original stores, such as the buns shop and the tea room, are retained. At the same time, the area expands to the west side, connected with the traditional businesses of Hedong Street, and connected to Square Tower Street on the south side to form a commercial circle [6]. In the expansion area, it brings in the catering and cultural shops needed by modern residents to achieve the transition between traditional and modern lifestyles. On the one hand, it shows the historical and cultural atmosphere of the ancient city, while on the other hand, it satisfies the modern life needs of the residents, promoting the commercial vitality of the ancient area.

C. Cultural Landscape Renewal

Among the cultural landscapes of Changshu, Yu Hill, the Square Tower, and the Moat are important symbols of

residents' impression of the ancient city.

Yu Hill is an important part of the unique urban spatial form of Changshu. Since ancient times, Yu Hill has been the birthplace of Changshu's urban culture, bringing together the historical landscape of cultural heritage. At the same time, it has laid the favorable conditions for the construction of the city and improved the ability of the military to guard against fortification. In 2004, Changshu City demolished the buildings built illegally on the surrounding hills in the 1980s, and restored the natural form of the mountains, re-entering the southeast of the hill and the gate into the urban landscape. In 2016, the Yu Hill Ecological Trail was officially launched [7]. Its construction is of great significance for returning mountains to people and cities.



Fig. 10 Yu Hill

The Square Tower is an outstanding work in the construction of the ancient city of Changshu. The symbolic value of the tower in the urban space goes far beyond the building itself. In the Southern Song Dynasty, the relative spatial position of the city and Yu Hill has been formed. At that time, a Buddhist monk called Wenyong was proficient in the technology and knowledge of urban construction. He believed that as a city, the west should be lower than the east because emperors and officials face south. Otherwise, it will violate the feudal hierarchy and social conventions. So, the monk suggested to the county magistrate to build a tower to balance the city's geomancy [3]. From the perspective of the design and construction of the Square Tower, it seems to be in order to satisfy the geomancy and the social-ethical order, but in fact, it integrates the design of the urban spatial landscape and the urban space height mark asymmetric design. In order to enable people to see the Square Tower from all angles of the city and keep the memory of the landmarks of the ancient city, the height limit of all buildings in the ancient city shall not exceed the Square Tower in the urban planning. At the same time, the Square Tower Garden is built around the tower, collecting functions such as sightseeing, leisure, ecological protection, and cultural education. The protection of the tower reflects its own iconic landscape characteristics and retains the traditional spatial characteristics of the city.

There are many watercourses in Changshu City. It is necessary to protect the remaining Qinchuan Stream, Liuxian

Stream, and Qixian Stream, restoring the form of the waterfront building. On the basis of the protection of the existing moat, a slow-moving landscape corridor is built [8]. The two sides of the corridor are green belts, which connect with Yu Hill to complete the ancient city pattern. In addition, according to the records of the Ming and Qing Dynasties, the city walls on the Yu Hill were restored. Due to urban traffic demand, the city walls in the flat areas of the city have been dismantled. For respecting the needs of the city's actual development, this part of the walls is no longer recovered. By perfecting the boundary of the ancient city and restoring the space of the watercourses, the landscape of the Yu Hill has been introduced into the city, and the pattern of integrating the hill, the water, and the city has been preserved, showing the beautiful scenery of the ancient city.



Fig. 11 The moat watercourse

IV. STRATEGIES FOR THE RENEWAL

From the protection and renewal of the ancient residential area in Changshu, four strategies can be summarized.

The first is to have a clear understanding of the ancient settlements. Large cities have a wide range of cultures, while small and medium-sized cities are dominated by local culture, showing small and refined urban characteristics. Since the city was built, the ancient area of Changshu has gradually formed an urban pattern of integrating landscapes and cities, which is the embodiment of the adaptation to local conditions and development. Moreover, the ancient district has a strong atmosphere of traditional neighborhood life and is a living treasure of the city's history and culture. These understandings of the ancient area are the basis and direction for the renewal work.

Second, it is to retain the building and street space of the ancient area in stages. Changshu has classified the degree of protection of the buildings. Take complete measures for traditional buildings with great historical value. Partial repairs are made to ordinary buildings that are still usable and do not affect the style of the ancient city. Demolition and reconstruction are carried out on buildings that are not suitable for use or buildings that seriously affect the urban style. At the same time, it protects the street space of the residential area and preserves the small space used in the daily activities of the residents. In addition, the landscape restoration of Yu Hill and

the moat was carried out, open to the residents. It is important to improve the boundaries of the ancient city and integrate the beauty of the city into the memory of the residents.

The third is to continue to use the characteristics of the ancient area and to do the modernized update. Within the newly built area, the scale ratio and interface style of Changshu are utilized to make new buildings; thus, achieving a harmonious state between the old and the new. It connects the old buildings and preserves the complete features of the ancient area, providing a reference for the later update work. In addition, the old facilities have been largely replaced with modern supplies, which is convenient for the residents living in the city.

Last but not least, it is necessary to update the protection step by step. The situation in the ancient city settlement is complex and fragmented, and its renewal and protection cannot be achieved in one step. A large number of rapid updates will undermine the self-development capabilities of ancient urban settlements. It often takes a while to verify the actual effect of the project. Therefore, in the overall renewal of the ancient city, we need patience to constantly reflect. It is significant to continuously apply new and effective updated knowledge to the renovation works and gradually complete the protection of the ancient residential area.

V. CONCLUSION

The renewal of the ancient city settlement needs to consider a variety of factors. If just repairing the old, or simply implanting a variety of businesses, the ancient city will become like an exhibit in the museum and lose its original function in the city - to provide residents with space for living and working. The ancient district often has historical sites and cultural attractions of the city, as well as many daily life nodes, such as housing, vegetable market, breakfast shop, and park. These places have gradually become people's memory points for urban life in the years of change. The combination of these memory points creates an impression of the city. Therefore, in the process of updating the ancient city settlements, it is necessary to notice these places that have condensed urban characteristics. In the construction or reconstruction, modern building materials and techniques can be used instead, but the layout of various functional places in the ancient city should be preserved, and some small spaces with special features should be protected. Thus, it will maintain a continuous, complete memory of the ancient city for the residents of the city.

REFERENCES

- [1] Hongwei Chu, "Study on reconstruction patterns and problems of Changshu old city," Shanghai Jiaotong University, 2007.
- [2] An Zhou, "Research on space form protection of the incomplete small historical cities," Zhengzhou University, 2018.
- [3] Jianguo Wang, "Study on the historical characteristics and evolution of Changshu city forms," *Journal of Southeast University*, 1994(06), pp.1-5.
- [4] Jianmei Ma, Li Jiang, Hao Wang, "The continuation of traditional space image in the protection of ancient city scenery—taking the reconstruction of ancient city in Changshu as an example," *Forestry Science and Technology Development*, 2013, 27(06), pp.140-143.
- [5] Zhi Huang, Jianqiang Yang, "Protection and continuation of the landscape features of No.7 neighbourhood of Changshu old town," *New Construction*, 2004(06), pp.13-15.
- [6] Suli Tu, Quanxing Fan, "Combination of commerce, history, culture and

environmental landscape in the reconstruction of the old city——analysis of landscape planning and design of the Square Tower Garden in Changshu,” *Journal of University of Science and Technology of Suzhou (Engineering and Technology)*, 2007(03), pp.67-69+73.

- [7] Wenjie Zhang, Yuewu Wang, Kai Wang, “Analysis on the reformation of natural landscape of urban open space——taking Changshu city Liangshan project as an example,” *Journal of Anhui Agricultural Sciences*, 2011, 39(15), pp.9237-9238.
- [8] Haiying Zhang, Lijun He, “Urban vestibule landscape planning and design: taking Changshu city moat vestibule for example,” *Value Engineering*, 2011, 30(35), pp.98-99.