

Research of the New Space in Vernacular Dwellings of Jiangnan Area during Mid-Ming Dynasty

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Abstract

In recent years, architecture culture study is a popular direction in traditional vernacular dwelling research of China. Architectural culture, as the metaphysical part of a building, not only influences the formation of the building in design period, but also dominates the use-pattern of the building after construction. However most of studies started with material form of dwelling from architectonic prospective ignored that architecture is a phenomenon of culture. The study of vernacular dwelling from cultural and other related academic fields is very necessary. *Bei-nong* is a transportation space in traditional vernacular dwelling of Jiangnan area in China. This paper tried to use the methods of urban history research to investigate this space. First of all, the particular time and region of *bei-nong* appearance has been observed and defined from historical and cultural background. Then, appearance reasons have been analyzed based on the social context and mainstream philosophy during the scope of time and region. In the end, the physical and social functions and the architecture construction of *bei-nong* have been summarized and ratiocinated from the former conclusions according to inductive reasoning theory. A real and comprehensive *bei-nong* is showed in the result of research, not only the physical form and history of architecture but also a history story about that place and time.

Keywords: Dwelling; Bei-nong; Transportation space; Feudal ethics; Disaster prevention space

Bei-nong, an alley was designed in the Chinese traditional vernacular dwellings. The related study started in 1970s, but there is no monograph till now. The predecessor research results summed up below. First, *bei-nong* is a unique space in buildings of the Suzhou area (C, Z, Su. 1978; G, X, Pan.1986; S, F, Yu. 1990 and Y, D, Lu. 2003). Second, this space include the function of the fireproofing and the drainage (J, J, Hu. 1987 and Z, J, Peng. 2012). Third, this space was exclusively for the female user (J, R, Teng. 2010 and J, Zhu. 2012). However, all of these studies were established on the survey only in Suzhou City in Jiangsu Province of China. More researches of *bei-nong* need to be survey in a wilder geographic area and historical environment.

The definition of the appearance time and geographic area of *Bei-nong*

The “metabolism” of the transportation space in the dwellings

According to ancient book recordings and on-site mapping, *bei-nong* was a common transportation space in the whole Jiangnan area of China. Since the short life span of the wood structure, most of the architecture heritages were built in Ming, Qing dynasty and Republican China. Therefore, the limitation of the mapping sample created a misunderstanding that *bei-nong* existed in dwellings from the very beginning. Few people analysis the appearance time of this space.

Buildings in Chinese traditional courtyard house were set in door-halls-bedrooms pattern, and placed from front to the back one by one. This design had already been stabilized during the Chun-Qiu period of China (B.C.770-B.C.476) [1]. Attributed to this in-series layout, the inner house **typical transportation method** of person called **across-mode** was along the central axis of the house. That means you have to pass through all of the buildings if you want go to the innermost building. In the Wei-Jin period of China (A.C.220-A.C.420), the winding corridors were used to connect buildings and provided another traffic method in house but without a fixed pattern. From the Tang to the Yuan dynasty, the corridor always designed to be built along the central axis and perpendicular to the two buildings [2]. This layout formed an **I-shaped** or **T-shaped** and be widely used in official-type architecture and the dwellings. This can be proved by abundant of the *jie-hua* (a kind of realistic painting using ruler) such as *Along the River during Ching Ming Festival* and *One Thousand Li of Rivers and Mountains* [3] (Figure1). But these new corridors did not change the former traffic mode that crossing buildings one by one until the appearance of *bei-nong*.

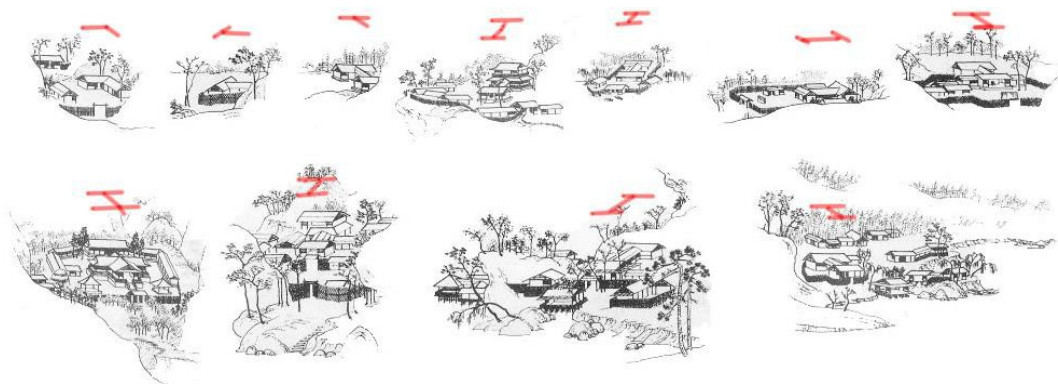


Figure 1: The **I-shaped** and **T-shaped** house in *One Thousand Li of Rivers and Mountains* by Wang Ximeng in Song dynasty.

Based on the record of ancient classics, *bei-nong* was never recorded before the Ming dynasty.

What exactly time of the appearance of the new space and replacement of the corridors used before is difficult to trace. The earliest record about *bei-nong* was found in a book named *Treatise on Superfluous Things*, an encyclopedic book about garden architecture and interior design written during 1620 to 1627 in Ming dynasty [4]. This book point out that the best house on that era must have a *bei-nong* space, and the I-shaped layout should not be used except the official buildings. That means *bei-nong* had already appeared and applied in the house before 1620. According to the survey situation of the dwellings heritage in Jiangnan, *bei-nong* also became the normal design in the dwellings from Ming dynasty. Therefore, the appearance time of *bei-nong* was supposed in mid-Ming dynasty. As a new traffic space, it improved the typical transportation pattern, and had been widely used in the house during Ming-Qing dynasties.

The usual pattern in the dwellings of Jiangnan area

Different from previous research, in this study *bei-nong* have been found not only in Suzhou city but also in the **whole Jiangnan area** through the extension survey. One consensus of various definitions of Jiangnan area is about the geographical range that the core area was include Suzhou, Songjiang (Shanghai), Changzhou, Hangzhou, Jiaxing , Huzhou and Jiangning (Nanjing). This region had grown as an economic and sociocultural community at mid-Ming dynasty since they have similar culture background and closely relationship in geography and finance. *Bei-nong* have shown in radial structure along Taihu lake bank as the investigation of heritages quantity. Both the shape and size of the *bei-nong* found in Changzhou, Huzhou or other areas were same to Suzhou. Even in surrounding areas of Jiangnan, such as Huizhou, Yangzhou and Ganzhou, there are several structure similar to *bei-nong* were found, which have some different characteristics in shape and structures, such as *Huo-xiang* (shown in figure. 2).

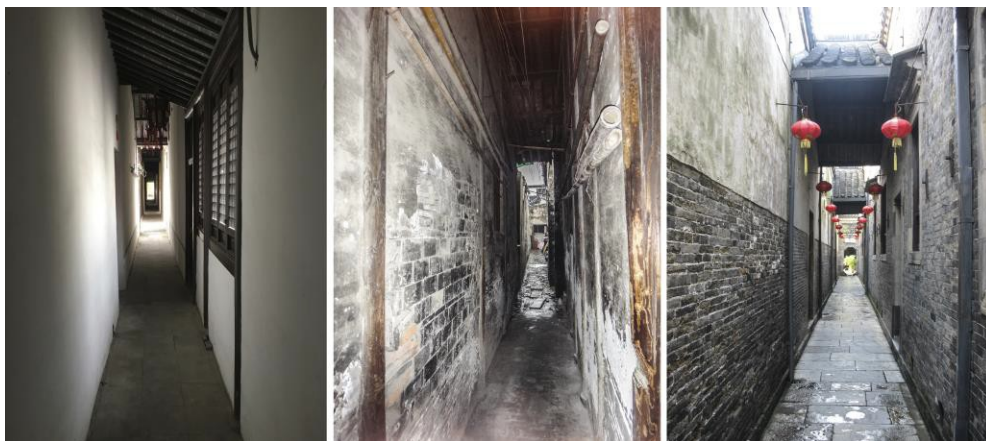


Figure 2: From left to right, Wuxi *bei-nong*, Changzhou *bei-nong*, Yangzhou *huo-xiang*

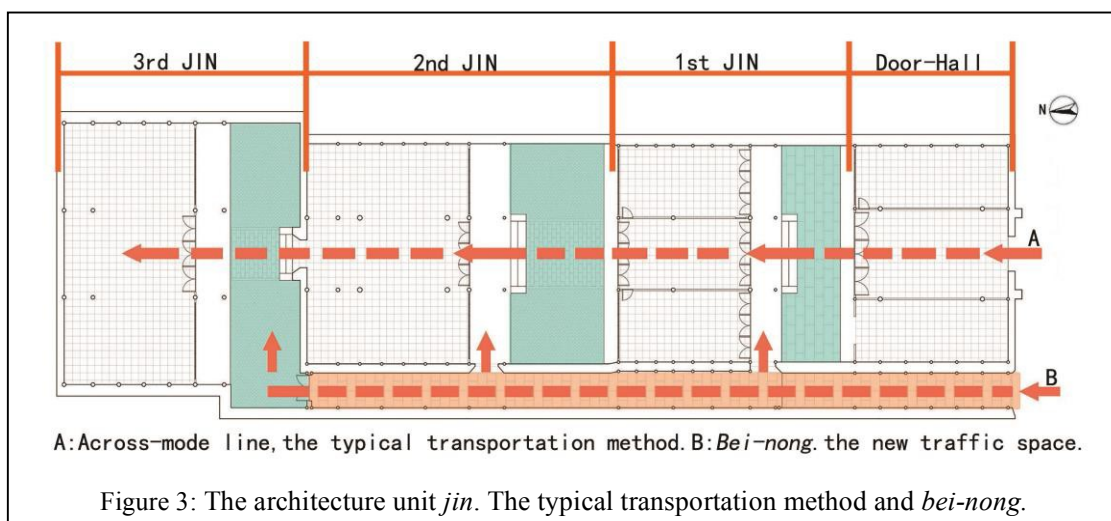
Explanations of the appearance of *bei-nong*

More and more gentry moved to live in the urban

Jiangnan had become a well-developed area in China since Tang dynasty. One poem written by Hanyu living in Tang dynasty mentioned that in some years Jiangnan accounted for 90% of whole country tax burden. In the Song dynasty, the movement of economic center of country from north to Jiangnan have completed. More urbans were forming in Jiangnan. Experienced years of war from late-Yuan to early-Ming, the political and economic environment became stabilized and recovered, and Jiangnan had entered a new era of accelerated urbanization process. Due to the improvement of living condition, more and more gentry who have the enormous political and economic privileges were attracted and relocated their families from village to urban [5].

The dwellings of gentry were usually built huge and complex for their solid economic capability. These huge house always composed with many *jin*, a unit of architecture. One *jin* include one building and the front yard (shown in figure 3). Accompanied by the expansion of the building scale, more people lived in together, which lead to more transportation requirements. The typical traffic mode cannot satisfied these requirements any more. In order to improve traffic efficiency and mobility in house, *bei-nong* was created.

As figure3 shows, *bei-nong* was set paralleled to the central axis on the most left or right side of all buildings next to the boundary wall, and connected every buildings and yards in the house. Users can walked through this equal-width alley to get every building rapidly and easily. *Bei-nong* improved transport efficiency and traffic order of the life in the large-scale house.



A space induced by traditional feudal ethics

Bei-nong has another name *bi-nong*, recorded in *Treatise on Superfluous Things*. Here, “bi”, means avoidance in Chinese, and this name shows another explanation of the usage about *bei-nong*. In the actual process of using, for avoiding the master and the male guest, *bei-nong* was the dedicated channel designed for the slaves and female family members.

In Ming-Qing dynasties, the common people were divided into different classes, and the different classes were not allowed communicated optionally, especially from the lower class to higher class. Slave was almost the bottom class in society. It was considered as an unlucky thing or an offence if they met the master or guest without permission in the house and would be punished. This consideration and punishment were protected by the law and conformed public opinions. *Bei-nong* could help the slaves to avoid the master and keep the service work normally and efficiently.

The female family members is the second group of the user of the *bei-nong*. In traditional life of China, without the permission of husband or master, women have to stay in the room forever except a few chances in a year, such as the mothering days or temple fair. Women still need hide their faces by round fans or handkerchiefs when they take part in these activities. During Ming-Qing dynasties, these restraints for women were protected and encouraged by the gentry, religious organization and the government [6]. In fact, the female family members were always forbidden to walk around in male space located in front of the house. Under this background, many female spaces were designed in dwellings, for example, the female pavilion and the boudoir. *Bei-nong* with the isolation effect is another representative of these spaces, which could be used by the master to limit and control the action of the female family members.

The **hierarchy** and **the gender difference perception** were performance of the feudal ethics in real life. And the feudal ethics is the mainstream thought of the society during Ming & Qing dynasty. After 240 years of the war, the whole country urgently need a peaceful and stable environment to recover the economy and various social undertakings. The government enacted a series of statutes to emphasize the exalted position of the etiquette, the core of the feudal ethics. And the meanwhile, Zhu Yuanzhang, the first emperor of Ming dynasty, was eager to prove the legitimacy of himself because of his humble origin. He enacted and implemented new statutes to get more support and keep the stability of his governing. Driven by both demands, these statutes of etiquettes were unprecedented harshly, and the feudal ethics applied to life broadly and dramatically.

Bei-nong just was a material form of this feudal ethics. Although the birth of *bei-nong* was for resolve the traffic problem in the large-scale house belongs gantry in physically, but the major

user of *bei-nong* were the slaves and female family members for abide the statutes of feudal ethics under the influence of the social culture and ideology. Wen Zhenheng, the writer of *Treatise on Superfluous Things* was a scholar, painter, landscape garden designer, who came from the gentry class. The opinions in his book not only represented the thinking of the writer, but the aesthetic taste and cultural conception of the gentry. The function for upholding the feudal ethics of *bei-nong* was very significant to gentries, even more valuable than the traffic function.

The functions and construction ways of *Bei-nong*

A carrier of multiply functions

Based on the analysis of the appearance of *bei-nong* mentioned above, the major function of the *bei-nong* can be summarized in physical part and social culture part.

On the physical part, in order to satisfy transportation needs in large-scale house, *bei-nong* provided a fast channel, which helped people to get to every buildings rapidly in the house. As a transportation space, *bei-nong* improved the efficiency of the traffic and the utilization of the whole house. On the social culture part, under the influence of the feudal ethics, *bei-nong* was a material medium to limit and induce the behavior of people. As a spiritual space, *bei-nong* fostered the hierarchy and the gender difference perception. It was a reflection of the social mainstream ideology during Ming-Qing dynasties.

Besides the major function, *bei-nong* also was an important space of disaster prevention.

- First, for fire protection. In case of fire, *bei-nong* can cut off and slow down the fire from one side to another side. Meanwhile, it is a temporary safer passageway which can evacuate the people in house rapidly.
- Second, for water discharge. In most cases, on the one or both sides, drains were dug on the ground of *bei-nong*, which connected the rainwater head and drains of yard. Because of the straight shape of *bei-nong*, it is benefit to drain in rainstorm.
- Third, for defense against intruder. People can use this fast channel to stop or chase the intruder in time.
- Forth, other functions. *Bei-nong* always have a roof which can used to keep out winds, rains and the sun exposure. This space provides a comfort condition for walk and improves the quality of life in the house.

Construction ways of *Bei-nong*

As figure 1 shows, *bei-nong* is consisted of two different structures that the building-side is next to the building and the yard-side is face to the yard. The doors in *bei-nong* were only located in the yard-side. People can use the doors to get to every yards then to each buildings. According to the arrangement of buildings and yards in the house, two structures were grouped together alternately to form a *bei-nong*. The length of the *bei-nong* always equal to the length of the whole house and some existing *bei-nong* are one hundred meters long in Jiangnan area. The width of *bei-nong* is about 0.8-2.2 m.

Bei-nong has a successive roof. This is the most distinctive feature compared with the similar spaces found in other place of China. The roof of building-side of *bei-nong* is the continuation of the building roof. That means, there are no gable between the building and *bei-nong* in aerial view. The roof of yard-side *bei-nong* have two settings, one is single-pitch, and the other one is double-pitch just like the roof of the wing rooms.

The location of the window is selected cautiously as conventional wisdom believe it is important for concentrate strength and wealth. The side walls of buildings are not allowed to have windows. Therefore, the natural lighting for long *bei-nong* is bad. To compensate the lack of natural lighting, some alcoves were placed on the wall of *bei-nong* every meters. Oil lamp or candle can be putted in alcove to increasing the lighting in *bei-nong*. And another way to improve the lighting is add some skylights on the roof. In the traditional private gardens in Jiangnan of China, flower window on the yard walls helped the lighting of *bei-nong*, and decorated this new space.

Conclusions

Chinese traditional dwelling is composed of many spaces which have various forms and functions. At different periods, new spaces appeared incessantly with the development of the physical and spiritual demands. As one of these new spaces, *bei-nong* was born in Jiangnan area of China during mid-Ming dynasty, and became the normal setting in traditional dwelling. *Bei-nong* improved the efficiency of the transportation in house, and reflected the social mainstream ideology during Ming-Qing dynasties.

This study draw on the research methods of urban history and sociology to investigate the architecture space. More attention paid to the causality between architecture and historical background. In the survey of this research, several spaces similar to *bei-nong* was found, such as *huo-xiang echo-xiang*, and more study is still needed.

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Acknowledgement

This study was founded by Jiangsu Province Research Innovation Program for College Graduates (CXZZ13_0758), Jiangnan University Research Fund for the Doctoral Program (JUDCF13014), Jiangsu Province Social Science Foundation for youths(13LSC011).