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## **MICRO-REGENERATION FOR TRADITIONAL RESIDENTIAL AREAS: THE CASE OF NANHU COMMUNITY IN NANJING, CHINA**

**Abstract:** *The article discusses the characteristics and evolution of historical urban fabric based on historical review and plan analysis, and studies the issue how to inherit its spatial features into the regeneration process to enhance the urban identity during the progression of globalization. “City Betterment and Ecological Restoration” is the latest concept in China under the background of urban regeneration. The article takes Nanhu Community, which is one of pilot implementations in city betterment and ecological restoration programs in Nanjing, China, as an example to investigate its characteristics and evolution of urban form. Some strategies are proposed to alleviate the spatial issues and try to create a new mode of continuation of the historical context in regeneration of traditional residential areas.*

**Keywords:** *city betterment and ecological restoration programs, urban micro-regeneration, traditional residential areas, historical fabric, evolution of urban form.*

### **Introduction**

One of the easiest ways to cognize a city’s identity is through spatial experience, which could be epitomized in the urban fabric rationally. Urban fabric is the physical expression from results of the historical trend of the times, city’s features and objective demands. It reflects social values at the particular historical background. Under rapid urbanization, urban renewal appears all over the world to relieve development pressure caused by rapid population growth and poor social infrastructure.

However, at the same time, homogeneity becomes a controversial issue in the regeneration process during the progression of globalization, which leads to the chaos of urban characters and the absence of urban identity. Thus, nowadays, how to inherit the historical urban fabric into the newest demands is a popular discussion topic.

“City Betterment and Ecological Restoration” is the latest concept in China to deal with that kind of challenge. “Ecological Restoration” aims to reactivate the self-regulating function of the ecosystem by repairing bared mountains and polluted rivers. “City betterment”, or could be easy to understand as “patchwork urbanism”, proposes to remedy and upgrade various urban functional space through improving social infrastructure and public services, while retaining the local history, culture and social network at the same time.

Most of time, with a rich history, diversified tradition and cultural deposit; historical districts gain more consideration than other general districts. It is ignored that places that almost seem ordinary except for the extraordinary amount of life that takes place in them. Nanhu Community is a typical traditional residential area, which was constructed in 1982 to solve the housing issue of the back of the educated youth who went and work in the countryside during the Culture Revolution. It was the one that of the most famous communities at that time. In addition, it plays a significant role in the history of residential development. With the unique urban fabric, which represents the special background, Nanhu Community is one of pilot implementations in city betterment and ecological restoration programs in Nanjing, China. This article, with the Nanhu Community as an example, studies the characteristics and evolution of historical urban fabric

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based on historical review and plan analysis, and attempts to create a new mode of continuing the historical context in regeneration of traditional residential areas.

**The case of Nanhu Community**

In the late 1970s, the back of the educated youth who went and work in the countryside during the Culture Revolution led the acute housing shortage in Nanjing. Nanhu Community, located in the outside the west gate of Nanjing historical district, was constructed as a resettlement by the local government in 1982 to alleviate this housing crisis (Nanjing Local Chronicle Compilation Committee, 2008). Nanhu Community got its name from Nanhu (south lake in English) which locates on the south of the most popular attraction in Nanjing, Mochou Lake (it was referred to as the north lake at that time). It is the first construction out of the western part of the city wall and represents the new stage of city development in Nanjing.

Before the construction of Nanhu Community, here was farm land or pond, and only few houses and factories located on both sides of Shuiximen Road. Dark green in the Nanjing Map 1976 below represents the construction land (Fig. 1). Began in December 1984, the first phase of Nanhu Community was completed at the end of 1985, covering 9322 households (Fig. 2). The first phase of Nanhu Community is divided into 20 neighborhoods and the layout conforms to the sequence of the row of buildings with building interval from 1:1 to 1:1.1. It is mainly composed of four to six-story residential buildings. Public buildings are marked as dark color, including a cinema, a hospital, a swimming pool, a cultural center, a stadium, two secondary schools, three primary schools, four kindergartens and several bus stops and commercial buildings along the street. (Nanjing Local Chronicle Compilation Committee, 2008)

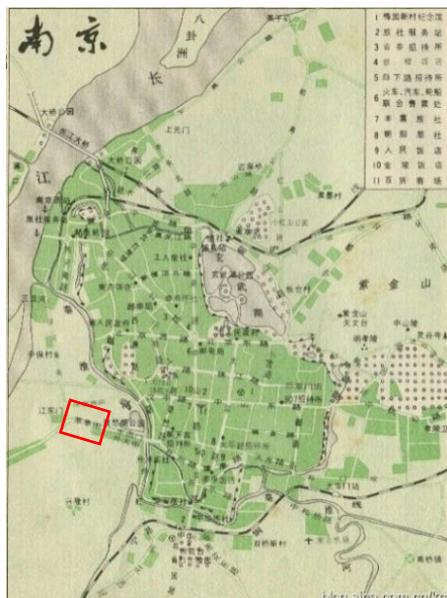


Figure 1. The site in Nanjing Map, 1976 (Source: blog.sina.com.cn/kcj)

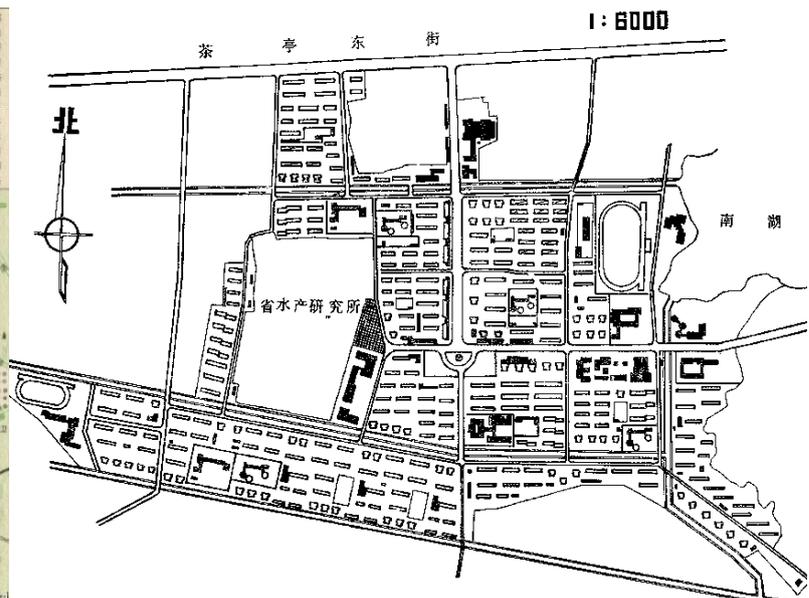


Figure 2. Master Plan of Nanhu Community Phase I (Source: History of Nanjing Urban Planning, 2008)

Grid-like roads was categorized into five grades: arterial road (20 meters), collector road (12 meter), road between neighborhoods (7 meters), road in neighborhoods (3.5 meter) and sidewalk (2 meter), named from No.1 to No.12 (Fig. 3). Besides, as the typical feature, a raised circular area where three roads join locates on the intersection of No.1 Road and No.2 Road, formed by Nanhu Square.

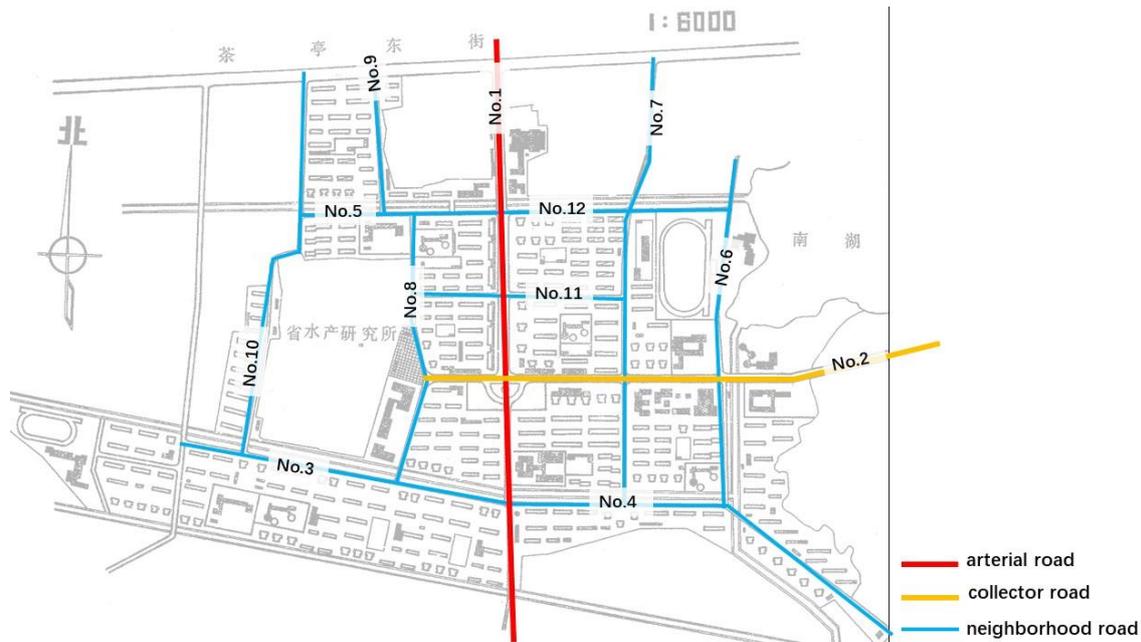


Figure 3. Category and name of roads in Nanhu Community (Source: drawing by the author)

Nanhu Square was located in the center of Nanhu Community, with a sculpture and a fountain (Fig. 4, 5). And each neighborhood has centralized green land where near the public center to allow playing fields, playgrounds and recreation centers to be used by residents.



Figure 4. Location of Nanhu Square (Source: drawing by the author)



Figure 5. Photo of Nanhu Square (Xihui Zhang, 2011)

Then following the Nanhu Community Phase II had been built near the Phase I during 1985 to 1990, with the similar layout and architectural styles, covering 9622 households in total (Nanjing Local Chronicle Compilation Committee, 2008). Nanhu Community was the first large-scale residential project in Nanjing, with well-equipped facilities. It was called “newly-built small city” and has caused widespread concern.

With great changes of social and economy environment, Nanhu Community has undergone many formal and informal renovations. At first, there were no walls to separate different neighborhoods in Nanhu Community. However, the trend of wall building became popular after the reforms of housing system. Almost all the newly built communities were enclosed by walls. At the same time, the old community also appeared the trend of building walls. Thus the

government built out walls for Nanhu Community during 1995 to 1996 (Xihui Zhang, 2011) which continues to this today (Fig. 6, 7). As we see now, different neighborhoods are separated by walls, rivers, or commercial buildings.



Figure 6. Before (left) and after (right) the construction of wall in Nanhu Community (Source: Xihui Zhang, 2011; Google street view)



Figure 7. Construction of walls in Nanhu Community (Source: drawing by the author)

Growing dissatisfaction with the lag of infrastructure over the time is driving demand for infrastructure improvement. Thus, the government is launching a series of infrastructure

improvements for Nanhu Community after 2001, including improvements of road, building and environment.

In the first two years, there were only few roads improvements launched in Nanhu Community. The most impressive are the south extension and widening of No.1 Road (Nanhu Road today) in 2001 (Nanjing Jianye District local chronicles compilation committee, 2002), and the widening of Shuiximen Road in 2002 (Nanjing Jianye District local chronicles compilation committee, 2003). A massive of road improvements began with roads renamed in 2003 (Xihui Zhang, 2011). When Nanhu Community has just completed, roads had been termed as a series of number. During the improvement process, roads were renamed and names are related to the surrounding neighborhoods (Fig. 8): Nanhu Road refers to No.1 Road, East Nanhu Road refers to No.2 Road, Yanhe road refers to No.3 and No.4 roads, Beilei road refers to No.5 and No.12 Roads, Wenti road refers to No.6 road, West Wenti road refers to No.7 roads, East Yutang road refers to No.8 and No.9 roads, Yutang road refers to No.10 road and Yuyin road refers to No.11 Road.

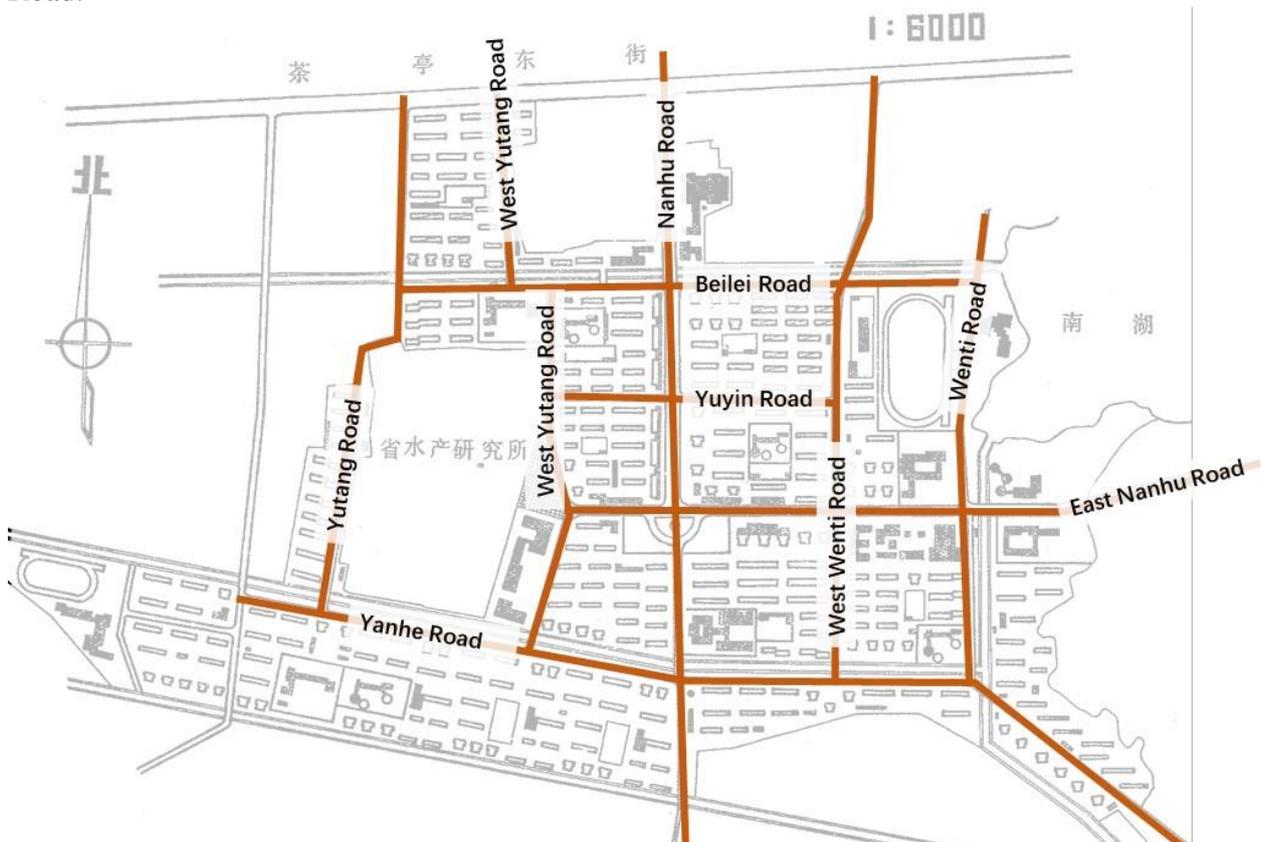


Figure 8. Rename of roads in Nanhu Community (Source: drawing by the author)

In the following, almost all roads in Nanhu Community had been widened and extended to satisfy the growing traffic demands and become part of the urban road system. The main projects include (Fig. 9): Beilei Road and West Wenti Road in 2004 (Nanjing Jianye District local chronicles compilation committee, 2005), Wenti Road in 2006 (Nanjing Jianye District local chronicles compilation committee, 2007), Jiqingmen Road in 2008 (Nanjing Jianye District local chronicles compilation committee, 2009), and East Nanhu Road in 2010 (Nanjing Jianye District local chronicles compilation committee, 2011). And road improvements had an inevitable influence upon near-road buildings. Several residential buildings and public buildings were demolished because of road widening.



Figure 9. Roads improvement, 2001-2010 (Source: drawing by the author)

Besides, residential buildings were also improved at the same time which mainly focuses on the transformation from flat roofs to slope roofs and facades refresh (Nanjing Jianye District local chronicles compilation committee, 2004). Most transformation from flat roofs to slope roofs were processed during 2003 to 2005, then this phenomenon is gradually disappearing after 2009 (Xihui Zhang, 2011). Thus this is what we can see nowadays that both slop roofs and flat roofs are existing in Nanhu Community (Fig. 10). Moreover, sidewalks, flower-beds, and walls have also been renovated (Fig. 11).



Figure 4. Aerial View in Nanhu Community (Source: photographed by the author)



Figure 5. Sidewalk improvement (Source: photographed by the author)

Furthermore, some new public facilities were built after some were dismantled (Fig. 12). For example, Nanhu Gymnasium and Ground were established in 2005 for the 6th sports meeting of Jianye District and serve community (Nanjing Jianye District local chronicles compilation committee). Nanhu commercial street and Yunhe commercial street opened in 2006 to provide a variety of leisure activity options (Nanjing Jianye District local chronicles compilation

committee, 2007). Nanhu Community service center, replaced the original Nanhu post office, is constructing since 2013 (Nanjing Jianye District local chronicles compilation committee, 2014). Most dramatic, perhaps, was the construction of Nanhu Park in 2003 (Nanjing Jianye District local chronicles compilation committee, 2004). Nanhu Park used to be a pond which crowded with humbles for a long time and it had not been opened to the public. Nowadays, Nanhu Park is a multi-functional and fully-equipped city park and it is a most popular open space in Nanhu Community.

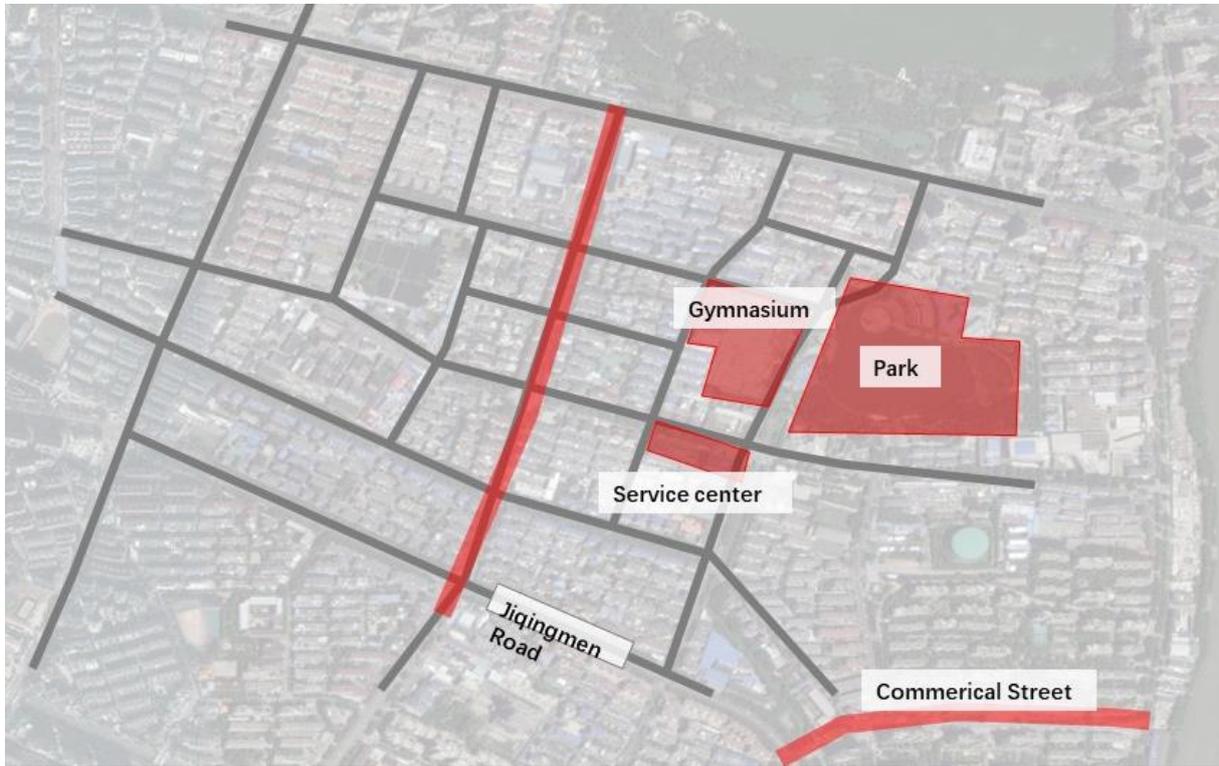


Figure 12. New construction of public facilities (Source: drawing by the author)

Nowadays, with the rapid city development, the boundary of Nanhu Community cannot easily be recognized in urban fabric (Fig. 13). The Nanhu Community, called newly-built small city originally, has gradually becomes a part of main city Nanjing. With the same time, Since the wall construction for neighborhood aggravates the separation of Nanhu Community, and several symbolic characteristics of Nanhu Community disappears, most residents usually recognize the urban space by individual neighborhoods, instead of Nanhu Community. They have been unable to distinguish the specific boundaries of Nanhu Community.

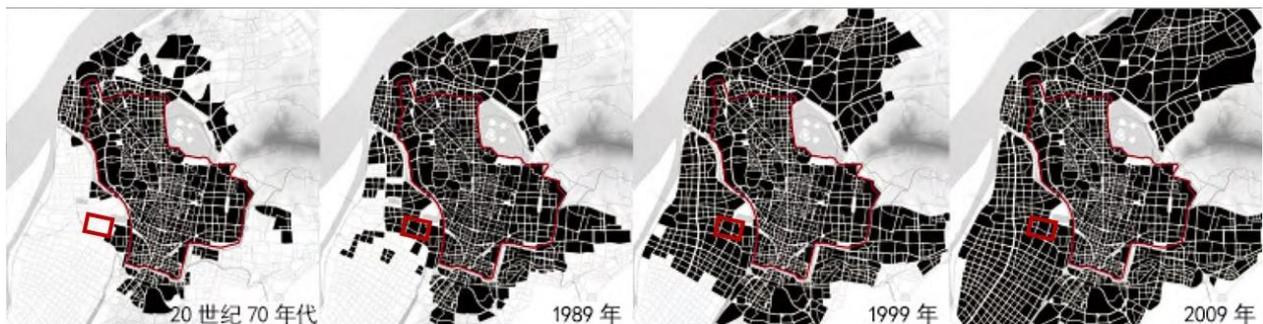


Figure 13. Evolution of Nanjing Urban Form (Source: drawing by the author)

Since Nanhu Community constructed in 1985, Nanjing comprehensive plan experienced three adjustments: Nanjing Comprehensive Plan 1983 (for 1981-2000), Nanjing Comprehensive Plan 1995 (for 1991-2010) and Nanjing Comprehensive Plan 2001(for 1991-2010).

Nanjing Comprehensive Plan 1983 (for 1981-2000) was the first legislated document for urban planning in Nanjing approved by the State Council. It put forward an urban spatial structure with five concentric zones, including urban, suburban, satellite city, rural area and small town in outskirts. In Nanjing Comprehensive Plan 1983, Nanhu Community locates between urban area and suburban area. It was supposed to be a mix use land which includes industry, agriculture and residential. Then, land use of Nanhu Community turned to unproductive land in Nanjing Comprehensive Plan 1995 which advocated to expand toward southwest. In Nanjing Comprehensive Plan 2001, Hexi New Town, which is considered a significant new town to supply residential function for main city, was proposed to alleviate the contradiction of historical perseveration and modernization construction in Nanjing.

And Nanhu Community was positioned a regular residential area in Hexi New Town.



Figure 14. Roads in Nanhu Community (left 1989; right 2017)  
(Source: drawing by the author)

However, with the increasing modern expansion of Hexi New Town, the urban fabric is changing and unique historical features of Nanhu Community is getting fading. First of all, roads in Nanhu Community, which used to be the inner road to separate different neighborhoods, have been integrated into urban road system. Compared with the maps of Nanhu Community in 1989 and 2017 (Fig. 14), the connectivity and accessibility of roads have increased significantly. However, Nanhu Square, as one of the landmark of Nanhu Community, was demolished during the improvement process of Nanhu Road. Just a signboard with “Nanhu New Area”, which is located at the intersection of Shuiximen Road and Wenti Road, might be considered as a new landmark.

Second, the change of urban fabric in Nanhu Community is also reflected the category and distribution of public infrastructures. In the master plan of Nanhu Community 1985 (Fig.15 left), public buildings were centrally arranged and mainly served for the local residents. Commercial shops were located on the west side of No.1 Road (Nanhu Road today) and the both sides of No.2 Road (East Nanhu Road today).

Various public buildings such as market, canteen, publicbathrooms were located on the main road intersections. And schools were separated into neighborhoods. However, nowadays, the variety of public infrastructures has increased and distributed, providing public services for larger areas (Fig. 15 right & Table).

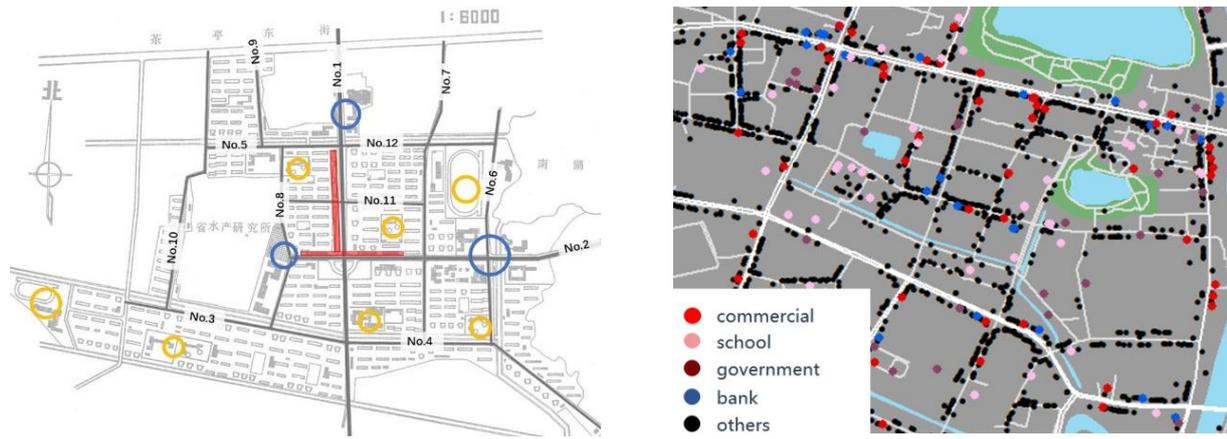


Figure 15. Public infrastructures in Nanhu Community (left 1985; right 2017)  
(Source: drawing by the author)

Table

Category and account of public facilities in Nanhu Community, 2017 (Source: baidu POI)

Function	Number
Service (bank, maintenance, logistics, etc.)	118
Utility (kiosks, restroom, etc.)	66
Resturant	163
Health (pharmacy, health center, elderly apartment, etc.)	18
Entertainment (Club, Internet Cafe, etc.)	67
Hotel	34
Retail commerical	448

At the same time, with the residents moved in, their daily life activities have a dramatic impact on the urban fabric which represented as the transformation of living space and occupation of public space. The most obvious phenomenon is building unauthorized constructions on original residential buildings (Fig. 16). The original space cannot satisfy residents' needs due to the high speed of urban development. Thus public space is affected by invasion of personal daily experiences. For example, the household of the first floor possessed parts of public sidewalk. And river was crowded with humble houses.

Besides, because most neighborhoods were constructed in 1980s and parking is one of the issues that was not considered. A large number of vehicles occupied both sides of city roads is one typical characteristic in Nanhu Community, which may influence the traffic flows and pedestrian walkability.

Furthermore, night fair and gourmet are the attractive cultural characteristics in Nanhu Community. According to the research on the social perception of Nanhu Community, the traditional life style and delicious food are the general impression from public. When night falls, many people from different places would like to go there and enjoy the local food. And Nanhu Community holds a food festival each year since 2006. Night fair appears after the construction of Nanhu Park, with pleasing illumination, clean road, fresh air and a large group of people. The transformation of physical space stimulates collective interaction, and the activity also feeds back to physical space.

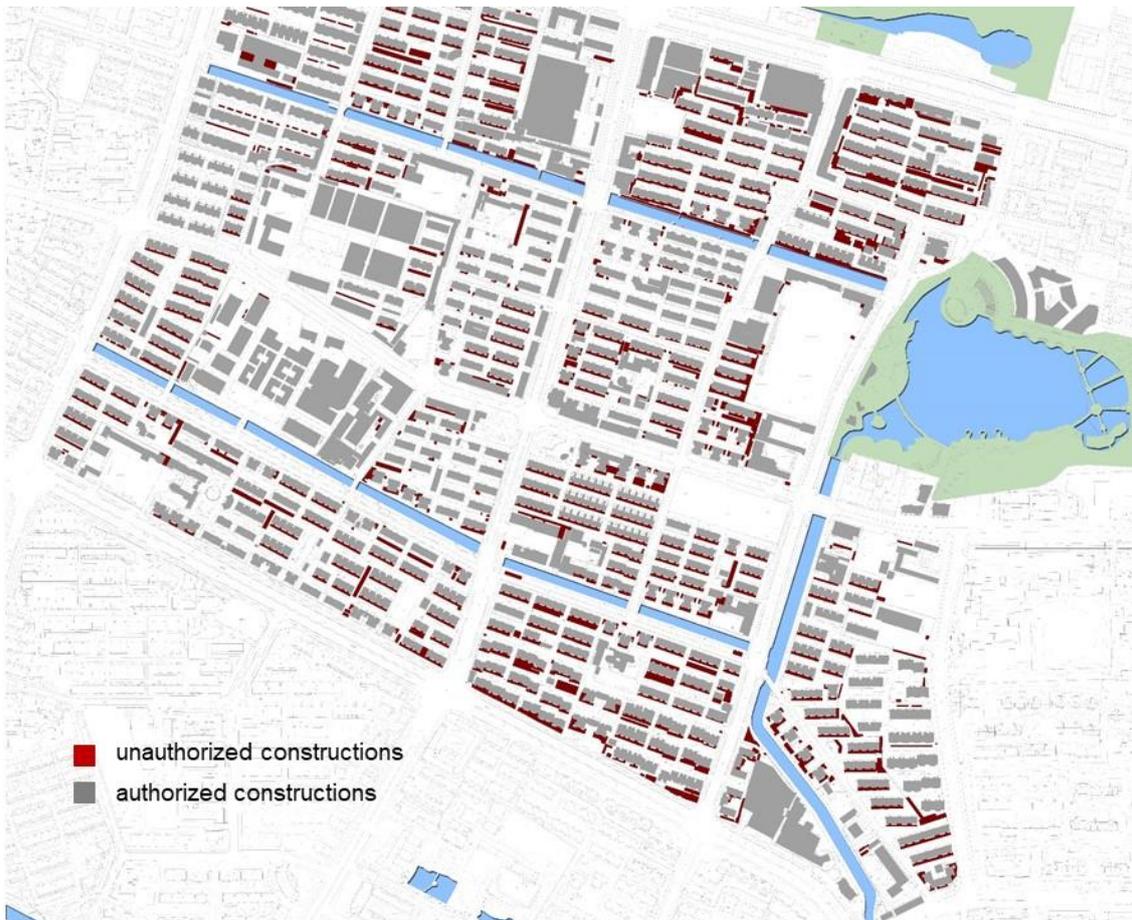


Figure16. Unauthorized authorized constructions in Nanhu Community  
(Source: drawing by the author)



Figure 17. Rendering of renovation of industrial area

**Strategies**

First, the project rehabilitates residential function in Nanhu Community through land use adjustment. Residential neighborhoods, with typical characteristic of scale, contribute to the unique urban fabric which conflicts with huge scale buildings such as factory or warehouse. Thus, the project enhances the land use with residential, commercial and service functions by replacing industrial land. For example, No.26 and No.34 areas, which was a shoes factory earlier, is supposed to transformed into a commercial complex. The basic form of business operation is set to be catering business based upon the existing sound atmosphere. More important, the social identity is recognized by preserving parts of structures and red brick walls of the factory. Furthermore, public infrastructure is improved, such as the increasing of parking lots.

Second, the project strengthens scale and functionality of city road through road optimization. City roads are classified as two categories: one is vehicle priority and the other is pedestrian priority. Vehicle priority roads look good and maintain the status quo. Pedestrian priority roads are proposed to allow smooth traffic flow and pedestrian walkability through the extension of roads, delineation of parking lots and upgrading of sidewalks. It ensures a pleasant and accessible public experience.

Moreover, as for neighbor roads, a uniform and connective network is created to relieve the traffic pressure and it responds to the place by retaining the existing roads, plants, and trees. The uniform road network allows the traffic to be evenly distributed, rather than concentrated at several certain roads. Thus the road usage and access rates are raised. There are four optimized options based on the different distances between two parallel residential buildings (Fig. 18). It puts forward some methods and the reflections of thought on how to settle problems of the traditional residential area.

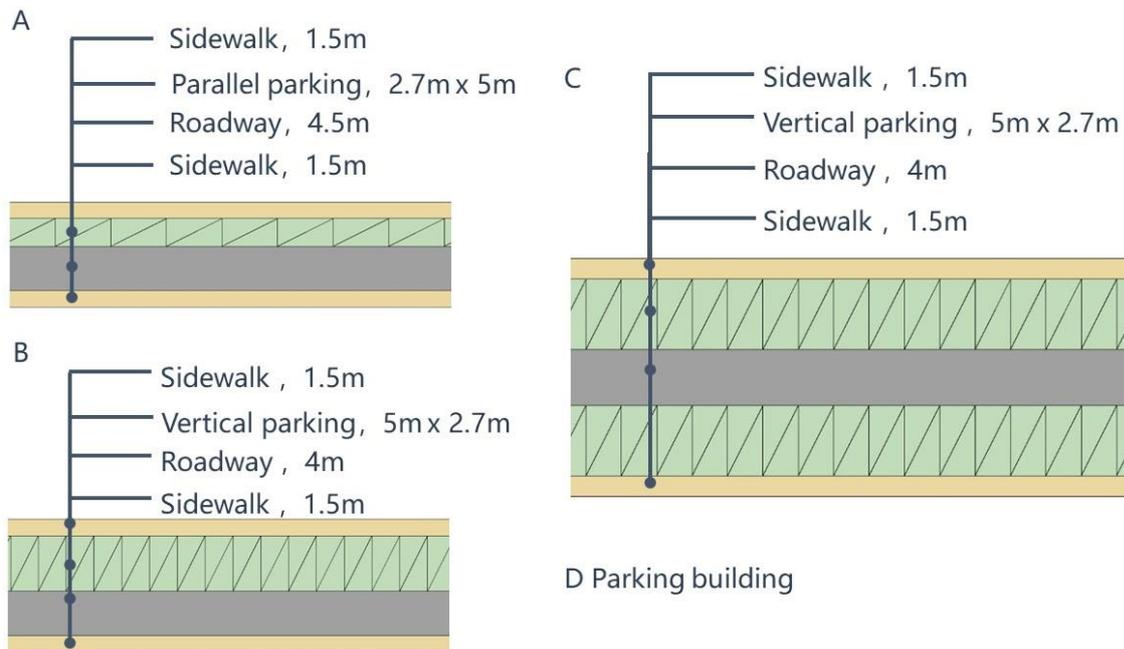


Figure 18. Four optimized options for neighbor's roads (Source: drawing by the author)

At the same time, with the upgrading process of neighbor roads, the project has the purpose to provide the residents with great community experiences via the demolish of unauthorized constructions. Specially, green corridors along rivers are based on the ecological restoration and public infrastructure improvement. In the view of the collective of re-appropriation of rivers, there is re-activation of the waterway and the pedestrian promenades along its banks. People can

walk alongside the water. Inverted images of people on the uneven surface of water create beautiful and comfortable natural scene. Child dip their feet in the shallow water, which is a calmer, more passive alternative to running through the fountains.

Third, the most important, non-motorized traffic network is constructed based on the original urban fabric (Fig. 19). It provides an indelible opportunity to reconnect isolated neighborhoods. Various public facilities are located near non-motorized ways, such as daycare centers, health centers, kindergartens and other recreational and sports facilities. It creates profound social infrastructure framework and enables better care of these disadvantageous groups which are main demographic composition in Nanhu Community. Beside, several pocket parks are created with the non-motorized traffic network including parks, plazas, squares, linear parks and open space formats that have been instrumental in promoting healthy, sustainable, and equitable outcomes in Nanhu Community. And there are multiple ways including stairs of bluestone and stepped planters to enter the public spaces.



Figure 19. Non-motorized traffic network (Source: drawing by the author)

## Conclusion

Values of urban fabric mainly reflect its history and development of urban construction. A series of structure and spatial system are built through various combination of buildings, under the influences of different backgrounds and lifestyles. These historical urban fabrics, with the collective memory and unique traditional features, are irreplaceable assets and important foundation for urban future development. Thus, not only values of urban fabric in historical districts, but also values in any other common districts are easily ignored. Such as Nanhu Community, a typical traditional residential area, would easily flung into chaos of urban character and lose identity due to the convergence of urban fabric on the basis of globalization, urban high-speed development and urban blindly construction. The paper aims at creating a new mode to continue the historical context in regeneration of traditional residential areas through investigation of evolution and characteristics of historical urban fabric. It heals the physical and mental harms done to the local community, who has suffered the degraded environment for decades.

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