

RESEARCH ON PUBLIC SPACE DESIGN IN OLD  
COMMUNITIES BASED ON THE PERSPECTIVE OF  
MICRO-RENEWAL

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## **Abstract**

The decline of urban and community public spaces in urbanization is a common challenge faced by cities worldwide. Nowadays, the development center of urbanization has shifted from the horizontal increment of the city to the vertical development of the existing stock of the city. The size of the city no longer measures the city's quality, but the city's characteristics, vitality, and community space become new growth points for urban quality.

In the past development of urban public space, renewal means the demolition and reconstruction of the city. Facts have proved that this renewal model has not only failed to ultimately improve the quality of urban public space and stimulate urban vitality but has brought serious urban gentrification problems.

As a new concept of urban public space construction, micro-renewal can protect the historical texture and style of the original space and activate the vitality of urban space based on solving the problem of urban and community stock optimization. In addition, it can effectively alleviate the problem of urban gentrification.

Under the background of urban public space renewal, this dissertation studies the relevant theories of urban public space and architecture. It uses literature, data analysis, and case study analysis methods to systematically analyze the concept of micro-renewal from the aspects of space value, function, and form. Describe and summarize the micro-renewal design principles and design methods of public spaces in urban communities. Finally, implement the design concept of micro-renewal into masterpieces.

**Keywords: Stock, Urbanization, Public space, Community Renewal, Micro-Renewal, Community Spirit, Vitality**

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# CHAPTER 1. INTRODUCTION

## 1.1 RESEARCH BACKGROUND AND MOTIVATION

### 1.1.1 BACKGROUND OF URBAN DEVELOPMENT

According to statistics from the World Bank [1], by the end of 2021, China's urban population accounted for 62.51% of the total population. Although China's urbanization rate is still somewhat different from that of many developed countries (e.g., Hungary, Czech Republic, Switzerland, Germany, France, UK, USA), it has increased by almost 50% compared to China's urbanization rate in the 1960s. (Fig.1)

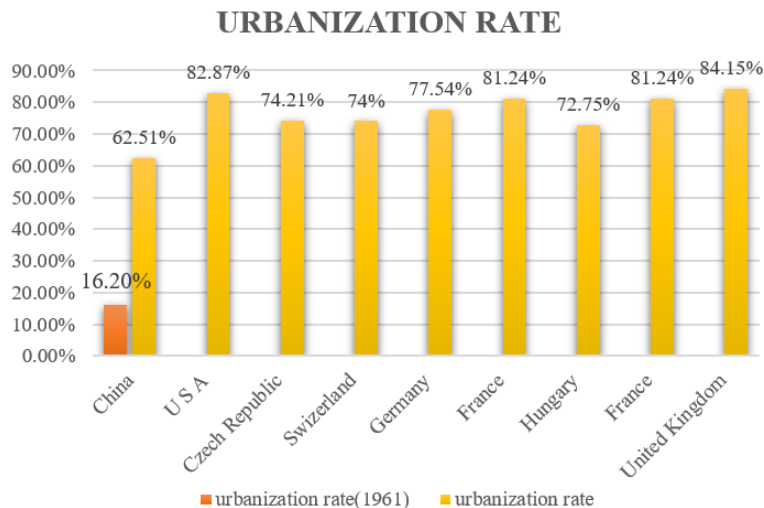


Fig.1 Level of urbanization. (Source: Drawing by Author)

Over the past 60 years, the development of China's cities has focused on the solution to the problem of housing the expanding urban population, the industrialization and modernization of the country's urban infrastructure, and the incremental growth of horizontal urban development. It was characterized by a gradual expansion of the urban landscape, a simple program of inner-city demolition and redevelopment, and a clear distinction of the city's political, economic, and industrial zones. At that time, there was

an apparent dichotomy between the new and the old, and as Corbusier depicted in his book, the new city was to be built on flat land [2]. Since the 1990s, many residential areas have been built in the demolished areas of China's major cities, which solved the problems of poor housing and living conditions. At the same time, old city streets and urban systems were refurbished and renovated. In the last decade or so, the scale of cities has gradually expanded, the scale of construction has continued to grow, and building technology has developed rapidly, with over 2 billion square meters of the new building area being added each year in China [3], making the scale of urban construction overgrowing and over a vast area.

Large-scale urban construction and renewal have played a positive role in improving the housing conditions of urban residents. However, along with the merits, the old city renovation and community demolition campaigns in cities have also brought about severe social problems. The number of real estate development projects in cities has increased dramatically with the opening up of urban land sales and real estate development policies in China. A great deal of practice has shown that large-scale urban redevelopment has the disadvantages of wasting resources and destroying the identity of the original community and is essentially an "unsustainable" form of renewal. In contrast, "micro-renewal," which has little impact on the integrity of urban and community public spaces, is more suitable for revitalizing neighborhoods and urban public spaces.

With time, most of the public spaces in old communities have developed problems that do not adapt to the rapidly growing modern life, characterized as follows:

1. the safe service life of community residences is within national standards, but the functions and landscape facilities of public areas in residential communities are gradually falling into disrepair and lagging behind modern urban life. According to statistics from China's Ministry of Housing and Construction, the number of old neighborhoods in China's cities will be about 170,000 by 2020, with 160,000 built

before 2000. The communities were created earlier, with an average age of more than 20 years. Also, the housing and environment within the community have not been well maintained and modernized, resulting in poor environmental quality, limited building functions, and a lack of community public space and infrastructure facilities. According to statistical data, there are still more than 42 million households living in such communities [4].

2. With the increasing level of economic development in cities, the number of automobiles in cities is increasing, which has led to a constant compression of community public space. The current state of traffic in the cluttered community public space has seriously affected the community leisure activities and travel safety of community residents.

3. Since old communities in cities are built long ago, and without community service, residents build temporary structures in the communities privately to obtain more land use rights in the communities, resulting in the disorganization of the community public space and the loss of community morality and community spirit. At the same time, temporary buildings without safety permits also pose serious safety risks to the community.

### **1.1.2 POLICY BACKGROUND**

For a long time, the Chinese government has been trying to improve human living conditions. Since the beginning of the new millennium, China has issued several legal documents related to the renewal of public spaces in old communities to promote urban renewal further and increase the livability of cities. The author summarized the documents in chronological order (Fig.2).

<i>Time</i>	<i>Department</i>	<i>Name of regulation</i>	<i>Details</i>
2007	Ministry of Housing and Urban-Rural Development of the People's Republic of China	About Launching the guidance intention on the improvement and transformation of residential areas	It's the first time to put forward the normative requirements for old community which means the beginning of the renewal of old communities
2008	Government of China	Town and Country Planning Law	The Law stipulates that the concept of new urbanism and smart growth should be incorporated into the national urban construction
2016	Government of China	Several Opinions on Further Strengthening the Management of Urban Planning and Construction	Documents highlight renewal of cities neighborhoods and context
2017	Ministry of Housing and Urban-Rural Development of the People's Republic of China	Guiding Opinions on Strengthening Urban Renewal Work for Ecological Renewal	Document points out the need to improve the quality of the urban environment, and emphasizes the community renewal once again
2019	Urban Renewal Professional Committee of China Urban Science Research Association	Technical standard for comprehensive renewal of old urban residences	The standard marks the guidance for the community renewal of Chinese city should be carried out landscapes traffic system architecture form
2019	Government of China	A State Council Meeting Document	The first time raised the need for civic participation in community renewal projects
2020	Department of Housing and Urban-Rural Development of Hubei Province	The Guidelines for renewal of urban residential areas in Hubei Province	The guidelines describe in detail the goal, principles, scope and organizational, structures, and sources of funding
2020	General Office of the State Council of the People's Republic of China	Guiding opinions comprehensively promoting the renewal of old communities	The document aims at the renovation of old residential areas before 2000, increasing the number of renovations in old communities expanding the scope of renewals. Emphasizing the need of resident participation
2021	General Office of the State Council of the People's Republic of China	14th Five-Year Plan and 2035 vision	The plan shows that China need to speed up the pace of urban renewal, and urban community renewal

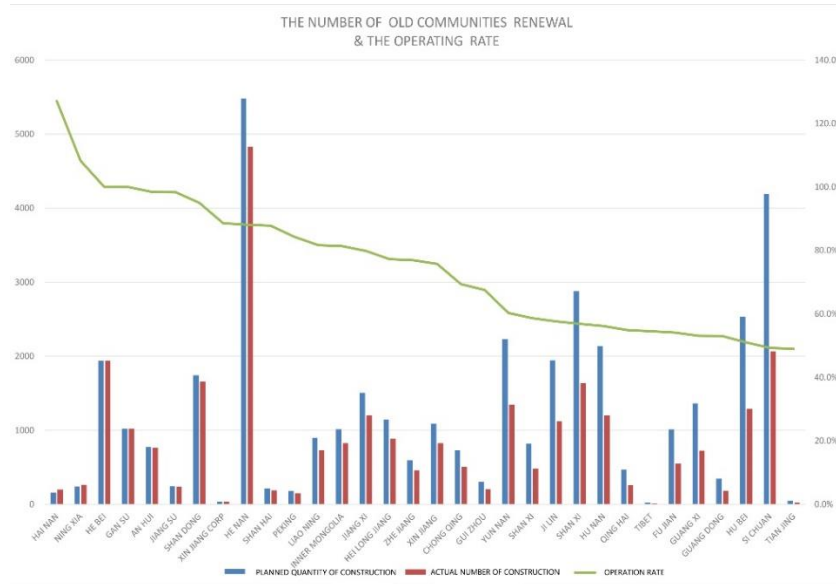
FIG-2: Illustrate by the author (summary by the author)

### 1.1.3 MOTIVATION

The development of Chinese cities has reached the second half of urbanization development. Most cities are slowing down or even gradually stopping the scale of urban expansion, reducing the "horizontal development" of cities and progressively transitioning to "vertical development." This process of urban quality improvement inevitably involves the renewal of many old urban residential communities. According to the data on the renovation of old neighborhoods released by the Ministry of Housing and Urban-Rural Development of the People's Republic of China in 2020, thirty two provinces have already renovated old neighborhoods, and 70% of the renovation projects have been started (Fig.3). From the chart, we can get two conclusions.



1. the scope of community renovation in China is enormous, involving almost all areas of China's inland provinces.
2. the scale of communities is large, and the base of community renovation is vast.



*Fig.3 Statistic from the Ministry of Housing and Urban-Rural Development of the People's Republic of China  
(Source: Drawing by the author)*

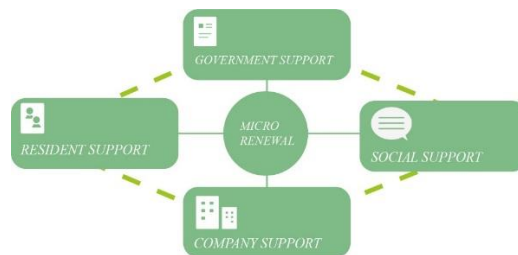
Most of the old neighborhoods in our cities are located in the center of the town. Past renovation experience tells us that although redevelopment (gentrification) can improve the appearance of the city in a short period, the high housing price and the conflict of interests between the government and the residents after the renovation also become an obstacle to sustainable development of the city. Conflicts and contradictions around housing compensation and other attractions will negatively affect the city's harmonious and stable sustainable development [5].

The community is the smallest unit of the city and where the city residents have the most connections. It has the dual attributes of regional humanistic memory and inheriting the city's unique culture. If the original community structure is overturned, it will profoundly impact the city's unique culture, eventually leading to the fragmentation

of the urban fabric and the dissipation of the humanistic spirit. Although the "knock-down-rebuild" approach can quickly improve the quality of urban areas, the re-planned areas destroy the original pattern and texture of urban space, eliminating the city's spatial characteristics and resulting in a one-sided pattern of a thousand cities [6].

The concept of "micro-renewal" is integrated into the community public space renewal process, aiming at solving the problems of the community public space environment based on targeted and "low-intervention" transformation without changing the original community spatial structure. Micro-renewal is more conducive to preserving the city's cultural heritage and urban characteristics than the "demolition and renovation" model and can stimulate urban vitality, strengthen urban memory, boost urban economy, and thus promote the city's sustainable development.

Although the scale of old community renewal projects is much smaller than that of new community projects, the renovation of old communities requires the cooperation and joint participation of the government, social capital, community residents, and enterprises, so the "micro-renewal" projects of community public space can promote the coordinated and orderly development of the whole society. Therefore, micro-renewal projects in community public spaces can promote social forces' coordinated and orderly development (Fig. 4).



*Fig.4 Multi-participation of Micro-Renewal (Source: illustrated by the author)*

These are the motivations for adopting the concept of micro-renewal in community public spaces.

## **1.2 SIGNIFICANCE**

The development of cities is often accompanied by the annexation of urban land and the increase of land value, especially in urban centers. Although demolition and redevelopment can improve the appearance of the city in a short period, they can also destroy the identity of the original community and the urban landscape. This type of regeneration also increases the burden on the city's finance and a massive waste of resources, which is essentially an unsustainable way of regeneration. As an alternative to demolition and redevelopment, "micro-renewal" is significant to the sustainable development and preservation of the urban landscape.

### **1.2.1 THEORETICAL SIGNIFICANCE**

The renovation of old communities is one of the essential elements of urban renewal. On the one hand, with the urban renewal movement, the urban blueprint of the times can be carried out smoothly, and creating a city with characteristics is possible. Therefore, the rational "micro-renovation" of public space in old communities enriches the urban planning and implementation theory. In terms of improving the residents' quality of life, a more targeted and human-scale renovation of old communities can not only enhance the sense of belonging and pride of the community residents but also attract foreign visitors and investors, which is the objective requirement of social development for renovation. Therefore, the theoretical study of community micro-renewal has the following theoretical significance.

1. To build a theoretical research framework of community micro-renewal: At present, the transformation of China's old urban communities is mainly focused on urban planning and community infrastructure, but there is less research on "community culture" in the public landscape of communities, and no complete "micro-renewal of old communities" has been formed. Based on the current background of urban renewal, the authors analyze the cases of the development and transformation of old

communities at home and abroad and referred to existing research findings and projects. The author has sorted out the "micro-renewal" of public environment landscape of old communities suitable for China's national conditions. The authors discuss the concept of "micro-renewal" of community public space as an entry point to further understand the inner mechanism and development trend of community micro-renewal and to construct a "micro-renewal" design strategy for public landscape space in old communities in Hubei Province based on the general background of old community renovation and current community renewal environment planning, "Micro-renewal" design strategy for old community public landscape space.

2. Enriching the idea of Chinese urban public space at the micro level: Community public space is an indispensable type of urban public space, an essential part of urban residents' life, and an important part of urban planning and urban science. With the beginning of the industrial revolution of humanity, the European countries and the United States entered a rapid period of capitalist development. The introduction of the Athens Charter marked the formal establishment of the modernist urban planning discipline, and the modern urban planning discipline and public space thought in Europe and America were born. After nearly 100 years of development, urban design theory has a profound theoretical and practical foundation. However, the problem of public space in cities still exists today, especially the problem of community public space is still a hot urban reality. In the 1990s, the theory of livable communities and the theory of smart urban growth, marked by New Urbanism, were established [7]. The new urban and rural planning law implemented in China in 2008 incorporated the New Urbanism theory and related theories (livable city theory, high-density urban planning, and transportation system theory promoted by the "compact" and "smart growth" city concepts). Although the new urbanism is reflected in new buildings and communities in China at the macro level, it still needs to address the public space environment of older communities. "Micro-renewal" design theory, as a supplement to the public space of communities in urban construction, reveals the future development dynamics of

public street space in old communities and enriches the public space thinking of China's cities at the micro level.

### **1.2.2 PRACTICAL SIGNIFICANCE**

This paper analyzes the concept of community "micro-renewal" from the perspective of comprehensive development and the overall opening of community space. This paper also guides the design direction of community micro-renewal from the concept of "micro-renewal" and the sub-research of the paper. It provides directions for the future sustainable development of public areas in the city. In order to optimize the small-scale community public space, we aim to coordinate the relationship between the old community space and the urban development in order to achieve the symbiosis between history and contemporary, to continue the urban culture, to inherit the community culture, and to revitalize the urban space in practice.

## **1.3 METHODOLOGY**

### **1.3.1 LITERATURE REVIEW METHOD**

According to the research direction, we analyzed and summarized the existing theoretical literature at home and abroad to compile the relevant information. At the same time, the research has a deeper understanding of the keywords of the old community, micro-renewal, and spatial landscape transformation in multiple directions. The research also summarizes the feasibility and necessity of landscape transformation of the old community through the "micro-renewal" approach providing a theoretical basis for the design.

### **1.3.2 SUB-RESEARCH**

Based on relevant theoretical research and essential information on transformation subjects, we combine landscape and micro-renewal design techniques, select excellent cases of old community transformation at home and abroad, and summarize relevant

transformation experiences to explore the ideas of landscape transformation design of public space in old communities.

### **1.3.3 FIELD RESEARCH AND DATA ANALYSIS METHODS**

The old communities in Wuhan and Huangshi are undergoing community transformation work. Based on the community renewal design work he has participated in, the author has conducted more detailed field research and data analysis, and field interviews on the old communities to obtain adequate first-hand information and has a thorough understanding of the breadth and depth of the community transformation, and understands the development background of the old communities and the real problems faced by the communities at present, to provide a realistic basis for the later targeted research work and design transformation work.

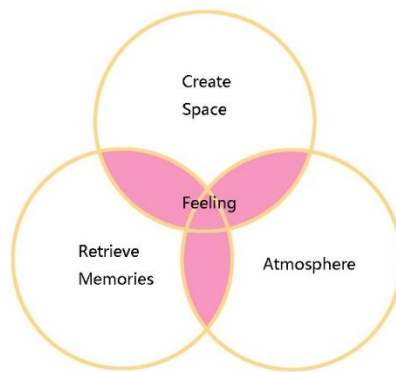
## **1.4 RESEARCH INNOVATION**

(1) Combining the examples of public space micro-renewal in the Rose West community in Wuhan and the Feng Ye Shan community in Huangshi, the author summarizes the directions of community landscape renewal and cultural creation and tries to discover the entry points for the integration and development of community environment enhancement and unique history and culture.

(2) Contrast the traditional urban renewal approach of "big demolition and big construction" with the "micro-renewal" concept of this case, and integrate the modern "sharing" model into the public areas of the community. In this case, the modern "sharing" model is integrated into the "micro-renewal" approach. New transformation modes are explored by combining the regional and unique characteristics of different areas with the actual situation of the area.

(3) Tapping into the community culture. The communities mentioned above are the products of different backgrounds, regions, and historical periods, with their unique and

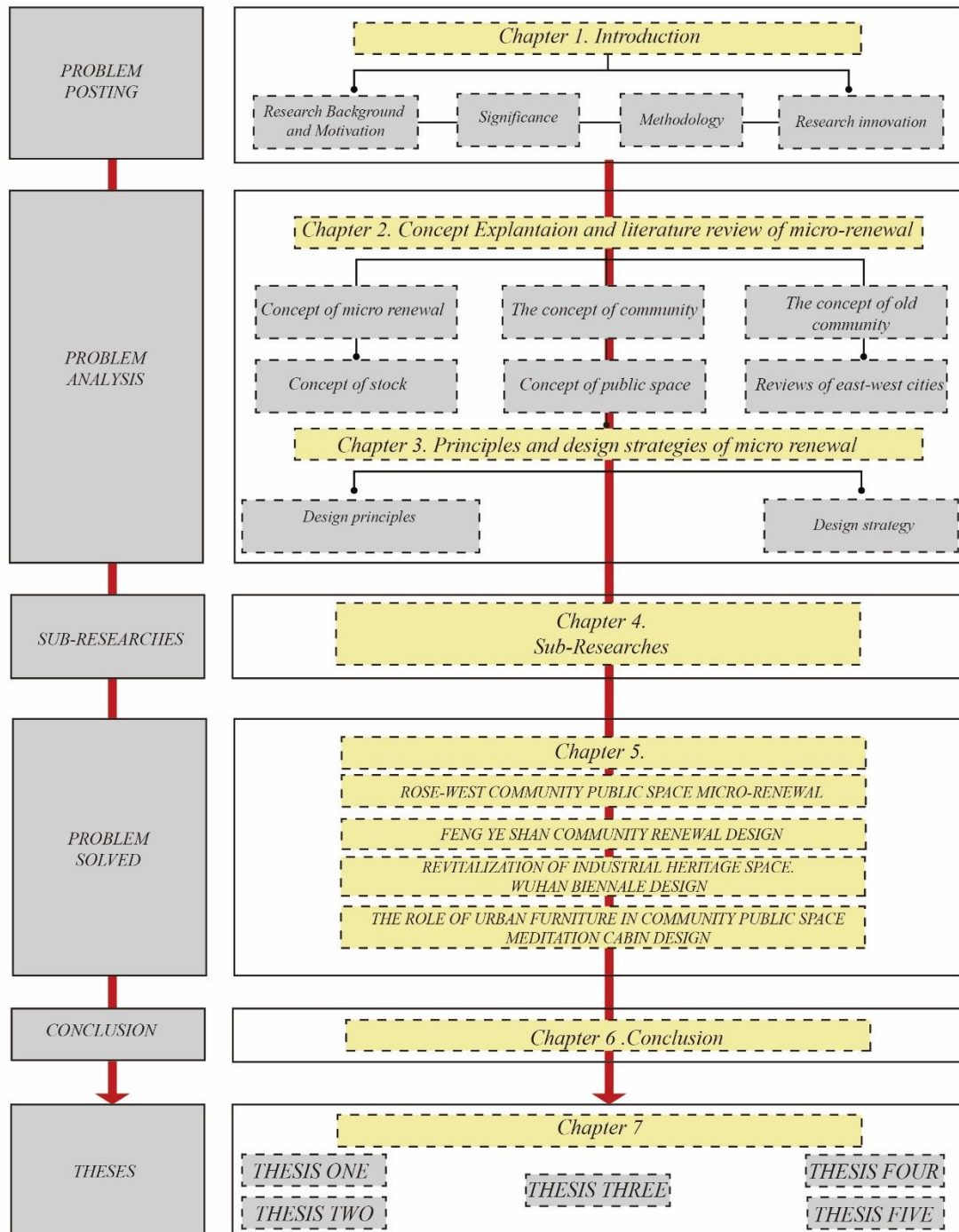
rich cultural heritage. The Feng Ye Shan community locates in the downtown area of Huangshi City. The community property belongs to Huangshi Huaxin Cement Factory, so most of the community residents are employees or family members of the cement factory, and most are Huangshi locals. Wuhan Rose West Court community is one of the first real estate communities, newer than the above two communities. Although it has a thorough background of community culture, the community residents are not all employees of the same company or factory, so the neighborhood connection is poor, and the community spirit is thin. Through the renovation design of two communities with different backgrounds and distinctive features, the authors attempted to present the historical memory and community culture of the communities by "recovering memories," "creating space," and "creating atmosphere" and community culture (Fig.5)



*Fig.5 Presentation method for community micro-renewal (Source: Drawing by Author)*

## 1.5 RESEARCH FRAMEWORK

### RESEARCH ON PUBLIC SPACE DESIGN IN OLD COMMUNITIES BASED ON THE PERSPECTIVE OF MICRO-RENEWAL





# CHAPTER 2. CONCEPT EXPLANATION AND LITERATURE REVIEW OF MICRO-RENEWAL

## 2.1 CONCEPT OF MICRO RENEWAL

Micro-renewal refers to renovating and restoring small-scale public spaces in cities and communities, including transforming play facilities, landscape ecology, and site use in public spaces.

The micro-renewal approach to renewal focuses more on the protection of the city's historical heritage and existing buildings. Through the renewal and renovation of buildings, the public space can meet the needs of modern urban residents for living and use while preserving the historical and cultural values in the space. Advantages of micro-renewal includes increasing urban functions, enhancing an urban image, activating urban vitality, and increasing people's sense of well-being in living. In addition, this type of urban restoration reduces the financial risk and the pollution caused by construction, promoting the city's sustainability. (Fig.6)

COMPARISON OF COMMUNITY RENEWAL MODE		
Pattern	Micro-Renewal	Blind Reconstruction
Scope of reformation	Small	Huge
Period	Short Period	Long Period
Financial	Less Capital Investment	Large Amount of Capital Investment
Policy	Flexible	Rigidity
Participant	Government , City Investment Corporation Company, Designer , Residents	Government , Personal Real Estate Company, Designer
Cultural & Historical Protection	Good	Non

*Fig.6 comparison between micro-renewal and blind reconstruction*

*(Source: Drawing by the author)*

In Chinese, "micro" means small and gradual. "Renewal" means innovation, renovation, and replacing old things with new ones. Therefore, micro-renewal is a small and incremental approach to achieve a new effect.

## 2.2 THE CONCEPT OF COMMUNITY

The concept of "community" was first introduced by the German sociologist *Ferdinand Tennes* in his book "*Community and Society*," in which *Tennes* argued that "community is a social association based on blood and kinship ties, in which the natural will of emotions prevails, and the will of the individual will suppress by the emotional, common will" [8]. The definition of community in the Chinese context originates from the 1930s, and the community interpretation emphasizes the community as a commune and team of non-kin blood. Citizens and communities, as well as the multifaceted elements of territorial attributes, whose residents within the community interact, share similar social activities or value orientations, and, above all, they need to live together simultaneously within an area.

In 1955, the American sociologist Hilary synthesized many definitions of community and formulated them in a unified manner. He argued that the following conditions are necessary to form a community:

1. similar or similar economic structures.
2. social needs that are mutually desirable.
3. unified or similar social identity and social values, none of which is necessary.

Although the researchers were in different historical eras and different social development forces, their perceptions of community deviated. Tennessee mainly analyzed traditional agricultural societies as the background, where community members were familial primarily with a strong sense of territory between communities. They have more vital family traditions and know other community members well. The subsequent community research theories took the industrial era as the background, and the composition of the community was more complex and diverse. Both, however,

invariably emphasize the need for communities to be connected. In the Encyclopedia of Chinese Sociology, the theory of "community" includes "dwelling, area, institutions, occupants, community economy, culture, interpersonal relations, and public facilities" [9]. In this paper, the community is considered a "socio-spatial unity" and has both physical and social properties (Fig.7). The physical attributes include the physical space of buildings, the gray space of buildings, the public space of the community, the public services in the community, and the physical environment of the community landscape; The social attributes contain community services, community structure, public consciousness, community culture, public participation in public interaction, Etc.

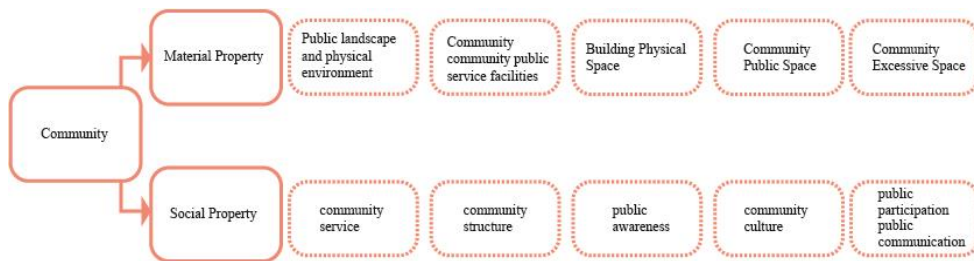


Fig.7 The dual character of the community (Source: drawing by the author)

### 2.3 THE CONCEPT OF THE OLD COMMUNITY

Most old communities are residential communities funded by the government and work units before the reform of the unit system. Compared with the new-type communities in the current cities, most of these communities are not up to date [10].

Functional facilities, community spaces, landscapes, interiors of community buildings and roads, security measures, and use values in such communities are outdated. There are generally problems in the community, such as backward environmental conditions, lack of community public facilities, lack of landscape coverage, and insufficient expression of community culture. However, it is precisely because of the relatively long history of the community that the residents living in such a community have formed almost similar living habits and cultural values due to the long-term and close common living conditions and environment and have a relatively close and stable neighborhood

relationship. Make the social attributes of the old community more prominent.

## 2.4 THE CONCEPT OF STOCK

1. Stock land: In a broad sense, stock land refers to the land occupied or constructed in the city. In a narrow sense, it refers to the idle, unused land and land that has yet to be fully developed and utilized within the scope of the current urban construction land.

This kind of land often appears with unreasonable and incomplete development, which leads to the low output value of land value and imperfect creation of space sense, affecting the region's environmental construction. However, this land is also precious for development and exploitation potential.

The "stock land" described in this article refers to the incomplete and unreasonable land in the community, that is, the community functional area that community residents cannot use.

2. Ecological landscape stock: the ecological relics that have been artificially intervened in the development time and space of the city, and then abandoned, and allowed to continue to grow naturally. This type of ecological landscape can be restored and reconstructed. The natural stock of resource value and environmental value has a certain ecological service value and production support function in developing cities and communities [11]. (Fig-8)



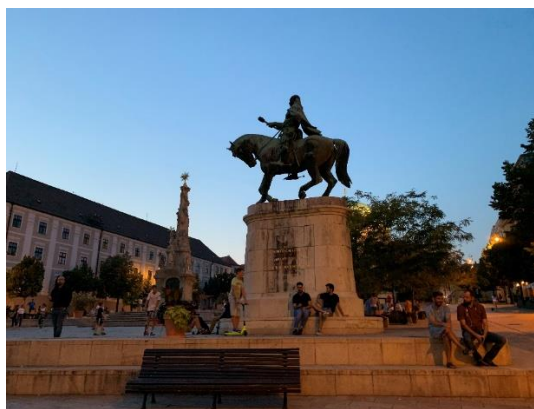
*Fig.8 Stock in a community (source: Photo by author)*

3. Population stock: Kisho Kurokawa mentioned in the book, "urban development in

the 21st century will be accompanied by a large number of population migrations, and the 21st century is an era of *moving people*” [12].

The stock population of the community is developing dynamically. With the city's development, the need for work, and the gradual aging of the overall environment of the community, the population of community residents usually has aging residents, middle-level population gaps, and the loss of a new-generation population. Most urbanized residents cannot change their living environment or space due to physical and economic factors. At the same time, the capable middle-class population moves out of the community because of the dilapidated environment of the old community and no willingness to change. These factors further lead to the loss of the community stock population, forming a vicious circle.

4. Cultural stock: refers to the cultural heritage and traces in cities and communities. The quaint appearance, architectural style, spiritual sculpture, old facilities and equipment, unique building materials, and construction styles in the old community fundamentally differ from those of the new generation community (FIG 9). For urban development, the surviving old communities' current internal architecture and environmental and cultural stock have traces of urban development and particular "cultural" value. They are an indispensable part of the urban cultural stock.



*Fig.9 Cultural stock in Pecs (source: photo by the author )*

## 2.5 THE CONCEPT OF PUBLIC SPACE

The concept of “public space” was first proposed by German scholar *Habermas*. He believes that "public space refers to one or some areas of social life that should be open to all citizens. According to Habermas, public space is a buffer zone between civil society and the state. It is independent of the field of politics and economics. In Habermas's idea, citizens can debate public affairs in public space and form a public opinion to supervise government behavior [13]. His theory has strong communication and social behavior. In general, community public space is defined as a space that can provide a safe place for human activities.

Public space is outside architectural entities, including streets, squares, green spaces, parks and natural spaces, and humanistic spaces (including traditional culture and customs), which are a subsystem of urban and community environmental systems. Appropriate public space design can strengthen the functions of communities and cities and improve the quality of communities and cities.

Public space is a precious and rare area in communities and cities. Other technologies cannot replace the sense of reality created by the unique place and media attributes. In the era of rapid technological development, people can communicate with people thousands of miles away through the Internet. However, communication through screens and words cannot make people get rid of isolation and isolation. Public space is still the best carrier of public activities. It is a place that can provide human beings with sight, touch, hearing, and smell. As *Jan Gehl* said, “*Once there is a place, people can invite behaviors, and human social behaviors can follow the trend.*”

As the carrier and presentation place of community life and awareness, community space intuitively reflects the quality of the urban environment and the form of human social activities. It determines the impression of residents on the community and the

city. As Aristotle described it: "A city is built to give its citizens a sense of security and happiness [14]".

## 2.6 RENEWAL RESEARCH REVIEWS OF EAST-WEST CITIES

The lineage of development of community public thought renewal in Western cities can be divided into the idea of urban public space renewal during the agrarian society, the idea of urban planning and modernist urban thinking based on industrial technology, and the postmodernist and new urbanist thinking from the 1990s to the present (Fig. 10).



*Fig.10 Development diagram of urban design theory*

*(Source: Drawing by the author)*

Although the development of urban renewal theories is sometimes in different lines, without exception, the theoretical thinking of any period has accumulated experience and contributed to the subsequent development of urban renewal. In this chapter, the author will describe the development process of urban renewal through the order of time development.

### 2.6.1 REVIEWS OF WESTERN URBAN RENEWAL RESEARCH

The modern idea of urban renewal began with revolutions. With the rise of the Industrial

Revolution in Europe in the 18th century, transformations in modes of production and social organization led to far-reaching changes in the structure of urban and rural life (Fig.11), and the development of capitalist industrialization of cities diminished the defensive needs and religious overtones that influenced urban development.



*Fig.11 Manchester, England, during the Industrial Revolution*

(Source: <https://zhuanlan.zhihu.com/p/351125745>)

The symbolic, classical aesthetics and strong individual artistic creation of the public space structure of urban communities developed in ancient Greece, Rome, and the Renaissance were no longer adapted to the demands of capitalist industrial production. The urban space (especially the community public space) also became the primary problem of urban development in Europe at that time due to the traffic, pollution, urban diseases, and housing problems caused by the city's overpopulation. The urban planning system inherited from agricultural societies could not solve the urban problems in the context of industrial cities, thus prompting designers and scholars of the time to study public space. At the same time, with the emergence of humanistic sociologists such as Montesquieu and Rousseau, the spirit of the social contract, the concept of democracy, and the idea of human rights were established as the essential elements of the capitalist system, and the development track of capitalist society gradually shifted from bureaucratic society to civil society.

The trend that forced the transformation of the British economy to agriculture in the 18th and 19th centuries caused a significant reshuffling of the British population and laid the foundation for the move towards an urban-minded society [15]. The



development of transportation expanded the influence and radius of cities. It strengthened the process of urban centrality, and further urbanization and industrialization brought severe problems and challenges to urban space.

With the expansion of cities, public health in urban spaces has become an urgent problem to be solved. For this reason, the British government successively promulgated *Nuisance Remover Acts*, *Environmental Health Acts*, *Public Health Acts* and *The House of The Working Class Acts* and a series of laws and policies [16]. These laws' promulgations are used to curb and reverse the continued deterioration of urban public space. Moreover, through the government's administrative management, the city's slums, brownfields, municipal systems, and other urban public spaces and facilities are renovated and reconstructed [17]. Intervention and support run through the beginning and end of the study of public space in British urban communities. At the same time, the urban public space in Paris faces severe problems. The city is overcrowded, dangerous, and dirty. (Fig.12)



*Fig.12 Urban scene of Paris, France, in the 19th century,*

*(Source: <https://zh.wikipedia.org>)*

The problem in Paris has been recognized as far back as the eighteenth century. Voltaire once described the narrowness of the streets of the Paris market, the unreserved display of the city's squalor, and the chaos and disease that can be seen everywhere in the city

[18]. In the middle of the 19th century, French architect *Sacer Dali* founded the first urban planning magazine in French history, *Revue générale de l'architecture et des travaux publics*, in which he criticized the problems of urban planning in Paris. In June 1853, *Georges-Eugène Haussmann* was elected governor of the Seine, and on the 29th of the same year, he opened the world-renowned Haussmann's Paris transformation plan. The Paris renovation plan was divided into three phases. In the first phase, nearly 10,000 meters of road engineering were completed. At the same time, the renovation team was also actively transforming the underground pipeline system in Paris so that urban sewage would no longer pollute the Seine River. After more than ten years after the transformation process, the city appearance of Paris has undergone qualitative changes, sweeping away the old scene before. At the same time, the "green space" plan was launched in Paris, adding a series of public spaces such as city squares, green space systems, shared parks, and boulevards. Haussmann mentioned in his memoirs that King Napoleon III of France ordered: "Green space construction should fill all districts of Paris, and the time for citizens to walk into the park should not exceed ten minutes" [19]. At the request of *Napoleon III*, the *Ottoman* developed 24 new public squares, 17 of which were distributed in the old urban area, and added 150,000 square meters of green space to the city. Opening the green space was undoubtedly immediate, allowing Parisians to see green mountains and waters and enjoy actual development results. "

Whether it is the urban renewal project in the UK or the urban renewal project in Paris, France, it is no surprise that it is to reconcile the contradiction between the development of urbanization and industrialization and the lack of carrying capacity of backward cities. The urban system, residential planning, and green park construction during this period all revolve around this central idea.

*Ebenezer Howard* was a representative figure of this period. In his book *To-tomorrow: A Peaceful Path to Real Reform*, he proposed the "Garden City" because of urban congestion, poverty, and deterioration of the living environment. "Ideological theory,

he believes that after the city's boundary reaches a specific range, it should stop expanding, but the excess part of the city should be transferred to adjacent towns.

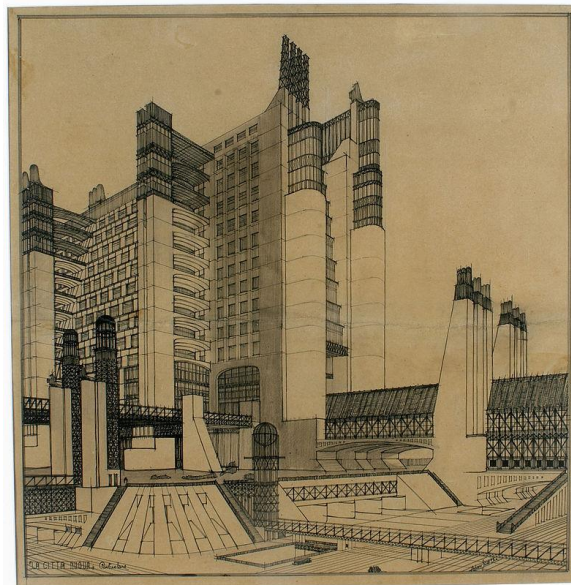
The "*Garden City*" theory is a method to balance industrial areas and residential areas. The urban planning theory of agricultural area proportion [20], his theory contains the viewpoint of the marginal effect of carrying capacity in the public space of urban communities, and it is also the road to sustainable urban development under the conditions of science and technology at that time. *Patrick Geddes*, a Scottish urban planner, mentioned in the book *City Development, A Study of Parks Gardens and Culture-Institutes: A Report to the Carnegie Dunfermline Trust* that industrialization brought congestion to cities and urban sanitation well as social problems. It proposes using urban green and public spaces to solve such problems. Further, it proposes that the development of cities should include research on urban cultural development and urban sociology. For the first time, he introduced the concept of "region" into the framework and planning of urban space and innovatively proposed the term city conurbation [21].

The urban space theory of *Geddis*, contains a strong spirit of humanism. He proposed that urban planning is not only about location and work, but more importantly, about people. He promoted public participation through exhibitions, education, and mobilization. The activism of the masses creates community public spaces.

## **2.6.2 THE DEVELOPMENT OF MODERNISM PUBLIC SPACE RENEWAL THINKING**

After the First World War, Europe ushered in a period of stable development. The population of Europe exceeded 500 million [22], a considerable population gathered in the city, and the city once again faced pressure from the environment, traffic, and housing, driven by the electrical revolution, urban science, and technology differ from decades ago. In order to deal with the new round of urban problems, all social strata

naturally think of using more efficient technology to serve the city. Standardization and rapid construction to solve urban community space problems. With the establishment of the democratic system and the prosperity of European culture and art, the "futurism" advocating science and technology occupied the theoretical high ground of community public space for a while. In 1909 the Italian poet *F. T. Marinetti* published the "Manifesto of Futurism," which emphasized the love of speed and technology and that humans should admire machinery and technology. In the eyes of futurist scholars, the urban space full of cars, airplanes, and industries is the "New Jerusalem" (Fig.13) in their eyes. They believe the city's development should only focus on the future, looking for new architectural styles and forms. This break with history and tradition and the aesthetic trend of advocating technology and speed gave birth to the idea of public space in modernist urban communities advocating rationality and functionalism.



*FIG.13 Futuristic City Intention (source: Antonio Sant'Elia)*

*Le Corbusier* is one of the representatives of functionalism and the founder of the modernist urban movement. In 1922, he published the book "*Urbanism*," which elaborated an urban planning plan for a population of 3 million, consistent with Howard's garden city theory. The difference is that Corbusier emphasized "urban centralism" and advocated solving urban congestion problems through high-density methods (such as skyscrapers) and establishing an elevated road network structure that

separates people, cars, and railways. The book's central idea is to Evacuate the city's central urban area and increase the city's density, improve the traffic problems in the city, and provide citizens with green space, sunshine, and urban public space [23]. Although his plan has been hotly discussed and debated by all parties, he also opened the innovation of the theory of urban planning theory. In 1928, under the initiative of *Le Corbusier*, Congress International-Architecture-Moderne (CIAM) was established, and in 1933 presided over the formulation of the "Athens Charter." The modernist urban system was formed with the introduction of the charter. The core ideas of Le Corbusier can be briefly summarized as clear functional zoning ideas, a comprehensive urban road network system, high-density skyscraper buildings, and determinant residential community theory. His utopian ideals were the fundamental guiding ideology of much urban planning from 1930 to 1940, which finally led to the completion of the Marseille apartment in 1952. (Fig.14)



*Fig.14 Apartment in Marseille*

(Source: <https://www.archdaily.cn/cn/928613/adjing-dian-ma-sai-gong-yu-le-star-ke-bu-xi-ye>)

*Clarence Perry* proposed the Neighborhood Unit urban community theory in 1929. He regarded the Neighborhood Unit as an integral part and cell of an urban community. From a formal point of view, the outer boundary of a neighborhood unit is composed of "external road systems, but the internal road planning is inconsistent with the external roads being connected, and external vehicles passing through the community will also

be strictly restricted. Public facilities such as community commerce, services, and community public spaces are inside the neighborhood units, the residential unit's cultural identity and sense of belonging. Perry's independent community concept is considered comprehensive physical planning, promotes a community-centered lifestyle, and is committed to creating a community residence and public space away from factories and noise [24]. As a modernist designer, Perry's Neighborhood Unit model embodies the functional principles advocated by the "Athens Charter" and modernism [25] and is followed by countries all over the world. This new theory of community public space and housing appeared in capitalist countries, and even the Soviet community model and China's closed residential communities have Perry's shadow.

*Elieel Saarinen*, a Finnish-American architect, expounded the theory of organic evacuation in his book *The City - Its Growth, Its Decay, Its Future*, published in 1943. He believed that "satellite city planning is a method to manage urban problems, but there is no need to build a new city for this purpose but to alleviate the problem of the central city through targeted development of towns inseparable from the central city [26]." After seeing the rapid growth of the city and the gradual spread of dilapidated areas, *Elieel Saarinen* proposed that the urban is a growing organic whole. He regards the arteries and veins of the city as arteries and veins, the capillaries as the streets, and the organic organs that make up the city with different functional areas in the city. Saarinen's organic evacuation theory profoundly impacted urban reconstruction and development after World War II.

### **2.6.3 THE DEVELOPMENT OF POST-MODERNISM PUBLIC SPACE**

#### **THINKING**

*Camillo Sitter* is an Austrian architect and urban planner. He emphasized that urban planning should revolve around urban residents' experience of the city. The quality that emerges from the inside, the city is a whole, and the role of the whole is greater than the sum of the various divisions of the internal space [27]. Although urban planning

was dominated by modernism, Sitter was unreservedly criticized by *Le Corbusier*. However, *Camillo Sitter's* urban space theory was often used to critique modernism in the postmodernist period.

From the end of World War II to the 1970s, European countries entered a new round of urban construction with the economy's recovery and the rapid development of productivity. The development generally continued modernism and functionalism. When the new urban appearance brought by the modern industrial city gradually takes the dominant position, the urban population expands again, which once again causes the shortage of traffic, environment, and public space in the city. The modernist urban design trend has changed the original urban design. Residential structures, excessive technology, and technological spatial patterns have unknowingly destroyed harmonious neighborhood relationships in traditional society. People living in bright and beautiful cities have accumulated loneliness and depression in their hearts. At this time, social problems became another problem to be solved after urban technical problems.

The acceleration of urban life, the instability of the current situation, and the uncertainty of the future have plunged society into colossal chaos. The chaos aroused Western scholars' thinking and worries about science, society, and the future of humankind, forming the postmodernist thought trend in the Western world. The concern of "*Silent Spring*" is about human abuse of technology, "*The Roman Club*" focus on the energy crisis, population, and industrial development [28]. It has triggered people's thinking on the values of industrial civilization with high efficiency, high consumption, and material enjoyment, realizing that the boundaries of cities are not infinitely expanding and that the development of industry and technology may not be able to solve all problems. Urban planning is not a symbolic shape design on drawings, and that the design of urban public spaces is an eternal topic. There is no final form, and the urban community space environment cannot be improved only by demolition and reconstruction. If a city needs to continue to develop, a sustainable development path

must be taken.

Many urban thought masters have emerged in the post-modernist trend of thought. *Lewis Mumford* reflected his humanistic urban development concept in urban construction in the culture of cities. In the book, *Mumford* argued that urban history is the civilization history. The city condenses the power of civilization and preserves the society's cultural heritage. The fundamental problem of the city is to meet the basic needs of human life. The purpose of urban design is to promote the communication and walking of residents in the city [29]. Therefore, he focused more on urban social issues than urban aesthetics.

In the book *The Image of the City*, *Lynch* and *Kevin* conducted five-year research on the public spaces of urban communities in Boston, Los Angeles, and Jersey. He concluded that people form five elements of the mental image of the surrounding environment, namely paths, edge districts, nodes, and landmarks [30], and rationally arrange these species elements in the city to create a shape that conforms to human perception. He further emphasized that the image of the city does not exist in the drawings but in the senses of the residents who use the city. The order comes from readability, and the imagery of the landscape depends on visibility, practicality, and emotional meaning.

American scholar *Jacobson* analyzed the large American cities headed by New York from the perspectives of urban economics and urban vitality in his book "*The Death and Life of Great American Cities*," examining the internal structure of their cities and the role of structural elements in urban life. She believes that the city's vitality depends on the city's complexity and the activities of the people living there. *Jacobson* further pointed out that "the scale of the space will give people a sense of insecurity, and the streets in the city should be full of vitality, full of traces of human activities, a good street space must have a human scale, and if the scale is too large, people will not stop



and stay, that is an inappropriate space [31]. At the same time, she also emphasized the pattern of renewal in cities and communities which should be in small-scale, gradual, and segmented long-term update mode.

Danish architect *Jan Gehl* held almost the same view as Jacobsen in the book *Life between buildings*. He believed that the scale of the street is one of the keys to generating human activities. The street should also have the attributes of public activities and advocate traffic use. Space and public activity space are developed in a balanced manner in the city, changing the situation of many cars invading urban space and creating high-quality public space for cities and communities to attract residents to travel on foot or by bicycle [32].

*Rowe Colin* believed modern cities are physical, but entities cannot "enclose space," eventually leading to conflicts between urban texture and architectural entities. To alleviate contradictions and conflicts, it is necessary to couple functional areas in the city, "collage" functional and living areas, and new town and old city, so as to blur the whole building group, highlight the urban texture, and achieve the purpose of integrating texture and entity [33].

Mr. *Kurokawa* showed his thinking in his book *The Philosophy of Symbiosis*, and he believes that constructing contemporary urban community space should be symbiosis. Pluralist, not modernist dualist thinking. There are still many excessive spaces in the indoor and outdoor spaces of buildings, and using these Spaces can improve the quality of urban public space [34]. The thought of Kurokawa, is a unified thought of symbiosis of all things, including the simple Eastern concept of collection and balance with Yin and Yang and the Western humanistic spirit of postmodernism. His concept of urban symbiosis is a development idea emphasizing integrating multiple elements of urban public space rather than the "dualist" thinking of modernism and functionalism.

The urban construction thought of postmodernism reflects the modernist city. It focuses on the livability of the urban public space and the humanistic spirit in the city and begins to pay attention to the development of the city's diversification. The postmodernism believes that human beings are part of the city and advocate that diversity surpasses unity and that pluralism replaces dualism. At the same time, they also pay more attention to the "public willing" and consider the feelings of urban residents. They emphasize that planners and designers should integrate into the public, avoid overemphasizing personal values and personal judgment and integrate them into specific designs. Urban public space should focus more on urban ecology and artistic conception (open imagination space). They wanted to create an urban community space that blends nature and technology.

#### **2.6.4 PUBLIC SPACE THINKING UNDER NEW-URBANISM AND SMART GROWTH THEORY**

After World War II, middle-class Americans prided themselves on driving their cars between offices and suburban homes. It was a pleasant and comfortable sight, a harmonious chapter of human enjoyment of peace, the culmination of the modernist idea of the city. However, suburban sprawl and gentrification also began inner city decay.

At this time, urbanists were surprised to find that the traditional cities of Europe, the Mediterranean coast, and the United States, which had arisen before 1930, had unique characteristics not found in the new cities, which gave rise to the unique urban vitality of these old cities. After an in-depth investigation by urban scholars, it is found that people living in modernist communities have no feelings for communities, including *Sense of Locality, sense of Safety, Sense of Relatedness, Sense of Belonging, Sense of Relatedness, and Sense of Identity*.

In short, modernist communities lack community spirit and site spirit. A new urban

community movement - New-urbanism quietly launched in response to these conditions.

The concept of new-urbanism, which hopes to build walkable communities with different sizes of housing and different jobs, is strongly influenced by the traditional urban model, which is dominated by cars. Traditional neighborhood design (*TND*) and Transit Oriented Development (*TOD*) advocated by new urbanism can be summarized into two concepts: 1. Building community spirit and sense; 2. development and practice of urban ecological public space [35]. New-urbanism hopes that the city's development can return to the traditional urban form, strengthen the neighborhood relationship, and alleviate the city's increasingly severe traffic and ecological problems. *Ahwahnee Principles*, a landmark document of new urbanism theory, was submitted by the California Council of Governments in 1991. It emphasized that all community space planning should adopt the "complete community" concept. A series of facilities, such as the community's residential, work, and other activity centers, should be designed with the principle of proximity [36].

*Andres Duany* and his wife, *Elizabeth Moule*, represent new urbanism. They designed a seaside community (Kentland) and many other New-urbanism communities (Fig15).



*Fig.15 Seaside community, Walton County, Florida Panhandle*

*(Source: <https://www.cnu.org/what-we-do/build-great-places/seaside>)*

*Peter Calthorpe* proposed the concept of development Pedestrian Pocket in 1989, an

urban space pattern combining many public spaces, low-rise and high-density residential buildings, commerce, and retail, and multiple traffic modes. In the early '90s, he wrote a book called *The Next American Metropolis: Ecology Community and the American Dream* put forward the mode of TOD. The book not only proposed new ideas and development directions for urban design but also introduced how cities should realize these new changes in detail, including specific measures and guiding principles. In the book, he stressed that *"our communities must re-establish and strengthen public industries through design, our living and working environments must be on a human scale, our neighborhoods must be diverse in function and composition of residents, we need to start building communities instead of small plots of land for housing, urban residential areas instead of isolated building projects; A diverse community rather than a segregated master plan. In short, we need cities, not sprawl [37]."*

In addition, American designer *Michael Arth* proposed "New Pedestrianism," which believes that human beings should be the theme of the city and play the most crucial role in its development of the city. Cities should build more pedestrian-only roads further to enhance the status of human beings in the city [38].

According to the urban theory of the new urbanists, public space is the core of community construction, and the community is the basic living unit of the city. The city's future development is to provide a convenient and comfortable living environment for the community residents by relying on good public space and high-quality service facilities in the community. In addition, the community regularly organizes various activities to promote mutual communication among the residents. When the scale and development of the community reach a certain level, the residents will have a sense of community and community spirit towards their community so that the community will mature. The community's organic growth will promote the city's organic growth.

There are 20 states in the United States that have established Smart Growth laws, such as Smart Growth Act and Growth Management Act. The concepts of smart growth urban planning and urban community public space design mainly include:

- (1) Creating walkable community systems;
- (2) Create an integrated community public space environment;
- (3) Create a variety of travel modes, mainly public transport and walking transport;
- (4) Advocate public participation in community public space design and cultivate community consciousness;
- (5) Planning urban compact mode, establishing compound communities, breaking the idea of functional zoning and social isolation, advocating mixed land use, and diversifying housing types and prices.

According to the author, although Smart Growth theory contains the idea of urban community space transformation under the new situation, it is consistent with the development vein and ultimate goal of the new urbanism urban community public space theory. The appeals of both are similar. They are trying to show how to provide a more comfortable, warm, healthy, and harmonious community for the community and residents instead of the modernist residential community.

### **2.6.5 CHINESE THEORETICAL RESEARCH AND DEVELOPMENT**

Chinese dynasties developed based on agricultural society, due to underdeveloped commodity trade, capital market, and the need for military defense. The shape of cities was mainly closed (Fig.16).



*Fig.16 A City of Tang Dynasty*

(Source: <http://mt.sohu.com/20160707/n458340069.shtml>)

Not until the Song Dynasty, when capitalist industry and commerce began to develop, did the closed social space of Chinese cities loosen and open up. In the feudal society of China, there were many magnificent cities, such as Chang 'a, Nanjing, Beijing, Etc., among which the most prominent was the construction system of Beijing's central axis with a "central symmetry" pattern. The central axis showed the supremacy of the royal power in time and space when people passed through 12 consecutive and different closed Spaces [39]. At this time, Suzhou, a city south of the Yangtze River in China, was more dependent on environmental landform and humanistic thought in its spatial form and consisted of a watercourse and courtyard-style residences closer to the traditional small-scale public space of nature [40].

#### **2.6.6 CHARACTERISTICS OF URBAN COMMUNITY PUBLIC SPACE UNDER THE SOVIET MODEL**

In 1949, the People's Republic of China was established in Beijing. In the 100 years before 1949, China was affected by wars and disasters for a long time, and urban public space and urbanization construction was at a standstill. Hence, the urbanization rate of China during this period was only 5.1% [41].

After the founding of the People's Republic of China, the development of Chinese cities did not integrate into the world urban construction trend but followed the footsteps of the Soviet Union, turning the cities into production bases and big factories, and there was even a large number of urban young people returning to the countryside anti-urbanization movement. During the 28 years from 1950 to 1978, the urbanization rate only increased from 11% to 18%, which was a typical slow growth. Urbanization and the general lack of urban space were the situations.

## 2.6.7 CHARACTERISTICS OF URBAN PUBLIC SPACE

### TRANSFORMATION AFTER INTEGRATING INTO THE WORLD

After the 1980s, China gradually integrated into the world's development environment. The great strides of economic and industrial development laid the foundation for urbanization and urban space development. Many big cities in China were gradually developed during that period, such as Beijing, Nanjing, Guangzhou, Shenzhen, Wuhan, and Chongqing.

The 1980s was a period of confrontation between the old and new urban space theories in Europe, the United States, and other countries. Modernism was gradually disadvantaged, while postmodernism gradually raised its head. In the past 30 years, the development trend of public space in urban communities has undergone significant changes. The construction thought of public space in cities and communities has gradually changed from functionalism to humanism. The urban form has changed from a low-density vehicular road network to a high-density pedestrian road network. The practice of community public space dominated by determinant and slab buildings has been gradually phased out. China did not use the latest urban construction model to update and transform the city. However, the then mainstream community and city transformation models, such as new urbanism and postmodernism, gave way to internationalism and functionalism, making modernism blossom in the land of China once again. (Fig.17)



*Fig.17 Photo of Beijing in the 80s*

(Source: <https://beijing.qianlong.com/2017/0109/1291984.shtml>)

After the transformation, Chinese cities follow strict functionalism and modernism, with more comprehensive and exhaustive roads and urban loop lines, leading to a widening distance between houses and workplaces. The working class had to move between their workplace and home in a long pendulum motion. (Fig.18) The "demolition and construction" style of urban renewal destroys the continuity of the city, and indiscriminate urban expansion leads to the rise of the university town, industrial zone, villa areas, and technology incubator-based enclosure competition in the outer suburbs of the city [42].



*Fig.18 Beijing under modernization*

*(Source: <https://chinadialogue.net/zh/2/43959/>)*

In short, since the 1980s and 1990s, the fundamental theories, ideas, and practical means adopted by urban renewal in China have been the same as the modernism patterns in Europe and the United States after World War II, which can be called the Chinese version of modernist urban space practice. At that time, the urban community public space still did not keep up with the development trend of The Times.

## **2.6.8 THE DEVELOPMENT AND RESEARCH STATUS OF URBAN COMMUNITY PUBLIC SPACE IN CHINA AFTER 2000**

Since entering the new millennium, significantly after China acceded to the WTO and



the World Economic and Trade Organization, China's foreign cooperation has been increasing yearly, including urban public space. At this time, the concept of a "*compact city*" advocated by the European Union and the theory of "*new urbanism*" and "*smart growth*" in the United States gradually entered the vision of the Chinese people. The construction plan of Guang Ming new city in Shenzhen is the best embodiment of a "compact" city in China. Meanwhile, Binhai new area in Tianjin also uses the idea of a "compact" city in its construction [43]. After the new millennium, the renewal construction of Chinese urban public space tries to follow the most advanced design concept of urban public space in the world, trying to create the urban community public space with humanistic care and historical and geographical dimension through a new round of "micro renewal" of urban community.

Currently, China is expanding its urban territory and completing major infrastructure construction in various cities while the growth rate of urbanization has leveled off. The main task of urban and community public space construction is to build an ecological, humanistic, and civic city. The focus of this round of urban renewal is to renew the gradually dilapidated community public space in the city. How to design the minimum investment and the fastest effect? How to build a comfortable community public space? How can we build community spirit? How to restore landscape diversity in a community? How can "smart growth" be achieved in a community? These problems are hot topics discussed in academia and the design industry in China.

Academician *Liangyong Wu* concluded in his book *The Charter of Beijing* that "In addition to relying on technology, the development of a city is more important to consider the urban context and culture, which vary with geography and customs. Therefore, any region needs to find its own urban and community context. More than ever before, the design of public spaces in cities and communities requires holistic thinking [44]." Academician Wu's urban community public space design is based on the design thinking of serving objects designed by people with a solid humanistic spirit.

*Xuejin, Wu*, a doctor from Central China Normal University and a professor from the School of Management of the Wuhan University of Biological Engineering, elaborated on the main problems of urban space in China at the present stage from the perspective of domestic and foreign urban development trajectory in his paper *Study on Livability of Urban Community Public Space and put forward targeted suggestions*. He believes that the mechanization and dogmatism of modern cities come from the under-utilization of space. Under the background of current urban renewal, the public space of blocks and communities will develop towards a sharing mode of smaller scale and more functions and activate the community public space through space sharing [45].

*Feifei Feng* discusses the elements of a sound community public space in her paper. He believes that the design process of the community public space in China needs to be adjusted, and the public space needs to be practical, not just beautiful. Thirdly, the design of public space needs to have the spirit of unity. Finally, she emphasizes that public space should include resting and relaxing areas [46].

In his book *Urban Renewal*, Professor *Jianqiang Yang* of Southeast University classifies the old communities with different urban landforms and human color, divides the old communities into three forms: organic structure, natural extension, and mixed growth, and summarizes the material structure, social structure and transformation measures of "micro renewal" in the three forms of the old communities. In his opinion, the city has various types of old communities. In addition to the gated communities with national attributes, many communities formed naturally and in the urban center. Although the internal public space of such communities is small, they have The Times' characteristics and the spatial attributes of unique communities. With the whole community as the overall design object, the particular memory of community public space is retained in the renewal process. The community organism is created by symbiosis between urban space and community space and between urban culture and

community culture [47].

Professor *Xiaochun Liu* of Sun Yat-sen University, in his article *Inspiration of "Community Construction" in Japan and Taiwan to the Protection of Non-heritage in the Process of New Urbanization Construction*, studied "urban renewal" and "urban construction" in Japan and Taiwan and said that "the transformation and renewal of urban public space should be based on respecting the natural texture and historical context. Build communities that sustain a sense of history recognized by residents, and those rooted in the local culture and fabric are sustainable [48].

"

In an interview with *Caijing Magazine* in 2020, Professor *Baoxing Qiu*, president of the Research Council of the Chinese Academy of Urban Social Sciences, explained the help of the micro-renewal of public space in old communities to urban development from the perspective of an urban economy. He mentioned: "At present, China's economic situation is declining, and the stock of old communities in China has reached 10 billion square meters. If the subsidy policy of 1000/m is completed in five years, it will attract Chinese cities to invest 10 trillion RMB. The income the investment brings will effectively hedge the current trend of investment decline in China, and it is a strong shot given to the market by the Chinese government [49]. President *Baoxin Qiu* speech explained that the "micro renewal" project of the old community could not only improve the spatial quality and humanistic spirit of the urban community but also increase new ways of investment and financing for the economic difficulties faced by China through "micro renewal," and stimulate China's economy to be great again.

# CHAPTER 3. PRINCIPLES AND DESIGN STRATEGIES OF MICRO-RENEWAL

## 3.1 DESIGN PRINCIPLES OF PUBLIC SPACE UNDER THE CONCEPT OF "MICRO-RENEWAL"

### 3.1.1 PRINCIPLE OF SCALE

The fundamental goal of the "micro-renewal" of public space in old communities is to provide community residents with a beautiful living environment and activity venues. Therefore, the "micro-renewal" of community public space requires designers to regard the community public space as a whole, starting from users' daily needs and upgrading the public infrastructure, service facilities, and entertainment facilities in the community from an overall perspective. When grasping humanization, we should pay attention to the scale of interpersonal communication. *Edward T. Hall*, in "*The Hidden Scale*," divides human communication into four middle distances, and the four distances can be determined by the change of the interlocutor's volume level [50]. The four scales are intimacy scale, emotional distance, social distance, and public distance. (Fig.19)

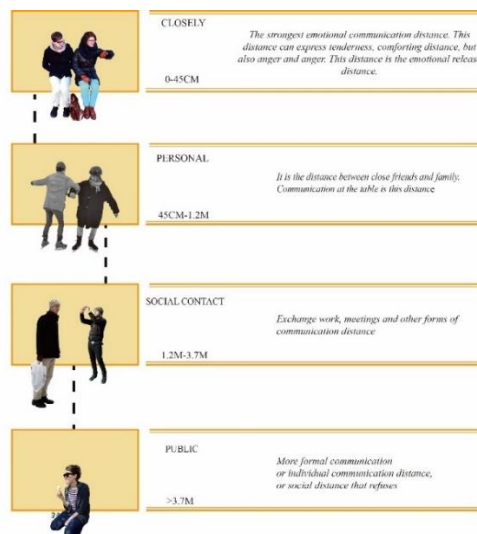


Fig.19 Four kinds of social distance (Source: Drawing by the author)

The service objects of community public space are mainly community residents. From the usage rate of the site, large-scale public space is often lower than the space with full functions but small scale. (Fig.20)



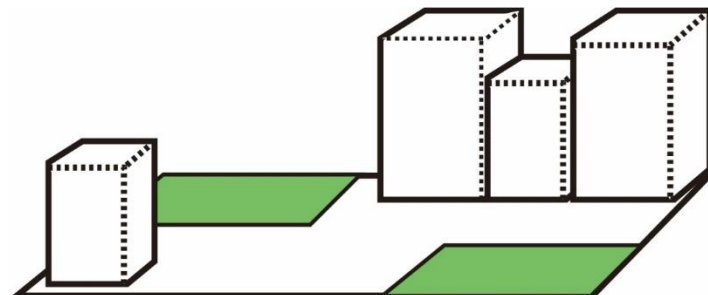
*Fig.20 Comparison of the use of two different scale spaces*

*(Source: Photo by the author)*

The scaling principle of "micro-renewal" is to reduce the "passive" contact space and create the spatial principle of promoting "active communication." The original space is divided into appropriate scales to form a leisure space for solitude on a small scale and gathering or socializing on a medium scale.

### **3.1.2 SYMBIOSIS PRINCIPLE**

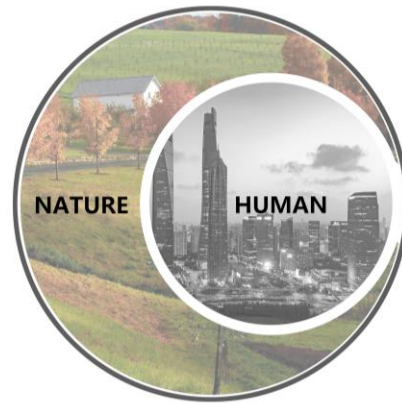
Although the interpretation of symbiosis philosophy is that both sides live together and respect and protect their "territory," we view the symbiosis relationship from the perspective of modernism and functionalism, and the distinct landscapes and footpaths in the public space of cities and communities are also a kind of symbiosis (Fig.21).



*Fig.21 urbanism symbiosis (Source: Drawing by the author)*

However, the author believes that the symbiotic relationship between man and nature

in the public space of the old residential area is one of inclusiveness and integration. The place where community residents have public activities (whether a road, rest area, or activity area) should be integrated into the community landscape, and the relationship between nature and human social interaction should be interactive and symbiotic. (Fig.22)



*Fig.22 Symbiosis between humans and nature (Source: Drawing by the author )*

### **3.1.3 PROTECT THE PRINCIPLE OF URBAN TEXTURE AND CULTURE**

The history of the old community is an essential part of the city's history. Its development has taken a long time. It is significant to urban history and national culture to protect the community's historical style and restore its historical memory. Protecting the old community is not simple overall maintenance, nor is it a conservative approach to restoring the old. It is a comprehensive renewal method to revitalize the old community by protecting valuable parts and rebuilding abandoned areas. The designer tries to preserve the community style and emotional memory as much as possible through the compromise design to stimulate the community's vitality and promote the community's public communication. By reshaping the fabric of the community, designers provide the driving force for the sustainable development of the community; Designers should carry out cultural construction of valuable public space and landscape space, connect the community cultural consensus of the people, and finally achieve the continuation of the community and urban context.

### 3.1.4 AGE-APPROPRIATE PRINCIPLE

According to the standards of the United Nations elderly society, an elderly society can be defined when the number of people over 60 exceeds 10% of the national population [51]. According to the data summary provided by China Health Commission, the author can find that by 2021, there will be 267.36 million older adults over 60 years old in China, accounting for nearly 19% of the country's population. China has stepped into an aging society (Fig.23).

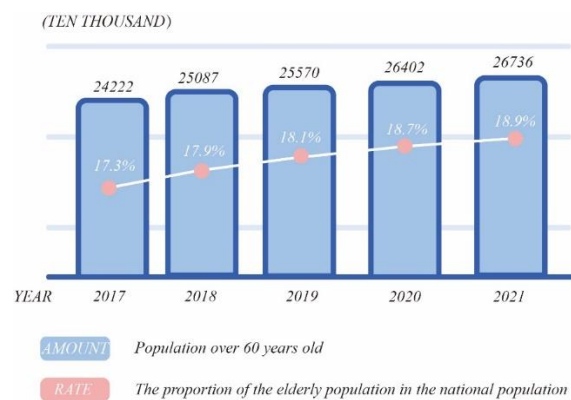


Fig.23 Proportion of elderly population in China 2017-2021

(Source: drawing by the author)

The inevitable aging of the population is bringing significant challenges to the public space of urban communities in China. Most of our older adults' activities are in the community public space. Compared with middle-aged people and children, they have lived in the community longer and have more demand and use rate of the public space.

Residents' spontaneous activities in community public spaces are usually dominated by the elderly. Although the quality of public space in the old community has been improved, the elasticity of space is insufficient due to the uneven distribution of space facilities and the lack of scientific and artistic quality. Therefore, the principle of aging adaptation from the perspective of "micro renewal" is to enhance the scientific artistry in the space and the reasonable distribution of functional facilities.

### 3.1.5 PRINCIPLE OF OPEN SPACE

The opening of public space means that it will play more roles and carry more tasks in the lives of residents. (Fig.24) It has the following characteristics

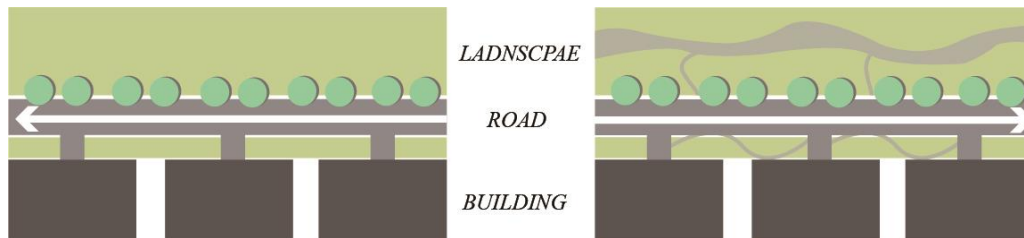


Fig.24 A comparison of closed and open effects

(Source: drawing by the author)

1. **Open space means diversity.** Opening the initial closed boundary can bring more experience space to the community residents and strengthen the visual feeling of the whole public space. The spatial opening principle of "micro-renewal" emphasizes hierarchy instead of functional differentiation. While strengthening the function, it establishes a unique and pleasant place for the user's experience.
2. **The opening of space means the remodeling of space.** Modernism uses the logic of machine operation to define urban space. When the machine runs, all the goals are for production, while humanism takes a secondary position. The neglect of humanism also causes urban problems from modernism and functionalism. "Micro-renewal" emphasizes the coordination and balance between function and humanity. Using the form of existing public space, materials, and technologies, micro-renewal relocates the function, ecological environment, and site of the space. Attracting more people to reuse public space and promoting people's activities and communication in public space makes the binary opposition between people, nature and site into a pluralistic balance and ultimately promotes the city's sustainable development.
3. **Improve the landscape environment of the community space.** A community's public space should have more extensive connections with community residents.



However, due to the division of functional areas, people and space are gradually isolated. Over time, the isolated public space will be abandoned and become the Achilles' Heel of the community.

"Micro-renewal" improves the landscape of the community's public Spaces by reinvigorating areas that are about to be or have been abandoned.

4. **Open space means socializing.** The problem with public space is the problem of invitation. The wide road and fast overhead become the "best invitation" to the car in the modernist public space. However, industrialization cannot replace people socializing, leading to indifference among city people. The design principle of "micro-renewal" of public Spaces emphasizes public socialization. After reopening and connecting, the closed public space becomes a social space offering inviting behavior, facilitating interaction and emotional exchange among residents.
5. **Open space means a new meaning of space.** The space opening of the community requires us to redefine the site's new connotation because the site's original form and connotation can no longer adapt to the current urban development needs and residents' needs. The opening principle of public space can give the old site a new development connotation, marking the beginning of a brighter future for the space.

The available principle of public space is an essential part of the principle of "micro-renewal." It does not aim at rebuilding space but pays more attention to what social places the space can provide for people and what behaviors residents can use the space. For a long time, the opening principle of community public space has yet to be considered in the planning. However, the significance and value of opening community public space under the "micro renewal" concept have been discovered and incorporated into the design principle of "micro renewal."

### 3.1.6 PUBLIC PARTICIPATION

If Chinese communities are compared to individual cities, then the active residents are the citizens of the "city".

Today, with the rapid development of science and technology, tall buildings are rising in urban areas. The new scene of urban modernization has deepened the gap between the old communities and the city, contrary to the original intention of shared prosperity and sustainable city development. The heart and environment of the residents in the old communities should not become bystanders of the city development but should be participants.

Urban Construction Bureau is the department that manages urban construction in China. Its main task is to advise and supervise the development and construction of the whole city, but this is only limited to government-funded municipal projects. For urban community space, they often carry out mechanical and menu-type hardware facilities transformation of community public space according to government instructions and objectives. The results are often unsatisfactory and have little effect, especially when building community spirit and balancing the interests of residents. Other functional departments in charge of community spirit and culture need to gain the knowledge of space design and construction and the management mechanism of community renewal. Therefore, community micro-renewal requires the participation of community residents. The essence of "micro-renewal" is community governance. It is not a one-time upgrade but a multi-party joint "lasting freedom action" in the community space.

The residents' participation principle of "micro renewal" changes the identity of community residents in the renewal process, from passive participants to advisers and helpers of community renewal. The people who best understand a community's structure and needs are those who live in it. Allowing community residents to participate in the spatial transformation of "micro-renewal" can cultivate the

community space consciousness of residents, stimulate the imagination and vitality of residents, provide designers with better, more relevant, and practical design ideas, and finally, gradually build the sense of civic participation from the community to the city. (Fig.25)

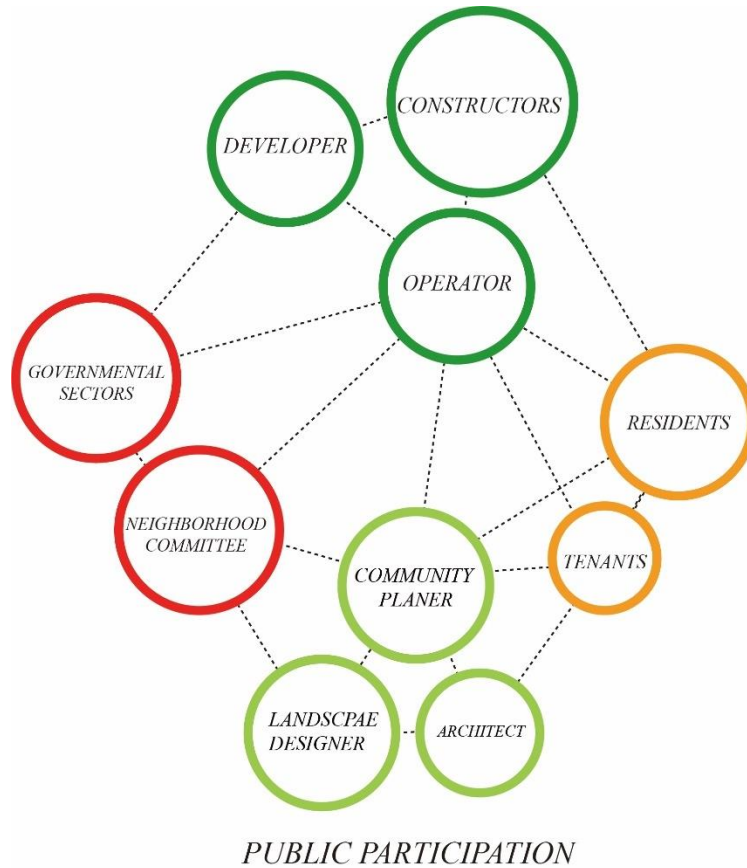


Fig.25 Public participation (source: drawing by the author)

The principle of mass participation in community micro-renewal should prove the idea in *Richard Penks' Civic Governance* that "residents will invest in community construction only when they have close relations and interests with themselves." [52]

### 3.1.7 THE SPIRIT OF PLACE

The spirit of the place can be traced back to ancient Roman religious mythology. The Romans believed that gods protected all individual beings. Moreover, the gods give them a unique personality, independent will, and spirit. When the Greeks built the

temple, they chose the corresponding construction site according to the different personalities of the gods so that the temperament of the site was in line with the gods they worshipped. The concept of the modern "spirit of place" comes from Norwegian architect *Norberschutz*, who advocated that works of art should have concrete expressions in life situations. People need to experience meaningful life scenes, and the purpose of places is to preserve and convey meaning [53].

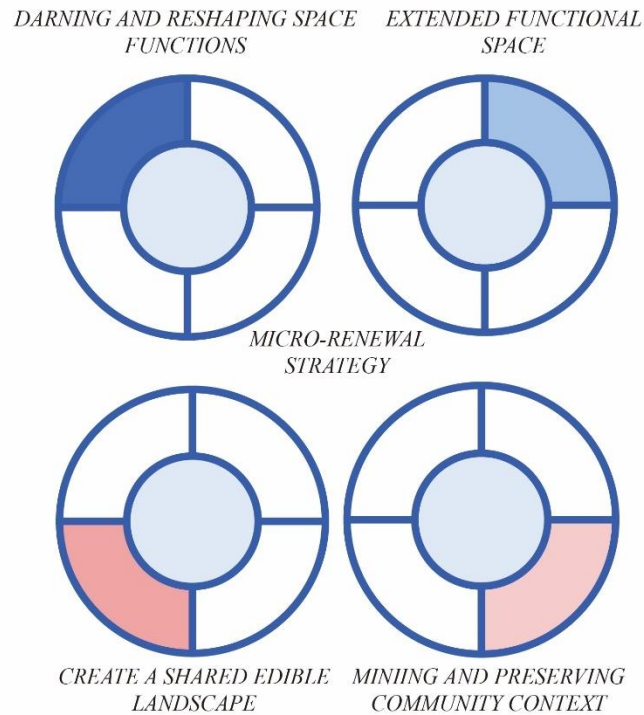
The core of the place spirit of the old community is the sense of identity that takes root in the heart of the community residents and carries the community culture and characteristics. With the industrial development pattern, finding highly homogeneous design standards in any urban neighborhood seems possible. The concept of homogenous community public space design divides the history and reality of the city, as well as the cultural memory of people and space.

"Micro renewal" inherits the community's unique community culture and regional culture. While satisfying the function of public space, it also carries the regional culture of the community. Through "micro renewal", the form of community public space and public facilities can be reasonably "embodied" to supplement and create the place spirit of the community.

### **3.2 DESIGN STRATEGY OF "MICRO RENEWAL"**

The "micro renewal" of old community public space is integral to urban public space design. Through the observation record of the site, the residents' life rhythm and activity characteristics are analyzed, and the contradictions and problems of the site are analyzed. They are tracing the cultural context to the root to fill the lack of space culture and selecting the entry point of space renewal according to the characteristics of different spaces to choose specific design strategies. The following author summarizes the spatial renewal strategies of old communities based on the summary of spatial contradictions and problems in old communities, combined with the spatial

characteristics and relevant specific analysis cases. (Fig.26)



*Fig.26 Design strategy (source: drawing by author)*

### **3.2.1 DARNING AND RESHAPING SPACE FUNCTIONS**

The space resources in the community are limited, and the functions are simple. However, with the progress of the development era of science and technology, the residents' demands for space and outdoor activities are increasing. Through the exploration and investigation of the current situation of the site and the site resources, through the substitution and replacement to improve the quality of space, the edge space and invalid space of the community are rationally used to connect the breakpoints in the community space. To develop complex community space, to enhance the compact and continuity of community space, and to create a community space suitable for residents of all ages.

### **3.2.2 EXTENDED FUNCTIONAL SPACE**

Multipurpose is the goal of expanding community space. The enhancement of space is not only the extension of art, fun, and entertainment but also the appropriate space left

in the space to provide emergency needs and reserve space for residents as a place for emergency services.

### **3.2.3 CREATE A SHARED EDIBLE LANDSCAPE**

Many reasons lead to the gradual degradation of old community landscape space, among which the most serious is the unfunded management caused by the high maintenance and management cost. In community development, local plants suitable for the local climate and easy to grow and maintain are planted to avoid the duplication of landscape space after "micro-renewal," which can effectively reduce the management difficulty. As human activities from the field into the city, people with feelings of land, nature, and farming hope to reclaim a piece of arable land in the city and enjoy the happiness of farming again. However, urban space is costly, and farming areas are challenging in high-density cities. Community green space is the most accessible space for residents. We should optimize the stock of community green space, develop the complex function of green space, and guide residents to participate in the planting of landscape and edible vegetation. These approaches can strengthen the community cohesion and realize the space sharing.

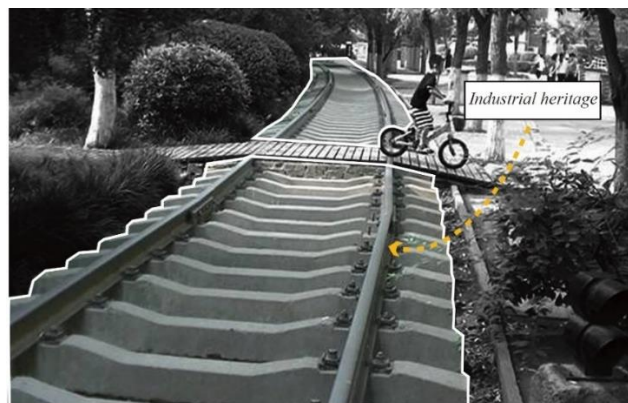
On the other hand, the effective use frequency of community landscape can be ensured, and landscape activity can be enhanced. Make the landscape a healing space in the community. The edible landscape space of Yongchangli Community, Zhongzheng District, Taipei City, was originally an abandoned street corner area in the community. However, after residents' spontaneous landscape construction, the area has been transformed into an edible landscape area. (Fig.27)



*Fig.27.Edible landscape of Yong Chang Li community, Taipei City  
(Source:[https://ms-community.azurewebsites.net/community\\_20220706/](https://ms-community.azurewebsites.net/community_20220706/))*

### **3.2.4 MINING AND PRESERVING COMMUNITY CONTEXT**

The old communities' locations are different regions and resident populations, and the specific solutions differ. For the closed communities in urban space, it is necessary to integrate the community culture by combining the historical latitude, mining the community context, and integrating the context resources into the community space through concrete design techniques to strengthen the historical characteristics of the old communities (Fig.28).



*Fig.28 Zhengzhou west old community industrial (source: drawing by the author)*

As for the old neighborhoods with intense commercial atmospheres, it is necessary to strengthen the building of commercial atmospheres, attract residents and tourists through commerce, and activate the community space by improving its popularity. (Fig.29)



*Fig.29 Yong Qing community renewal situation*

*(Source: <https://worldlandscapearchitect.com/>)*

### 3.3 SUMMARY

In the chapter, the author starts from clarifying the concept of "micro-renewal," and the space concept of the old community and interpreting the design principles of micro-renewal in the public space of the old community. The author also summarizes seven principles of micro-renewal in the public space of the community, namely, the *scale principle*, the *context protection principle*, the *age-appropriate principle*, the *symbiosis principle*, the *mass participation principle*, the *place spirit*, and the *space opening principle*. Finally, four key design strategies are summarized: *darning and reshaping space functions*, *extended functional space*, *creating a shared edible landscape*, *Mining and preserving community context*.



## CHAPTER 4. SUB-RESEARCHES

### 4.1 CASE STUDY 1: COMMUNITY "MICRO-SPACE" REVIVAL

DESIGNER: YU TING (WUTOPIA LAB)

YEAR: 2019

In 2019, in response to the urban renewal and community renewal programs advocated by the Shanghai government, North Waitan Street commissioned Wutopia Lab to design a public space for an old community. (Fig.30)



*Fig.30 An axonometric map of the design*

*(Source: <https://www.goood.cn/cloud-in-gutter-china-by-wutopia-lab.htm>)*

Cloud in Gutter locates at No.138 Changyang Road, Hongkou District, Shanghai, China (Fig.31). The community was formerly the most significant Jewish refugee shelter during World War II, and now it belongs to the autonomous resident community of Zhoushan Neighborhood Committee.



*Fig.31 Site location map (Source: Drawing by author)*

Although the location of the community in prosperous Shanghai, the courtyard area inside is minimal, only 380 square meters. Before the renewal, the green landscape in the community is composed of one ample public green space and three private green spaces. Although the community's residents tried hard to keep the community clean and tidy before the renovation, the community has a history of 100 years, and everything from the buildings to the community's public space is ancient and dilapidated (Fig.32).



*Fig.32 Situation before renovation*

*(Source: <https://www.goood.cn/cloud-in-gutter-china-by-wutopia-lab.htm>)*

Before the renovation, the neighborhood was in a dilapidated state. Dilapidation is due to the lifeless landscape environment and the community's clogged plumbing system.

When Shanghai's rainy season rolls around, an indescribable stench fills the neighborhood air from clogged sewer pipes. After surveying the site and listening to residents' opinions, designer *Yu Ting* and his team members decided that the first step in the community's renewal would be to rebuild the rainwater sewer system. In addition, the design team integrated public green space with private green space to open the boundary of green space, thus placing new space in the original green space system and increasing the use area of the green space system (Fig 33). In addition, urban furniture systems are introduced into the new green space. The cloud-shaped rest pavilion, composed of steel frames, becomes the highlight of the community's public landscape space, turning the initially lifeless community green space system into an outdoor public living room.



*Fig.33. Public Landscape space in the community*

*(Source: <https://www.gooood.cn/cloud-in-gutter-china-by-wutopia-lab.htm>)*

In the landscape part, the design team removed the original monotonous grass and used more ornamental landscapes and shrubs to make the community landscape more "readable" and ornamental.

The second practical problem that residents have to confront is the small size of the community housing, and there is no space for hanging-drying. Because the living habits of Chinese people are slightly different from those of Westerners, Chinese people do not like to use dryer, so Chinese people have more demand for drying and sunshine.

However, the space of the community is relatively small, and the area occupied by the natural landscape space is enormous. How can we integrate the function and landscape? Ultimately, the design team integrated the drying rack into the community landscape using high and low scattered and functional integration through symbolizing life functions, which made the landscape area ornamental and life attributes. (Fig.34)



*Fig 34. community drying function combination*

(Source: <https://www.goood.cn/cloud-in-gutter-china-by-wutopia-lab.htm>)

Finally, the transformation of the Community was completed in its final form in October 2019, and the "micro-transformation" of the Community was finally completed. (Fig.35)



*Fig 35. Residents on National Day*

(Source: <https://www.goood.cn/cloud-in-gutter-china-by-wutopia-lab.htm>)

The micro-renewal of the Community landscape strengthens the unique memory of

residents at the community site. The historic building complex, the great past that protected Jews from the flames of war during World War II, is a source of pride and superiority for the community's residents, allowing them to identify their community identity through historical memory and symbols. The beautiful landscape environment gives residents another kind of identity: *neighborhood identity*. Although the apartment in the community is not large, they share a large community living room, which holds the memories of their decades of living together. Therefore, the renovation has strengthened the community spirit in the community.

## 4.2 CASE STUDY 2: ITALY TOSCANINI COMMUNITY RENEWAL DESIGN

DESIGN COMPANIES: ORIZZONTALE, NOEO, WALLS

YEAR: 2019-2021

The Toscanini community was established in 1990, as a social affordable neighborhood on the outskirts of Aprilia (Fig.36), a medium-sized city in central Italy.



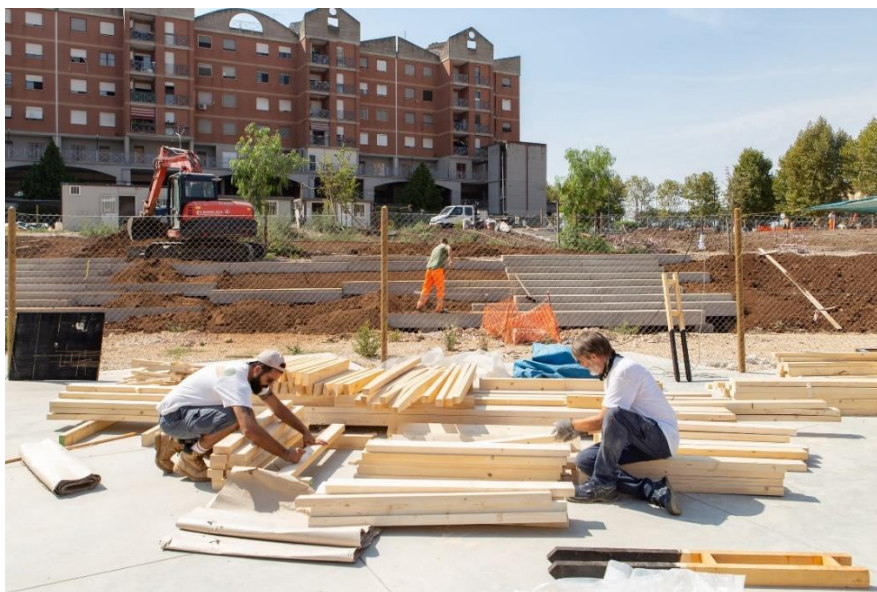
*Fig.36 Toscanini community (Source: Drawing by the author)*

The Toscanini community needs more basic infrastructure, so residents always stay in their homes. The lack of human activities eventually leads to a sense of abandonment and insecurity in the community. The community has become a symbol of the failure of urban planning in Aprilia. Moreover, the dilapidated community image indirectly intensifies the distance between residents and society, exacerbating social isolation. (Fig.37)



*Fig.37 The public space before the transformation  
(Source: Prossima Apertura by orizzontale – moool)*

Regarding the community environment, the large area of green space in the community square should have played a role in connecting the neighborhood and community. However, due to the lack of community planning ideas in 1990, the open space in the community was abandoned more than 20 years later. The design team integrates designers from various fields, such as space, landscape, art, and industrial design. Through various activities, such as architecture, social psychology, artistic creation, and social interaction, residents can participate in the community renewal project and become a part of the community renewal (Fig 38).



*Fig.38 Resident participation*

*(Source: Prossima Apertura by orizzontale – moool)*

In order to completely prevent the decay of the community and improve the spatial quality of the community and residents' quality of life, the designers design around two basic principles.

**Principle 1:** Improve the accessibility of regional space. Based on the original site landform, the designer expands the functional properties of the site, making the initially closed grass open to residents in an open and inclusive way. The designer integrated walking paths, landscape tree pools, children's activity facilities, parking lots, public seats, slides, and other facilities that can promote community communication in the

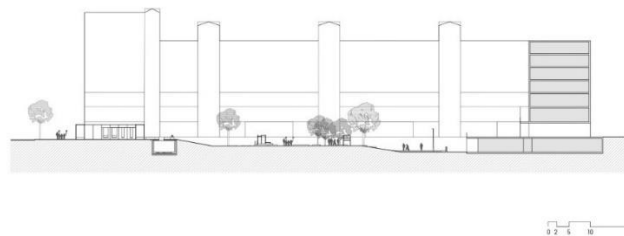
space, enriching the community environment and encouraging community residents to engage in collective activities (Fig.39).



*Fig.39 Diversity of public facilities in community public space*

*(Source: Prossima Apertura by orizzontale – moool)*

**Principle 2:** The designer redefines the relationship between residents and traffic based on the difference between the grass and the road, separates the road from people and vehicles, creates a harmonious traffic diversion between people and vehicles, and provides a safe communication space for the community residents. (Fig.40)



*Fig.40. The difference between high and low is used to divide people and vehicles*

*(Source: Prossima Apertura by orizzontale – moool)*

The core idea of the public space regeneration project of the Toscanini community is to focus on building the collective consciousness of the community residents and to create



a community image with humanistic care and community spirit through the regional activation and functional expansion of the community reservation. Toscanini Community Renewal embodies the humanistic care of "micro-renewal" design and creates a new renewal model for urban renewal in Italy.

### 4.3 CASE STUDY 3: RENEWAL DESIGN OF PUBLIC SPACE IN SOPRON, HUNGARY.

**DESIGNER (ARCHITECTURE AND LANDSCAPE): HETEDIK MŰTEREM LTD,  
CSENGE CSONTOS, BORBÁLA GYÜRE, GERGELY LÁD (GEUM MŰTEREM LTD.)  
YEAR:2009-2015**

Sopron is a historic city located in the west of Hungary, near Hungary's neighbor Austria. In 1921, when Sopron held a referendum in Hungary, more than 60% of the nearly 27,000 voters voted and decided to stay in Hungary. Therefore, it is called the most loyal city in Hungary [55].

The project is the renewal of the block public space of Sopron Castle Street. *Várkörút* is a 40-60m wide avenue on a moat ramp that encircles the entire historic town of Sopron [56]. The main area around the moat still retains buildings from the old era. The texture of the contemporary Castle Street in Sopron was formed in the middle of the last century according to the plans of the chief engineer Soutrand, *Pál Bergmann* (1897-1970). The road system of the Site is built around the city wall and steps.

Although in terms of public transportation, *Pál Bergmann* ensured the carrying capacity of the roads in the castle area as much as possible, the core problem of the castle area is that the area does not integrate urban characteristics and context, forming a public space with close functions but separated from the city (Fig. 41)



*Fig.41 The Castle area in Sopron 1964*

(Source: *Lechner Nonprofit Kft. Dokumentációs Központ / VÁTI ©Fortepan*)

The primary purpose of the road system is to carry motor vehicles, which isolates the pedestrian system and divides the square into several continuous functional Spaces along the longitudinal side of the site. (Fig 42)



Fig.42 Site Plan (Source: <https://www.archdaily.cn/>)

In 2009, the municipality of Sopron announced an international bid to "revitalize the Castle District." The competition aimed to create urban public Spaces at scale through the reinvention and renewal of urban public Spaces. The competition was awarded to *Hetedik Műterem Kft* studio and landscape studio *GEUM Műterem Kft*. Hetedik's team applied the concept of inclusive and unified spatial structure to reconstruct the street space in the castle district. (Fig.43)



*Fig.43 King Street pedestrian space system (Source: <http://hetedik.hu>)*

The design team arranged public activities and vegetation in the new spatial grid. The new street design transforms the initially tedious and dangerous streets into a rhythmic and safe pedestrian space system. (Fig.44)



*Fig.44 Plan of pedestrian integrated space system (Source: <http://hetedik.hu>)*

The spatial beauty of Sopron's castle district comes from the continuous and varied spatial relationships, as well as the vitality of *Várkörút*. The design team wanted to preserve the sense of space on the site and continue it through the renewal of the city square. They wanted to ensure that any site space would be accessible to users and visitors, an integral part of the regional space.

The walking system is the key to revitalizing the inner city. Bringing people into the inner city can quickly restore the area's vitality and revitalize the local economy. The key to walking is to establish the safety and invitation of the streets.

**Safety:** The original main road of Castle Street bears most of the traffic in the Castle area. The high usage rate improves the traffic service status of the main road in the Castle area, but it also prevents the use of the street by pedestrians, resulting in a terrible use of the public space on the street. Therefore, the design team decided to establish a one-way lane on Castle Street to limit the traffic and transform the boulevard on the

other side into a two-way lane to absorb the traffic of the branch road intervention to transform the traffic system of Castle Street (Fig.45). After the transformation of the street, the original road is retained. However, the one-way traffic mode limits car travel and reduces the hidden danger of cars to pedestrians.



*Fig.45 Comparison of street reconstruction*

*(Source: <https://www.archdaily.cn/>)*

**Invitation:** The renovated block has a pedestrian and cycling system, landscaping and public facilities, updated block elements, traffic lights, streetlights, and signage. It is also because of the block space's diversity and the environment's safety that the street has a good invitation, which arouses residents' interest in walking and cycling. Finally, residents participate in the public space of the block to reshape the vitality of the space. (Fig.46)



*Fig.46 Street status (Source: <http://hetedik.hu>)*

## CHAPTER 5. MASTER PIECES

### 5.1 ROSE-WEST COMMUNITY PUBLIC SPACE MICRO-RENEWAL

**DESIGNER: PAN HAOWEI (PTE), ZHENG GEWEI (HBUT)**

**YEAR:2021**

In 2020, the government of Hanyang District of Wuhan followed the Chinese government's decision on the reconstruction of old communities, listed the reconstruction of old communities as a pivotal project to ensure people's livelihood, and carried out the renovation of old communities throughout the district. From 2020 to now, the Hanyang District government has been committed to improving the quality of community space in the region's old communities. They plan to renovate 45 old communities in the district within three years. The transformation of the public space of Rose West Community began under this circumstance. The project was completed by Wuhan Hanyang Municipal Co., LTD., Hubei University of Technology, and the University of Pecs.

Rose West belongs to the subordinate community of Yongfeng Street, Hanyang District, Wuhan City, Hubei Province. The community is located at the intersection of Hanyang Avenue's north and Yulong Road's west sides. The west side of the community is the finance school of Wuhan City. The traffic and commercial conditions of this community are exemplary. The word "rose" comes from the food street in the north of the community - Rose Street. Rose Street is a holy food place in the heart of traditional Wuhan. Every day, people come here in an endless stream to enjoy food. In addition, there are also a large number of cultural and natural scenic spots near Rose Xiyuan Community, such as Guiyuan Temple, Qingchuan Pavilion, Guqin Terrace, Guishan Scenic Spot, Yuehu Park, and other famous scenic spots in Wuhan, which are rich in natural resources. (Fig.47)

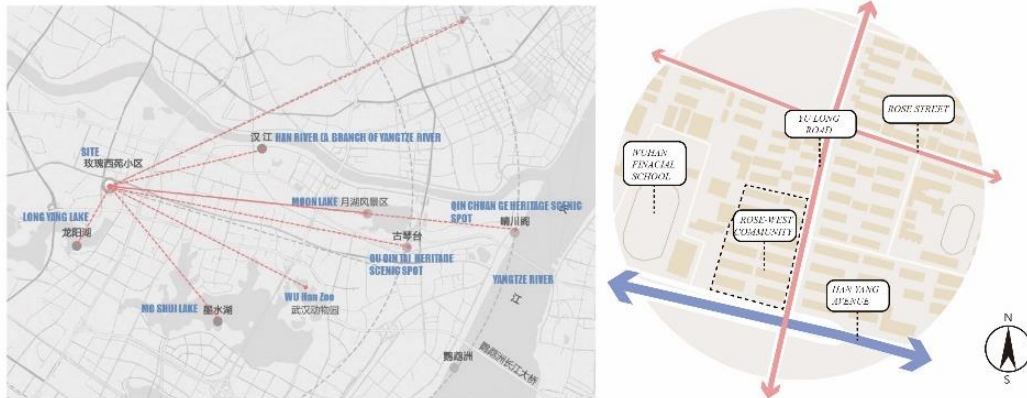


Fig.47 Community location (Source: Drawing by the author)

### 5.1.2 CURRENT SITUATION WITHIN THE COMMUNITY

Founded in 2000, the Rose West community was the first generation of commercial communities to open their homes to private purchase after 1998. The overall form of the community has an unmistakable modernist functionalism style. The house is a strip slab building, and the public spaces form distinct functional zones with plazas and enclosed landscapes (Fig.48).



Fig.48 Aerial view of the community (source: photo by the author)

The public space area of the community is 29,945 square meters, the building area is 54,000 square meters, and the plot ratio is 1.803. There are 12 residential buildings with a total of 471 families living in the community, which has 110 car parking Spaces, but no underground parking. In addition, the community also has a non-motor parking

space, an area of about 150 square meters.

### 5.1.3 SPACE SITUATION

According to the author's field research, although it is found that the residential buildings and infrastructure (water, electricity, and natural gas) in the community are in good condition, the roof water tank and water supply pipeline are not damaged, and the community has implemented rain and sewage diversion, there is much encroachment of public space in the community. According to the author's field exploration, the ground public space occupied by households is about 1755.41 square meters (Fig.49).



*Fig.49 Situation in the community (source: Photo by the author)*

### 5.1.4 CURRENT LANDSCAPE AND PUBLIC FACILITIES

The greening rate of the Rose West community is 30%, which meets the national requirement. However, the green space only exists as a space element, which has no ornamental value and cannot interact with the community's residents. With the passage of time and management's negligence, the landscape area in the community has become abandoned. The plants in the community are mainly combined with trees and shrubs, and the landscape configuration is single. In addition, there is unreasonable development of public space in the community. There is only space on the overhead floor to provide activities for the elderly, only some fitness equipment and seats are set in the community, and the community lacks activity space for children. The community has minimal public furniture, and the community space needs to be fully and effectively used. It is concentrated in the square near both sides of the road and facing the road,



and no one uses it. There is a small amount of fitness equipment in the community, mainly for the elderly, and the community lacks space for children. (Fig.50)



*Fig.50 Community landscape wasteland and worthless public facilities*

*(source: photo by the author)*

The community area is large, but due to the negligence of the design during community development and the disorderly and unreasonable redevelopment in the later process of community development, the available community public space becomes increasingly rare and precious. In the survey conducted by the author in 2021, many community residents gave feedback that neighborhood conflicts often occurred in the community, which were mainly caused by grabbing the right to use public space. A community with neighborhood disputes cannot be called harmonious, and community spirit cannot be built.

### **5.1.5 COMMUNITY SPIRIT AND COMMUNITY IDENTITY**

A community spirit fortress is built in the center of the community's square. Due to the lack of space and visual design related to its own culture and site spirit, the characteristics of the community are not distinct, residents here have a low awareness of the community (Fig.51), and the relationship between neighbors is indifferent, just like passers-by.



Fig.51 spirit fortress (*Source: photo by the author*)

### **5.1.6 CURRENT SITUATION OF ROAD TRAFFIC AND PARKING LOT**

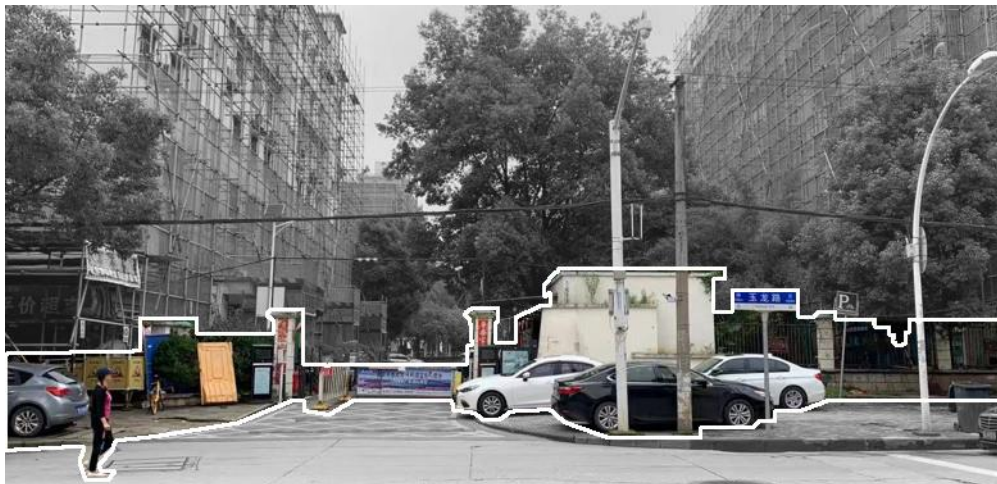
Based on the statistics of parking space in the original community drawings and on-site review, the author reconfirms that there are 110 parking spaces in the community. According to the rules of the guidelines for the model community planning and design, the parking space in the community should be at least lower than 20% of the number of families in the whole community [57]. There is a total of 471 families in the community. Theoretically, 95 parking spaces can meet the demand. However, due to the improvement in residents' living standards and the lack of fixed parking spaces in the community, residents can only park their cars everywhere, reducing the few communities' public spaces (Fig.52).



*Fig.52. Situation of parking in the community (Source: Photo by the author)*

### **5.1.7 CURRENT SITUATION OF GATE**

The gate is an important identification of the community, and its quality determines the citizens' first impression of the community. Through the field research of Rose-West the author found that the community gate has problems such as lack of style, separation of people and vehicles, aging walls, unreasonable entrance scale, uneven roads, and less green and illegal parking of vehicles. (Fig.53)



*Fig.53 Current situation of the gate (Source: Photo by the author)*

### **5.1.8. CURRENT SITUATION OF THE SQUARE**

The square is the activity center of the community residents, a part of the community

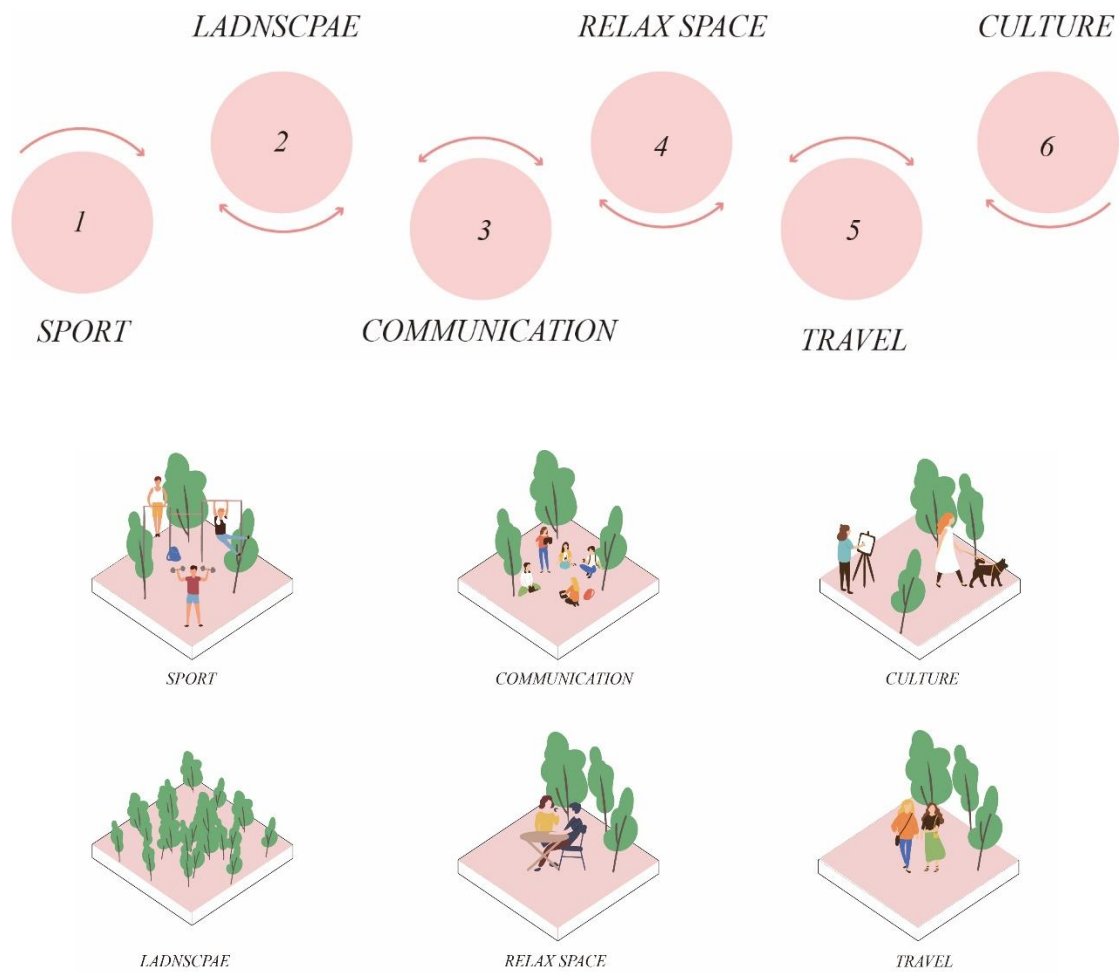
style composition, and the focal center of the community vision. The author found through the field investigation of the community has a large green area but a low utilization rate, narrow entrances and exits, lack of barrier-free facilities and rest seats, little road scale planning, lack of public drying, and no entertainment facilities. Small size, lack of barrier-free facilities, parent-child interaction space, and other problems. In addition, the pavement of the square also has a big problem. The floor pavement of the square is hard-paved with marble and tile. If the elderly and children fall on the hard pavement, it is easy to get injured (Fig.54).



*Fig.54 Situation of squares (Source: Photo by the author)*

### **5.1.9 DESIGN OBJECTIVE**

This design takes Wuhan Rose West Garden as a design case. The author determines this design's objectives by analyzing the community's current situation and summarizing the transformation content. By excavating and demonstrating the cultural background and culture of the Rose West community, the overall cultural atmosphere of the community is improved, and the function of the public area within the community is supplemented by the design method of "micro renewal". Based on considering the interests and needs of all ages in the community, the landscape and space environment of the community is improved and creating a harmonious and friendly community home atmosphere. (Fig.55)



*Fig.55 Design objective (Source: Drawing by the author)*

### **5.1.10 A CONCEPTUAL ANALYSIS OF DESIGN CULTURE BASED ON MICRO-RENEWAL**

The design starts from the cultural ideas, extracts the community culture from various historical and humanistic aspects, and then creates the community public space by combining culture and public space "micro-renewal."

As one of the inspirations for the design, the author focuses on the dedication of the roses. *The roses in her hand, the flavor in mine*, is an Old English proverb. It means that even if the trivial matter brings warmth, the heart will be diffuse. The author hope to give a tone to the community spirit through the beautiful words - goodwill.

Another cultural idea of community micro-renewal is "bosom friend culture" Bosom friend culture is a unique cultural resource representing friendship in the Hanyang District of Wuhan City. More than 2,300 years ago, during the Spring and Autumn Period and the Warring States Period in China, a pair of excellent friends was named Boya and Zhong Ziqi. They got to know each other through music and eventually became bosom friends. In order to commemorate their friendship, the Chinese people use "zhiyin" to describe the friendship from strangers to bosom friends. (Fig.56)



*Fig 56 Zhi yin culture (Source: <https://baike.baidu.com/item>)*

The author hopes that borrowing "bosom friend" into the public space design of Rose West refers to the community's neighborliness, group friendship, and harmonious coexistence between man and nature.

Finally, the author integrated the two cultures of Rose and "bosom friend culture" into the most critical core value of Chinese culture — goodwill. Create a public space of "goodwill culture" in Rose West community. This community transformation will focus on the relationship between man and man, man and nature; People-oriented, benevolence as the core of transformation, rose as the design concept media; Around the community life chain service demand, create activity space full of "goodwill" and ecological friendly viewing space, let the good will accompany the residents of the

community every day. (Fig.57)

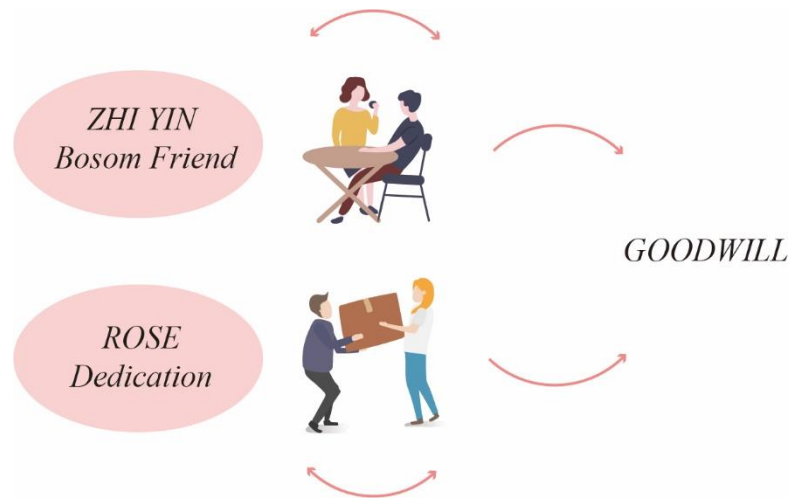


Fig.57 Origin of the concept of community culture(Source: drawing by the author)

#### 5.1.11 PUBLIC SPACE DESIGN BASED ON MICRO-RENEWAL

The author divided the community's public space into entrance landscape, interactive landscape (*leisure landscape, interactive production landscape*), cultural square, functional area in the building overhead floor, and drying area (Fig.58). This section describes the design of each partition in detail.



Fig.58 rose-west community master plan (Source: Drawing by the author)

### 5.1.12 THE DESIGN OF THE COMMUNITY GATE

Based on the problems of the gate in Rose West community, the author redefined the landscape and style of the gate in the community. First, the existing fence of the gate was used to integrate the missing landscape into the fence, which will be turned into a three-dimensional greening. Secondly, it is more convenient and safer to set people and cars diverting and turning a single motor vehicle lane into a two-way lane. Third, since the original gate of Rose West community has no logo and features, the author extracted the abstract pattern of roses as the gate's decoration, redesigned the gate's logo, and shaped it to increase the recognition of the gate. (Fig.59)





*Fig.59 Design of the gate (Source: Rendering by the author)*

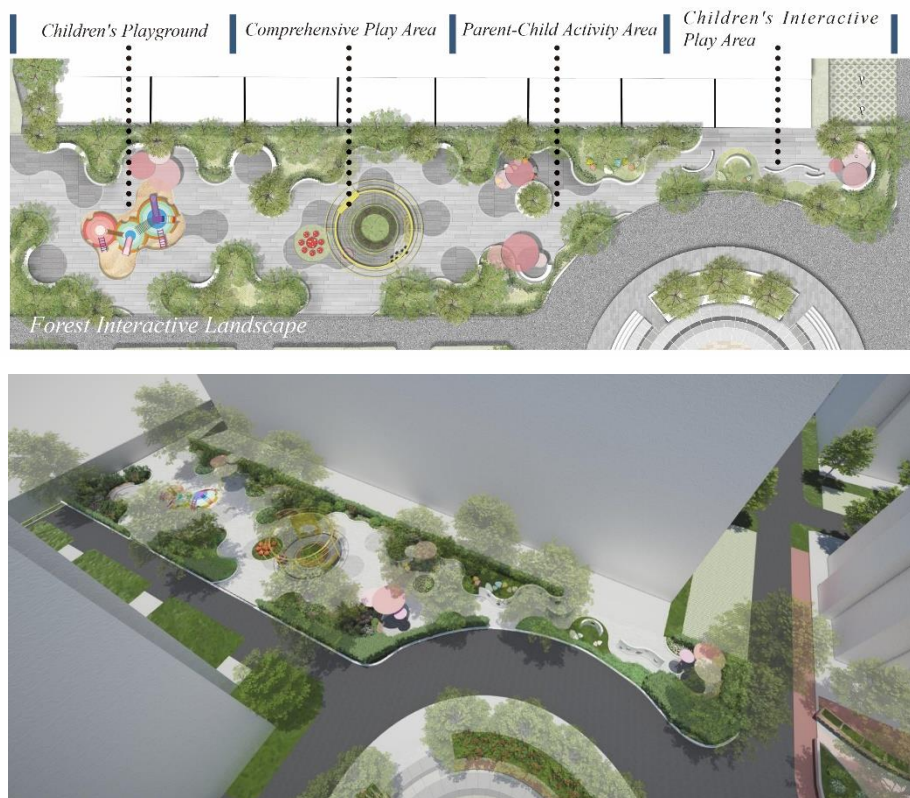
The author did not use too much decoration in the gate but put the mind in the symbiosis of people, cars, and nature. The existing conditions were used to add sidewalks to provide residents with a safe walking experience. Meanwhile, the vegetation coverage rate was further increased based on the site's permission to provide residents with a more ecological living environment.

### **5.1.13 INTERACTIVE LANDSCAPE SPACE**

#### **Forest interactive landscape space**

Initially, this area was an abandoned public facility that residents had yet to use. It is an abandoned land stock area in the community. Although it has specific functional effects, the site has been abandoned and cannot be used again. The author turned the initially

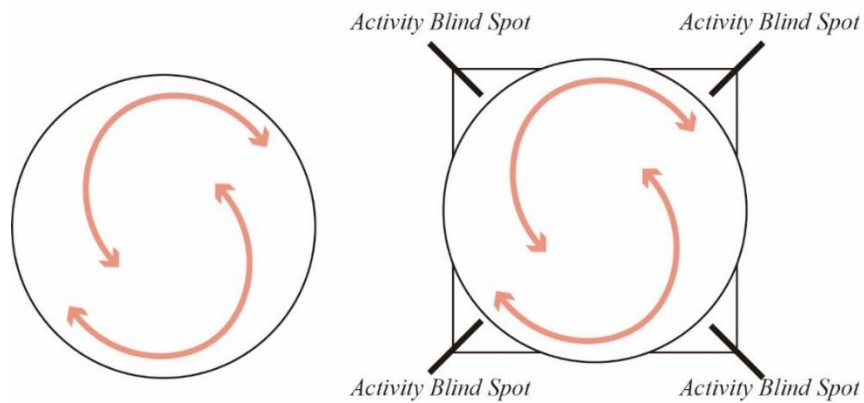
closed planting area into an open design, using the vegetation configuration of grass, shrubs, and trees to create a more comfortable activity space. The space contains four spatial attributes: children's playground, ample sports space, parent-child interaction space, and children's interactive recreation space. These four spatial attributes can meet the daily use needs of residents of different ages. (Fig.60)



*Fig.60 Interactive landscape plan and aerial view (Source: Rendering by the author)*

The author decided to use a circle as the main shape of the site in order to allow users to fully and safely use the interactive forest area.

From the morphology perspective, firstly, the circular field is entire, providing users with a fuller activity field, while the rectangular area has four activity blind areas (Fig.61). Secondly, the circle has a centripetal force, which can stimulate the interaction between residents and make it easier to establish contact. Third, the circle saves more space, and the space form is more changeable.



*Fig.61 Round and square court contrast (Source: Drawing by the author)*

From the perspective of safety, the site design without any edges and corners allows people to rest and play in the area with peace of mind, avoiding residents' injury caused by an accidental bump and highlighting the space's goodwill and sense of security.

The circular structure subtly echoes the ground form. The facilities meet the entertainment and fitness needs of multiple age groups, providing parent-child interaction, youth entertainment, elderly fitness, and other different needs. The color of the public facilities is mainly yellow and yellow. The appearance of the whole yellow is full of vitality and blends with the surrounding landscape (Fig.62). The facilities are both modern and vibrant.



*Fig.62 Functional facilities of interactive forest space.*

*(Source: Rendering by the author)*

The children's entertainment facilities comprise mushroom tents and slides, and the ground is sand (Fig.63). When designing the children's play area, the author carefully considered the children's preferences and found that the children have an unwavering love for climbing and digging in the sand, which is a way for them to get close to nature.



*Fig.63 Children's recreation facilities (Source: Rendering by the author)*

In the parent-child activity area design, the author extracted the color and form of the

rose as the form of public facilities. The circular sense of spatial aggregation creates a small theatre belonging to parent-child time (Fig.64). The well-scattered shrubs are enclosed in a semi-private social leisure place. Together with the abstract rose awning, it creates a comfortable experience place for community residents.



*Fig.64 parent-child activity area (Source: Rendering by the author)*

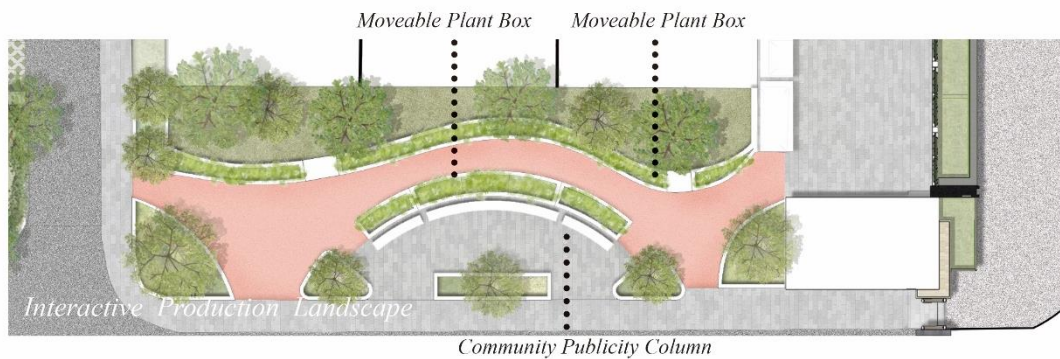
Hide and seek is the most popular game among children worldwide. Considering this, the author decided to introduce the game into the design. In addition, the author placed allusions and stories about "kindness" on the wall to create a place for children to combine entertainment and education and enhance the cultural atmosphere of the whole space. (Fig.65)



*Fig.65 Children's interactive space (Source: Rendering by the author)*

### 5.1.14 INTERACTIVE PRODUCTION SPACE

Although China is already an industrial country, Chinese people's attachment to land and agriculture inherited from thousands of years of agricultural production has been deeply implanted in their genes. When tracking the residents, the design team found many older people in the community. In addition to dancing, walking, and chatting with friends, what they liked most in their daily activities was reclaiming land and planting vegetables in the landscape planting area. While farming is harmless, damaging the public landscape can make other community residents dissatisfied. In order to balance the land needs of the community, the design team designed a planting landscape area within the community's public area for the use of residents who love farming. From the perspective of the planar form, it echoes the interactive area between the forests, continuing the arc style and ensuring the integrity of the design style. From the function perspective, the area has 30 mobile planting boxes. While providing planting space for residents, well-growing agricultural vegetables can also bring a sense of joy to the community residents and promote a sense of honour among the communities. (Fig.66- Fig.67)



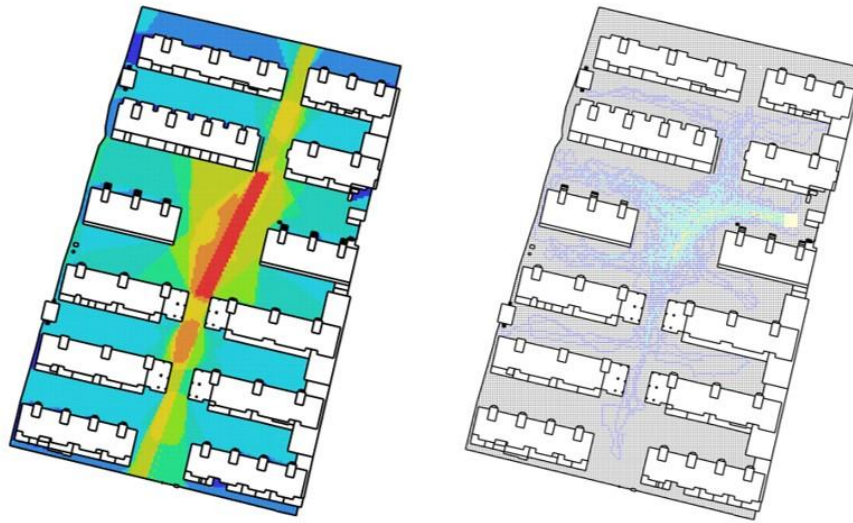
*Fig.66 Interactive production landscape plan (Source: Rendering by the author)*



*Fig.67 Interactive production landscape renderings (Source: Rendering by the author)*

### **5.1.15 SQUARE DESIGN**

The author used software (*DepthmapX*) to deduce the square's human activity track, calculated the best location of the visual center (Fig.68), and designed the central square based on the analysis.



*Fig.68 View analysis simulation Left center of view, right: flow diagram*

*(Source: Rendering by the author)*

As the geographical and cultural center of the whole community, the author focuses on improving the cultural connotation and overall taste to meet the spiritual and cultural needs of the community. (Fig.69)



*Fig.69 Square plan (Source: Drawing by the author)*

The author did not change the square's original topography too much but used the existing square area and removed the original planting pool to make the square more transparent and spacious (Fig.70).





*Fig.70 Comparison of before and after renovation  
(Source: Drawing by the author)*

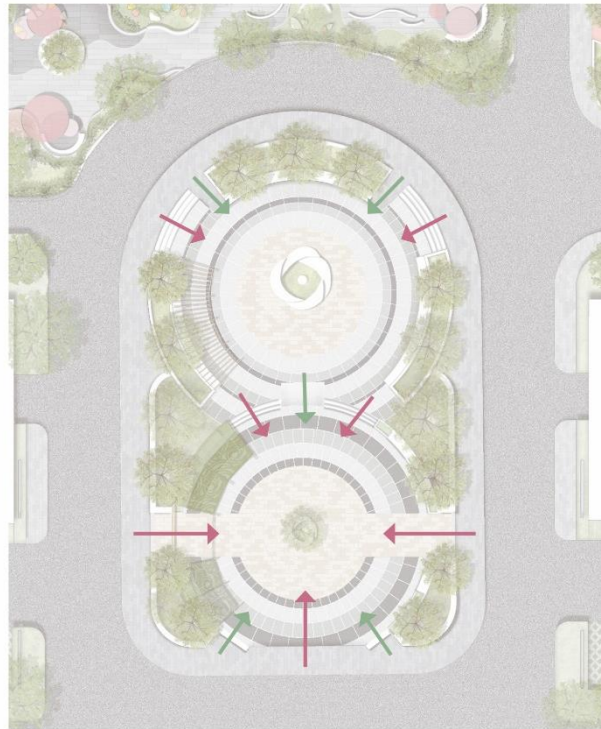
The author implanted the rose element and the culture of bosom friend into the design by overlapping two converged circles, reflecting the meaning of kindness. The north circular site uses the original structure as a spiritual fortress and center, set off by a wind and rain gallery and flower-shaped casual seating.

The circular site to the south is centered on rose seats and a ginkgo tree, which make Hanyang's spirit carrier and the community's spirit carrier rely on each other. Readable wood carvings of goodwill maxims surround the wind and rain gallery in the square. In the concise design language under the blank, the space has more variability to meet the community's various activities. While highlighting the style of Rose West community, the central square enables residents to experience the taste of life and feel deep happiness here. (Fig.71)



*Fig.71 Aerial view of the square transformation (Source: Drawing by the author)*

At the same time, the author also considered different groups of people and added barrier-free passages at each entrance of the square, striving to make the square a shared living room for every resident. (Fig.72)



- ➔ 人行道 Sidewalk
- ➔ 无障碍通道 Accessible Sidewalk



*Fig.72 Central square crowd lines and renderings (Source: Drawing by the author)*

### **5.1.16 SPACE DESIGN OF THE FIRST FLOOR OF THE BUILDING**

The aerial space of the first floor of the community residence, which has the function of shading the sun and rain and expanding the building function, is a rare "grey space" in the rose west community. The author divided the four existing elevated floors in the

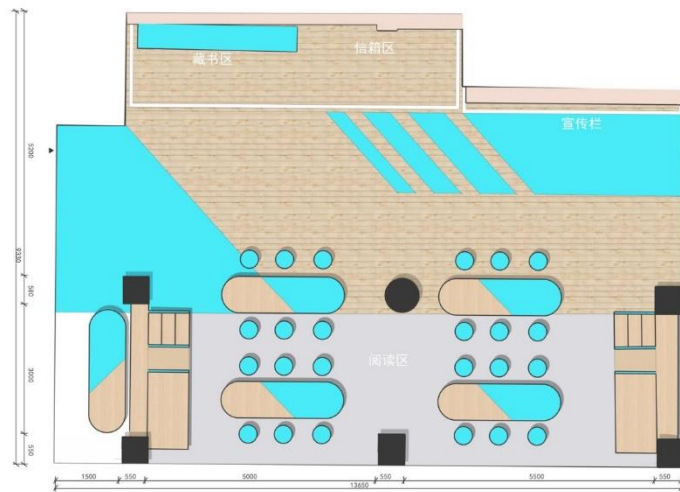
community into four areas, namely reading space, dancing space, sports space, and singing space, with different colors. Through the color and functional configuration, the residents can be clear at a glance to meet the needs of different people. The author designed the opening floor space through "micro renewal," solved the problem of using the opening floor on the first and first floors of the building, and added new public space to the community. (Fig.73)



*Fig.73 Opening space rendering pictures and physical picture  
(Source: Drawing by the author)*

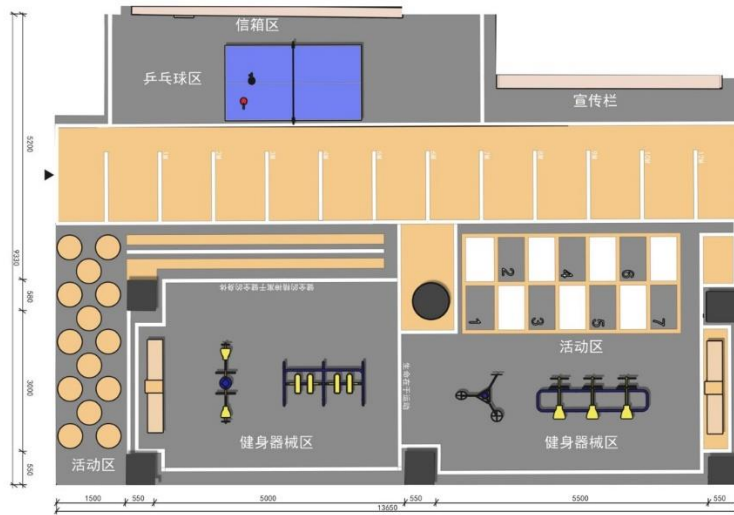
In the four opening space the reading space takes "blue" as the theme color, giving people a quiet atmosphere of immersion, as if walking in the ocean of books. A reasonable functional layout can meet the needs of different groups of people in the community so that the opening floor becomes a shared space for residents to study and

work. (Fig.74)



*Fig.74 Read spatial space plan and renderings  
(Source: Drawing by the author)*

Orange represents enthusiasm and energy. The author takes orange as the theme color of the sports space to express the healthy atmosphere full of vitality and energy of the site. The functional facilities are complete, and the planning distribution is reasonable. Create a healthy sports life for community residents. (Fig.75)



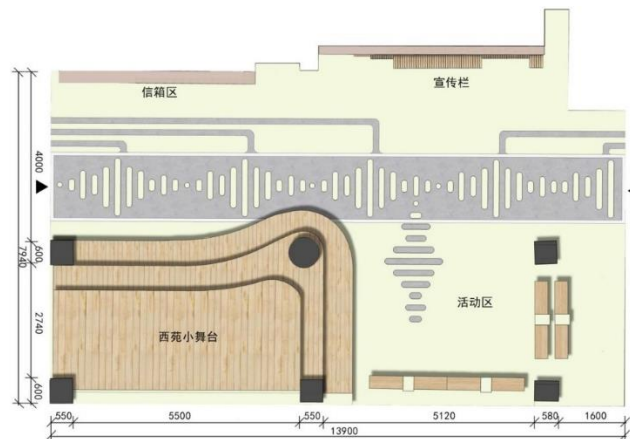
*Fig.75 Sports space spatial plan and renderings (Source: Drawing by the author)*

Pink represents gentleness and youth. The design team takes "pink" as the theme color to reflect the dancers' young gentleness and mentality, extracts the abstract form of a rose, and uses it on the pavement of the venue to show the rhythmic beauty of dancing. (Fig.76)



Fig.76 Dancing space spatial plan and renderings (Source: Drawing by the author)

With "green" as the theme color of singing space, it creates a natural mood for residents and let residents feel nature while imagining the movement of life. (Fig.77)





*Fig.77 Singing space spatial plan and renderings (Source: Drawing by the author)*

Photo of opening floor design completed (Fig.78)



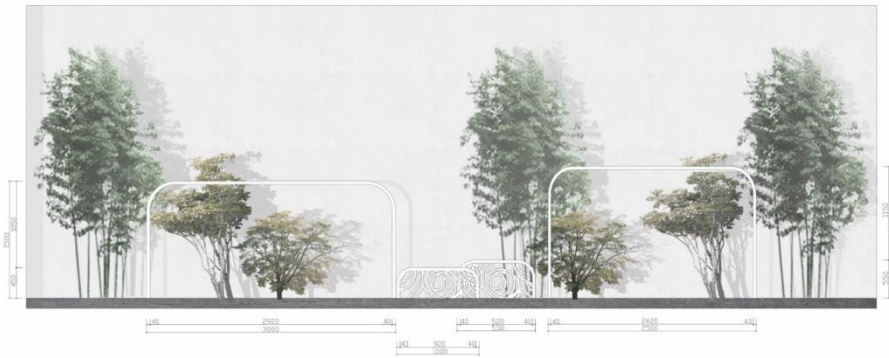
*Fig.78 Opening floor design completed (Source: Photo by the author)*

### **5.1.17 DESIGN OF CENTRALIZED DRYING AREA**

Since the residential buildings in the community do not have balconies, residents here have a strong demand for drying. Given the need for drying areas in the community, the author placed the drying area in the green space in front of the building. The high



and low matching hangers and dense vegetation provide residents convenience and create a beautiful environment. (Fig.79)



*Fig.79 Drying area renderings (Source: Drawing by the author)*

## 5.2 FENG YE SHAN COMMUNITY RENEWAL DESIGN

DESIGNER: PAN HAOWEI, HOUSING AND URBAN-RURAL DEVELOPMENT

BUREAU OF HUANG SHI CITY.

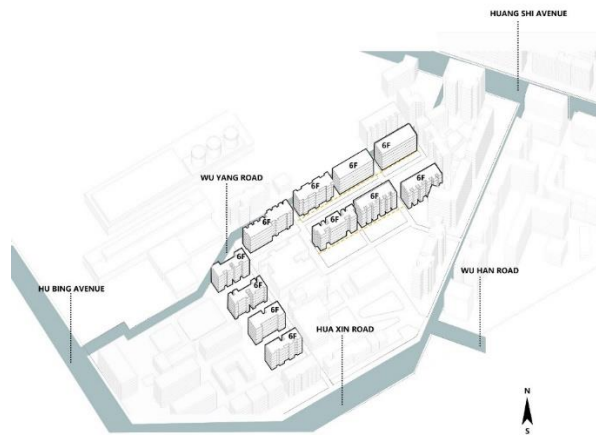
YEAR:2020

The author participated the Feng Ye Shan community renewal project in 2020. The project locates in Huangshi port district, the central district of Huangshi, Hubei province, with unique geographical advantages (Fig.80). People living in the community can choose a variety of ways to commute and reach every place in the city center in a short time. In addition, the diversified traffic also increases the social activity on the streets and enhances the city's vitality. Feng Ye Shan community around the transportation network developed. The south side of the community is Huaxin Road, which connects two main roads of Huangshi (Huangshi Avenue and Hubin Avenue). Wuyang lane locates in the north of the community, connects the community with Huangshi Aavenue, providing more convenient transportation for residents living in the community. Wuhan Road, the most prosperous commercial street in Huangshi, is connected with Huaxin Road. It is also the street where most residents gather.



*Fig.80 Community location (Source: drawing by the author)*

Feng Ye Shan community is a welfare housing community that Hubei Huaxin Cement Company uses to settle its employees. There are 11 residential buildings with 6storey in the community. (Fig.81)



*Fig.81 Community axonometric diagram (source: drawing by the author)*

Huangshi used to be a city of industrial resources. Due to the gradual exhaustion of industrial resources, factories in the city gradually moved, and those communities belonging to factories became dilapidated due to a lack of factory management. Garbage can be seen everywhere in the community's public space, and vegetation in the planting area gradually withered. (Fig.82)



*Fig.82 Landscapes situation in the community (Source: Photo by the author)*

Over time, the community has been aging seriously. In recent years, with the growth of private cars, cars filled every corner of the community, the space in the community needs to be safer and beautiful, and the community spirit needs to be improved. In order

to solve the problems existing in the public space, the design management team carried out the space micro-update from the aspects of landscape, safety, and entertainment.

**1. Safety:** According to the author's field exploration, community roads severely lack function. No diversion of people and vehicles in the community leads to serious safety problems. If the community cannot guarantee the daily safety of residents, community spirit and community construction will be out of the question (Fig.83).



*Fig.83 Traffic situation (Source: photo by the author)*

**2. Landscape:** Community landscape is one of the essential factors in creating a community atmosphere. A good community landscape can improve the quality of the community. The Feng Ye Shan community was originally designed without considering the landscape. Instead, the simple boundary of the area is enclosed to form a meadow and tree pool. The closed landscape boundary creates a fault line between the landscape and the daily activities of the residents. Like any modernist community in China and any other city in the world, the landscape of the community is too simple and lacks beauty and functionality. (Fig.84)



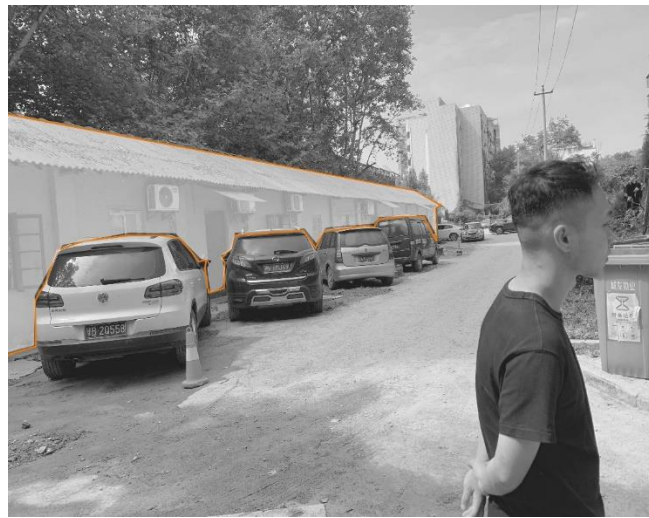
*Fig.84 Landscape status (Source: photo taken by the author)*

**3. Entertainment:** The author found in the survey that most community residents are elderly and children. The author summarized their requirements for community space as conversation and entertainment. As shown in Figure.85, older people need more space for conversation, and children need good entertainment space



*Fig.85. Questionnaire summary (Source: drawing by the author)*

In the renewal design, to solve the problem of parking cars in the community, the design team decided to dismantle some illegal buildings in the community after communicating with the residents. The residents built these structures without property rights to obtain more private space. Because of the age of these illegal structures and the lack of any safety approval procedures, they damage the community's original road condition and threaten to collapse. The design team decided to remove the buildings, restore the original landscape of the community, and create more parking space for the community based on these plots. (FIG.86)



*Fig.86 Dismantled area (Source: photo taken by the author)*

To expand the functional area within the community, the author chose the principle of open green space: breaking the closed status quo of the community center green space and the green space in front of the house, integrating the walking path and activity area into the green landscape space, and transforming the original monotonous landscape into a playground and community living room (Fig.87). Considering that the community's population is mainly the elderly and children, the author designed the public areas with an emphasis on the safety of the space. In the ground area of public space, we use rubber as the ground filling. First of all, the rubber color is diverse and rich, and the decorative effect is excellent. Second, rubber is a soft ground material, and the friction is also powerful. It is difficult to cause the elderly and children to fall. Even

if people slip on the rubber ground will not cause severe injury, and it is very friendly to the elderly and children; Third, the noise reduction effect of rubber floors is better than that of cement, marble, or wood, such as hard pavement. The design team considered that not all the residents of the community use the public space at the same time, and when some people use the space, there is bound to be noise, which is very unfriendly to those who stay at home, so the design team used rubber as the floor filler for the space. (Fig.88)



*Fig.87 Design plan (source: drawing by the author)*



*Fig.88 Design return visit (source: photo by the author)*

In addition, the leisure area is integrated into the former small green space. Considering that the elderly has the habit of walking and playing chess after dinner, we provide a

small garden for them to play chess and take a walk in the community (Fig.89), which provides more leisure and experience places for the residents of the community. We encourage the residents to enjoy the sunshine in the community through activities. We hope to create the community landscape and public space through "micro-renewal" so that the beautiful landscape and comfortable public space can bring safety and happiness to the community life.



*Fig.89 The public space of Feng Ye Shan community after construction  
(Source: photo by the author)*

### **5.3 REVITALIZATION OF INDUSTRIAL HERITAGE SPACE.WUHAN BIENNALE DESIGN**

**DESIGNER: PAN HAOWEI, HUANG ZHENKAI, XIONG WEI, LEI TILUN.**

**YEAR:2021**

Industrial remains are living fossils that witness the development of urbanization. These industrial buildings were once the driving force for social progress and urban development. They are the imprint of the development of human civilization and have historical, technological, and aesthetic value. Although today's industrial production does not require these factories to undertake production tasks, re-examining the cultural value of industrial relics is an essential part of the concept of "micro-renewal."

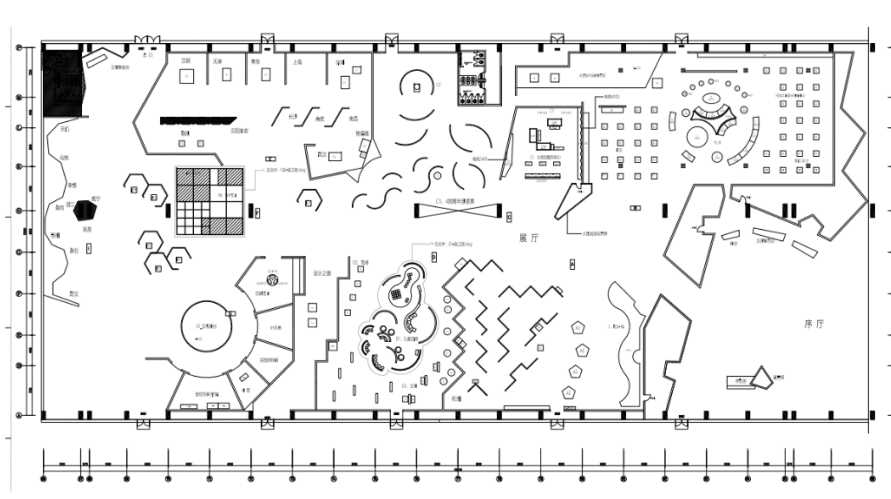


Wuhan is the largest city in central China and the birthplace of China's modern industry, leaving behind many industrial and cultural heritages during industrialization. In November 2021, the 6th Wuhan Biennale was held at the industrial site of Hanyang Iron and Steel Factory in Hanyang District, Wuhan. (Fig.90)



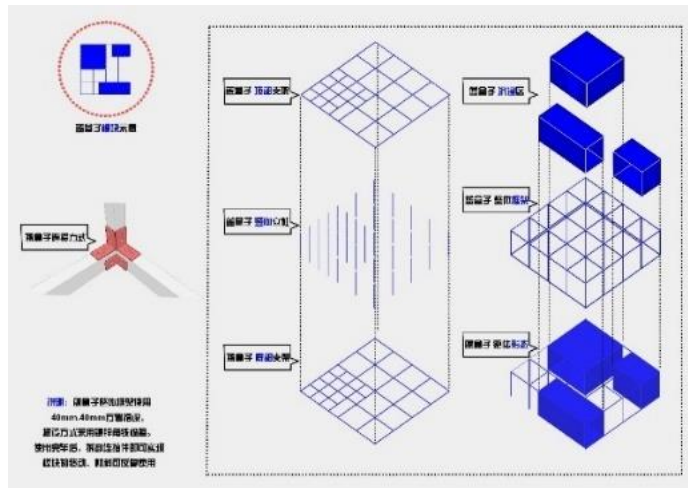
*Fig.90 Site situation before renewal (Source: photo by author)*

The Biennale is an exhibition for citizens to promote traditional urban culture and urban technology. The design site of this Biennale is 120 meters long, 54 meters wide, and 6480m<sup>2</sup> in area. There are nine engineering design exhibition areas (*From A to I*). (Fig.91) The exhibition covers architecture, cultural creativity, urban renewal planning, smart city, future space practice design, and industrial design. It shows Wuhan's design innovation ability from different design types to the world. The purpose of holding the Biennale is to activate and renew the city's stock space, awaken people's awareness of the protection of urban industrial heritage and cultural awareness, and integrate the city's industrial heritage into urban life.



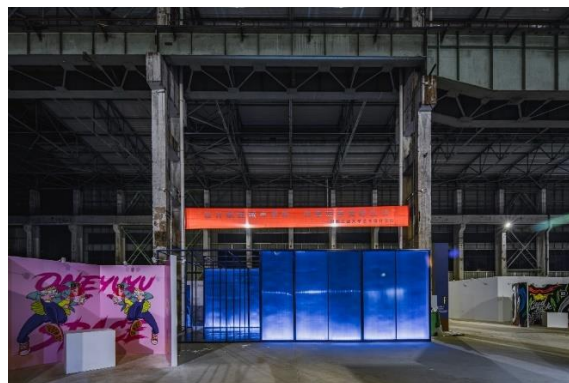
*Fig.91 Site plan (Source: Drawing by author)*

IBLUE is the digital experiment space in this Biennale. It is also the design practice of the author's micro-renewal of urban public space (Fig.59). With the end of urban sprawl, every piece of land in the city will become more precious, how to create Expanding the functional and cultural attributes of public space based on the existing stock in cities and communities and creating exciting and cultural public activity areas for residents has become an urgent problem to be solved. The facility is a square building with a length, width, and height of 9.6m\*9.6m\*3m. In the facility's design, the author used the concept of modularization and continuous circulation and used 40mm\*40mm steel components fixed with bolts as the facility's main structure. (Fig.92) put the three functional areas of IBLUE into the structure, becoming the final physical space.



*Fig.92 Structure of the IBLUE digital experiment space (Source: Drawing by author)*

The facility uses a plastic panel as the exterior facade of the building. The author considers the usage scenarios of the public space during the day and night and puts LED light strips in the interior of the plastic panel as decorative lighting at night to create an atmosphere for night use. (Fig.93)



*Fig.93 Night effect of IBLUE experimental space (Source: Photographed by the author)*

The IBLUE architectural entity is used to limit the area to provide spaces for users. The interior decoration of the used space is completed through digital media. The author uses the diverse effects of digital media to create an immersive public space that is artistic and entertaining. (Fig.94)



*Fig.94 Interior effective of experimental space (Source: Photo by author)*

## **5.4 THE ROLE OF URBAN FURNITURE IN COMMUNITY PUBLIC SPACE—MEDITATION CABIN DESIGN**

**DESIGNER: PAN HAOWEI**

**YEAR:2022**

From 2019 to 2022, the world has been plagued by a pandemic, people are forced to stay at home, and people are more dependent on the Internet for communication. On the one hand, the Internet is the continuation of the communication space in the Internet era, and the matching mechanism of big data can also give people a better sense of community; on the other hand, it also means that people communicate with themselves and with others in real life. Social time also decreases.

Functionalism and industry drive the rapid development of cities and communities, followed by the increasing compression of public leisure spaces in cities and communities. The meditation cabin design is the author's "micro-renewal" design of public spaces under such circumstances. Based on keeping the nature of the urban land and the style of the community, the author inserts a small urban furniture system into the limited space resources of the community and the city to provide residents with leisure and meditation space. (Fig.95)



Fig.95 Meditation cabin rendering (Source: Drawing by author)

Considering the limited space resources in the city and the use scenarios of the cabin, the author decided to use "functional implantation" and "low intervention" as the starting point for the design of the meditation cabin on the premise of retaining the use function and to reduce the construction size of the cabin as much as possible so that it can be better integrated into every corner of the city (Fig.96).

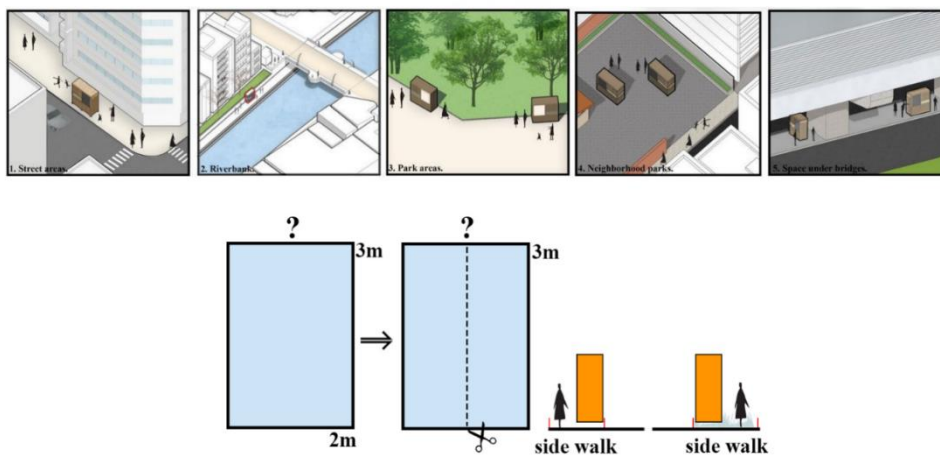
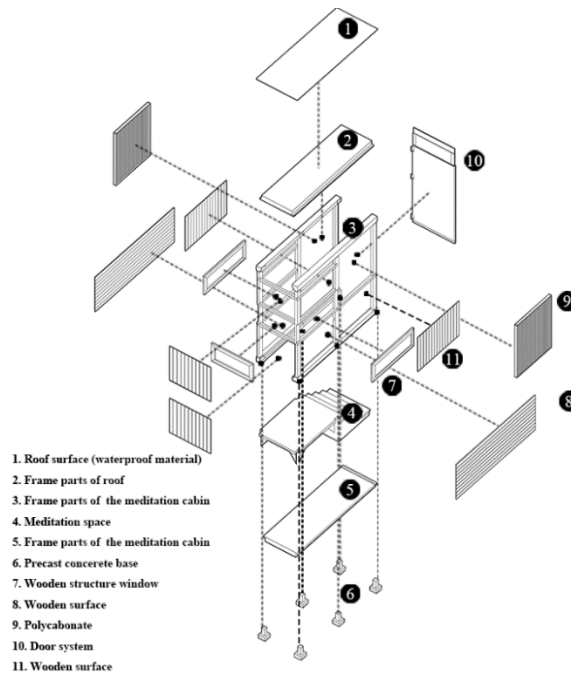


Fig.96 Diagrams of Meditation (Source: Drawing by author)

The main structure of the cabin is made of prefabricated flexible wooden structures. In order to enhance the stability of the hut, the base uses six prefabricated concrete tiptoe

bases. Make the hut stand more stable on every city corner (Fig 97).

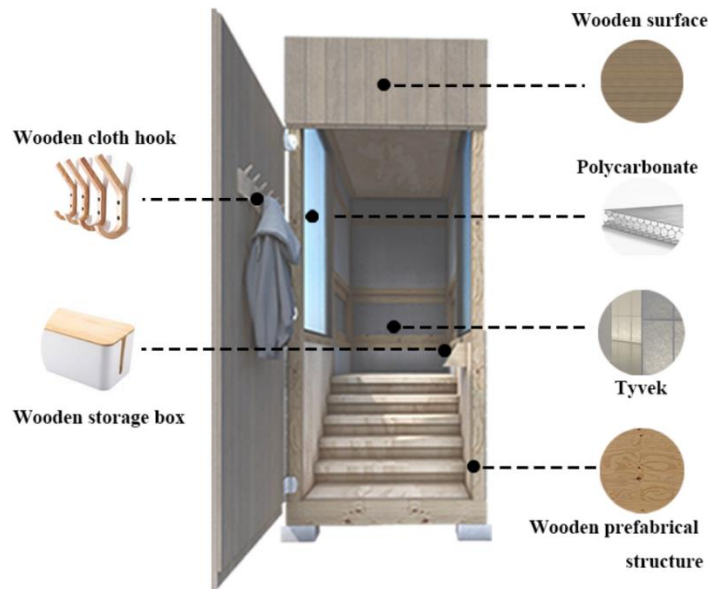


*Fig.97 Explosion diagram of the meditation cabin (Source: Drawing by author)*

Since the structures of the huts all use prefabricated components, the construction price under mass production will be more acceptable, laying a solid foundation for the possible clustering and commoditization of meditation huts in the future.

The cabin is a community structure with both furniture function and space attributes. The convenience of use and the ventilation and lighting system of the building are factors that need to be considered.

The author hopes to create a pure meditation and leisure space experience for users in a small space. Considering the ventilation and lighting functional requirements of the building itself, the facade of the hut adopts hanging windows with Asian cultural symbols and translucent plastic panels as ventilation and lighting equipment. Regarding other functions, the hut provides users with hooks and storage boxes for electronic equipment, allowing users to use a pure interior space and reduce other distracting thoughts and burdens during meditation. (Fig.98)



*Fig.98 Functional diagram of the meditation cabin (Source: Drawing by author)*

After completion, the meditation cabin can become a public building and furniture in cities and communities, providing users with a meditation space to connect with themselves (Fig99).



*Fig.99 Rendering of the meditation cabin (Source: Drawing by author)*

## CHAPTER 6. CONCLUSION AND PROSPECT

### 6.1 CONCLUSION

The author takes the design concept of "micro renewal" as the design basis and applies the concept to the renovation of the old community in Wuhan Rose West Garden. This paper adopted a case study approach to study the theoretical development of the urban community and public space, and the current background of urban renewal in China. The research findings revealed the inevitability of the "micro-renewal" of public space and perceives the new dynamics of "micro-renewal" of community public space at home and abroad. The author draws the following design conclusions from the research and analysis of "micro-renewal" from different perspectives:

1. The micro-renewal of community public space should interfere less with the site form and adopt the renewal method according to local conditions.
2. Humanized design should be followed in the design, manifested by understanding the needs of residents of different ages through field research and designing according to the different needs of residents.
3. "Micro-renewal" should follow the principles of symbiosis, such as symbiosis between people and the site, between people and the landscape, between history and modern times.
4. "Micro-renewal" should follow the principle of mass participation, which is reflected not only in the design process but also after the completion of the design. The designer can provide a space for users to play freely, promote the participation of the masses in the community's construction, improve the space's utilization rate, and cultivate the community consciousness and spirit of the residents.



5. "Micro-renewal" needs to bridge the urban context. After several times of urban construction in China, the form of many cities has become unified, and the unique cultural context and urban texture are even harder to find. Under the design concept of micro-renewal, designers need to update the urban and community public space gradually and, at the same time, dig and save the unique context and history of the city.

## **6.2 RESEARCH DEFICIENCIES AND PROSPECTS**

Several limitations must be acknowledged. First, due to the impact of the 2020 pandemic, the author cannot inspect many public spaces. Second, the communities have different forms, sizes, and the renewal quality, the author can only cover some of the community renewal cases within the limited scope of the investigation. Future research can address these research deficiencies.

At present, community renewal in Chinese cities, is a project of the nature of the whole society. A wide range of renewal and a large number of affected people, reflect the efforts made by the Chinese government for the sustainable development of cities. In this paper, by combining the theory of "micro-renewal" with practice, we can constantly improve the spatial quality of the community, cultivate the community spirit of residents, bridge the context of the city and the community, and promote the economic development of the characteristic city through continuous efforts to practice. We should consider the relationship between people, nature, site, and culture in the design. Seek a breakthrough in the renewal, and contribute to the future public space of Chinese cities.

## **CHAPTER 7. THESES**

### **THESIS ONE**

Community public space plays a crucial role as one of the primary places for community residents to interact and engage in activities. However, the quality of public space cannot be measured solely by its scale and quantity. The concept of "micro-renewal" emphasizes the diversity of resident activities as a critical factor in evaluating the quality of public space. Therefore, in the micro-renewal of public space, emphasis should be placed on enhancing the diversity of community public space, including its landscape, entertainment, and interactivity. This approach can improve the quality of life of community residents and the community's overall image, creating a more vibrant and attractive community environment.

### **THESIS TWO**

Compared to the overall development of a community, micro-renewal places greater emphasis on cultural preservation and integrating cultural elements into the renovation process. From the perspective of micro-updating, there is a new understanding of cultural preservation for both the community and the city, with cultural heritage being regarded as objects for protection and development during the renovation process and the reshaping of their role in urban life. Micro-renewal of public spaces takes advantage of cultural heritage's protective and functional development to stimulate residents' awareness of community and urban cultures. Based on community consensus, micro-renewal helps build community cohesion and fosters community spirit.

### **THESIS THREE**

How to use the brownfields and land stocks is worth exploring from the micro-renewal perspective.

Those lands, abandoned and unfulfilled in development, could be active spaces after the micro-renewal process and provide more public facilities and services to enhance

living standards for residents.

In micro-renewal, paying attention to brownfield and stock land and how to increase the value of existing resources is essential. Improve the functionality and quality of the community's stock land through renewal, renovation, optimization, Etc., create a more complete and better community landscape, provide residents with a more convenient and comfortable living environment, and then increase the value of the community's stock land, and promote sustainable development of the community.

#### **THESIS FOUR**

The community public landscape should be part of the urban block system landscape. Whether it is a medium-sized city or a metropolis, the city's vitality comes from the activities of urban residents in the city, and the factor that affects the activities is that the city will establish blocks that can stimulate public activities.

The micro-renewal of the public space in the community should not only focus on the vitality and space quality of the current community but also face the development of the future block to meet the needs of future block life. At present, the micro-renewal is aimed at the spatial quality of the community and serving the residents of the community. In the future, it is necessary to integrate the public spaces inside and outside the community through micro-renewal to form an overall public landscape with vitality and promote the flow of people. In the future urban development process, it is necessary to incorporate the public space texture within the community into the city blocks to deal with the development of the block life in the future city.

#### **THESIS FIVE**

Community spirit and public participation complement each other. The prerequisite for establishing community spirit is to arouse residents' awareness of the community's public spaces and to give residents the right to know, choose and participate. The combination of questionnaire design and participatory landscape design can make

Residents' participation in the construction, operation, and maintenance of community public spaces can effectively improve community spirit.

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