# Research on the Renewal Strategy of New and Old Intersection Communities in Metropolis Based on the Concept of Landscape Urbanism——Taking a Practice in Shanghai Tianlin Community as an Example

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**Abstract:** With the development of the economy and the progress of society, people's demand for the quality of human habitat is increasingly urgent. However, the urban development strategy adopted by China's rapid urbanization process in the past few decades has brought problems such as high-rise buildings, dark corners, and lack of quality public spaces. Especially the new and old intersection communities have become the accumulation of problems in various periods. The Tianlin Community in Xuhui District, Shanghai is close to the inner ring road of the city, integrating a new community with high-rise buildings and a dilapidated old community. A large number of people and so rich elements such as iron orbits, hospitals, parks, slums, modern residential areas and so on, in stark contrast to the closed space, rare public activities and lack of vitality. Landscape urbanism uses landscape instead of architecture to become the basic medium in the new round of urban development. Practice has proved that landscape is the only model that has the ability to propose effective solutions to the rapid development of today's society and the problems of urban transformation from gradual adaptation and alternate evolution. This paper takes the landscape urbanism as the guiding ideology, regards the landscape as the most basic element determining the shape and experience of the city, In response to the problems of low spatial quality and lack of vitality caused by the isolation between functional zones and within functional zones in Shanghai Tianlin community, the community update strategy of connecting urban fabrics, integrating natural and engineering systems, creating synergy of shared spaces was proposed. Reorganizing the area through "landscape infrastructure", creating new urban Spaces that meet the needs of the people and finally re-establishing physical and social connections.

**Key Words:** Landscape Urbanism; Community Renewal; Urban Design; Shanghai Tianlin Community; Vitality Creating

## 1 Introduction

From the 18th National Congress of China, the new urbanization with Chinese characteristics has been proposed, which means the transformation of urbanization from quantity to quality and from extension to connotation. The 19th National Congress pointed out that the main contradictions in China's society have been transformed into the contradiction between the people's growing needs for a better life and the development of inadequate imbalances. From this we can find that China's urban development is shifting from an increase in quantity to an improvement in quality. The original way of building renovation is no longer suitable. Landscape urbanism originated from the criticism of

postmodernism on modernist architectural planning in the late 1970s. It is considered to have a profound impact on the improvement of human settlements. Therefore, at the current stage of development and stage of China, there are Important guiding significance.

China has experienced 40 years of rapid urbanization development. In order to meet the needs of urban economic and social development, a large number of new districts have been built. The population density and construction density of the cities are in a state of rapid growth. However, due to historical reasons and the development of "cake-spreading" in some areas at that time, there were problems such as low floor area ratio, dangerous buildings, backward facilities and bad sanitation (Yang *et al*. 2019). At the same time, the rapid expansion of urban space has made urban construction land reach the ceiling. Faced with the shortage of construction land indicators, urban renewal has become the main way to meet urban space needs (Tang, 2015). Especially for the new and old intersection communities of cities, the particularity of their location has led to the accumulation of urban problems, which are the key areas for urban renewal.

Based on the full understanding of landscape urbanism and urban renewal, this paper takes the urban renewal practice under the background of landscape urbanism with a new and old intersection communities in Shanghai, one of the cities with the fastest development and the most urgent urban renewal in China. Practice brings some relevant thinking.

## 2 The development and practice of landscape urbanism

### 2.1 The origin of landscape urbanism

The origin of landscape urbanism can be traced back to the critical stage of postmodernism's modernist architectural planning in the late 1970s. The main background of its emergence was that there were more and more "decentralization", no centralization, and high liquidity in the city during the industrial transformation. People moved away from the urban center and the urban population experienced negative growth. Industrial civilization brought serious environmental problems to the society at that time, causing great damage to the natural ecology, and the human living environment was worrying (Steiner, 2011, Weller, 2008). Under such a background, landscape is the only model that has the ability to propose effective solutions to the problems during the rapid development and the urban transformation of today's society from gradual adaptation and alternate evolution (Yang, 2009). The landscape is expected to replace the building as the most basic element of the new stage of urban development, helping people to rationally use natural resources, reshape the natural ecology and the relationship between man and nature. In the 1990s, Charles Waldheim, then deputy dean of the School of Architecture, Landscape and Design at the University of Toronto, first proposed the term "landscape urbanism" to describe a series of emerging theories and practices in urban planning and design.

### 2.2 The concept and connotation of landscape urbanism

In the article "A Reference Manifesto", Charles Waldheim, the author of the term landscape urbanism, defines the concept of landscape urbanism: landscape urbanism describes a way to re-integrate existing order in the process of contemporary urbanization. In this process, landscape replacement of buildings has become the most basic element of urban construction. In many cases, landscape has become a perspective window for contemporary cities, especially North American cities, and an important medium for urban reconstruction (Waldheim, 2006, Waldheim, 2016).

Landscape urbanism is some different responses of a group of designers based on the same values. In the face of cities driven by capital markets, urban design should no longer be based on the capital carrier of architecture, but should return to urban Ecosystem and human-scale to do the design, its connotation has the following characteristics:

First of all, the landscape of landscape urbanism is not the visual perception of the aesthetic connotation in the traditional sense, or as a natural space for the building. It regards all the existing objects (natural or artificial) on the earth and their visual and comprehensive interpretation of the state and space as a continuation of the spread landscape. It is a combination of nature and man-made objects, a multi-functional structural carrier of the city, and the connotation of the landscape has a large degree of expansion and development (Feng *et al*. 2013).

Landscape urbanism advocates the natural process as a form of design, fully respects the natural evolution process of the site, analyzes the texture of its evolution, and uses it as a basic integration into the design. This is an artificial way to create a near-natural artificial ecosystem by using natural elements. It is based on ecological principles to reconstruct the living environment.

Landscape infrastructure is another important feature of landscape urbanism. Most people's knowledge of infrastructure is gray infrastructure such as roads and bridges. People usually only consider their technical requirements and ignore their social, aesthetic and ecological functions. Landscape urbanism advocates the coordinated integration and overall construction of "gray infrastructure" with "green infrastructure" such as park green space and rivers to form landscape infrastructure (Zhai, 2010). The landscape infrastructure is comprehensive and complex, close to the diversity of contemporary society and environment, and meets the maximum needs of social and economic development as well as ecosystem service requirements with the least amount of land.

Since landscape urbanism was born to solve the problem of the decline of American urban centers, it is very suitable for the revival of the central city that is declining. When the city develops rapidly, the central area of the city declines, and it becomes a gathering place for all kinds of dirty behaviors. It changes the image of the central area of the city through landscape urbanism, stimulates the vitality of the central area of the city, and wins new development. In addition, because the landscape is more flexible, resilience, and less costly than buildings, it is easier to cope with the social problems brought about by economic structural changes.

**3 Urban renewal of the old and new intersection communities of metropolitan areas**

**3.1 The background and connotation of urban renewal**

Urban renewal enables urban land to be economically and rationally reused through substantial maintenance, renovation, and demolition, and strengthens urban functions, enhances social well-being, improves quality of life, and promotes sound urban development. Its purpose is to promote a region (including economic, material, social, environmental and other aspects) for a long time, and the approach adopted is comprehensive and holistic (Song *et al*. 2015). The ways of urban renewal mainly include redevelopment, rehabitation and conservation, but not limited to these three actions.

At present, the development space of China's megacities is basically saturated, construction land is increasingly scarce, and there are a lot of land resources in cities that need to be revitalized, such as

dilapidated houses, abandoned industrial buildings, and inefficient space. According to statistics, the commercial properties amount of Beijing and Shanghai are underestimated to more than 10 million square meters (Qin, 2018). China's cities have entered the era of stock development from the incremental era. Urban renewal has become a major new growth point for cities, especially megacities, due to its important role in improving the efficiency of the stock land and space.

### 3.2 Urban renewal of the old and new intersection communities of metropolitan areas

The old and new intersection communities of metropolitan areas is a special area in the city and an important potential area for urban renewal and structural optimization. This area was originally a fringe of urban development in the past. It has a certain sense of history and some of the functions and buildings developed in the early days. This is an area where urban space is rich in content and urban functions are highly mixed. With the rapid development and expansion of cities in recent years, these areas have become special areas between the new city and the old city. Due to the influence of traffic location, land price and other factors, in the background of increasingly tense relations between people and land, the intersection communities of old and new areas has become a center of illegally construction and social problems. It is precisely because of its problems and the prominence of contradictions that in the wave of urban renewal, this area has gradually become a hot spot for urban renewal. However, market-driven urban renewal tends to benefit value, and the update project lacks overall coordination. At the same time, the update of high development intensity has inundated the original regional characteristics. The update method only focuses on the project site itself and finally destroys the integrity of the design and the original near-human experience scale. Finally, the street vibrancy is replaced by the depressed high-rise buildings. Therefore, in the new development stage of pursuing urban quality, the new and old intersection communities of metropolises are in urgent need of a new round of renewal. Considering that most of the areas have undergone a large-scale construction and renewal, small interventions and construction should be adopted to achieve regional regeneration.

### 4 Urban renewal practice in Shanghai Tianlin area based on landscape urbanism

Shanghai is China's cosmopolitan city. After 40 years of rapid development, the shortage of land resources has become increasingly serious. Shanghai's new round of master plan (2016-2035) puts forward the basic requirements for the strict control of construction land use in Shanghai's new round of urban development, aiming to achieve "zero growth" in the total construction land use of the city, which requires Shanghai to transform from urban incremental planning to stock optimization.

Tianlin Community is located between the outer ring road and the inner ring road. It belongs to Xuhui District of Shanghai and is close to the Xujiahui City Sub-center (Figure 1). This area was a gathering place for workers' villages and production enterprises in the 1980s and 1990s. It is now an urban community with a predominantly residential function. Due to the particularity of its location, there are new communities with high-rise buildings, old and broken communities, and even the coexistence of illegally built urban villages. Although the facilities are complete and the flow of people is large, this area faces problems such as space closure, rare public activities, lack of vitality, etc. The update practice introduced in this paper is located on the riverside of Puhuitang river in the Tianlin community. It is a 7-hectare plot with good resources and convenient transportation, but it faces many problems such as the isolation of both physical space and social space, as well as low space quality and

lack of vitality (Figure 2). Based on the concept of landscape urbanism, we try to use ecological and human perspectives to discover problems within the site or with the surrounding environment and then solve problems, and also reorganize the site and then create new urban spaces that meet the needs of the people to re-establish material and Social connection.



Figure 1. Location of Tianlin Community between and Design Site in Shanghai



Figure 2. Problems the Site Facing(Contradictions New and Old, closures, high-voltage towers in parks,inactive public spaces, etc.)

**4.1 Connecting urban fabrics**

Landscape urbanism emphasizes the extension of design thinking to the urban scale, taking the perspective from the spatial organization and arrangement within the original venue, the beauty and ugliness of the design form to the discovery and solving problem within a larger scope. The design considers the role of the site in a wider range and the connection with the surrounding area, and proposes to create a blue-green network to communicate with the surrounding, to create a non-motorized traffic network and increase the openness.

4.1.1 Create a blue-green network to communicate with the surrounding

In the greenfield system planning of Shanghai 2035 master plan, Puhuitang river, which passes through the site, is an important waterfront corridor, while the Dream Park on the other side of Puhuitang river is a greenland node (Figure 3). At present, the green coverage rate in the site is low, and a large amount of green space is used for parking. At the same time, the ultra-high waterfront buildings, waterfront fences and parking spaces hinder the penetration of the green landscape and cut off the continuity of the waterfront corridor. Therefore, the design creates a green corridor along Puhuitang river and leads it into the site by constructing a multi-level greening network including waterfront green space, big green space, little community green cube, and connections between different green spaces. And finally form a greening node (Figure 4).

Figure 3. The greenfield system planning of
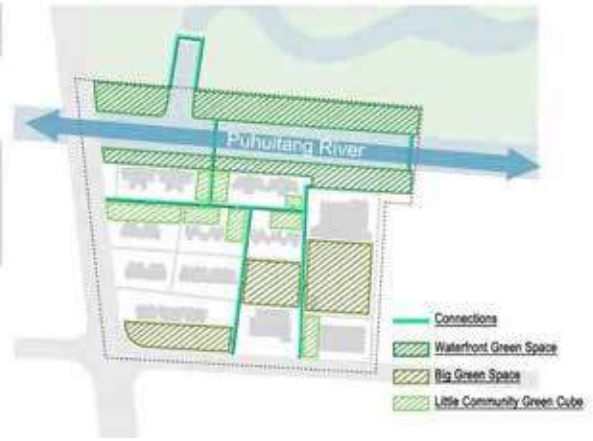Shanghai 2035 master plan

Figure 4. A multi-level greening network

4.1.2 Create a non-motorized traffic network to communicate with the surrounding

At present, the site is a typical motor vehicle-oriented traffic situation in China, with only a small amount of chronic space and poor quality (Figure 5). In order to solve this problem and create a good chronic network, firstly, plan enough underground parking space to solve a large number of ground parking problems occupying the traffic space, and secondly design a network of walking and cycling networks (including increasing the bridge connecting the banks of the Puhuitang river). And also connecting with the surrounding chronic system. On this basis, through the design of the section and the improvement of the surrounding environment, create a high-quality non-motorized traffic network (Figure 6).





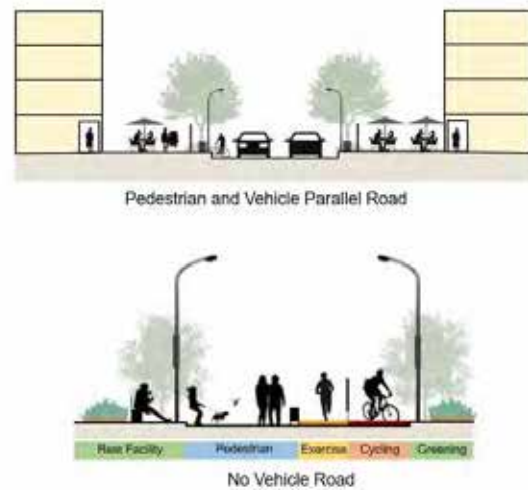Figure 5. Current non-motorized traffic spaces

Figure 6. Designed non-motorized traffic spaces

4.1.3 Increase openness to form urban public nodes

The city's important green corridor, Puhuitang river, passes through the block, and the large urban park, Dream Park, should have become a public node of the city. However, due to the property rights of the park and the consideration of safety and management of the residential community, most areas of the site are surrounded by walls or fences, the closing rate is as high as 82%. And even there are high

fences on both sides of the river, which completely obstruct the view of people. What's more, the lack of bridges makes the two sides of the river completely isolated.

The solution is to open the residential area. Of course, it is not as open as many communities in Europe and America. This is incompatible with China's national conditions and people's perceptions. Many successful opening residential areas experiences in China have shown that opening up some public functions and closing small residential areas is a good way. At the same time, the landscape forms a system that is open to the outside world (Figure 7).
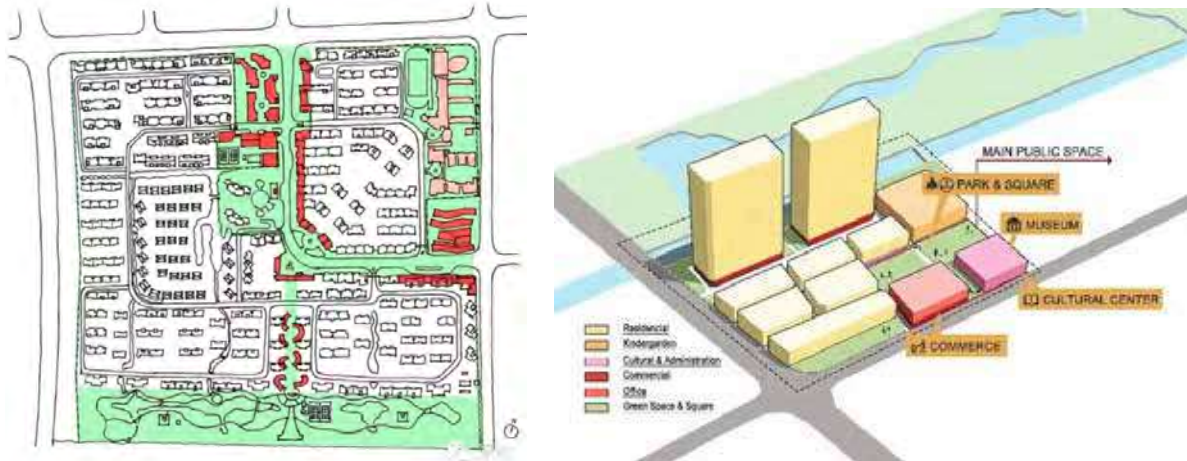


Figure 7. Case: Partially opened residential area Figure 8. Public functions promote the opening of site.

In addition, creating more public functions is also an important method. Transforming the old abandoned factory buildings into museums, cultural centers and businesses, and increasing the proportion of public green space, making the land function complex and open, and then becoming a waterfront public node serving the surrounding areas (Figure 8).

**4.2 Integrating natural and engineering systems**

Landscape Urbanism show interests in infrastructure and ecological functioning, its challenge to the nature–culture dichotomy and its promotion of creative assemblages, that it promotes hybridity between natural and engineered systems. For example, some experts have already introduced such features as SUDS (sustainable urban drainage systems) and reed-bed water purification systems into urban areas. And the artist-engineer Viet Ngo's lemna (pondweed) facilities, also designed to clean up waste water (Thompson, 2012). This design takes into account both the natural and engineering systems and try to exert the importance of landscape infrastructure.

4.2.1 Restore ecological function and balance

(1) Use a variety of plants

In the long-term urban construction, the builders consciously left some ecological space, but often limited to large-scale turf cultivation and single tree arrangement, the horizontal and vertical landscapes are single, and also affect the regional biodiversity as well as undermine the development of ecological functions and ecological balance. The design uses a variety of species and adaptable local species, in the roadside, waterside, parks and other types of engineering sites, in the plane, facade and other layers

of plant combinations to increase biodiversity (Figure 9, 10).
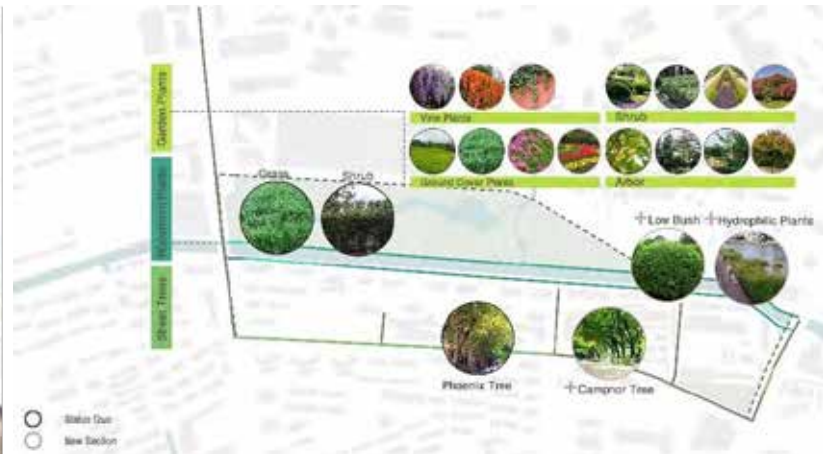


Figure 9. Diverse vegetation        Figure 10. Rich plants configuration

(2) Create an ecological coastline

The water system is an important ecological element of the land and plays an important ecological role. However, due to flood control and safety considerations, the revetment treatment on both sides of the Puhuitang river has adopted a hard dam, and even surrounded by high fences. These rude urban construction not only affects the urban landscape but also destroys the ecosystem. The design uses natural revetment, which consists of natural slope, vegetation, natural stone, wood, etc. The ecological coastline is beneficial to protect the health of the water ecosystem, and it can prevent the erosion of water waves and floods on the shoreline. It can form a green ecological hydrophilic space and improve the landscape quality of the city's waterfront. Its berm, flood control, filtration runoff, self-purification of water enhancement, regulation of water level, and integration of waterfront plants with shoreline plants to form a complete river ecosystem are the best manifestations of integrating natural and engineering systems (Figure 11).



Figure 11. Designed ecological shoreline.

4.2.2 Redesign and re-plan the infrastructure

(1) The space under the high voltage tower

A major constraint affecting the role of the Dream Park on the other side of Puhuitang as its central park is the high-voltage corridor that passes through it. The huge high-voltage tower hinders the feeling of people in the park. In the case where the position of the high voltage tower itself cannot be changed, the space for the ecological and engineering functions can be created by redesigning the space under the high voltage tower. The specific means are to use the terrain to create visual attraction points, while using rich plant layout and artistic components to reshape the regional image to weaken the isolation and negative feeling brought by the high-voltage tower, and then integrate the new theme to re-energize the site energy, thus rejuvenating the vitality of the park.

(2) Green roofs of the buildings

The green roof is an important path for the effective integration of nature and engineering. Planting green plants on the roof can increase the green area; at the same time, absorb the rainwater runoff from the roof of the building, purify and filter through the plant roots, collect and store the rainwater through the rainwater pipe to the rainwater tank, and use it for watering or building water reuse; The planting layer can also protect the building skin, absorb building heat and alleviate the urban heat island effect (Figure 12).



Figure 12. Green roofs of the buildings

The infrastructure under landscape urbanism is not a high-performance mediocre urban machine, but a man-made organic system that enables the city to breathe freely, with a comprehensive and complex life, and more close to contemporary society and the diversity of the environment.

**4.3 Creating synergy of shared spaces**

Landscape urbanism is a concept that spans multiple disciplines. In addition to the practical functions of the traditional landscape, it also pays attention to the social function of the landscape. It

advocates exploring the spirit of the place, creating a space to adapt to the needs of the local people, and thus closer to the real and complex city, adding a human touch to urban planning. The design is based on the actual needs of the local people, and the space or facilities needed to be placed or replaced to create a humanized public space that can strengthen social interaction.

4.3.1 The built environment must enhance the social life

The design site is divided into four sections by four development entities (two residential areas, one kindergarten and one production enterprise), separated from each other by roads and walls. The public space within the entire site is only a few undesigned small green spaces, lacking public space for social interaction, and lack of regional vitality. In our field research, we found that people of different ages and different occupational types are active in this place, and they have different needs for this place (Figure 13). For example, children in kindergartens and communities need to play together, young people working here need a good working environment and a quality space for communication, and old people need to exercise and chat in the morning...... But they are very pessimistic about the public space assessment of the status quo (Figure 14).
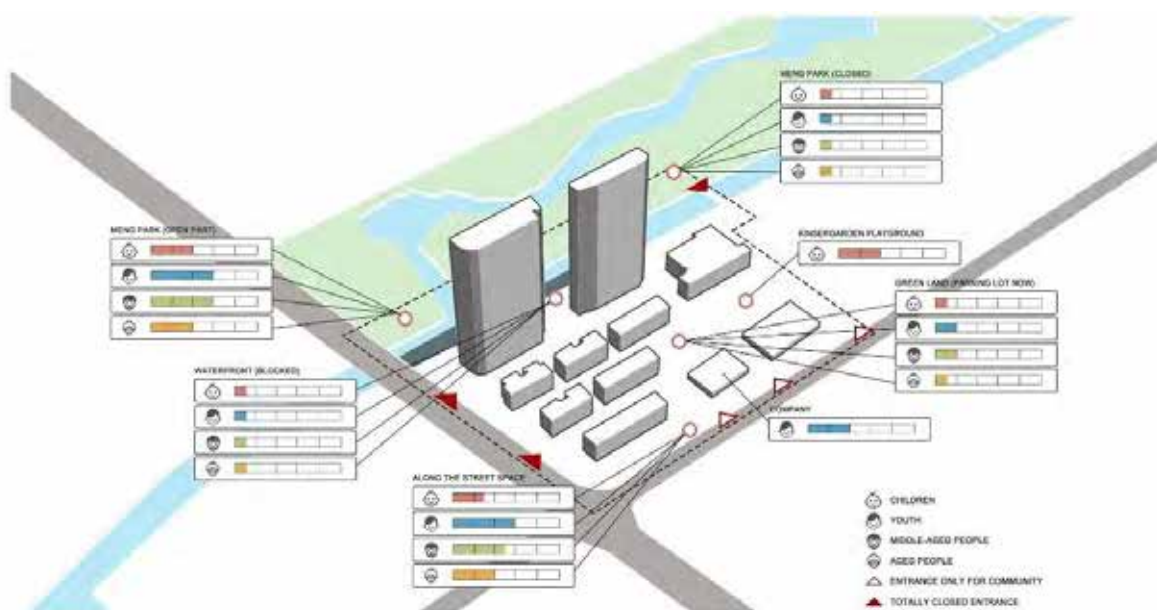


Figure 13. Demands of different groups



Figure 14. Spatial evaluation from different groups

The design predicts the space in which various groups of people may be active and the types of activities that may be generated, and then arranges these activities and people according to the space situation. At the same time, increase the corresponding facilities for the corresponding activities of various groups of people, and create a suitable space for activities (Figure 15). For example, set different types of game space for children of different ages, nursery and sand pool for children of 0-2 year old, graffiti wall and family coffee for children of 3-5 year old, and puzzle games and museums for children of 8-12 year old. These spaces that are truly suitable for a specific group of people can effectively promote people's activities here, thereby strengthening social interaction. They are mainly concentrated at the water's edge and a public space belt that extends from the water's edge to the interior of the city (Figure 16).



Figure 15. Activity spaces and routes for different types of people



Figure 16. A space that promotes social interaction from the water's edge to the interior of the city

4.3.2 Humanized scale public space

In the past period of time, China's rapid urbanization process has invisibly made society full of pursuit of scale and speed. A large number of simple and rude "non-human" scale space is produced, lacking space quality, unable to meet the actual needs of people, resulting in waste of space. Design site is also facing the same problem. Super-high residential buildings and large areas of artificial turf have

affected the use of public spaces. This design is based on the "human scale" as the basic ruler, focusing on small but exquisite, using the appropriate facilities and street furniture to make the public space more human, comfortable and secure (Figure 17).



Figure 17. Humanized scale of public activity space after design

## 5 Conclusions

Urban renewal has become an important direction and driving force for Chinese cities, especially large cities, in the new era of stock development due to the important role in improving the utilization efficiency of both stock land and space. The new and old intersection communities in metropolitan areas has become the key area of urban renewal due to the traffic location, land price and some other factors. Landscape urbanism is widely believed to have the ability to propose effective solutions to the problems of rapid development and urban transformation of today's society from the process of gradual adaptation and alternating evolution. Because it is very suitable for the revival of urban areas and can cope with the social problems brought by economic structural changes, it is suitable for urban renewal in the intersection communities of old and new in metropolises. Although the landscape urbanism theory has not produced much time and related practices are limited, its frontier nature will definitely make a great contribution to urban renewal during the period of stock development.

## Acknowledgements

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