

# Research on Emotional Healing Street Furniture under the Background of Urban Micro-Renewal

Tanhao Gao, Hongtao Zhou

**Abstract**—With the COVID-19 pandemic spreading worldwide, people are facing more significant mental pressure. The government and social groups are sparing no effort to find ways to heal people's emotions and return to normal life. Therefore, research on emotional healing has urgency and practical significance. From the perspective of urban planning, street furniture has the potential to become "emotional healing touchpoints." This study first analyzed the suitable places for adding emotional healing street furniture in the background of urban micro-renewal and combined the 15-minute living circle, the leftover space, and urban acupuncture theories, then used the 5W analysis method to show the main characteristics of emotionally healing street furniture. Finally, the research discovers four design strategies, which can be summarized as: A. Exploring the renewal potential of the leftover space; B. Integrating with local culture and the surrounding environment; C. Discovering quick and straightforward ways of interaction; D. Finding a delicate balance between artistry and functionality. Then, we take one emotional healing street furniture located on Chifeng Road as an example to show the design strategies vividly.

**Keywords**—Emotional healing, street furniture, urban micro-renewal, urban acupuncture.

## I. INTRODUCTION

THE COVID-19 pandemic has caused the entire world to suffer a painful shutdown of economies, societies, and cultures, as well as a series of mental health problems. In contrast to the physiological sub-health condition, residents in the psychological sub-health state face the double pressures of self-doubt and social evaluation. However, relatively few people are willing to seek professional psychological treatment. The existing centralized healing centers or healing parks are incapable of supporting this "silent majority group." Consequently, from the perspective of urban renewal, designers could create a flexible system that enables healing touchpoints could be placed in every corner of the city. So, mentally sub-healthy residents can interact with them in their daily life and feel the healing of their emotions, which becomes more and more urgent and valuable for research.

## II. THE IMPACT OF URBAN MICRO-RENEWAL IN CHINA

### A. Space Waste Caused by Rapid Urban Construction

The intervention strategy of urban micro-renewal is increasingly showing its important value in many rapidly expanding cities which can promote public participation, interact with the surrounding environment, smoothly inherit and innovate traditional culture and strengthen the cohesion of

residents. Furthermore, it can activate the vitality of community interaction. It took about 40 years for China to quickly complete the modern urbanization construction of major cities like Beijing and Shanghai [1]. However, it was restricted by China's basic national conditions, economic foundation, and public acceptance. The development and construction are full of rough and rigid urban planning and large-scale demolition [2]. Pragmatism and functionalism occupy absolute dominance. The aesthetics and the inheritance of cultural history have been ignored [3]. Although China achieves a highly rapid urban renewal and economic development, they also destroy the traditional culture and history, which has lost its regional characteristics [4].

Worse still, city construction that only pursues speed has further led to a series of problems such as structural chaos, destruction of the ecological environment, lack of features in public spaces, and lack of humanities in the city [6]. Therefore, urban culture is an essential element to promote urban renewal and construction. In the face of the problems arising from rapid urbanization, exploring urban characteristics and culture, developing urban cultural resources, and highlighting the features and charm of the region are the primary issues of current urban renewal construction [7].

As urban construction enters a new stage of development, people have deeply reflected on the expansionary urban renewal model. The concept of urban micro-renewal has gradually attracted extensive attention and in-depth discussion. Micro-renewal emphasizes solving the problems from small-scale aspects [8], avoiding social problems caused by expanding urban renewal, and achieving the goal of sustainable urban environmental development, organic circulation of the social environment, and steadily increasing humanistic care [9].

### B. The 20-Minute Neighborhood

The main goal of the 20-minute neighborhood concept is to build a safer, more intelligent, more sustainable, and more inclusive city [11]. It allows most city residents to meet their daily needs by walking or cycling [12]. After the COVID-19 pandemic, the flexible city based on 15-minute living circles has more practical significance [13]. It will help the community residents return to their daily lives safely and sustainably after the COVID-19 pandemic and create a better environment [14]. More specifically, it will help reduce unnecessary cross-city travel, provide more public space, inject vitality into local streets, enhance community awareness, promote health and well-being, and increase protection against emergencies and

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extreme climates [15].



Fig. 1 The dramatic changes in Shanghai over the past 40 years [5]



Fig. 2 The tearing apart between the new and the old in Shanghai's urban constructions [10]



Fig. 3 Features of a 20-minute neighborhood [16]

### C. Leftover Spaces

Shanghai has a lot of leftover spaces in the rapid urban construction. These spaces have been gradually forgotten over time, and some have even become problematic spaces that affect urban development [17]. However, under the background of urban micro-renewal and the construction of a 15-minute living circle, the remaining area is rooted in the urban crevices such as "dead alleys," "empty corners," and "abandoned infrastructure," which has the potential to become valuable

again [18].

Leftover space is characterized by isolation, fragmentation, significant area gaps, and unclear land property rights [19]. Contrary to the traditional urban space design concept of "large site plus centralized layout," "small site plus decentralized layout" is typical of using abnormal plots to transform into a community activity space [20]. Designers could focus on creating possibilities for a small number of people participating in various activities rather than a large number of people intensively participating [21].

Designers need to know how to restrain, learn to subtract functions and forms instead of blindly stacking all kinds of fancy functions [22]. In addition, designers should consider the location, area, cultural background, and surrounding communities of each region according to the needs of the surrounding residents for different types of activities to adapt to varying groups and form a flexible system [23].

De Monchaux [24] gave new value to the forgotten parts of the urban structure. He extracted the leftover public space data of four cities in San Francisco, Los Angeles, Venice, and New York and visualized the data into a series of charts to show the scale and type of those "dormant" landscapes.

The San Francisco's Department of Public Works called the terrible plots "unacceptable streets." The town has many streets with no right of passage, equivalent to Golden Gate Park, with more than 1,000 acres. There are "underutilized packages" in New York and Los Angeles. Los Angeles still has space under the billboards.

In contrast, Venice has an abandoned island, a "lagoon." De Monchaux emphasized that these spaces are often "invisible in the system" and are therefore prone to problems such as poverty, urban heat islands, and crime [24]. He uses many charts and displays the renewal potential and scope of the remaining space. By solving these "neglected" locations, cities can build a flexible spatial network to improve the city's environmental circulation and functions, which can even help cities reduce budgets in public works more wisely.

### D. Urban Acupuncture

Casagrande first proposed the theory of urban acupuncture in 2010, which is a design strategy that combines urban planning with traditional Chinese acupuncture theories [26]. It advocates adopting relatively small-scale intervention measures in

specific areas of the city, namely "acupoints," and environmental issues have a positive catalytic effect [27]. The city is regarded as an organic life form. The surface of the city is like the skin and will be affected by external interventions. The "needle" of urban acupuncture can be either a building, a landscape, a public installation, or a city event or festival celebration [28]. The designer uses "acupuncture" on the city's surface to regulate the internal metabolism of the organism, that is, the structural texture, social economy, history, and culture of the city [29]. When using urban acupuncture design strategies, designers should pay attention to the applicable principles of integrity, precision, small-scale, gradual, catalytic, and public participation to increase the interaction between community residents and the surrounding environment and inject vitality

into the city [30].

Big U is a replicable modular system that assists coastal cities in coping with climate change. The design team used a series of leftover spaces surrounding Lower Manhattan to revitalize them. A series of protective landscapes will save the city billions of potential economic losses caused by climate disasters and protect the millions of residents. Compared with this, the construction and maintenance costs of the project are only a fraction. In addition, the service facilities embedded in the embankment and flood control walls transform the original rigid infrastructure into a place for workers to relax and play, promote local social and economic development, and increase the diversity of the adjacent coastal communities.

Open Science Index, Urban and Civil Engineering Vol:16, No:9, 2022 publications.waset.org/10012699.pdf

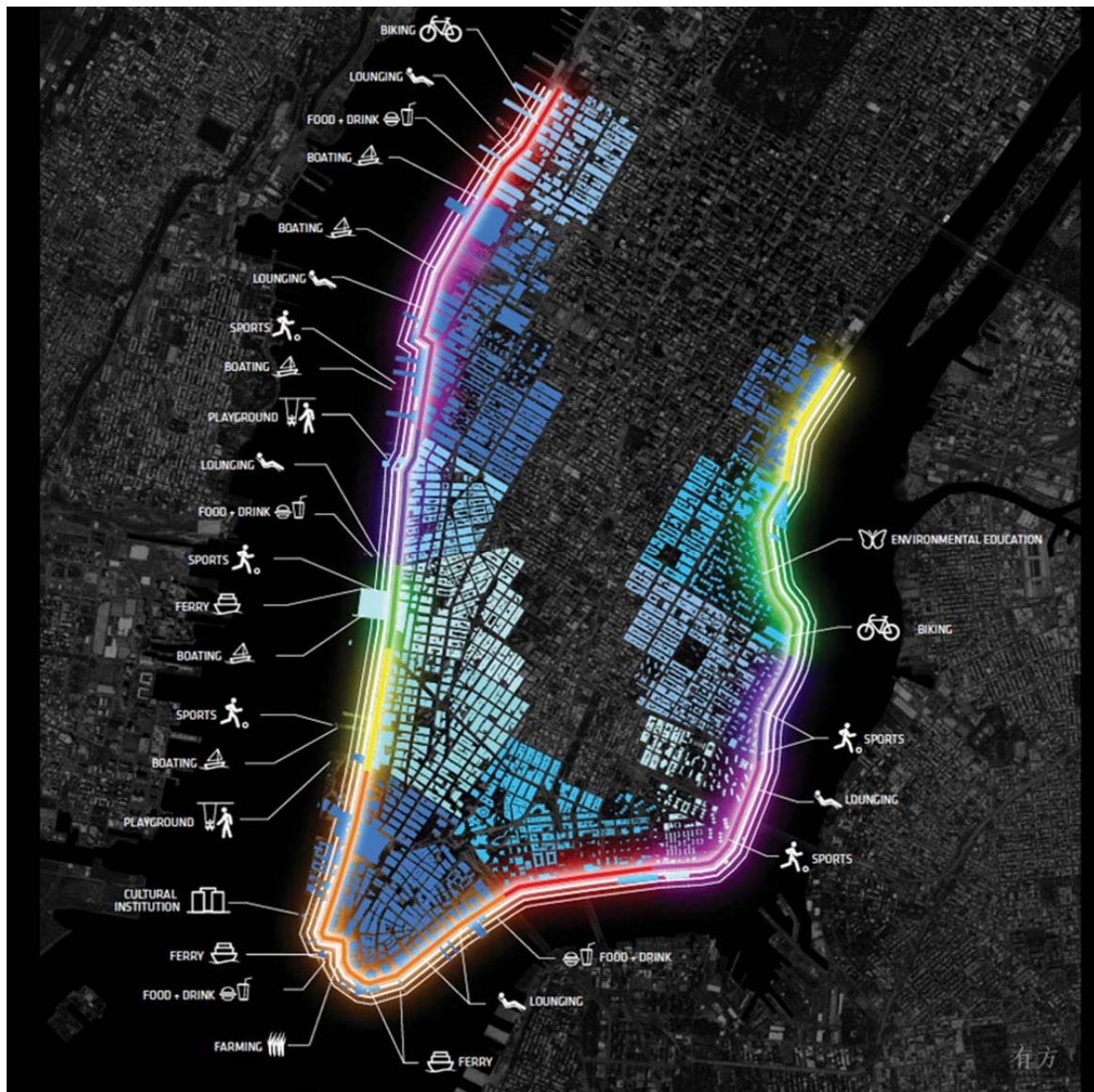


Fig. 4 The BIG U [31]

### III. MAIN CHARACTERISTICS OF HEALING STREET FURNITURE BASED ON 5W ANALYSIS

The research on emotional healing street furniture uses the

5W analysis method to show the primary purpose. This method is also called the "six-dimensional analysis method," which is a thinking method proposed by the American politician Lasswell

[32]. The "5W" are Why, What, Who, Where, and When. The specific process of the analysis method is: start with the purpose (Why), discover the phenomenon (What) itself, and then look for the stakeholders (Who), the venue for the activity (Where), and the period in which the activity occurs (When). The "5W" analytics can accurately define and clearly express problems, form rational thinking, and fully open up the connection between events, help to think about the problem comprehensively, improve the organization and management process of specific work, and improve work efficiency.

**A. Why**

With the increasingly fierce competition in society, people are generally in a state of mental sub-health, but the community typically lacks a correct understanding of mental illness. People will naturally ask for doctors and take medicine when they have a cold, but people in the mental sub-health stage are often regarded as "too sensitive and sentimental." They have to face the double pressure of themselves and society, which often leads to the aggravation of psychological pressure and eventually leads to more severe diseases. Worse still, with the global pandemic of COVID-19, countless people have lost their financial incomes and have to face social distancing [33]. Fear of the pandemic and uncertain future has further aggravated

people's psychological pressure [34]. Therefore, from the perspective of urban planning, the research on emotionally healing street furniture has urgency and practical significance.

**B. What**

Under the circumstances of large-scale mental sub-health problems caused by COVID-19, this research tries to identify a series of design strategies to heal the community's emotions from space design and urban renewal. This research uses street furniture as the intervention career, which has the characteristics of decentralized distribution, reproducibility, flexibility so that it has the potential to become the touchpoints of community emotional healing through "urban acupuncture."

**C. Who**

The target group of community emotion healing is urban mental sub-health residents, including various ages, occupations, and cultural backgrounds. As shown in Fig. 5, the operation mechanism of street furniture is inseparable from the cooperation and understanding between the government, enterprises, design companies, college teachers, and community residents [35]. In addition, a flexible and complete work promotion system from design to landing is closely related to the urban cultural context [36].

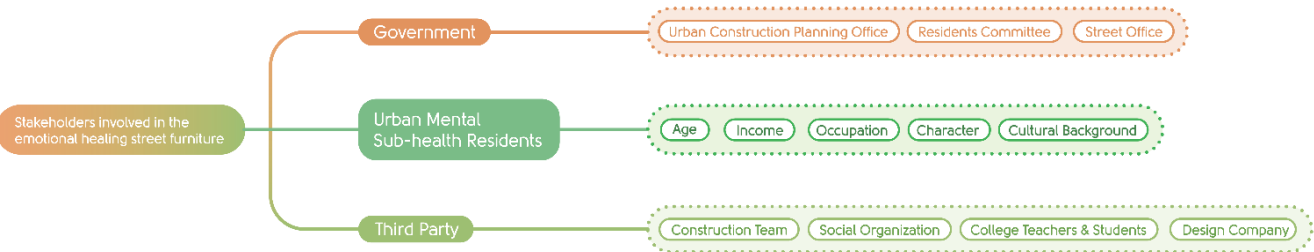


Fig. 5 Stakeholders involved in the community emotional healing



Fig. 6 A series of areas that have the potential to become places for community emotional healing

**D. Where**

Unlike the traditional emotional healing places such as healing centers or healing parks, residents need to be aware that

they are in a sub-health state and are willing to receive psychological healing. Then they need to go to a specific place for professional treatment. This research wants to include more people, take Shanghai as the target place, and set that emotional

healing street furniture from "centralized distribution" to "scattered distribution" to let residents feel the healing in their daily lives [37]. Fig. 6 shows a series of areas that have the potential to become places for community emotional healing. According to the space size of different regions and the needs of the people, put different functions and scales of "wake-up installations" to interact and resonate with the community and the city. The installations can also interact with each other to "awaken" the vitality of the city.

#### E. When

Fig. 8 shows the emotional journey of people at different stages of COVID-19. This journey pays attention to the connection between emotion and the experience process. In ordinary life, residents live and work as usual. After the outbreak of the COVID-19 pandemic [38], residents experienced dramatic mood fluctuations, such that, sometimes they may feel desperate about the uncertain future and the lack

of information, or alternatively feel excited because of some good news. When they leave the initiation and move to the maintenance process, people gradually adapt to the social distancing. At this stage, a person's mood changes gently, but on the whole, they keep the bad mood of anxiety and fear [39].

As the pandemic situation improves, they will move to the leave-taking process. When the pandemic is totally under control, residents will feel thrilled but also feel uncomfortable because they cannot immediately get used to the new life [40]. Moreover, even though many pandemic restrictions have been lifted, residents still feel alienated and afraid of face-to-face interaction [41].

This research focuses on the post-COVID-19 pandemic era and tries to find some triggers that could help residents release their mental pressure, discover new values and habits, and help them move to the new-normal life [42]. They go through an experience that profoundly changes their emotions, environments, interactions, and values.

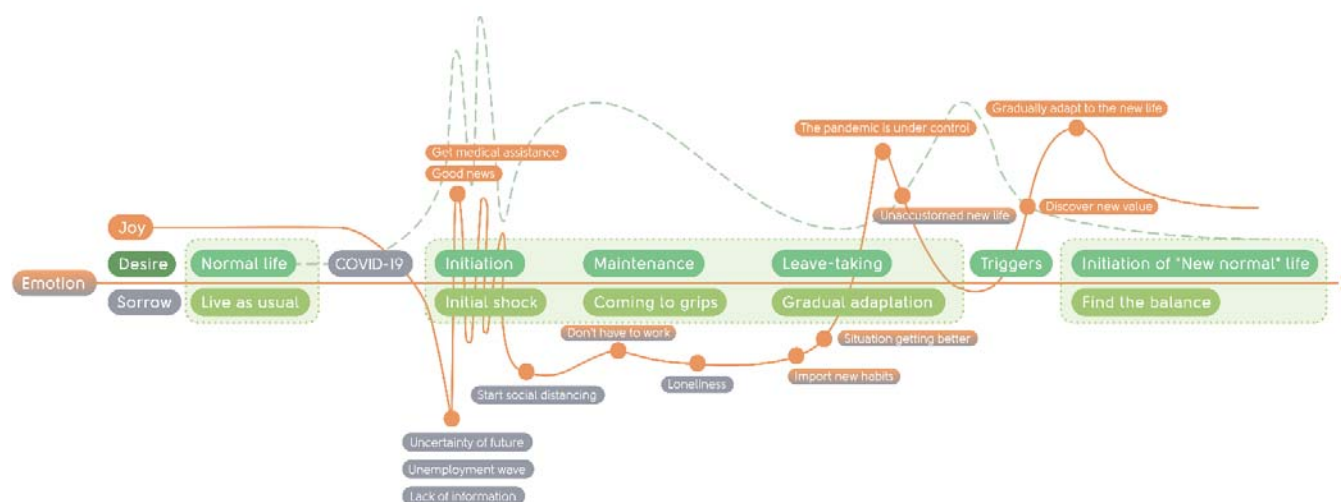


Fig. 7 The emotional journey of people at different stages of COVID-19

### IV. THE DESIGN STRATEGY OF HEALING STREET FURNITURE

#### A. Exploring the Renewal Potential of the Leftover Space

China has experienced extensive and rapid urban construction in the past ten years, but the large number of "leftover spaces" have not been rationally used. As good land resources become scarce, exploring the potential of "leftover spaces" and increasing their utilization has become a feasible solution. When designing street furniture, designers should not indulge in piling up various functions. However, design should focus on subtraction, making street furniture "small but refined," and discovering the leftover spaces. These areas may include the narrow corridors between two buildings, relatively steep stairs or slopes, vacant land under viaducts, unused regions due to changes in original functions, corners, and pillars. Street furniture can surround these leftover spaces without occupying the walking area, or the street furniture itself can have morphological variability, which can be flexibly changed to adapt to different activities.

Fig. 8 shows that the target site of the emotional healing

street furniture is located on Chifeng Road, Yangpu District, Shanghai, China. It is a road that starts from Siping Road in the east and ends at Zhongshan Beiye Road in the west. The total length of the road is 1.68 kilometers. There are a series of leftover spaces on Chifeng Road, one of the particular leftover spaces are located in the first section of Chifeng Road. There is a bus stop not far from it and the Tongji University Press at the back. There are also some colorful street furniture and telephone pole graffiti around. As shown in Fig. 9, we positioned the "tree seesaw" emotional healing street furniture in the middle of a row of trees on Chifeng Road. The size of this area is 3 meters long and 1.5 meters wide, while the size of the street furniture is 2.4 meters long and 1.5 meters wide.

#### B. Integrating with Local Culture and the Surrounding Environment

When street furniture is used as a touchpoint to promote the community's emotional healing, designers can seek inspiration from traditional culture and combine the original site's cultural, historical, and community characteristics. Furthermore,

designers could use innovative methods to inherit the community's cultural spirit. Finding the spiritual link between the new street furniture and the original site can also bring a sense of familiarity to the local residents, make them more

accepting of new street furniture, and evoke their childhood memories to achieve the purpose of releasing pressure and healing emotions.



Fig. 8 The surrounding environment of "tree seesaw" street furniture



Fig. 9 The size of the target area and the "tree seesaw" street furniture

Because this area is in the middle of the two trees, the shape and structure of the interactive street furniture also use a tree as the main shape, connecting with the surrounding environment. Moreover, the design team extracts morphological inspiration from the trees. The color of the street furniture echoes the green graffiti on the telephone pole. The texture on the bottom

platform uses a colorful texture, which is similar to the visual atmosphere of the whole street, which is the black linear graffiti and colorful background. For the texture style, the leaf texture is related to the surrounding environment and the street furniture.

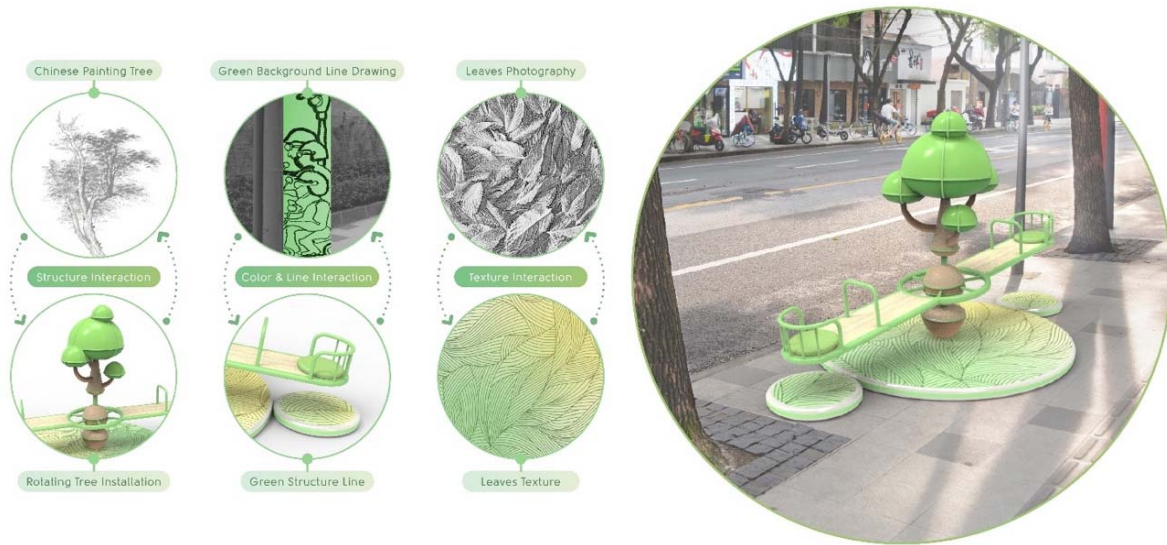


Fig. 10 The structure, color, and texture interaction of street furniture and the surrounding environment

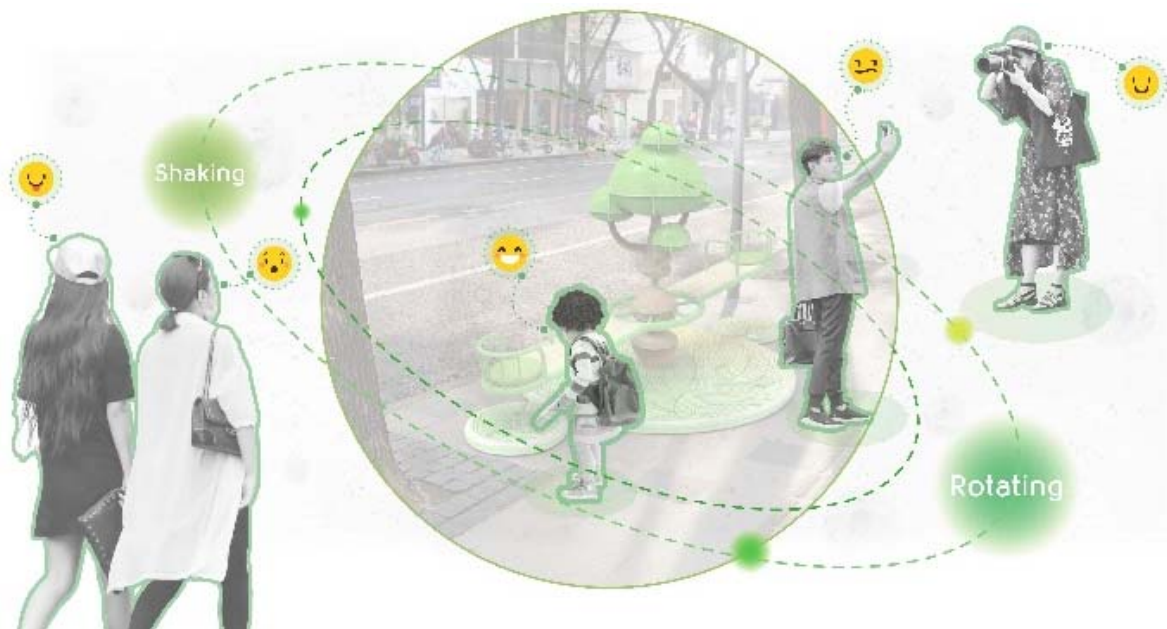


Fig. 11 The interaction methods of the "tree seesaw" street furniture

### C. Discovering Quick and Straightforward Ways of Interaction

Street furniture is irregularly scattered in all corners of the city, and it usually faces passers-by who come and go in a hurry. So, the emotional healing street furniture needs to achieve a "short, flat and fast" interactive experience. Moreover, they need to have low learning costs, which can be further divided into cognitive, emotional, and behavioral costs. The way to reduce cognitive costs is to replace lengthy and complex text introductions with clear illustrations, concise notes, and flat information guidance. In addition, designers can set up some timely visual feedback installations to let participants obtain a slight sense of accomplishment and surprise after the experience and quickly generate attractive graphics to bring joy

to participants.

The interactive method of the tree seesaw street furniture is to allow passers-by to sit on the two sides of the longboard. As the seesaw shakes up and down, the generated mechanical energy will drive the central tree installation to keep rotating, increasing the attractiveness of the interactive experience.

### D. Finding a Delicate Balance between Artistry and Functionality

Most of the existing street furniture in Shanghai focuses on solving functional problems, often ignoring aesthetic considerations. The public sculptures located in Shanghai are primarily concentrated in beautiful shapes and structures, but most of them are missing the interaction with surrounding tourists. Emotional healing street furniture needs to find a

delicate balance between artistry and functionality. While satisfying the functionality, the structure can also be made

extraordinary, attracting pedestrians to interact with street furniture and feel emotional healing.

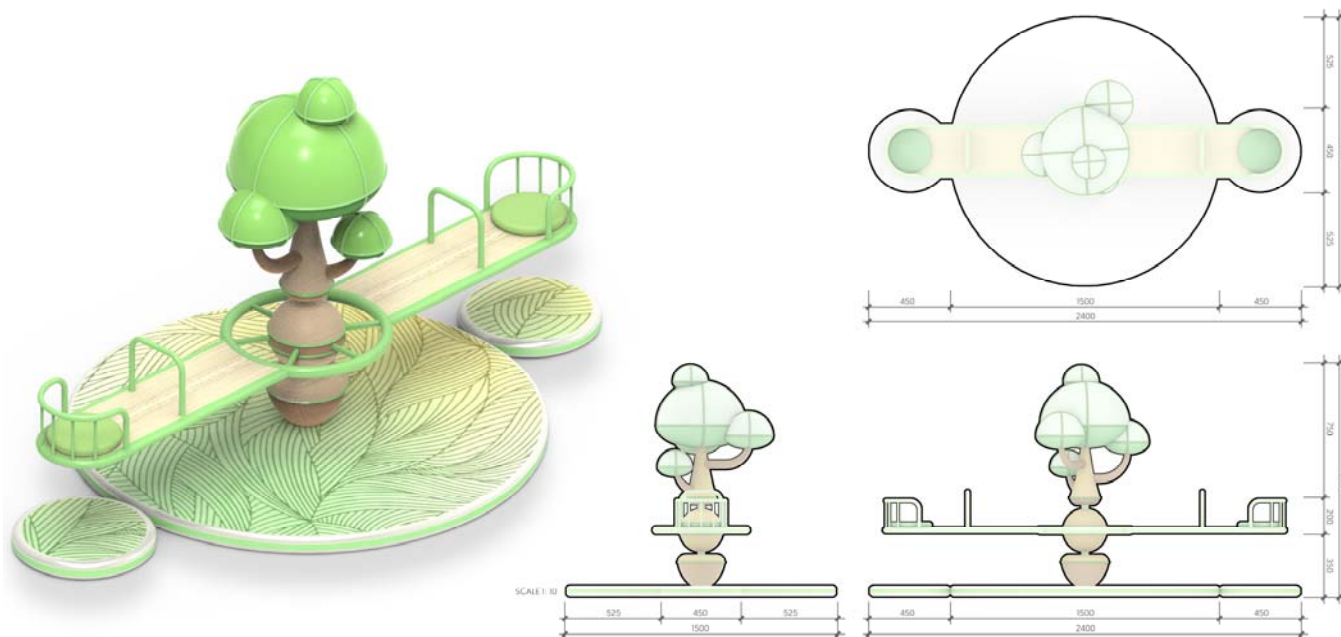


Fig. 12 The detailed dimension of the "tree seesaw" street furniture

#### V.CONCLUSION

Rapid urban development has brought a lot of leftover space, resulting in a large amount of space waste. However, street furniture can awaken the vitality of these spaces with the help of their small sizes and decentralized distribution. At the same time, emotional healing street furniture can also help surrounding residents get out of the social alienation caused by the COVID-19 pandemic. Through attractive appearance structures and interesting interactive methods, they could heal surrounding community residents' emotions like "urban acupuncture" and form a better community atmosphere.

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