

Research on the Optimization of Street Space in the Old City of Wuhan from the Perspective of "Emotional Design"

Ziyi Zhou, Xiaoyun Ni

School of Art and Design, Wuhan Textile University, China

Abstract. As the core of the city, the old town carries the history of the city and people's memories. However, in the past ten years, the focus of urban construction has gradually shifted to the new urban area, the construction of the old town has gradually faded out of people's sight, at the same time, more and more high-rise buildings have risen up, and urban construction has been separated from the local cultural background, which has also caused the status quo of "one side of a thousand cities". Nowadays, people have begun to pursue spiritual needs after satisfying basic material needs, so they have new thinking in urban construction. Taking people's emotional needs as the starting point, combined with the regional characteristics of the old town in China, this paper analyzes, and in view of the existing problems in the street space of the old town in China, the principle of people-oriented and sustainable development is integrated into the space optimization strategy to create an "emotional" public space and stimulate new vitality in the old town.

Keywords: Old Town Street Space; Emotional Design.

1. Introduction

Since the "Thirteenth Five-Year Plan", China's urbanization has achieved phased results, and the urbanization development has entered the stage of urban space optimization and quality improvement, of which the improvement of existing problems in old communities, old neighborhoods and urban villages is the key goal. The old town has accumulated the memories of several generations, is the precipitation and continuation of the city's local culture, in the context of the increasing convergence of urban construction, grasping the characteristics of the city and the emotional sustenance of residents has become the core of solving the problem of "a thousand cities". Therefore, it is particularly important to pay attention to people's inner emotions, so how to complete the optimization of spiritual and emotional levels in spatial optimization is a problem worth studying.

2. Overview of "Emotional Design"

Emotion, as a direct feeling, is a manifestation of whether people have their inner expectations about things, and emotional design is produced in the case of excessive pursuit of functionalization and ignoring the user's inner feelings. "Emotional design" is a design psychology concept, which was first embodied in product design as a criterion for judging whether a product is qualified. In 2005, Donald Norman's "Emotional Design" starts from the three levels of instinct, behavior and reflection, combined with Maslow's theory of human needs hierarchy, and expounds the importance of emotion in the design process. The instinctive level comes from human nature, focusing on the user's intuitive feeling of the things in front of him; The behavioral level is the combination of functionality and practicality, and it is also the basic condition required for the production of design products; The reflective level emphasizes the extension of design in terms of emotions, takes the user's emotions as the starting point, and produces different emotional effects according to the user's different life backgrounds and experiences, so as to have a certain impact on the user's outlook on life and values.

In the application of space design, "emotional design" takes psychological concepts as the theoretical basis, through psychological intervention for users, stimulates people's resonance and sense of belonging to urban culture from the perspective of emotions, combines the unique regional culture of the city, and breaks the situation of "one side of a thousand cities".

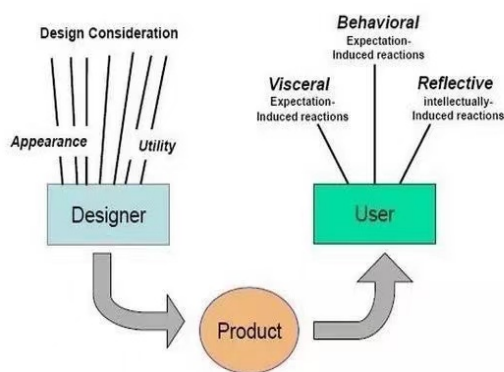


Figure 1. Donald Norman's "Emotional Design" three levels (Image source: Internet)

3. Analysis of Street Characteristics in the Old City of Wuhan

Historical streets record the changes in urban development and reflect the social civilization and spiritual civilization of a city. Lifen is a unique architectural form in Wuhan, modern Lifen architecture originated at the end of the 19th century, in the early 20th century Lifen architecture developed rapidly, is also the heyday of Lifen architecture, its architectural distribution is mainly concentrated in the Hankou area.

3.1 Spatial Layout Features

Wuhan is divided into main alleys, secondary alleys and buildings. The width of the main alley is mostly between 3-5 meters, and under special circumstances, it reaches 7 meters, connecting the entrances and exits and various branch alleys in series to ensure the daily passage of residents; The width of the secondary alley is mostly 1.5-3 meters, mainly connecting the residential entrances and exits, showing a compact space form, contrasting with the spaciousness of the main alley, reflecting the hierarchy of the space in the alley; the entrance building is divided into street building type and archway type, following the common expression of ancient architecture, the internal residential buildings are mostly 2-3 floors, and the overall height of the building is 8-12 meters. Wuhan Lifen is mainly divided into main alley type, main and secondary alley type, grid type and comprehensive type according to its internal space layout characteristics.

(1) Main alley type

Most of the roads in the main alley type are "one lane and one mouth" or "one lane and two mouths", and the main lane is a pedestrian path 3 to 5 meters wide, and the exit connects to the street outside. Both sides or one side of the main alley are residential houses, the residential layout is mainly unit-type townhouse layout, the gate of each residence faces the main alley, and the main alley type is smaller in scale as a whole, represented by Tongxingli, Jiangnan Village, Dongting Village and Baoyuanli.

(2) Main and secondary alley type

The main and secondary alleys are divided into main and secondary streets, only one main alley is connected to the outer street, the secondary alley intersects perpendicularly with the main alley, the secondary alleys are mostly distributed in parallel, the entrance and exit of the residence are connected to the secondary alleys, and the main and secondary alleys occupy a moderate area, represented by Ningbo Li and Hanrunli.

(3) Grid type

The grid type is evenly distributed inside, the road is grid-shaped, the main and secondary alleys intersect horizontally and vertically, and the internal buildings are neatly arranged. Compared with other layout types, the grid type has a large footprint, a more regular land shape, and a higher land utilization rate, represented by Sandri and Kunhouli.

(4) Comprehensive type

Comprehensive li is usually set up in the case of irregular plots, often set up more than 2 entrances and exits connected with the outside street, the internal main and secondary alleys are flexibly distributed, residential buildings are set according to the internal roads of the li branch, and the overall layout presents a more regular state, represented by Xian'anfang and Xinhuali.



Figure 2. Road layout of Tongxingli and Xian'anfang (Image source: self-drawn by the author)

3.2 Human Characteristics

The history and culture of a city are often buried in the city life, and for Wuhan, like the hutongs of Beijing and the lanes of Shanghai, it has formed a unique style, which is the epitome of Wuhan residents' residential culture over the past hundred years, and carries the memory of Wuhan people.

The Li branch building has strong traditional Chinese cultural characteristics, and is mainly divided into four categories: li, village, fang and township from the name. Lifen naming is mainly divided into three categories: one is based on place names, most of which echo the names of nearby streets, such as Dongting Village, Jiangnan Village, Poyangli, etc.; The second is named after the builder or belonger, for example, Sandri was built by the Liu brothers and opened the Three Virtues Trade; The third is to choose words with auspicious meanings to name, this naming method entrusts people's yearning and expectations for a better life, among which "virtue", "righteousness" and "prosperity" are used more times, which also reflects the values and moral concepts of the society at that time.



Figure 3. The smell of fireworks in the mile (Image source: Internet)

Although the Lifen building is a product of modern times, it still retains a strong Chinese color. Residential houses are mostly two-story brick and wood mixed structures, the color matching is mainly red, white and gray, the walls are red brick or gray brick, with traditional wooden doors and windows, and the roof is laid with red tiles. Due to the influence of Western architectural culture, the decorations on the door head or column adopt a combination of Chinese and Western methods, forming a unique style appearance. Neighborhood harmony has been the humanistic feature of traditional Chinese houses since ancient times, and the overall space of the Lifen building is compact,

narrowing the distance between households. The main alley, branch alley and patio in the lane play an excessive role in the tight space, in this space, neighbors help each other, chat after tea and dinner, children chase and play in the alley, and the residents in the lane merge into a harmonious big family, making the streets full of fireworks.

4. Analysis of the Current Situation of Street Space in the Old City of Wuhan

4.1 Overview of the Current State of Street Space in the Old Town

The old town of Wuhan is mainly concentrated in the Hankou area, and after nearly a hundred years of development and use, it still retains a large number of cultural characteristics and research value, including the Yiyuan Road area. The Yiyuan area is framed by Yanjiang Avenue, Jiefang Avenue, Jiangnan Road and Sanyang Road to create a relatively regular square plot. In the early days of the founding of New China, the focus of the city was mainly industrialization, expanding the surrounding areas, building new urban areas, and neglecting the residential areas of the old urban areas, resulting in the replacement of the original houses by high-rise buildings or commercial bodies, and the destruction of the original historical features of the blocks. The meeting of the Central Committee of the Communist Party of China in 2015 clearly put forward a new goal for urban and rural planning, which played a guiding role in the construction and renewal of the old city.

After the partial renewal of the planning, a large number of restaurants and commodity stores poured into the street space, attracting foreign tourists to come to consume, thereby driving the economic development of the old town, due to the structural characteristics of the residential building itself, it still retains the original residential function of the Li branch building, that is, the lower floor is the form of commercial space and the upper floor is the form of living space, forming a symbiosis situation of commercial function and residential function. However, there is more street space and a long process of optimization in the one-yuan area, and some streets are in the stage of not being updated or incompletely optimized, resulting in the economic development and development of each street and a sense of difference in the living environment.

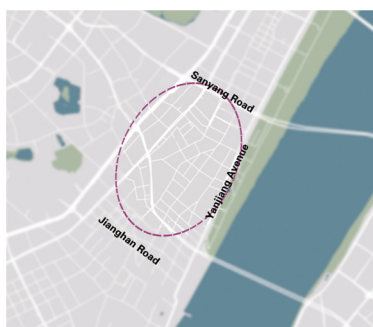


Figure 4. Yiyuan Road area (Image source: self-drawn by the author)

4.2 Analysis of Existing Problems in Street Space

Wuhan Lifan architecture was first produced in the mid-to-late 19th century and flourished in the early 20th century, the first built Lifan has a history of more than 100 years, and the later construction of Lifan has a history of more than 70 years. The whole building adopts a mixed brick and wood design, and the structure is relatively stable, but the façade wall of the building is still affected by weathering, and the wood structure such as doors and windows is damaged to varying degrees. Due to the low coverage of green plants in the block space, residents build window sills to place green plants, and lack of overall coordinated planning, making the originally compact space more crowded, resulting in unreasonable layout, visual disharmony, and potential safety hazards.

After the optimization of some buildings, there are still the following problems: First, there is no reasonable arrangement of functional spaces such as shared bicycles, basic configurations, and public rest spaces in the street space, the random placement of shared bicycles in the street space hinders the

normal passage of residents and foreign tourists, and the lack of fitness equipment and classified garbage cans in the block; The second is to only repair and update the street-facing part, ignoring the overall aesthetics of the building; Third, some buildings are replaced by new buildings, which emphasize aesthetics and functionality, ignoring the cultural connotation of the building itself, resulting in the destruction of the regional cultural style, and the effect of the update is gradually converging.



Figure 5. Irrationality in street space (Image source: Taken by the author)

5. Optimization Strategy of Street Space in Wuhan's Old Town from the Perspective of "Emotional Design"

5.1 Optimize Ideas

5.1.1 Cultural Inheritance, Stimulating Vitality

The old town records the change process of urban development, reflects the social civilization and spiritual civilization of a city, and forms a unique cultural connotation, which needs to be inherited in the process of construction. At present, the internal structure of the street building is basically intact after several repairs, and there are imperfections in the construction of the building façade and public space. Therefore, in the design, we should restore the architectural appearance, pay attention to the use of materials in the building itself, continue the regional characteristics, and supplement the basic design, thereby driving the economic and cultural development of the city and stimulating the vitality of the street.

5.1.2 People-oriented, Residents Build Together

The old town records the change process of urban development, reflects the social civilization and spiritual civilization of a city, and forms a unique cultural connotation, which needs to be inherited in the process of construction. At present, the internal structure of the street building is basically intact after several repairs, and there are imperfections in the construction of the building façade and public space. Therefore, in the design, we should restore the architectural appearance, pay attention to the use of materials in the building itself, continue the regional characteristics, and supplement the basic design, thereby driving the economic and cultural development of the city and stimulating the vitality of the street.

5.2 Optimization Strategy Research

5.2.1 Restore the Urban Fabric and Focus on Spatial Optimization

In terms of architecture, the original material of the internal structure and façade is preserved, and the decayed and defective parts are reinforced or replaced by materials. The building attachments built by the residents themselves are demolished and designed uniformly according to the needs of the users. For the symbiosis of commercial and residential buildings, the commercial floor can be

appropriately expanded outward, adding outdoor seats to attract foreign tourists to visit and improve economic benefits; Structural reinforcement between residential and commercial floors reduces noise interference caused by commercial space and ensures the basic quality of life of residents. Shared bicycle parking points are set up at the entrance of the street, and only tourists are allowed to visit on foot to ensure the smooth flow of public space routes; Repair damaged and uneven ground in alleys; On the basis of the original scale of the space, increase public resting places, appropriately add wall façade greenery, and increase space greening on the basis of not occupying public space.

5.2.2 Increase Public Participation and Enhance the Vitality of Space

In recent years, the urban development, people's pace of work and life has also accelerated, especially the establishment of high-rise is less of the community culture of the past compound neighborhood, so public space as a crowded place, but also an important place for friends to gather, the establishment of space place spirit is more conducive to people's communication. Public space belongs to every resident of the area, and under the principle of "people-oriented", every resident is guaranteed equal access to public resources. For example, some residents love greenery, and the annex to the building they built squeezed the original location of the patio, resulting in insufficient lighting inside the building. Therefore, in the process of transformation, actively communicate with residents, understand the demands of residents, and strive to build a harmonious space that everyone is satisfied with. Due to the pressure of 9-to-5 work and the lack of communication between neighbors, resulting in cold interpersonal relations in the block, then the renewal of the neighborhood can not only stay on the material basis, but also close the communication between people's hearts and break the barriers of estrangement. By creating a space for joint construction, residents are encouraged to participate in the construction of the block, stimulate the vitality of the block, and make the old town burst out with new vitality.

6. Conclusion

Mr. Feng Jicai said: "The architectural characteristics of a city are mainly based on its houses. "The residential buildings in the streets of the old town with a certain unique charm and cultural precipitation can not only stimulate people's sense of identity with the city where they live, but also feel a sense of belonging from it. In today's rapid urbanization, the optimization and renewal of the old town is particularly important, and there is still a long way to go in the inheritance of the historical context and artistic characteristics of different neighborhoods. This paper takes the street space of the old city of Wuhan as the research object, and proposes the emotional design strategy of street space. By improving the living environment, we will continue the vitality of the historic street and reactivate the vitality of the place space.

References

- [1] Siyu Liao, Spatial patterns and changes of sub-residential buildings in Hankou Yiyuan Area[D]. Tsinghua University, 2019.
- [2] Liu Qidong, Research on the protection and evaluation of street context and its application[D]. Southeast University, 2017.
- [3] Donald Norman, Fu Qiufang, Emotional Design [M]. Beijing Electronics Industry Press, 2005.
- [4] Xu Yufu, Li Baihao, Chen Libo, et al., Wuhan Modern Li Branch Housing 2nd Edition, Wuhan University of Technology Press, 2018.
- [5] Li Baihao, Zhang Yanlei, Hankou "Lifen" Research Part II: Taixingli and Tongxingli, Central China Architecture, 2008(02):176-179.
- [6] Liu Chengjiang, Application of emotional design in environmental design[J]. China National Expo, 2020.
- [7] Song Yang, Jia Yanfei, Identification and protection of architectural texture types in the British Concession in Hankou [J]. Central China Architecture, 2017.