

Study on the Landscape Design Method of Dafa Old Street in Shiguai District, Baotou Based on the Concept of Interactive Design

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Received: 13 June 2023; Accepted: 16 August 2023; Published: 7 October 2023

Abstract:

In recent years, with the accelerated urbanization and urban development process in China, each city has its own old neighborhoods, and these old neighborhoods carry the memory of the city. As the continuation of the historical old neighborhood as the city pulse, more and more conservation issues are being paid attention to, while the landscape design of the old street has also become a top priority. As an important part of the historical and cultural carrier of the old city of Baotou Shiguai, Baotou Dafa Old Street carries the memories of a generation, so it is necessary to further develop the landscape of Dafa Old Street. With the improvement of people's material life and spiritual life level, there are higher requirements for personalized level development, traditional landscape design can no longer meet people's needs. In order to better serve the public, the concept of interactive design is integrated into the landscape design of Dafa Old Street, and then the old street is restored to life. The article discusses the landscape design of Dafa Old Street through three design strategies: multi-sensory interactive experience design, public facilities interactive design, and cultural environment interactive design.

Keywords:

Dafa Old Street, Landscape Design, Interaction Design

1. Background and Status of Dafa Old Street

1.1. Background of Dafa Old Street

Dafabet Old Street Street is located in Dafa Village, Shiguan District, Baotou City, in the old city, Dafa Old Street Street area of 3.5 square kilometers, a long history, is a collection of hundreds of years of coal mining history remains of the industrial street, covering the late Qing Dynasty, Republic of China, Japanese-fake, New China "five" period, the 1970s-90s to the present coal At the outbreak of the Anti-Japanese War, the plundering of industrial resources by the Japanese and the Fakirs led to the destruction of industrial production in Shiguan District, leaving behind historical relics with special symbols, such as: Dafa Japanese and Fakir telegraph station, the old site of Nongfu Lian Russia, the Second Mine Club, Dafa Yangqiao, etc. (Figure 1).

Various periods of architectural and living relics are well preserved, retaining a large amount, laying the foundation for the creation of tourism industry.



Figure 1. Current status of architectural remains in Dafa Old Street.

1.2. Current situation of Dafa Old Street

Shiguang District is located in the northeast of Baotou city, Yinshan Mountain Range, the hinterland of Daqing Mountain, is a hilly area, surrounded by mountains on all sides, the north is relatively flat. Dafa old street is located in the middle of the northeast of Shiguang District. Due to the perennial coal mining in Shiguang District, industrial pollution is more serious, resulting in more serious water pollution, serious destruction of vegetation, sparse and single plants (Figure 2). Dafa Old Street has well-preserved industrial remains, and in the central area of Old Street there are landmark buildings with strong historical characteristics: Dafa Japanese telegraph station, the old site of Nongfu Lian Russia, etc. The buildings are brick and concrete structures with equal height and have their own style characteristics, but due to irregular and disorganized street landscape, lack of basic service facilities, single function and monotonous style, affecting the overall environment of Old Street, it is difficult to show the unique characteristics of Dafa Old Street.



Figure 2. Current status of Dafa Old Street.

2. Related Concepts

2.1. Interaction design

Interaction design is in 1984, the founder of the famous American design company IDEO, Bill Moggridge pointed out that digital technology has changed the way people and products interact with each other, the design of interactive products in the information age is no longer a modeling-oriented activity, no longer just design beautiful or practical objects, design should be more concerned with people using the product The design should pay more attention to the process of people using the

product. [1] In other words, the user's behavior determines the mode of interaction design, and the user's purpose should be analyzed before the design is carried out, and the user's psychological and physiological characteristics should also be studied. In addition, he proposed in "Software Concept Revolution: The Essence of Interaction Design" to focus on the interrelationship between people and landscape as the core content of landscape interactivity design. [2]

Interaction design is to humanize, rationalize and intellectualize a certain product, so as to increase and enrich people's experience and participation. The current research on the theoretical basis of interaction design mainly focuses on human-computer interaction, such as user interface, user experience, human-computer interaction and environment design [3]. In recent years, design emphasizes humanization and increasingly advocates human-centered design, and so does interaction design, which focuses on the user's experience and feeling in the interaction process.

Interaction design concepts applied to landscape design will promote the development of landscape design.

2.2. Interactive landscape design

Interaction design is based on the analysis of people's psychology and corresponding behavior and design, landscape design is also based on the needs and ways of people in various activities, both are human-centered design, the idea of "interactive landscape design" comes from interaction design. In the process of interactive landscape development, it has gradually become a standardized landscape model. From the initial experience landscape based landscape gradually developed into the human and landscape material contact, interactive participatory landscape. After cultural experience, it eventually forms an immersive landscape with cultural spirit and humanistic sentiment. From the development process, it is a process of development from functional needs to spiritual needs.

2.2.1. Experiential landscape

Experiential landscape focuses on user experience, with the interactive experience between people and the landscape, through people's vision, smell, hearing and touch and other multi-sensory activities and environmental interaction and communication, so that the brain feels the corresponding landscape, experience the interest of the spatial environment, forming an interactive experience. Experiential landscape in the human landscape interactive communication at the same time, the landscape also affects the human behavior and emotion. Therefore, designers in the design of the space in addition to the realization of functional, but also pay attention to the user's physiological and psychological experience, to achieve a good interactive effect of the human landscape.

For example, the Swing time swing (Figure 3), designed by höweler yoon architecture in Boston Park, USA, is an experiential interactive entertainment facility consisting of 20 circular swings with built-in LED light sources. The swings are made of welded polypropylene in three different sizes and have built-in accelerometers that measure the strength of the swings space.



Figure 3. Swing time swings in Boston Park, USA.

2.2.2. Participatory landscape

Participatory landscape lies in the user experience after the participatory, based on the concept of human interaction with the landscape in the penetration and interaction, the rational use of various landscape elements, so that people more intuitive experience of the participatory landscape. The core is “integration”, in the landscape design, to take into account the user's various physical and psychological feelings, so that the landscape can be perfectly integrated into the human spiritual level, to meet the needs of users and experience, to attract people to participate in it, so as to enhance their participation in the interactive standards.

An example is the linear park with various trendy sports facilities - Rather Korso, Germany (Figure 4). Rather Korso is a linear park with a separate road layout that comfortably connects the main open spaces in it to form a whole. The park is designed with multifunctional recreation and exercise areas, another facility is the soccer field - “Richtig guter Fußballplatz”, which is integrated into the existing green space, and the surrounding recreation area makes the soccer field a place of communication. The surrounding recreation area makes the soccer field a place of interaction and attracts a large number of young people to participate in it.



Figure 4. Linear Park Rather Korso, Germany.

2.2.3. Immersive landscape

In 1975, psychologist Mihaly first proposed the concept of immersion (Flow), and found that people unconsciously filter out some irrelevant intuition and enter a state of immersion when they are fully engaged in a certain type of activity. Massimini, based on Mihaly's research, found that when the level of challenge and skill are both low, people do not enter a state of immersion, even if the ability and difficulty are matched, but belong to a state called Apathy. Only when the difficulty of the challenge is slightly higher than their ability level, people become excited, nervous, and spontaneously devote their energy to the challenge, accompanied by a high level of satisfaction [4]. By combining immersion theory into landscape design, narrative

techniques can be used to inject historical traces into the spatial landscape through the analysis and study of spatial history and culture, and to attract people's attention and immerse them through these sensory experiences.

For example, the Moment Factory team's work night tour project Sakuya Lumina (Figure 5), located in Osaka Park, is an immersive landscape with light and shadow interaction. The nine zones of the night tour are AKIYO Story, Joyful Light Gallery, Talking Stone, Gate of Time Square, Joyful Genie Path, Inari God, Tree of Smiles, Light Show at the Bridge of Ultimate Bliss, Gate of Time Ceremony, and Joyful Flower, etc. It includes a light show, light sculpture projection on the stone wall and two interactive zones, fully reflecting the human history and traditional culture of Osaka Castle, and using sound effects, light and shadow, and movement to design interactive Experience nodes, a complete rendition of the local story line, make visitors feel the unique scenery.



Figure 5. Osaka Park Night Tour Project Sakuya Lumina.

3. Landscape Design Strategy of Dafa Old Street under the Concept of Interaction Design

Interactive landscape design is a human-oriented design, then the primary consideration in the design is the principle of humane design, first, according to the behavioral characteristics and needs of different groups of people to design, to meet people's behavioral needs; second, respect the history and culture of different regions, design landscape artifacts with the local cultural characteristics of Dafa Old Street; third, in the design, pay attention to the relationship between people and nature, to create a better neighborhood environment. Integrate humanized design into the interactive landscape design, and pay attention to people's behavioral needs while also taking into account their emotional needs, so that people can get a good sense of interactive experience. The next interactive landscape design strategy is discussed through three aspects.

3.1. Multi-sensory interactive experience design

3.1.1. Multi-sensory interaction design of plants

Dafa Old Street belongs to the historical industrial district, due to the over-exploitation of the Shiguan District resulting in serious damage to the vegetation landscape, the current plant species is single, grass and trees are sparse, due to unmanaged weeds, resulting in the Dafa Old Street overall disorderly single color, poor visual experience. Therefore, the design of landscape plants in Dafa Old Street should pay attention to the matching of plants, plants are the most comfortable part of the landscape design can bring people a sense of experience, is one of the most important elements of the landscape design of Dafa Old Street, therefore, from the color of plants and plants to create the space of two aspects of the interactive

experience design for the landscape design of Dafa Old Street.

3.1.1.1. Color of the plant

The color scheme of plants will bring different experiences to people, combining with human color psychology for the plant design of Dafa Old Street. The French Color Association has experiments that show that different colors can cause different emotional changes in people, that is, colors can produce emotional effects. For example, when people encounter warm colors, will not feel the pupils become larger, breathing and pulse accelerated; while encountering cold colors, the heart will slow down, tend to calm [5]. In the greening design of Dafa Street, people's psychological and emotional reactions should be taken into account, for example, warm colors such as red and yellow can make people have positive emotional reactions and give them a warm psychological feeling, so they can be used in locations with strong marking; green is the most vital color, giving people a sense of freshness and relieving their fatigue and stress, so it can be used on both sides of the road in Dafa Street. Therefore, it can be used on both sides of Dafa Street. Different colors of plants give people different visual experience and psychological feelings, so we should reasonably use plant colors for landscape design, which can also have a healing effect on people's psychology while enhancing sensory experience.

3.1.1.2. Space creation of plants

The concept of space, known as "layout" in garden science. Garden rule a book says: "garden skillful in borrowing, fine in the body appropriate". Shen Zongqian of the Qing Dynasty: "the layout of the occasion, it is necessary to change, the intersection must be obvious; there is a change is no repetition of the editor, can be obvious is no twisted end" [6]. The space creation of Dafa Old Street should focus on people's psychological feelings and enhance people's experience on the basis of meeting the basic functions.

Plant layout design as a natural element can shape both private and public spaces. Alone in a spatial environment, people need to be able to occupy and control a certain spatial domain. People's choice of private space can be expressed as a person who wants to be alone and control their own environment according to their own ideas. Considering people's need for privacy, designers are designing in such a way that the private space is not a completely enclosed space, but the space should have a relatively complete and clear boundary in terms of spatial attributes. Therefore, in Dafa Old Street, some regularly arranged trees can be used in a reasonable layout to form an enclosed space, so that people can feel a sense of security. Public space is as important as private space. Public space is an open and free space, so you can choose some ornamental plants and interactive plant landscape in the public area of Dafabet Street to attract people to watch, and this design method can make people gather and participate in it with certain experience.

3.2. Public facilities interaction design

The current status of public infrastructure in Dafa Old Street are damaged, lack of functional facilities and disorderly, due to a series of drawbacks in construction and management, the facilities material, color, style and other single and lack of characteristics, can not show the culture of Dafa Old Street, therefore, the interactive landscape design method of public facilities in Dafa Old Street from two aspects of lighting facilities and rest facilities.

3.2.1. Lighting facilities

Lighting facilities are one of the most important elements affecting people's interactive behavior in the landscape of Dafa Old Street, and are the facilities that are most likely to interact with people in the landscape. Using new media technology combined with traditional technology to make lighting interactive devices, through the clever combination of light and sound applied to the site lighting facilities, set up in the public area can be interactive behavior of the perceptual device, to create a new type of device different from other traditional lighting facilities, can be used as a bridge between people and Dafa Street space interaction.

3.2.2. Rest facilities

Rest facilities are important carriers of interaction between people in the space of Dafa Old Street and valuable functional facilities in the neighborhood landscape. By comprehensively considering the location, material and function of rest seats in the site space, the design of rest seats can better meet people's physiological and psychological needs and promote the generation of interactive behaviors in the street. The space between the buildings can be used for the design of rest facilities, and seats for resting and staying can be set to enrich the experiential nature of Dafa Old Street. In social activities, people tend to gather in one space, but sometimes they may separate or not participate in social activities. Therefore, for rest seats in the neighborhood, the design of private and open spaces should be considered, using shapes such as circles or polygons, or using the shape, location and distance of the seats to create private and open spaces.

3.3. Cultural environment interaction design

The interactive design of cultural environment refers to the integration of scenarios, combining the humanistic history of Dafa Old Street with landscape design, determining the "theme line" of the story, developing node design around the "theme", and combining it with each landscape element to make people feel the immersive interactive experience. The architecture of Dafa Old Street has strong historical characteristics and carries the memory of a generation. Taking the humanistic history of Dafa Old Street as the theme, the regional culture of the neighborhood is combined with the experience area and integrated into each landscape node of the neighborhood. For example, the display-type facilities of the guide system in Dafa Old Street can be designed with a rusty feeling and combined with the historical industrial culture of Dafa Old Street to create an immersive interactive experience space, so that people can understand the history of Dafa Old Street and at the same time bring them certain visual enjoyment.

3.4 Summary

In summary, this paper discusses the strategies and methods of interaction design in the landscape design of Dafa Old Street, so as to build a system of three interactions through the landscape of Dafa Old Street. In the process of multi-sensory interaction design of plants in Dafa Old Street, it is necessary to make reasonable plant configuration to create a good neighborhood atmosphere and environment for Dafa Old Street, which can relieve people's psychological pressure and fatigue and enhance the experience in this era of fast pace of life, and at the same time restore the vitality of Dafa Old Street and beautify the neighborhood. In the process of interactive design of public facilities, it is necessary to flexibly use the function of facilities plus new

technology combined with tradition to reflect the modern digital technology of Dafa Old Street, enhance the user's sense of experience and participation in the neighborhood landscape, and make people experience the environment of Dafa Old Street in all aspects. In the process of interactive design of cultural environment, the story line of Dafa Old Street should be linked according to the determined theme, and combined with all elements of the landscape to highlight the regional cultural characteristics, show the unique charm of Dafa Old Street, create an immersive and participatory interactive experience space, so that the history and culture of Dafa Old Street can be widely disseminated.

4. Conclusions

Based on the concept of interaction design, the article integrates the concept of interaction design into the landscape design of Dafa Old Street, and the interactive landscape design according to the existing problems of Dafa Old Street is an important bridge to promote the development and restore the vitality of Dafa Old Street. The article analyzes the interactive landscape design strategies at three different levels: multi-sensory interactive experience design, public facilities interactive design, and cultural environment interactive design, combining new media technology with tradition to create a digital characteristic historical old neighborhood, thus enhancing people's experience and participation, enhancing the characteristics and attractiveness of the cultural landscape of Dafa Old Street, strengthening people's sense of identity and belonging to the street, and thus making The old street will be revived.

Currently we are in the information age and technology is changing our lives. People pay more attention to the interactive experience between people and the environment, the traditional static landscape is gradually losing its attractiveness, so the landscape design should follow the trend of the times and constantly update the design methods and approaches according to the changing needs of people. The use of interactive design to break the bland traditional static landscape, so that people can be in it and interact with the landscape, but also gives life to the landscape.

Conflicts of Interest

The authors declare that there is no conflict of interest in the publication of this article.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

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