

Research on the Interactive Design Strategy of life-oriented and Commercial Historical Street Landscape in Zhengzhou City—— Take Xili Road in Zhengzhou City as an Example

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Abstract: Using the theory of interaction design, explore the activity form of residents in the living commercial historical street space. First, the street space was divided into three areas based on the interactive form of sight and behavior. Secondly, according to the differences of interaction forms in different regions, the design of the three interface elements of space is further discussed, so as to summarize the strategy of life-oriented commercial street space landscape interaction.

Keywords: Interactive design; Historical commercial street; Space interaction; Landscape design

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Since ancient times to the present, historical streets have always been the cornerstone of people's living space and the embodiment of urban cultural characteristics, so they have attracted much attention from all walks of life. Commercial historical streets can be divided into life-type commercial streets and city-level commercial streets^[1]. In this paper, taking the living commercial streets of Zhengzhou city, the space, facilities and environment of the living commercial historical streets of Zhengzhou city are investigated through the behavior observation method, field investigation method and literature research. Taking the historical street of Xili Road in Zhengzhou as the case analysis, through the interactive landscape design analysis, providing innovative ideas and practical methods for the creation of the life-oriented commercial landscape of the historical commercial street in Zhengzhou.

1. Design basis

1.1 Correlation between interaction design and interactive landscape

The interactive landscape element is the main component of the public space of commercial streets, and it is the space attached to the space. It is mainly divided into three interfaces: bottom, side and top^[2]. The bottom interface mainly includes the ground in the street public space and various landscape facilities existing on the ground. The facades of the buildings and structures along the street converge to form the side interface, including billboards, signs and other ancillary elements. The top interface is a virtual space defined by the top edge line of the two side interfaces, usually refers to the sky, and the hanging objects, frame, flags and canopy across between the buildings on both sides constitute the "second contour line" of the top interface.

As an integral part of the urban streets, the living and commercial historical street is not only an important traffic road, but also an important place for local residents to interact and communicate. According to the behavior characteristics of people, this interaction is divided into three dimensions: five-sensory interaction, behavioral interaction and emotional interaction.(Table 1-1)

Five-sensory interaction is that people actively obtain external information through the five sensory systems of vision, touch, smell, hearing and taste. Among them, vision is the most direct and the fastest way. In landscape design, by creating suitable space

and facilities, behavior stimulates the interactive experience of behavior between different identity users. Emotional interaction is the highest level of interactive landscape pursuit^[3].

Tab. 1-1 Analysis of interactive form elements (chart source: author self-drawing)

Interactive form	Factor analysis
Five sense interaction	Vision, hearing, touch, smell, and taste
Behavioral interaction	Social interaction, passage, and rest
Emotional interaction	Historical context and regional characteristics

1.2 Design method

As mentioned above, the five-sense interaction is mainly obtained through the five sensory channels in human physiology, while the behavioral interaction is mainly realized through human behavioral activities in space and interaction with landscape facilities. Emotional interaction comes from what humans feel in the environment. According to the actual activity mode, the street space can be further divided into three functional areas: dynamic flow, dynamic activity and static stay, and a design strategy is proposed.

The dynamic flow area is the space that carries the pedestrian and car dealer groups to pass through in the linear flow state. At present, there are many problems in the interface design of the dynamic flow area. The interface on both sides is lack of features, ground material, lack of comfort, lack of characteristics of ground material pavement installation, unreasonable roadway and sidewalk scale, etc. Therefore, for the spatial design of the dynamic flow area, we should start from the side interface and the bottom interface, aiming to improve the existing shortcomings.

The dynamic activity area is an area with a “space stage” attribute, which usually has a certain capacity, in which users can interact. However, the current design results in the flow of people within the area without staying. Therefore, the design method of the side interface and the bottom interface should be considered in the design to achieve the effect of extending the residence time of the crowd in the area.

Static stay area: The static residence area is essentially a clustered space. However, at present, the design of static residence area mostly starts from a single interface. Therefore, the design needs to comprehensively consider the three interfaces, and pay attention to the degree of their influence on the space and their interactive content, so as to achieve better results.

By setting up dynamic flow area, dynamic activity area and static residence area, and dividing them according to the interactive form of people, the activity area of urban residents in the commercial streets can be defined. This division provides a basis for further exploring the design of increasing vitality of commercial street space.

2. Lifestyle commercial street design strategy of Xili Road, Zhengzhou

By positioning the urban commercial street space as the key node of the city, and integrating the multiple elements such as site, space and industry, we can improve the activity degree of the whole urban area by stimulating the point-type vitality^[4].

2.1 Design strategy of dynamic flow area

Side interface design: The elements of stimulation should also be appropriate, and the crowd should be guided to find the highlights of the street space. At present, Xili Road in Zhengzhou lacks eye-catching elements. The visual effects of the street shops are average and lack bright spots.

Base interface design: In order to ensure that urban residents can pass through safely and orderly in different periods of time, the dynamic flow area should be highly functional, so the width of the bottom surface needs to be fully guaranteed. The roadway is a one-way lane, so the parking space on both sides occupies a lot of space. People in the pursuit of quality of life and comfort at the same time, pay more attention to the experience of walking on the ground, therefore, in the design should pay attention to non-slip and aging.

2.2 Design strategy of dynamic activity area

Base interface design: The bottom interface of commercial space is the interface that people often contact with. People mainly interact with the bottom interface through walking and sight interaction^[5]. The design of the dynamic activity area should consider the interaction behavior and the interface extension effect of the crowd, strengthen the space interest and render the street atmosphere by with cultural elements, at the same time, the characteristic design of the guide system and the layout of the urban furniture, and reasonably arrange the rest space.

Side interface design: The thick material can block and guide the traffic flow line, and the interface composed of transparent ma-

material can make the two Spaces achieve the effect of dynamic communication. The height design of the side interface should consider factors such as wide and narrow matching, more harmonious color jumping, interlace gaps, etc., in order to create a rhythmic urban architecture and a vibrant street atmosphere.

2.3 Static residence area design strategy

Top interface design: This area has the functions of rest and leisure, so we need to focus on the top interface design. In the traditional design concept, the open top interface form can improve the space of the space, but in fact, the top interface with a space height can attract the attention of the crowd. The appropriate component design can effectively guide the crowd to communicate and interact, so the height of the component can be controlled and combined with the specific function of space.

Side interface design: The design of adding components and decorations is based on the existing space, which can be added and changed more flexibly, and is not limited by the existing conditions^[6]. The form and height of the components should be determined according to the different functions required by different age groups, which should be both innovative and distinguish the different needs of various age groups.

Base interface design: In the layout of urban furniture, attention should be paid to interactive and experiential design to further attract more rest people, increase the stay time. Guiding design should be carried out around the static stay area, including the guiding design of the steps, the guiding design of the pavement texture, the limited design of the green planting line and the design of the guide system.

3. Conclusion

The design strategy of each area interface is summarized to increase the interaction form between people and landscape to enhance the activity of urban commercial streets. Break people cognition of the traditional historical commercial street landscape space, attaches great importance to the interaction between people, people and landscape, change the life of commercial street landscape design practice, put forward with interaction as the core of the principle and method of commercial street landscape design, considering the needs of people, discusses the future street space demand and dynamic channels.

References:

- [1] Ali S A ,Baper Y S . Assessment of Livability in Commercial Streets via Placemaking[J]. Sustainability,2023,15(8).
- [2] Sanjana B ,Chandramathy I ,Louishidha J K . Aesthetics of urban commercial streets from the perspective of cognitive memory and user behavior in urban environments[J]. Frontiers of Architectural Research,2022,11(5).
- [3] Hiroyuki Y ,Masahiro Y . Increasing the Value of a Shopping Street in an Ethnic Town::Shopping Street Activation and “Town Planning for Multicultural Coexistence” in Ikuno-ku, Osaka City[J]. The Annals of Japan Association for Urban Sociology,2017,2017(35).
- [4] Fan W ,Salazar B N . Analysis on Traditional Commercial Street Quality with a Neighborhood Communication Perspective —— A Case of Rue de Marchienne, Belgium[J]. Science Journal of Business and Management,2016,4(5).
- [5] Lee ,Sang-Hoon ,Shin , et al. The Development Process and the Livability Factors of Garosoo-gil as a Commercial Street in Sinsadong, Seoul[J]. Journal of the Urban Design Institute of Korea Urban Design,2011,12(6).
- [6] Park ,mihwa; Ryu, Eungkyo.A Study on the Improvement Plan for the Actual Conditions of use in the Street Facilities of Urban Street Space[J].KIEAE Journal,2007, vol.7, no.4,pp. 23-30 (8 pages).