

Research on the Effect of Waterfront Space on Building A Livable City

-- Taking the Southern Section of The East Bank of Longzi Lake in Bengbu City as An Example

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Abstract: Waterfront space is a specific area category in the city. It is closely related to the daily activities and recreational behavior of surrounding residents, and has a strong attraction to them. With social progress and economic development, the development and design of waterfront space becomes more and more important. Based on the space site established for residents' activities, what is to be built or what is to be built is a problem that the local government is most concerned about. Although the current qualitative analysis has provided relevant constructive suggestions for the government, there is no systematic theoretical guidance for promoting the activities of urban residents given a certain performance by the activity space. Through the observation and analysis of the terrain, area, vegetation and public building facilities of the activity site in the south section of the east bank of Longzi Lake in Bengbu City, it is found that the waterfront space has a certain performance that can promote the activities of urban residents, and the research results can be used to improve the dragon The planning and related design of the activity space form in Zihu District.

Keywords: Waterfront space, Livable city, Plasticity, Longzi Lake.

1. Introduction

The waterfront space is an important place for life including human beings to survive, and it is an activity place formed by the long-term interaction and interaction between human and nature. With the acceleration of the development of human civilization, it is foreseeable that people will pay more and more attention to the settlement effect of urban waterfront space environment now and in the future. The transition of human beings from living on the waterfront to gathering on the waterfront fully demonstrates that the waterfront area carries many functions such as living, recreation, sports, and popular science. From ancient times to the present, in the process of urban pattern evolution, urban waterfront space has always been the intersection of urban human habitation and gathering. The spatial performance created by the urban waterfront space has an important impact on the development of many aspects of the city. Therefore, the nature and function of urban waterfront space will become the theme of future development and exploration in urban construction.

In modern society, waterfront space can not only meet the needs of residents for recreational activities, but also play a pivotal role in the virtuous circle of urban ecological environment, the formation of urban spatial skeleton and the balanced urban pattern; it is not only the most popular in the city It is one of the areas, and it is also a window that reflects the urban context and displays the image of the city.

2. The function of Urban Waterfront Space

2.1. Urban Waterfront Space Is an Organic Part of The Open Public Space of The City

Public open space is a place for urban public activities, an important element of urban design, the preferred place for

people to recreation, leisure and performance, and a place for residents to exercise and exercise. The performance advantages of the urban waterfront space itself in terms of landscape, environment and interest make it a very distinctive part of the urban public open space. Urban waterfront space is shared, allowing urban residents to enjoy the waterfront area not only with social benefits, but also with economic benefits.

2.2. Waterfront Space Is A Typical Ecological Staggered Zone

The waterfront area is the transition area from land to water, and is a space where artificial landscapes and natural landscapes interact and merge. It often has rich animal and plant resources, has strong sensitive environmental characteristics and very high ecological value. Stratified arrangement along the waterfront area, using the terrain advantages of the waterfront space, separating various functions such as traffic streamlines, cultural sightseeing routes and landscape architecture sketches,

2.3. Urban Waterfront Space Is Conducive to Shaping the Image of The City

The vitality value of human settlement activities in urban waterfront space, landscape beauty, architectural landmarks, and spatial openness have strengthened the recognizability of the city. The urban waterfront is often the most prominent place in the urban context, and it is also the area that best reflects the urban texture, so it is also the place that can best show the overall image of the city. Building a good urban waterfront space is one of the important ways to improve the quality of the urban environment and enhance the vitality of the city. Therefore, the scientific and reasonable use of urban waterfront space to create the performance of a livable city, so as to maximize the comprehensive value of waterfront space, and define the performance of space suitable for

residents' activities, is an important problem that needs to be solved urgently in waterfront space.

3. Construction of Waterfront Space in Longzihu District, Bengbu City

At present, in terms of topography, the waterfront space of Longzi Lake belongs to the waterfront space of the water type, which is only for the investigation and analysis of the waterfront space at the southern end of the east bank of Longzi Lake, due to the urban main axis of the Bengbu master plan divides Longzi Lake into a "ten" word, the waterfront space is divided into four spatial layouts (as shown in Figure 1) in space, to a certain extent, due to the influence of space, terrain, and surrounding environment, it is not possible to study the spatial performance of one area and apply to the other three waterfront spaces. This study focuses on the analysis of Area D, and explores the construction performance of waterfront space on the basis of the geographical location, topography, traffic flow, and vegetation characteristics of Area D.



Figure 1. Spatial layouts

Area A and Area C are geographically close to residential areas, and the two areas have a tendency to extend each other geographically. The water corridor thus connects the functional building facilities of the two areas, and Area A is mainly for sightseeing, and there are many leisure benches and rest facilities in the area. Area C mainly shows the spiritual culture of Bengbu City, and designs cultural facilities such as large squares, architectural sculptures, and waterfront areas. In this way to distinguish it from other areas, the waterfront space is the spatial window of the city, which should show a certain economic vitality and resident vitality while expressing the urban culture. Areas A and C are the windows of urban cultural output, and the design of areas B and D carries the attribute content of the window for the display of economic and resident vitality to a certain extent.

In the construction of the spatial content of Area B, entertainment facilities are the mainstay, and the more dynamic building facilities are mostly based on family groups. Area B is designed to show the vitality of the city's residents, and to design large-scale facilities such as artistic observation decks, children's beaches, and landscape mazes. There are many people on weekends or large holidays, and the vitality is high. The main trends are: parent-child, parent-parent, child-child. These three main social situations are conducive to the warming of affection between parents and children, help children to contact with nature, society and people, and cultivate children's touch with nature, contact ability with society, and communication ability with different groups. At

the same time, the area is designed with a large parking lot, mainly serving family groups 3 km away. Area B and Area D are connected by the passage under the bridge to meet the needs of different areas and different groups of people on the traffic flow line.

From the satellite map, the D area belongs to a large part of the blank space. This is the nature of the area, with a greater degree of freedom. The number of people active in this area is not inferior to the number of people in A, B and C, on the contrary, there are more types of people in this area, mainly family groups, friend groups, lover groups, business groups and other groups. The types of activities in the area are also not limited to the facilities offered by the venue, such as picnics, Lego, kites and other activities for family groups; Friends can carry out handicrafts, games, board games and other activities; Lovers group can chat, hang out and other activities; The commercial group refers to the sale of small traders and hawkers, as well as the group of economic activities such as wedding photography. The vitality and population distribution of Area D are obviously different from other areas, which is due to the different spatial characteristics of this area, with high degrees of freedom, and the shaping of the activity site is high, which meets the different needs of different populations.

Overall, at present, the four waterfront spaces in Bengbu Longzi Lake District are relatively clear about the division of regional functions, but at the same time, through investigation and research, the waterfront space in Area D is high in vitality value, but Area D is relatively lacking in cultural construction, and the vitality value of the area can be used to transform it into a window for urban cultural dissemination, providing a dynamic window for waterfront space to create a livable city.

4. The Space Construction of The Southern Section of The East Bank of Longzi Lake in Bengbu City

After the investigation of the four waterfront spaces of Longzi Lake, it was found that the vitality value of the waterfront space in the southern section of the east bank was higher, which was due to the high formability and freedom of the area. The construction of space basically meets people's basic needs, but for the window to show a livable city, there is a lack of spiritual and cultural construction. In order to meet the spatial characteristics of the area, a window conducive to the spread of urban culture has been added. To a certain extent, it satisfies the spiritual and cultural needs of the regional groups, while spreading the utility of the rational use of waterfront space to create a livable city. The spatial construction of the southern section of the east bank of Longzi Lake is carried out from the following four aspects:

4.1. Modular Space

The functional positioning of the waterfront space area and the modular management design of the specific area help to expand the content form of the waterfront space. According to the spatial distribution of the southern section of the east bank of Longzi Lake, it is divided into dynamic area and static area. The division between dynamic and static is not a conventional dynamic and static, but a relative. The dynamic area includes the residents' free entertainment area, waterfront walking belt, underground passageway, etc., and the static area includes parking lot, consumption area, commercial area, fixed-point rest area, etc. For the southern section with strong

plasticity, the dynamic area and the static area are interspersed with each other, and in the public space culture, the dynamic and static interweaving also illustrates the rational design of the site. Controllable factors exist in areas designed as static areas, such as parking lots, public restrooms, and consumption areas. The area where uncontrollable factors exist is a dynamic area, which has a high degree of freedom, and is not limited to the facilities provided by the site, but also the space for residents to entertain and rest. According to this classification, the interweaving of dynamic and static into the design planning of the waterfront space can show the characteristic culture of the city at the point where the dynamic and static are intertwined, which is the "cultural point". A cultural point is not just a point, it can be a large art installation, or a signage. A point that shows the characteristics of the city can reflect the economic development of the city, or highlight the history and culture of the city. For the division of modular space, it is necessary to conduct field research on the area, explore the main role of the space, and what kind of existence value the area has for local groups, and on this basis, develop the maximum application value of the space.

4.2. Humanistic Space

Humanistic space is the demand for public art facilities, and public art facilities are an important means of shaping space culture. Public environmental space embodies the superficial form and inner essence of social form, mass concept, value system, etc., and involves the evolution of social politics, economy, philosophy, aesthetics, culture, history, and tradition. From an aesthetic point of view, environmental beauty is an organic unity of natural beauty, social beauty and artistic beauty, and the three are inseparable. Adding public art installations to waterfront spaces can highlight the city's unique cultural qualities, beautify the environment and optimize space. Public art installations are based on the cultural resources of urban characteristics, enhance the public's aesthetic awareness, improve the recognition of public art, and make public art installations a platform for displaying urban culture. Public art installations can be designed as interactive public installations, or they can be replaced in real time with a certain hot spot or festival of the city, condensing the vitality of the city while innovating, without losing the characteristic culture of the city, while improving the beauty of the urban waterfront space, but also greatly enhancing the city's popularity and recognition, bringing significant economic and social benefits.

4.3. Consumption Space

The place of consumption is inevitable, and there is a value and significance of its existence in this space. Starting from the consumer itself, there is a certain consumption value in the public environmental space, and consumers cannot avoid consuming for their own needs in the activity. The consumer space plays a role in balancing the overall space environment, and the activity of other space modules also attracts the input of merchants. The proportion of consumption space compared to the rest of the space is not very large, but the value role played is not available in the rest of the space. Different consumption habits show different consumer demand, and at the same time, the difference in economic strength is seen on the side. In the planning of consumption space, the demand for its waterfront space and a range of consumption capacity can be designed at different levels. For example, in the

residents' free entertainment area, the basic needs of water, snacks, small toys and other basic needs during the family group entertainment can be set up as a consumption area with a lower price. For couples who want to meet the needs of dining, barbecue and other needs in their space, they can set a consumption area with a relatively high consumption environment. Different areas meet the needs of different consumers, at the same time, the consumption space is also the window of the invisible urban cultural form, through the taste of "demand", the establishment of corresponding consumption space, from the feeling, thought, memory and other aspects of the content, it is of great significance to summarize it into the construction of waterfront space and integrate into the performance of urban characteristics.

4.4. Ornamental Space

According to the plant characteristics of its waterfront space, a multi-purpose walking belt is set up, which can be used by people such as walking, jogging, walking pets, and cycling. Both sides of the walking belt can be dominated by aquatic plants or terrestrial plants, mainly with seasonal plant colors to embellish its waterfront space, according to its topographic characteristics, the narrow bandwidth of the plants on both sides of the walking belt is changed, keep the width of the walking belt width unchanged, and the rest area that integrates with the boundaries of its plant belt can be designed on both sides, creating a continuation space for urban residents to approach nature.

The ornamental space is mainly to meet the aesthetic needs of residents for the waterfront space, and the area is also very important for the setting of basic identification signs, and there must be clear signage to provide residents with clear site identification, square identification, information transmission, and safety warning guidance service functions. In addition, from the perspective of residents, the safety and comfort of signage are optimized to meet the needs of residents in the use of waterfront spaces.

5. The Utility of Waterfront Space to Creating A Livable City

The public culture construction of waterfront space is the carrier of the city's export of cultural life to the outside world, as a cultural dimension and advanced expression of the spatial architecture, which not only emphasizes the natural landscape of the waterfront space, but also highlights the cultural activity of the waterfront space. That is, through specific environmental planning, architectural style, scene design, service projects, activity development, content supply, etc., to create a new type of space with human, functional and social, reveal and transmit local spirit and humanistic characteristics, cultivate new cultural styles, create a waterfront livable cultural space construction, and spread the spiritual context of the city. The waterfront space can show the economic development, spiritual and cultural connotation of the city, and the vitality of the city, and is a window for the city to the outside world. The construction of waterfront space can intervene in people's daily lives, through the organization, design, participation in various forms of public cultural activities, through multi-dimensional cooperation and interaction, to build a harmonious social and interpersonal relationship, so as to enhance the sense of belonging to the local culture, improve the availability of waterfront space, and enhance the inclusiveness, centripetal force and cohesion of

urban residents.

In the construction of the waterfront space, the construction method of "characteristics-scene-integration" is the mainstay, and the characteristic elements of the city are selected to match the waterfront space scene, and the characteristic scene is integrated with the facilities of the waterfront space for cultural construction. "Characteristics" are used to reflect the characteristics of the city in terms of spatial integration. "Scenes" emphasize convenience in service acquisition, and be attractive in service content, so that people can produce the effect of urban imagery. "Integration" reflects the publicness of the waterfront space, its own degree of openness, and the humanistic functional attributes of the characteristic scene. Urban waterfront space carries the task of urban spiritual civilization construction and cultural construction, on the basis of meeting the needs of the public space, its construction and creation reflects the residents' continuous pursuit of high-quality cultural life, and the new era civilization practice activities it carries also objectively reflect the people's yearning for a better life and the overall step forward of the degree of social civilization. The division of different functional properties of waterfront space is an important task for the management and planning of the urban space, and the construction of its content is to face different service scenarios and service objects, carry out various forms of innovative exploration and development models, and better create a livable city.

6. Conclusion

To study the utility of waterfront space to create a livable city, taking the southern end of the east bank of Longzi Lake in Bengbu City as an example, the research object belongs to the waterfront space type of the waterfront type, and the main concern in the research process is the theme research on the spatial performance, the definition of the waterfront space place, and the better improvement of the functional needs of the waterfront space and the continuous development of the two sides of the city. It has a certain role in promoting the performance of waterfront space in water-filled cities in the

future, and accelerates the integration of people and environment in waterfront space. Urban waterfront space is a special area in the city where the ecological environment is relatively complex, there are many restrictions on people, and it is both humanistic and natural. It plays a key role in the improvement of urban landscape, air quality improvement, communication between people, etc., so we should rationally plan and use this golden area, fully understand its characteristics, pay attention to its development, and on this basis, give full play to its comprehensive benefits in social, cultural, ecological and other aspects, form a distinctive waterfront open space, create a space suitable for settlement, and promote the sustainable development of the city.

Acknowledgment

Anhui University of Finance and Economics Graduate Research and Innovation Fund Project (ACYC2021561).

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