

# *Research on the University Campus Space Environment Design from the Perspective of Behavioral Psychology*

—Taking Qinhu and its surrounding environment as the example

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**Abstract**—The purpose of this study is to understand the impact of the building environment on users' behavior and psychology. Through the study of environmental psychology, behavioral psychology and other theories, taking Qinhu and its surrounding environment as the research object, this study makes the analysis of different groups' activity psychological needs and the law of behavior. The evaluation of the status quo of the campus environment has been carried out with the questionnaire survey method, the interview method, the observation record method and the behavior map method, and a large number of suggestions and design strategies have been put forward to improve the environment. The detected problems and conclusions can be further promoted to make a solid set-up for the study of the open urban space system, which will be of a certain practical significance.

**Keywords**—*university campus space environment; psychological demand; law of behavior; design strategy;*

## I. INTRODUCTION

In recent years the research on the environment-behavioral relationship is carried out, it has been gradually turning from theoretical exploration to practical application research, researchers of environmental behavior and psychology are more concerned about the application of environmental-behavior theory in practice[1]. The reason of choosing university campus space environment as the research object is that its main users are college students, whose age and the gaps are very small and behavioral activities are more regular, therefore, it could be used for more comprehensive investigation to understand and analyze[2], and the detected problems and conclusions can be further promoted to make a solid set-up for the study of the open urban space system.

## II. CHARACTERISTIC ANALYSIS OF QINHU AND ITS SURROUNDING ENVIRONMENT

Qinhu is located in the center of Huangjiahu campus, and its surrounding environment is divided into five functional areas, including the green viewing area, learning & exchange area, leisure and entertainment area, fitness area and water

view area. Learning & exchange area is located outside the library, and here is the outdoor venues mainly for students to read in the morning, carry out the English corner and after-school review, and has attracted a lot of students to study and exchange; the leisure and entertainment area treats the starting point of Qinhu bridge as the center, with a lot of public square, tables and chairs surrounded, students and residents can have sun bath and parties here; the fitness area is close to the teachers' apartment and attracts many teachers and their families to carry out family gatherings and morning exercises; the green view area is close to the back of Teaching Building 1, with a large number of plants planted inside, and the cherry garden and plum garden, students can go to Beiyuan from here to enjoy this green environment after class; the park's water view area is symbolized with Qinhu Island, it provides a more harmonious natural landscape for other areas and adds new landscape elements into the entire park combined with natural water resources of Huangjiahu Lake.

## III. OBSERVATION OF CROWDS' BEHAVIOR OF THE ENVIRONMENT AND EVALUATION OF THE SPATIAL ENVIRONMENT

### A. *The law of crowds' activities*

The research was carried out on the weekend, when Qinhu Park has various crowd types, as Qinhu Park's active population is mainly for students and residents for fitness and walk from the surrounding on the working days.

Through observation, the park has rich types of activities. From 6 o'clock in the morning, many people come here to exercise for fitness in the morning, people coming here for morning reading also gradually increase, some photography enthusiasts begin to shoot out the scenery of the morning of Wuhan University of Science and Technology; after 8 o'clock, the fitness people get reduced, the crowds for parties begin to increase, and the students of morning reading go to indoor for the review; at 12:00 of noon, people for all kinds of activities begin to decline, while still with a large proportion of people for parties; after 5pm, people of fitness gradually increase again, photography enthusiasts begin to enjoy the night view

of WUST, with rare people for parties and studying, as it's very dark.(Fig.1)

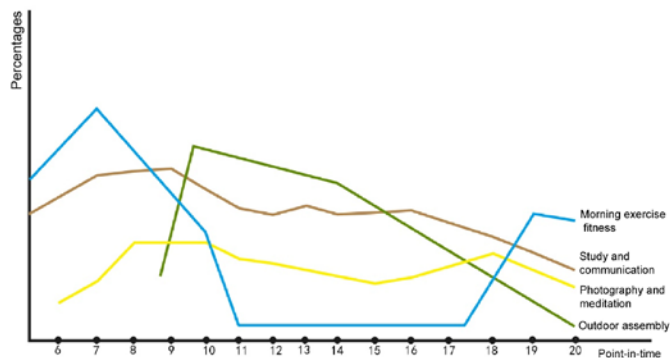


Fig. 1. The law of crowds' activities

**B. Crowd Distribution of the Main Space**

According to the survey results, the flow of people is concentrated in the study & exchange area at the entrance of the lake island, the lake island and the fitness area close to the teachers' apartment, and the space type is mainly open space.(Fig.2)



Fig.2. Crowd Distribution of the Main Space

According to field research, it's found that the use of the crowd of the open space along the lake is mainly the young college students in and around the school, and the half open space under the willow along the lake are mostly the elderly to play chess, fishing, chat and other activities. In the park, Lake has a meandering shoreline scattered with rocks and willows[3], due to the open sight, most of the visitors would walk along the lake to relax or sit down and watch the lake. The lake island in the center of Qinhu Lake is the highest point of the park, where the landscaping is beautifully arranged, there is a fountain for people to enjoy and pavilions for people to rest.

**C. Spatial analysis**

Qinhu and the main venues of its surrounding environment have the garden oxygen bar, rockery, waterfall, small square, green promenade and so on. The various types of road systems has provided dynamic browsing conditions for the public, and

various types of landscapes are arranged according to local conditions on both sides of the road. The deficiency of this park is that the park space is relatively ordinary without climax and finishing touch, the whole space changes are very single and slightly boring, and there's the lack of garden-style landscape layout feature in the park[4].

**D. Facility analysis**

- Rest facility: There is a clear shortage of recreational facilities in the park, and the number of tables and chairs is not enough to meet users' needs, resulting in that many leisurely visitors in the forest have seats to support their activities, so the green grass becomes an alternative place to rest.
- Sanitary facility: there's the lack of sanitation in the park(Fig.3), the closest restroom is in the library, so it's very troublesome, despite this, residents till cannot solve the health problem after coming here for leisure, and a small number of children can only randomly urinate on the roadside, which has a great damage on the environment of Qinhu Lake.



Fig.3. The lack of sanitation in the park

- Safety facilities: the embankment near the edge of Qinhu doesn't have enough safety facilities, the children can have direct access to the water, the soil close to the water is also very loose, so there are many security risks.

**E. Plant configuration**

The park has rich plant species, when the arbor, shrub and grass have a reasonable combination on the plant configuration, and shape and color change of the plant individuals and groups have a reasonable match in different seasons, there will be no feeling of depression[5]. The shortcoming is that the plant configuration needs to be improved, and it's proposed to enhance the landscape and create a park environment with 'scenery in the four seasons and flowers in the three seasons'.

#### IV. CONCLUSIONS OF THE STUDY AND RECOMMENDATIONS FOR ENVIRONMENTAL IMPROVEMENT

##### A. Conclusions of the study

It has been found through research that:

1) Qinhu Island has strong cold winds in winter and few people go there to play. The bridge to the center only one way, so visitors must return to the original road if they want to go to Qinhu Island, which lacks the fun of the landscape.

2) Sakura forest only has seasonal ornamental value, and the ornamental value declines a lot after the sakura season. The surrounding slopes have not been fully utilized, and the trees are not tall enough with poor shelter, so the people do not want to stay for too long. (Fig.4)



Fig.4. Sakura forest

3) Site's night lighting is not enough with inconvenient transit, and night activities are not available[6]. Usually a lot of people play here, while it cannot be used on rainy days as there is no of the facilities sheltering the rain.

##### B. Suggestions for environmental improvement

1) Planting tall trees in the winter wind direction to obscure the cold wind.

2) Set up benches, stone tables and other recreational facilities at the landscape for people to stay.

3) Increase the planting of trees and flowers of many seasons in the vicinity of Qinhu, pay attention to the time configuration of the flowering and abscission time for all kinds of plants, create the scenery in the four seasons, enrich landscape within the site and make full use of slopes to create some private spaces.

4) Increase the lights within the park and enrich the night view. Increase the corridors or other landscape sketches to shelter wind and rains and facilitate students' activities on the rainy days. (Fig.5)



Fig.5. The behavior of the crowd in sunny day

#### V. CONCLUSION

Through a large number of study and analysis on the domestic and foreign literatures, an objective understanding has been gained on people's general psychological needs and the law of behavior, and combined with field research, the success and shortcomings of Qinhu and the surrounding environment space design have been analyzed, together with the environmental psychology, environmental behavior and other theories; it has been summed up that to create a more pleasant city park, it is necessary to first meet people's needs of a variety of activities, which is explained in six types of activities of the sports and fitness type, leisure & game type, recreational activities, ornamental type, interactive type and artistic type, thus to create the space meeting these six types of activities[7]. Then, a higher level of need for people - the spirit need has been concluded, to gain the design principle of meeting the psychological needs of the crowd s, which is mainly described from the four aspects of safety, comfort, identifiability and aesthetics. The research of this paper. Expects to provide a certain reference value for the future's urban open space design through the investigation and analysis of Qinhu Park, thus to create a pleasant city park.

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