INFLUENCE OF LANDSCAPE PLANNING AND LAYOUT DESIGN ON PSYCHOLOGICAL NEEDS OF TOURISTS

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Abstract

Tourist block is a tourist area that integrates multiple functions (e.g. sightseeing, cultural display, business and entertainment), catering to the diverse psychological needs of tourists. Targeting the Gulangyu Island tourist block, the authors conducted a questionnaire survey on tourists’ perception, satisfaction and recommendation willingness of the local landscapes. The questionnaire was prepared based on the principles of landscape aesthetics and tourist psychology. Then, the survey results were discussed to reveal the influence of landscape planning and layout design on the psychological needs of tourists. The results show that the tourist block was not well perceived among the tourists, that is, the psychological needs of tourists were not satisfied; the tourists’ satisfaction degree was not significantly correlated with the observation deck or the visitor center. Therefore, the authored suggested that the landscape planning should fully demonstrate the historical and cultural values, and that the layout design must simultaneously display landscape and cultural beauties. The research results provide theoretical support to the planning and construction of tourist blocks.

Key words: Landscape Planning, Layout Design, Psychological Needs, Tourist Blocks.

INTRODUCTION

With the rapid development of economic society, the basic material needs of the people have been largely satisfied, and then they would pursue a higher level of spiritual and cultural satisfaction. As an extension of the “traveling” in people’s basic necessity of “food, clothing, sheltering and traveling”, tourism has become more and more popular, and the development of tourist blocks has flourished. The basic functions of tourist block gradually evolved from tourist reception service stations in the scenic spots to the modular blocks that integrate regional cultural characteristics, tourism commercial atmosphere, entertainment and shopping. China has vast territory and large population, and each ethnic group in China has its own unique cultural heritage, therefore, many unique tourist blocks have been developed, such as the Zhangjiajie Natural Scenic Area, the Old Town of Lijiang in Yunnan, the Yangshuo West Street, the Ancient Town of Fenghuang in west Hunan, the Jindazhen in Jiangxi, and the Gulangyu Island in Xiamen, etc., and they have all shown the profoundness of Chinese culture (Kara, 2013). These successful and typical tourist blocks have certain commonalities. The landscape planning and layout design of these tourist blocks are very efficient and scientific, so they can satisfy the psychological needs of the tourists. Whether landscape layout design can accurately capture the characteristics and laws of tourists’ psychological behaviors is of great significance for the planning and construction of tourist blocks.

The landscape design research based on the
perspective of tourism psychology was initiated by Gücksmann since 1943, he was the first to expound and classify the psychological needs of tourism (Bai & Zhang, 2010). Lee & Chen (2011) proposed the psychological phenomenon of tourism motivation and its research methods, and he believed that tourism motivation is the original driving force for tourists to choose and insist on completing the tourism activities. Based on the theory of social psychology, Parry-Jones (1990) proposed a model hypothesis for the psychological needs of tourists. On this basis, Aoki (1999) analyzed the subjective and objective factors affecting the psychological capacity of tourists through questionnaire survey, and then classified and prioritized them. Halpern (1999) adopted psychological analytic algorithm and proposed that the tourist psychological needs have a positive correlation with the image of the scenic spot, and they have a negative correlation with the psychological virtual distance. From the two levels of the tourists’ own characteristics and the marketing effects of scenic spots, Miho, Masayuki, Harumi et al. (2015) analyzed the cognitive decision-making psychology of tourists and constructed a tourism decision-making model combining geography and psychology. William collected information via the global Internet and analyzed the travel preferences and decision-making psychological behavior characteristics of tourists of different age groups and from different countries and regions. Miller, Mueller, Goldstein, & Potter (1978) used the “service measurement model SERVICE” to build a framework for satisfaction survey research and proposed suggestions to effectively improve the satisfaction of tourists.

As early as in 1884, Korver first created the landscape planning and design as an independent discipline, which has historical significance for the planning and development of the cities (Igatiieva, Stewart, & Meurk, 2011). Tourist blocks are open spaces in the city, and their landscape planning and layout are closely related to the image of the whole city and the life of the residents, therefore, how to create good and comfortable block spaces has become the focus for the development of tourism cities. Walker & Ryan (2008) divided the space images of tourist blocks into boundaries, roads, landmarks, nodes, regions, etc. Based on modern architecture theory, Jane extensively analyzed the landscape design and spatial planning in countries around the world, and she concluded a spatial scale model for blocks and their relations with the buildings. Based on the Trilism of Landscape Planning and Design, Zube (1991) proposed that the planning and design of block landscape should take the architectural characteristics, landscape sequences and human environment into consideration. Larsen (2007) systematically discussed the processing of planar outline, landmark buildings, roof facade, city tones and other landscape design details of the tourist blocks. Liu Yu conducted a field survey on the Dali Street District in Yunnan Province, studied the landscape evolution and design principles of this tourist block, and proposed feasible suggestions for its future planning and design.

Due to the rapid development of tourist blocks, combining with the psychological capacity of tourists, this paper takes the Gulangyu Island tourist block as an example, and uses questionnaires and SPSS data analysis to study the influence of landscape planning and layout design on the psychological needs of tourists, and then concludes landscape planning and layout design methods that satisfy the psychological capacity of the tourists, which provides certain theoretical support and data reference for the planning and construction of tourist blocks.

THEORETICAL BASIS OF LANDSCAPE DESIGN AND PSYCHOLOGICAL NEEDS

Landscape design of tourist blocks

The logical relationship between the landscape design of tourist blocks and the psychological needs of tourists is shown in Figure 1.

As an independent discipline, the research content of landscape design can be summarized as the scientific and reasonable space planning and layout design of the land form and landscape building factors in certain areas based on the overall height of human living space planning. Specifically, it is to plan the land forms, arrange the layout of the buildings, and design the distribution of the vegetation, the water bodies and the public facilities so as to realize the practical and aesthetic values of the space. Tourist blocks refer to the regional spaces with tourism functions, they are naturally separated by city streets and they constitute the basic living environment for urban residents and tourists.

Landscape behavioristics has pointed out that the modern landscape design should combine scientific theory with engineering practice, and it should be based on three basic points: landscape image, environmental greening, and behavioral psychological characteristics. Firstly, we should grasp the overall planning of the city space, combine the landscape image with the city culture, and enhance

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The aesthetic and human values; then we need to consider the optimization of the ecological environment, and arrange the distribution of the water body and vegetation according to the landform of the region; the tourist blocks must design the landscape according to the psychological needs of the tourists, and the design should meet the public's psychological expectation and the multi-level psychological needs of the tourists. In general, the landscape design of tourist blocks scientifically plans the road traffic, buildings and tourism service facilities in the city space based on the historical and cultural heritage of the city itself, including large-scale overall spatial layout and small-scale landscape detail processing, so as to meet the tourists' psychological needs in transport, residence, recreation, travel and shopping.

theory of tourists' psychological needs

The psychological needs of tourists refer to a series of psychological reactions and behaviors that tourists make to the natural landscape and the human environment in order to achieve the purpose of tourism within the field of psychology. They can also be called tourism motivations which directly lead the behavior to achieve the tourism purposes, including novelty seeking, aesthetic needs, leisure and entertainment, social business needs, etc. The landscape design of tourist blocks must be based on the psychological needs of tourists so as to make them have better experiences and purify their souls. The research on the psychology of tourists is mainly carried out through natural observation, qualitative description and on-site questionnaire survey, besides, some scholars have also proposed some empirical analysis and quantitative analysis methods. The influencing factors of tourists' psychological needs are mainly divided into external factors and internal factors. External factors refer to the social influences, including the social class, cultural atmosphere, family influence, etc.; the internal factors are the tourists’ inner psychological behavior characteristics, including self-cognition, learning level, personality characteristics, and psychological motivation, etc.

According to the relevant theories of tourism psychology, the characteristics of tourists' psychological behavior can be divided into three categories: the tourists’ different experience needs, aesthetic psychological needs, and perceptual consumption needs. First, the different experience needs refer to that, when people's basic material needs are satisfied, they would pursue different experiences in terms of space, time, environment and spiritual level out of curiosity, such as historical and cultural cultivation, trend and fashion experience, regional characteristics and experiences, etc. Second, the aesthetic needs are a subjective feeling in psychology, People's aesthetic needs can enhance their spiritual level so as to obtain physical and mental pleasure, mainly including intuitive aesthetics, rational aesthetics, and emotional aesthetics. Third, the perceptual consumption needs refer to the tourists' perceptions from their inside to the outside obtained in the tourist blocks, and their feeling of freedom when they pay for their traveling time and happiness, such as cultural symbolism perception, innovative inspiration stimulation, and tourism consumption decisions.

EMPIRICAL STUDY ON THE INFLUENCE OF LANDSCAPE DESIGN AND LAYOUT ON TOURISTS’ PSYCHOLOGICAL CAPACITY

Questionnaire survey and sample situation
To study the influence of landscape design of Gulangyu Island tourist block on the psychological capacity of tourists, the on-site questionnaire survey was adopted, and data analysis was conducted based on the Likert scale. A total of 200 questionnaires were sent out, and 164 valid questionnaires were returned, the recovery rate of valid questionnaires was 82%.

According to the characteristic statistics of the sample population in the investigation, the male accounted for 52.3%, and the female accounted for 47.7%; the age groups were mainly distributed between 21 and 45, accounting for 49.2%. Most tourists have received certain education and have above average income level, their occupation includes students, enterprise employees, teachers, government employees, and retired seniors, etc. As shown in Figure 2, for 56% tourists, their tourism motivation is to see the scenic spots, tourists whose motivation is leisure and entertainment accounted for 31%, 9% of the tourists want to experience the regional culture and ethnic customs, the aim of 3% of the tourists is to accompany relatives and friends.

**Result analysis**

Figure 3 is a quantitative analysis of the landscape layout perception of the Gulangyu Island tourist block. Wherein the mathematical expectation of natural scenery is 4.6, the standard deviation is 0.73; the mathematical expectation of architectural characteristics is 2.8, the standard deviation is 1.15; the mathematical expectation of vegetation and water bodies is 3.2, the standard deviation is 0.98; the mathematics expectation of the visitor center is 2.2, the standard deviation is 1.04; the mathematical expectation of the number of parking spaces is 4.0, and the standard deviation is 1.35. As can be seen from the figure, the tourists’ mathematical expectations of tourist block natural scenery and number of parking spaces are larger than 3.5, indicating that the tourists generally agree with the description in the questionnaire, and their perception is in line with their expectations. The tourists’ mathematical expectations of architectural characteristics and vegetation and water bodies are between 2.5 and 3.5, indicating that they are not very concerned or less aware of such factors. The tourists’ mathematical expectations of visitor center and entrance and exit design are less than 2.5, indicating that in terms of tourism service facilities, the tourists’ perception is far from their expectations, it does not meet the psychological needs of tourists and needs further improvement. The standard deviation reflects the fluctuations in the visitor samples, and the greater the standard deviation, the stronger the fluctuation.

**Table 1** shows the analysis results of the tourist satisfaction of the Gulangyu Island tourist block. 5 evaluation indicators of natural scenery, architectural characteristics, traffic conditions, observation deck, and visitor center were selected, which can completely describe the landscape layout planning quality of tourist blocks. Based on Logistic regression analysis, the regression coefficient t test was carried out with natural scenery, architectural characteristics, traffic conditions, observation deck, and road guidance as independent variables, and tourists’
satisfaction as the dependent variable. In the table, the $R^2$ values of natural scenery, architectural characteristics and traffic conditions are 0.72, 0.68, and 0.75, respectively, indicating that the regression data fits well; the standardized coefficients are 0.71, 0.65, and 0.68, respectively. In the 0.95 confidence space, the P values of the regression coefficients are 0.15%, 0.21%, and 0.18%, respectively, indicating that the satisfaction of tourists is positively correlated with natural scenery and traffic conditions. As for the observation deck and the visitor center, the $R^2$ values are 0.37 and 0.41, respectively, indicating that the fitting effect of the sample data is not good, and the satisfaction of tourists is less correlated with the observation deck and the visitor center.

**Table 1. Analysis results of tourist satisfaction in Gulangyu tourist district**

<table>
<thead>
<tr>
<th>Evaluation project</th>
<th>$R^2$</th>
<th>Standard coefficient</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural scenery</td>
<td>0.72</td>
<td>0.71</td>
<td>0.15%</td>
</tr>
<tr>
<td>Architectural features</td>
<td>0.68</td>
<td>0.65</td>
<td>0.21%</td>
</tr>
<tr>
<td>Traffic conditions</td>
<td>0.75</td>
<td>0.68</td>
<td>0.18%</td>
</tr>
<tr>
<td>Observation platforms</td>
<td>0.37</td>
<td>0.45</td>
<td>0.12%</td>
</tr>
<tr>
<td>Tourist centres</td>
<td>0.41</td>
<td>0.37</td>
<td>0.16%</td>
</tr>
</tbody>
</table>

**Figure 4. Tourists’ willingness to recommend Gulangyu tourist district**

Figure 4 shows the tourist’s recommendation willingness of Xiamen Gulangyu Island tourist block. According to the figure, 105 tourists expressed that they strongly recommend the tourist block, accounting for 65% of the statistical samples; 27% of the tourists recommend it but they have some reservations; 8% of the tourists had poor experiences and they expressed that they don’t recommend it. In general, the Gulangyu Island tourist block has left a good impression for most tourists. The satisfaction and recommendation willingness of tourists have remained at a high level, indicating that the landscape design layout of Gulangyu Island is attractive to the tourists. On the other hand, for the tourists who do not recommend the tourist block and have some reserved opinions, the relevant reasons were also recorded in the questionnaires. In conclusion, the main reasons include too-long tour route, repeated landscapes, high risk of traffic jams, and too few places for tourists to take rests. Related management departments can make improvement plans based on the above opinions.

**Tourism block landscape layout planning based on the psychological capacity of tourists**

Based on the geographical characteristics, ethnic culture, humanistic environment, business ideas and other starting points, the purpose of landscape layout planning should take the tourists’ psychological needs as the leading direction, and combine landscape planning and layout design methods to create comfortable leisure and entertainment places for the tourists, construct commercial blocks to satisfy their consumption needs, and meet their curiosity and deep amiable feelings. The principles and design methods of landscape layout planning are shown in Figure 5.

**Landscape planning principles**

Before landscape layout planning, some concepts should be integrated, that is, to perceive the image of the city, identify cultural symbols, establish tourism brands, promote creative life, and shape communication spaces. Landscape planning must follow certain design principles. First of all, we must respect the history and the culture and mustn’t put the cart before the horse, if we dismantle and rebuild without thinking, it will destroy the historical and cultural value of the tourist blocks. Second, the inheritance of the culture should be emphasized, the cultural connotation of tourist blocks is an important embodiment of the city’s soft power, and the spiritual connotation of the city is an important factor in attracting tourists. Third, establish fashion benchmarks to match the characteristics of modern young people in focusing on literature and art and keeping up with the trend. Fourth, encourage innovative ideas, landscape design can adopt various street arts and modern 3D traveling technologies so as to create a more innovative atmosphere for the tourist blocks.
Landscape layout design methods

Landscape layout design methods are rich and varied, here they are expounded from 5 aspects.

First, combine point-line-plane forms. The points refer to the characteristic landmarks in the tourist blocks, such as buildings, sculptures, vegetation or water bodies. The point-shaped landscape has a finishing touch to the layout of the entire city. In design, variations and exaggerations are often adopted to highlight the characteristics of the tourist blocks so as to impress the tourists. The line-shaped elements mainly refer to the streets in the city which have the function of providing a transportation for the traveling of the tourists. Straight lines or curves in the horizontal plane give people a calm, soft and elegant feeling, and the facade lines such as the contours of the buildings are also for people to watch, they are tall and straight, and the radiation lines present a beauty of stretching and moving. The plane-shaped elements generally refer to the planar layout of the tourist blocks, which are often presented in the form of squares, allowing the tourists to feel the tremendous vastness and the astonishing suddenness.

Second, perfect the basic service facilities, including street layout planning, number of parking lots, and location design, etc.

Third, penetrate culture into the landscape. In tourist blocks, buildings are the most important landscape element that reflects the regional characteristics, ethnic culture and the trend of the times. They are the material basis constituting the city blocks and their cultural environment. Many historical and cultural monuments are preserved in the form of city landscapes and they are one of the most important factors influencing tourists’ tourism decisions.

Fourth, apply landscape aesthetics. Highlight the aesthetic elements of the tourist blocks through the design of symbols, colors and patterns, including vegetation and water body landscaping, street art culture, and distinctive text or image guidance.

Fifth, introduce commercial brands. Manage the brand images of the merchants and provide good shopping service experiences and visual enjoyment. Use the windows of the shops to exhibit fashion and creative products to attract the attention of consumers.

CONCLUSIONS

Based on the basic principles of landscape behavioristics and tourism psychology, this paper used the questionnaire survey and Likert scale data analysis to analyze the landscape design of the Gulangyu Island tourist block, and expounded the influence of landscape planning design of tourist blocks on the psychological capacity of tourists, and following conclusions are drawn:

(1) The mathematical expectations of the natural scenery and the number of parking spaces in the tourist block are all greater than 3.5, indicating that the tourists’ perceptions and expectations were quite consistent; the mathematical expectations of architectural characteristics and the vegetation and water body are between 2.5 and 3.5, indicating that the tourists are not very concerned or less aware of such factors; the mathematics expectations of the
visitor center and entrance and exit design are less than 2.5, indicating that in terms of tourism service facilities, the tourists’ perception is far from their expectations, it does not meet the psychological needs of tourists and needs further improvement.

(2) The $R^2$ values of natural scenery, architectural characteristics and traffic conditions are larger, indicating that the regression data is well fitted, and the satisfaction of tourists is positively related to natural scenery and traffic conditions; the $R^2$ values of observation deck and visitor center are lower, the satisfaction of tourists is less correlated with the observation deck and the visitor center.

(3) In general, landscape planning principles should respect the history and the culture, emphasize the inheritance of culture and establish fashion benchmarks. The landscape layout design methods include combining point-line-plane forms, perfecting basic service facilities, penetrating culture into landscape, applying landscape aesthetics and introducing commercial brands.

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