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A study on the ephemerality of public space in traditional village from a cognitive perspective

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Abstract. Based on the design method of urban and rural planning, we combine the theories and methods of geography and habitat environment disciplines, and introduce the "schema" theory of psychology to construct the cognitive maps of residents and tourists. Using Zishan Village in Hanwang Town, Xuzhou City as an empirical case, we extracted regional characteristics and explored the cognitive evaluation of residents and tourists, and analyzed the research data in a qualitative and quantitative way. The satellite tracking 3D track function was used to record the travel routes and shooting points of the sample population, and the collected data were overlaid to analyze the overlap of the routes and shooting points, so as to derive the interest points of residents and tourists. The data were summarized in tabular form and imported into SPSS for cross-tabulation analysis and chi-square test. Questionnaire interviews were used to collect the personal feelings of residents and tourists from a qualitative perspective. The cognitive maps of residents and tourists were constructed and their differences were explored to visualize the regional characteristics of traditional village public space and to identify effective landscape design and public space construction, which can provide reference and basis for village construction.

Keywords: public space, traditional village, coenitive mappine, China.

1. Introduction

The public space of traditional villages is the material carrier of the inheritance of regional characteristics and the projection of villagers' production, life, culture, and beliefs, which plays a catalytic role in activating the vitality of villages and ensuring their sustainable development [1]. Whether residents can obtain a sense of belonging and identity from traditional villages is a major issue in the continuity of villages. Focusing on traditional villages under the cognition of tourists, it has a guiding effect on the construction of villages in the process of urbanization.

This project analyzes the imagery elements of traditional village public space with regional characteristics, conducts field research on traditional villages, visualizes the abstract cognition of residents and tourists about the locality of public space, generates cognitive maps from both residents and tourists, and uses the evaluation construction method to classify and summarize the elements.

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2. Coenitive mappine theory

The perception of imagery elements with regional characteristics in traditional village public space is a mapping constructed in people's brain after experiencing the village land-scape, so the deconstruction of this content should be based on its deep psychological mechanism of action.

Edward Tolman proposed the concept of coenitive mappine [2]. The conceptual class of cognitive maps consists of variables, labeling, and connecting lines, and aims to abstractly represent the cognitive levels and structural relationships of an issue, such as the narrative structure map drawn by Mark Lombardi (Figure 1). Spatial-like cognitive maps have more similarities to maps of practical meaning, with the difference being the highlighting of the focus of the representation of perception and the omission of other unimportant details (Figure 2) [3]. In order to visualize the public spatial imagery elements of traditional villages by residents and tourists at the level of cognitive results, this study selects the spatial cognitive map as its representation pathway to analyze the differences in the representational focus of conceptual and spatial cognitive maps.

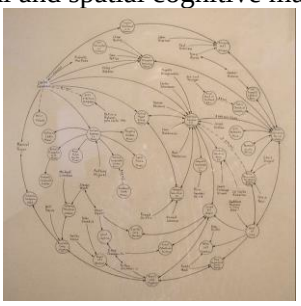

Figure 1. Figure 1.1Concept-based cognitive map（source: http://socks-studio.com/2012/08/22/mark-lombardi/）.

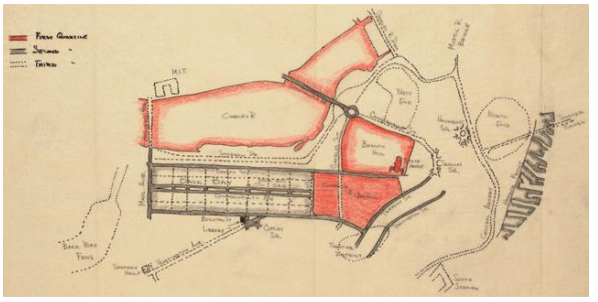

Figure 2. Space-based cognitive map（source: The Image of the City）.

3. Overview of the study area

Hanwang Town is located in the southwest of Tongshan District, Xuzhou City, Jiangsu Province, and is one of the 100 famous towns in Jiangsu Province. Zishan Village is in the center of Xuzhou Hanwang Town, divided into two villages, with the village built around the foot of Zijin Mountain and east of Bajian Spring scenic spot. The traditional architecture has local characteristics of Xuzhou.

4. Research methodology

4.1. Survey methodology

By combining the field survey method and the sampling method, the data on the tour route, tour time and photos taken in Zishan Village were collected in an objective and scientific way. The sample population used the cell phone software "Two Steps Outdoor Assistant" to record the tour history and send the data to the discussion group, where the group members collected and summarized the data. Field visits were conducted and a large amount of field research data was collected for statistical analysis.

4.2. Cognitive map

Aborigines are the constructors and users of public space in traditional villages. Aborigines freely draw or dictate the cognitive maps of public space in their hearts, and the recovered maps are spatially over-laid by software to analyze the spatial distribution patterns of memory elements and contrast with the cognitive schema of tourists [4].

5. Public space

Generally, traditional villages are distinguished from cities in that they do not have public spaces in a clear sense, but are mostly gathering places formed spontaneously by villagers' daily activities, such as

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street intersections, shade places, streamside laundry spots, etc.; they may also be public buildings built to meet the needs of traditional customs, such as ancestral halls, study halls, temples, etc. [5]. The traditional customs and lifestyles of villagers shape and influence public space, reflecting the fact that the public space of traditional villages in China is based on the traditional rural social structure and has the characteristics of both social and spatial nature. Asa Ode and Mari Johanson et al. suggest that the main indicators for identifying the visual characteristics of a land-scape include complexity, coherence, disturbance, management, imagery, visual scale, naturalness, historical and transient nine aspects [6]. For example, there is a large entrance plaza at the northern entrance for crowd gathering and children's play, and around the plaza there are stores, restaurants, consultation rooms, and other facilities that mainly serve foreign visitors. The seven-story Han Wang Pagoda at the top of the hill is the landmark of Zishan Village, forming a crowd centripetal force.

6. Research methodological process

This study used the satellite tracking 3D trajectory function to record the travel paths and shooting points of the sample population, and the collected data were overlaid to analyze the overlap of paths and shooting points to derive the points of interest of tourists and residents. The data were summarized in tabular form and imported into SPSS for cross-tabulation analysis and chi-square test to digitize the effects of age, gender, distance to residence, access to information, and consumption on the length of stay of the population.

Table 1. Statistical table of path location data and questionnaire data.

Number	Type	Dwell time	Age	Availability of consumption	Walking distance	Access to information channels	Pass through the marked points
	1.Permanent residents 2.Visitors 3.Short-stay residents	1. Under 30 min 2. 31 min-1 h 3. 1-2 h 4. 2-3 h 5. 3-4 h 6. 4-5 h 7. Over 5 h	1. 10-19 2. 20-29 3. 30-39 4. 40-49 5. 50-59 6. 60-69 7. 70-79 8. Over 80	1. No consumption 2. Under 10 yuan 3. 10-19 yuan 4. 20-29 yuan 5. Over 30 yuan	1. Under 1km 2. 1-2 km 3. 2-3 km 4. 3-4 km 5. 4-5 km 6. Over 5 km	1. WeChat Public 2. TV News 3. Web Info 4. Travel Website 5.Government Advocacy 6.Friend Referral 7.Arrival by yourself	
1	1	1	4	1	3	/	A1
2	2	3	5	3	5	1	A5A6C1
3	1	2	4	2	2	6	A1A2
4	2	6	5	3	6	1	A6A1C1
5	2	6	5	3	4	5	A1L2E2
6	1	6	5	4	6	5	A1E2
7	2	2	4	1	3	1	A1A2
8	2	3	2	1	2	2,3	A1A2B2B3B4B5B6A7A6 A5L4C3F3
9	2	2	2	1	2	6	C1L1A1B1G1G2G3G4G5 A8
10	2	2	2	1	2	6	C1F1F9F2E3E2D4
11	2	3	2	1	3	6	A1A2B2B3B4B5B6A7A6 A8L5C5F8
12	2	2	2	1	2	6	A1A2B2A3A4A5A6A7A8 L5C5F8C4C3C2C1D1

6.1. Path analysis

According to the statistical table from the crowd type, crowd age, crowd stay time three perspectives to draw the number of passing path statistics line graph.

The survey units were randomly selected from the population without any grouping, classification, or queuing, and an objective attitude and scientific method were applied to investigate the social phenomenon by conducting a field study of the crowd's tour paths and other phenomena in Zishan Village within a determined range and collecting a large amount of information for statistical analysis. Statistically, path A was the path that tourists passed through the most, and it was the path that residents

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passed through the most C. Among the survey respondents, tourists passed through the marked points on path A a total of 38 times, significantly more than other paths, and 32 times more com-pared to path L, which was passed through the least number of times. The number of visits by residents on each of the trails was generally low, with D and L being the least attractive to residents. Analyzed in terms of age, path A has the largest number of passages for either age group. For people under 30 years old, paths G and L have a lower number of passages, people be-tween 30 and 49 years old pay less attention to path B, and people over 50 years old are less interested in B and D. In terms of the length of the tour, people pay the most attention to the marked points on path A and less attention to path L. People who visit for less than 1 hour pay more attention to A, C and F. The time between 1-4 hours is more like the A and C paths, less interested in D and E, and not concerned about the G path. Those with time greater than 4 hours are more concerned with paths A and E and do not go through paths E and F. Overall, people pay more attention to paths A and E, and less attention to path L.

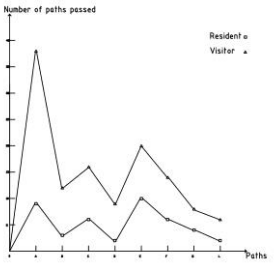

Figure 3. Statistical chart of the number of times residents and tourists pass by the path (Source: Self-drawn by the author)

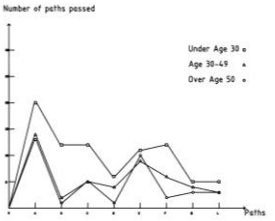

Figure 4. Statistical chart of the number of times people of different age groups pass by the path (Source: Self-drawn by the author)

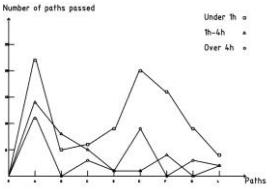

Figure 5. Statistical chart of the number of times people with different lengths of stay pass by the path (Source: Self-drawn by the author)

6.2. Shooting point analysis

The five points with the highest number of shooting points and the five points with the lowest number of shooting points are plotted from three perspectives: crowd type, crowd age, and crowd dwell time.

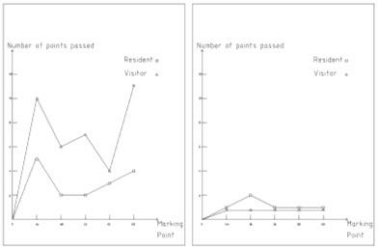

Figure 6. Statistical chart of the number of extreme values of residents and tourists shooting spots (Source: Self-drawn by the author)

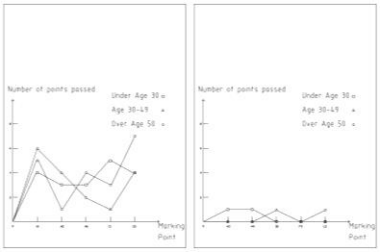

Figure 7. Statistical chart of extreme values for different age groups (Source: Self-drawn by the author)

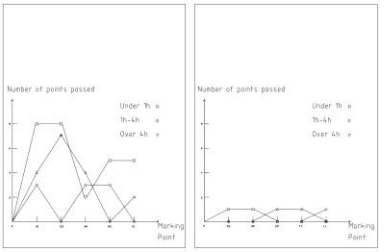

Figure 8. Statistical chart of population extremes with different dwell times (Source: Self-drawn by the author)

The cognitive map was drawn from the above three perspectives by the statistical data. From the map, it can be seen that the entrance square of Zishan Village gets the most attention in the crowd and is the easiest to form a memory point in the brain. The next one is the Bajian Spring near the Zishan Village where more photos were taken, and the Bajian Spring scenic spot has a greater radiating effect on the tourism development of Zishan Village.

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The sub-plaza after the entrance plaza is equally invested in the planning and construction, and the number of arrivals is low from the statistics. According to the site survey, there are continuous steps here, which to a certain extent reduces the interest of people to visit.

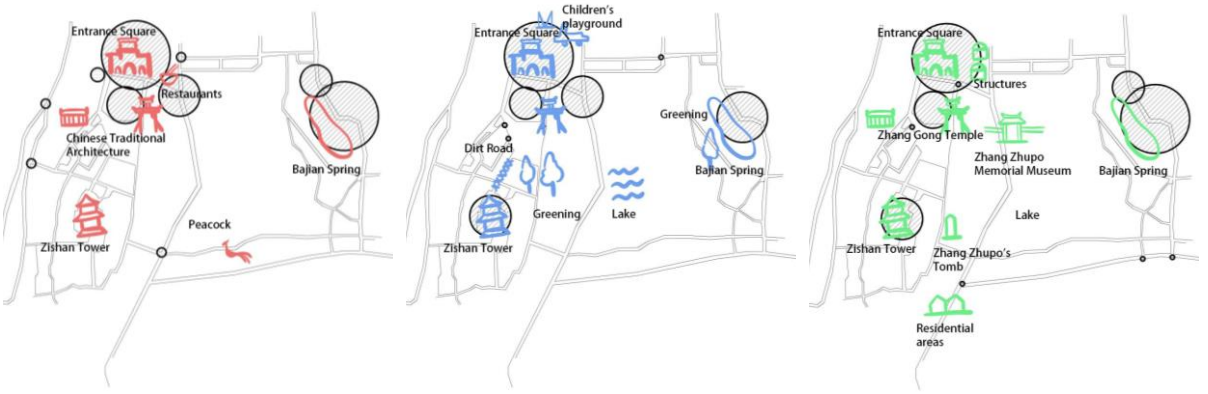

Figure 9. A cognitive map of three perspectives (Source: Self-drawn by the author).

6.3. Shooting location summary

(1) Most visitors will shoot multiple iconic buildings, both from a distance and up close, such as from the far side of the square to shoot the Zishan Village gate; halfway up the mountain or at a platform far from the tower to shoot the tower, etc.

(2) For those who have carried out the design, relatively complete field, visitors will take pictures and stay from multiple angles. For example, the small courtyard at the entrance, the moon gate, the pond, the resting area at the top platform, Zhang Boying Academy, the windmill and the sea of flowers at the foot of the mountain, all attract visitors to stay and photograph for a longer time.

(3) For plaques and characteristic landscape space, tourists will read and photograph them, but the possibility of photographing them is significantly less than that of a well-designed complete field. For example, at the foot of the mountain, there are wells, strange rocks, trees and bronze bells at the stone plaque of "Zhengu Mountain Spring", and visitors will put many elements into the photo together.

(4) For vast or overall scenery, visitors take pictures both on the way up and down the mountain. Most of them are in the entrance courtyard when going up the mountain, looking up to take pictures of the panoramic view on the mountain, or taking pictures of the tower and the side view during the climb, with a look-back angle, but the number is small.

6.4. Questionnaire research

This project developed separate questionnaires for two survey samples, residents and tourists. The difference between the two questionnaires is that the questionnaire for villagers includes the historical stories of the village, the characteristics of the village before and after its transformation, and the places where villagers used to and still do their activities, focusing on the local people's memory and outlook of the village; the questionnaire for tourists includes the tourists' place of origin, purpose of visit, number of visits, information acquisition methods, and play time, focusing on the outsiders' evaluation of the playability of the village.

Zishan Village is significant to its residents in several ways:

(1) Improving living standards: After the reconstruction, village roads and bus paths improve the convenience of travel for residents. Visitors spend money in the village, in-creasing residents' income.

(2) Provide employment opportunities: With the increase in visitors after the renovation of Zishan Village, many residents opened B&Bs, restaurants, and farmhouses of a comprehensive nature, solving the employment problem and being able to keep young people.

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(3) Enhancing communication with the outside world: The increased flow of people after the renovation of Zishan Village and the increased communication between outsiders and local residents have broadened the residents' horizons and made them more selective about their lives.

Purple Mountain Village attracts visitors in the following ways:

(1) Historical lineage: The Han cultural architecture of Zishan Village is very characteristic and has a greater attraction to tourists. The Bajian Spring scenic spot has a radiating effect on Zishan Village.

(2) Natural conditions: Zishan Village is rich in vegetation and water bodies, and is a good place for tourists to go for leisure and tourism. The air quality of Zishan Village is good, far from the haze of the city, and visitors with addresses near the village choose to go for a walk and exercise.

(3) Countryside features: Zishan Village establishes a special village with Han culture as the main focus, covering a variety of rural experiences such as B&B and farmhouse, attracting tourists who have lived in the city for a long time to come and experience a different life.

Most of the visitors who come to play are residents of the surrounding area, mainly mid-dle-aged and elderly people, and the research site is not attractive enough for young people. In addition, some residents are not satisfied with the speed and quality of the transformation of the scenic spot. There is a lack of historical and cul-tural places in the scenic spot, and there are few places for experience and few and single places for consumption.

7. Conclusion and outlook

By combining qualitative and quantitative analysis, constructing cognitive maps of resi-dents and tourists and exploring their differences, we can visualize the regional characteristics of traditional village public space elements, identify effective landscape design and public space construction, and provide references for the sustainable development of traditional villages.

Traditional villages in different historical backgrounds, geographical environments, and cultural circles have differences in their public space composition and regional characteristic elements. However, this study has guiding im-plications for the creation strategies of tradition-al villages in China's urbanization process: on the one hand, the method of cognitive mapping can visually and clearly explain the collective memory points of residents and the concerns of tourists after the construction of villages, and this method has the potential to be applied to different traditional villages in China, and helps to form a cognitive map and dynamic library of regional traditional villages, deconstruct traditional villages from the inner level On the other hand, the cognitive map of traditional villages can be combined with urban and rural planning techniques to set corresponding indicators ac-cording to the degree of correlation between key representations and the imagery elements of the regional characteristics of villages, so as to point out the direction for designing and optimizing the construction of traditional villages and creating villages with local characteristics and development potential.

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