

Analysis of the Spatial Form of Ancient Cities based on Image Theory: Taking the Ancient City of Zhangzhou as an Example

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Abstract: The construction of historical and cultural blocks in ancient cities is a new direction for the development of tourism in historical and cultural cities. As the core of the famous historical and cultural city of Zhangzhou and an important window of the city's image, the ancient city of Zhangzhou plays a decisive role in the development of Zhangzhou. This article is based on the theoretical study of Kevin Lynch's "Image of the City", and analyzes the spatial form of the ancient city of Zhangzhou from the material form (roads, boundaries, areas, nodes and landmarks) and spiritual form (specialty snacks, traditional operas, handicrafts), conducting a study on the individual characteristics and overlapping characteristics of the image elements, revealing that the image elements of Zhangzhou ancient city need to coordinate with each other to ensure the integrity and distinctiveness of the ancient city's characteristics, promote the sustainable development of the ancient city's spatial form, and have an impact on the overall spatial system and human environment of the ancient city.

Keywords: Urban Image; Image Elements; Zhangzhou Ancient City; Spatial Form; Ancient City Characteristics

1. Introduction

An ancient city refers to an urban settlement with a history of more than a hundred years and large-scale ancient buildings that are still well preserved in modern times or have been repaired and basically restored to their original appearance [1]. The image elements of the ancient city are the spatial carriers that reflect social life and cultural materials within the city and are an important way for people to more

deeply understand and remember the context and soul of the ancient city.

In his book "The Image of the City", American urban design theorist Kevin Lynch studied the empirical evidence of urban development changes in Boston, Jersey City and Los Angeles, and established five categories: roads, boundaries, regions, nodes, and landmarks. The image elements of a cognitive map [2]. From the research on urban appearance to the research on urban image, it expounds people's behavioral perception memory and environmental perception impression of the city and uses memory and impression to objectively reflect the image of the city, that is, urban image is the product of the interaction between subject and object. Therefore, studying the perception of the physical form of the object (i.e., the perception of the urban spatial level) and the perception of the spiritual form formed by the subject (i.e., the subjective reflection of the interior of the city) will produce a deep understanding of the urban image.

Research related to "Image Theory" is also gradually improving and deepening. In terms of research methods, they range from cognitive mapping methods and questionnaires to image research on image and text sources to large amounts of urban data research based on computer big data [3,4]; in terms of research perspectives, from spatial morphology, spatial cognition, urban texture, spatial evolution and other perspectives have been studied on urban image [5-8]. Therefore, studying the image elements of the ancient city plays an important role in the continuation of the urban cultural memory that is the material heritage and the spiritual connection of historical context, and also provides scientific reference for the protection of the architectural sites and folk

culture of the ancient city. Provide input into urban development research.

2. Overview of Zhangzhou Ancient City

The ancient city of Zhangzhou is located in the urban area of Zhangzhou City, which is rich in humanities and has a long history and culture. It has obvious location advantages. The ancient city of Zhangzhou was established in the Tang and Song Dynasties with a history of 1,300 years ago. The entire block of the ancient city of Zhangzhou still retains the "Zhensantai" structure since the Tang and Song Dynasties. ", bordering two rivers"; the ancient city of Zhangzhou stretches from Xinhua South Road in the east, Zhongfa Road in the west, Ruijing Road in the north, and Boai West Road in the south; Zhangzhou Ancient City is the most potential core value area in the Zhangzhou region, and is also one of the most promising areas in southern Fujian. An important part of the cultural and ecological protection experimental zone, as shown in Figure 1.

The ancient city of Zhangzhou has a strong historical and cultural atmosphere, numerous cultural relics and historic sites, and rich intangible cultural heritage. It now preserves a large number of national-level protection units, provincial-level, and municipal-level protection units (as shown in Table 1). Street space, architectural features, and historical relics are the value of Zhangzhou Ancient City. The axis of Zhangzhou Ancient City is strictly

clear and is the foundation of the spatial pattern of Zhangzhou Ancient City. Try to retain the axis pattern of "Nine Streets and Thirteen" to form the spatial pattern of Zhangzhou Ancient City. Each axis has its own unique charm, making the axis relationship of the ancient city of Zhangzhou more soulful; as the core of the ancient city, the Dacheng Hall of the Zhangzhou Confucian Temple on Xiuwen West Road has a high historical and cultural value, establishing its role in the ancient city The landmark; the arcade storefronts, the combination of Chinese and Western architecture, and the Minnan-style houses are the most unique blocks and architectural forms in the entire ancient city of Zhangzhou. Under the rich and long human history and specific natural conditions, the ancient city of Zhangzhou has formed the charm of the ancient city unique to Zhangzhou.



Figure 1. Aerial View of Zhangzhou Ancient City

Table 1. Tables Should be Placed in the Main Text Near to the First Time They are Cited

National cultural relics protection unit	Provincial cultural relics protection unit	Municipal and county-level cultural relics protection units	Characteristic buildings	special snack	local opera	traditional handicrafts
3	2	10	5	5	3	4
Confucian Temple Dacheng Hall, The stone archways of the Ming Dynasty, Lin's Ancestral Hall	Jian Dashu Shelter, etc.	The former site of the government office, East-West Bridge Pavilion, Song Hao, Shiwangfu, etc.	Jialan Temple, Yang Sao's former residence, Xu Family Temple, Miss building, Fanzilou, etc.	Braised noodles, mochi, meat dumplings, four-fruit soup, fried rice dumplings, etc.	Bag puppet show, Xiang opera, Jin Ge, etc.	Zhangzhou puppet head carving, Cai Fumei drum making, Babao ink pad, etc.

3. Analysis of Individual Elements of Zhangzhou Ancient City under the Theory of Imagery

Based on the interpretation of relevant data on urban image theory and image research, as

well as the investigation of the current situation of Zhangzhou Ancient City, it can be seen that the image of Zhangzhou Ancient City is the perception of the ancient city's spatial system by residents and tourists. Therefore, in addition to the roads, Boundaries, regions,

nodes, and markers are material image elements. This article also analyzes spiritual image elements: special snacks, local operas, and handicrafts. Only in this way can we study the spatial form of the ancient city at a deeper level.

3.1 Analysis of Material Elements of Zhangzhou Ancient City

3.1.1 Roads

Roads occupy a vital position in the construction of the city. Roads are the blood of the ancient city and even the entire city. They are directional imagery elements that enable people driving through the city to more intuitively perceive the style of the ancient city; It also forms a linear shape with the building body or landscape sketches, and the roads in the overall area are enclosed into a two-dimensional plane space, making the construction of the ancient city more integrated. The roads in Zhangzhou Ancient City have the following characteristics:

- (1) The square grid texture of the road in the form of straight lines strengthens the integrity of the road network in the historical and cultural district.
- (2) The direction of the road is clear. The road makes the block appear extremely heterogeneous, while the land parcel has clear direction and cohesion.
- (3) The roads are clearly divided into primary and secondary roads. The main roads are relatively prosperous and wide roads (such as Yan'an South Road, etc.); the secondary roads are branches of the main road with narrow roads (such as Zhencheng Lane, Yanglao Road, etc.). Lane, etc.).

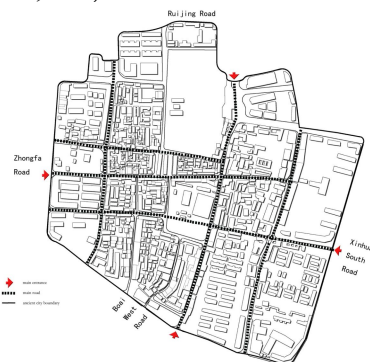


Figure 2. Road Map of Zhangzhou Ancient City

3.1.2 Boundary

The boundary refers to the end of one type of spatial level, and also represents the beginning

of another type of spatial level. It is also the boundary of the transition and change of different spatial forms. Under the influence of my country's traditional ancient ideas of building capitals and cities, the boundaries of cities are usually riverbanks, mountains, forests, city walls, roads, etc. However, with the changes in thinking and the development of modern cities, the boundaries defined in ancient times are not enough to carry the boundaries of the current city. Although this limits the expansion of urban spatial forms and the high concentration of built-up population within the city, it also restricts the infinite spread of urban spatial levels.

Therefore, the roads in the ancient city of Zhangzhou are the boundaries that distinguish it from other levels of the city. This road as a boundary is not used as a normal road. It is a plane composed of continuously enclosed linear elements that is the interior of the ancient city of Zhangzhou; it is the boundary that distinguishes the internal space of the ancient city from the dividing lines of other urban boundaries have obvious differences in block layout, architectural features, etc., and the visual differences are particularly significant. As can be seen from Figure 2: the two entrances of Xinhua South Road and Xinhua West Road, the arcade-style buildings and the modern buildings outside the road form obvious differences and divisions; the entrance of Zhongfa Road shows the traditional red brick building in southern Fujian and is also a symbol of the boundaries of the ancient city.

3.1.3 Area

A region is a large parcel made up of many smaller parcels. And each small area has its own functional characteristics and spatial hierarchy. It seems to be independent of each other, but there are certain connection points. The large area formed by the existence of different small areas further deepens the perception of the area.

The areas of the ancient city are usually divided based on the internal characteristics of the ancient city blocks, changes in spatial levels and differences in functional properties. As shown in Figure 3, the ancient city of Zhangzhou is divided into the ancient city area, school area, residential area and park area. Zhangzhou Ancient City, like most ancient cities, is an ancient city area that exists on the

premise of tourist and commercial value. At the same time, the surrounding supporting facilities are complete, such as parks, green spaces, residential areas, etc.

3.1.4 Node

Nodes are regional open spaces with specific functions, such as public transportation connection points and public building turning points. People often gather at each node to carry out various public activities. They have the characteristics of identification, landscape, interest and accessibility. Nodes are reflected in two types of environmental characteristics and behavioral characteristics of the ancient city: one is the traffic space nodes of the block, such as corners, intersections, square hubs, etc.; the other is the public building space nodes with historical significance, such as block temples, legacy sites, former residences of celebrities, etc. The functional attributes of these nodes affect the changes in the surrounding environment and the direction of human behavior.

The node characteristics of Zhangzhou Ancient City can be seen from Figure 3. On the one hand, the nodes of Zhangzhou Ancient City are unevenly distributed, which is related to the degree of preservation of historical and cultural heritage; on the other hand, the nodes of the overall pattern of Zhangzhou Ancient City, such as Zhangzhou Confucian Temple, Shangshu Tanhuafang, etc. Mainly concentrated on major arterial roads such as Xiuwen West Road and Yan'an South Road. The activities of tourists and local residents are separated so that they do not interfere with each other but are connected with each other. The ancient city of Zhangzhou presents a pattern that is partially scattered but closely connected overall.

3.1.5 Markers

The landmark is the most important point in the ancient city, which has the function of guiding and influencing the entire ancient city. The identification of landmarks heralds the establishment of the overall urban pattern system. The leadership of the landmarks spreads outward from its own center, affecting the surrounding street nodes and the development of the entire city. Landmarks are buildings, structures or natural landmarks with special geographical location, unique and distinct historical significance and profound cultural value, such as buildings, sculptures,

archways, etc. As can be seen from Figure 3, the Zhangzhou Confucian Temple in the ancient city of Zhangzhou has a unique geographical location and is a national key cultural relic protection unit. The Confucius statue and the scale of the ancient building complex in the Zhangzhou Confucian Temple have a profound impact on the ancient city of Zhangzhou and even Zhangzhou [9].



Figure 3. Zhangzhou Ancient City Area Map

3.2 Analysis of Spiritual Elements of Zhangzhou Ancient City

The spirit of the ancient city is a direct reflection of the humanistic connotation and quality of the ancient city. The spirit of the ancient city is expressed through special snacks, local operas, traditional handicrafts, etc., and is presented in the characteristic behaviors, lifestyles and folk habits of the residents of the ancient city, etc.

Special snacks in the ancient city of Zhangzhou: stewed noodles, mochi, meat dumplings, four-fruit soup, fried rice dumplings, etc.; local operas: bag puppet show, Xiang Opera, Jin Ge, etc.; traditional handicrafts: puppet head carving, drum making, eight-treasure ink pads etc.; These spiritual elements of the ancient city of Zhangzhou are the respect and continuation of the humanities and history of the ancient city for thousands of years. Just like the soul of the ancient city, what you feel when you are in the ancient city is the unique "Zhangzhou flavor".

4. Superposition Analysis of Zhangzhou Ancient City Elements Based on Image Theory

Kevin Lynch believes that everyone's perception of a city is different, but "any city seems to have a common image, which is

composed of many individual images overlapping” [10]. The correlation and complementarity between the material form elements and spiritual elements of the ancient city of Zhangzhou. The interaction between the elements constitutes the street space, characteristic nodes and behavioral activities of the ancient city of Zhangzhou. The two types of elements are superimposed on the plane of the ancient city to form the ancient city. Its integrity more fully expresses the spatial pattern of Zhangzhou ancient city.

Table 2. Overlay Analysis of Image Elements of Zhangzhou Ancient City

Image elements	Entity (point)	Virtual body (line)	Combination of virtual and real (face)
material elements	Zhangzhou Confucian Temple, Shangshu Tanhuafang, etc.	Street space, boundary, axis	Zhangzhou Ancient City
spiritual elements	Mochi, opera, ink paste, etc.	Taste, hearing, touch	

4.1 Abbreviations and Acronyms

All the imagery elements in the ancient city are restricted to the interior space. The material elements of nodes and markers highlight the historical and cultural attributes of the ancient city; the physical points of spiritual elements are also the soul and representative of the ancient city's culture, enriching the spatial morphological characteristics of the ancient city. As the carrier of the spatial form of the ancient city, in-depth research on the physical image elements can further explore the cultural characteristics and spiritual connotation of the ancient city, thereby enriching the spatial form characteristics of the ancient city.

4.2 Analysis of Virtual Elements of Zhangzhou Ancient City under the Theory of Imagery

The material form elements of Zhangzhou Ancient City do not exist in isolation, but there are inherent connecting channels between them: combining different image elements in the form of "lines" further reflects the systematic nature of the image elements of Zhangzhou Ancient City; roads as The dominant and basic element in the ancient city's intentional

elements; the boundary is another linear feature different from the road, emphasizing the distinction between the inside and outside of the ancient city, making the image elements in the ancient city more integrated; the spiritual elements include taste, hearing, The tactile image of the ancient city enriches the spatial form and cultural connotation of the ancient city.

4.3 Analysis of Virtual and Real Elements of Zhangzhou Ancient City under the Theory of Imagery

At the level of material form elements, what gives people the most sensation is the visual experience, and there is a lack of further feelings. The spiritual elements of Zhangzhou Ancient City give people a deeper feeling from taste, hearing, and touch, and strengthen the existence of the spatial form of Zhangzhou Ancient City; another the change and development of a single image element not only affects its own form, but also affects the development of surrounding image elements, as well as the entire spatial perception of the ancient city of Zhangzhou.

From the analysis of Figure 4 and Table 2, it can be seen that there is an inherent connection between the internal functions of the material form image elements and the spiritual image elements. The joint effect between the two types of elements strengthens people's perception of the space and psychology of the ancient city of Zhangzhou, thus Get an overall deep image of the ancient city. The two levels of urban image elements and contexts intertwine, influence and penetrate each other, jointly creating a culturally profound and unique image of the ancient city [11].



Figure 4. Overlay of Image Elements of Zhangzhou Ancient City

5. Conclusions and Reflections

To sum up, the overall and image elements of the ancient city of Zhangzhou are highly identifiable, and the combination of the image elements leaves a deep impression on people. Material form image elements (roads, boundaries, regions, nodes, landmarks) are important expressions of the overall ancient city spatial system pattern and are also carriers of spiritual elements such as behavioral activities, lifestyles, and folk customs in the ancient city. To deeply study the image of the ancient city, it is also necessary to combine it with the humanistic spiritual form of the ancient city (snacks, operas, handicrafts) to reflect the unique style and feelings of the ancient city. Material form elements and spiritual form elements coordinate with each other to create a comfortable ancient city characteristic landscape that meets people's vision, touch, hearing, and taste, ensuring the integrity and distinctiveness of the ancient city's features. The continuation of the regional humanistic cultural spirit is as important as the characteristic nodes of the ancient city, promoting the sustainable development of the ancient city's spatial form, and at the same time, it also provides corresponding reference for the research on the spatial form and protection of other ancient cities.

Through the analysis of the physical and spiritual morphological elements of the ancient city of Zhangzhou, we can better study and protect ancient cities in other regions. Measures are proposed here for reference: (1) A large amount of maintenance should be given to the fully protected historical and cultural buildings to extend their existence; (2) There should be a lot of diversification in the development of the ancient city, and should not only focus on With the development of commercialization, the form of the ancient city has become the same, and it has also lost its own charm; (3) Enhance the image of the boundary of the ancient city, forming a clear visual gap with the areas outside the ancient city, and further consolidating the overall spatial form of the ancient city; (4) For destroyed historical relics and gradually forgotten historical events or folk culture, establish historical and cultural memorial halls and disseminate historical and cultural elements through text reading, picture

dissemination, video viewing, and professional interpretation. Reconstruct the recognizability of the image; (5) Establish a historical and cultural tour route in the ancient city area, connect the material form elements and the spiritual form elements, and create interaction between individual elements and between two types of elements.

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