

Research on the Edge Space Construction in Urban Residential Districts Based on “Field and Behaviors” -Taking Tan Hualin Historic District in Wuhan City as an Example

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Abstract: The edge space lies between the “black” and “white” part of the city, associates the vagueness of the space with “ambiguity” and are the places to inspire people to interact with each other. Edge space is also becoming more and more important in increasingly alienated cities due to its heterogeneity and integration, but the vitality of edge space in cities is uneven. This paper taking Tan Hualin edge space configuration as the research unit, according to the chart of survey data, conducts a comparative analysis of the spatial “field” and human “behaviors” of the edge space between Tan Hualin commercial district and Tan Hualin residential district, so as to explore the reasons why the edge space of urban residential district is more dynamic and to enrich the types of environment construction of edge space in urban district .

1 Preface

1.1 From “Alienation” to “Manifestation”: Urban Edge Space

Gradually, more and more cities have presented a phenomenon of alienation that people grow away from each other and have a growing sense of distance in the city. The space where people live exists everywhere, but there is nowhere to find the place that people really want to stay at and miss. In city life, people may pass by many familiar places that are actually strange to them, but it is difficult for them to find a certain strange but familiar place.

The city itself is not only composed of reproducible piles of concrete, steel, asphalt and glass but also the people who actually live in the city and give life to the city. The carrier of urban vitality is not completely brand-new buildings, but more about “old things” where people have stored their precious emotions and memories, just like a blank space without ink in Chinese painting and a “manifestation” that arouses endless aftertaste and association. In urban districts, there are many such “manifestations”, which have their own characteristics, but are dynamic, vague and all-inclusive. If a single spark can start a prairie fire, the convergence of “manifestations” is the successive integration of edge space from the urban perspective, and it is a vivid and orderly picture of dynamic living in the city. It is an important topic that needs to be considered in contemporary city observation how to discover and sustain the real vitality factors and the continual sense of place of urban edge space.

1.2 “Lost” or “Resurrected”: Tan Hualin’s “New” and “Old”

Not all the scenes of the edge space are dynamic and lively enough. In recent years, some urban block space has been blindly rebuilt or even dismantled and rebuilt, which also demolishes the good memory. People familiar with Tan Hualin may have such images and feelings in their minds that as they walk along the renovated Tan Hualin Main Street (Figure 1), they will always quicken their steps unconsciously to explore the space ahead. When they reach the end of Tan Hualin Commercial Art Street, and turn around the corner, it seems as if they entered another world (Figure 2). Although it is not as delicate as Tan Hualin Main Street here, it has its own traits with bustling crowds, steaming hot, incessant shouts, mixed conversation that is not so noisy, and uncontrollable looking around. But what is the reason behind such contrast? Is the renovated commercial main district really “new” and the old residential district really “old”? This paper will explore the vitality factors of the edge space of Tan Hualin Historic District, and exactly interpret its role in “dynamic city lives”.



Figure 1 Commercial District



Figure 2 Residential District

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2 Theoretical Research

2.1 Edge Space

“Edge” Space, What Is Edge? As American city planner Kevin Lynch said in “The Image of the City”, “Edge is a linear element that cannot be regarded as a path. It is generally the junction of two different areas, which is however not a must.” “Edge not necessarily cannot be passed through. Many edges are connected with each other to form a suture, but not isolated barriers.”^[1] In fact, there is no clear boundary in the edge space. In a broad sense, from the separation zone between cities and towns, the public overlapped zone between construction units, to the water system, streets, and building eaves gallery that connect various functional units in the city, they all belong to the edge space in terms of geographical location.^[2]

The edge space studied in this paper is a fuzzy transition field with inclusiveness and heterogeneity formed when the physical space of either black or white is enclosed or dislocated with each other in the urban district, and is a link that connects adjacent things with the main part. At the same time, the edge space here consists of horizontal elements and vertical elements, including not only material elements such as buildings, roads and squares, and spatial elements such as crowds gathered and activities, but also environmental elements such as ornaments and afforestation, as well as place elements such as signs and symbols.

2.2 "Field" and "Behaviors": Urban Edge Space and Crowd Place Behaviors

The link and heart of space, environment and behavior is human, and human behavior should be fundamental to designs of urban edge space. When we look at the edge space environment, we should not directly regard it as the physical environment, but as the environment that people see, hear and feel inside it, which can become the “behavioral environment” of users, that is, the “field” of the edge space.^[3]

Psychologist Derk de Jonge found that among all kinds of spaces, the edge space tends to be the place where people are most willing to stay. He put forward the “Edge Effect”, and through research found that the space where people would like to stay is the area with boundaries. Some places are favored by people, because the “field” of the place itself agrees with the “behavior and psychology” of people in the specific time and space. The spatial elements of urban edge space are closely related and correspond to the activities and stories that occur in its places.^[4]

From the perspective of environmental psychology, the edge space is consistent with place behaviors. Exploring the relationship between “field” and “behaviors” is also to study people’s behaviors in the places through what appears to be, and then to study the way people use the space, and further enlighten people about the types of construction of the edge space.^[5]

3 Research Objects and Contents

The research object is the urban edge space of Tan Hualin Historic District in Wuhan. Tan Hualin Historic District is located in Wuchang District, Wuhan, Hubei Province (114 ° 18 'east longitude, 30 ° 33' north latitude). The district which is rich in spatial forms is influenced by its profound historical and cultural accumulation and complicated evolution history, and has formed more sophisticated street textures and spatial forms. Historic districts include not only the main commercial street that has been continuously renovated and perfected in recent years, but also the original Tan Hualin residential districts, the so-called “urban villages”. In Tan Hualin Historic District, there are different levels of commercial and residential space for all social classes to live together.

This research is mainly based on field investigation. Tan Hualin Commercial District and Tan Hualin Residential District are divided into different research units of edge space configuration according to the distribution and characteristics of the edge space. The scope of investigation is from Desheng Bridge in the west to Zhongshan Road in the east. The edge space of Tan Hualin District roughly covers Tan Hualin Commercial District area and Tan Hualin Residential District area (Figure 3). The research unit of edge space configuration include representative space joints of the main street and representative places of Tan Hualin residential district, such as Desheng Bridge and Gejia Camp.

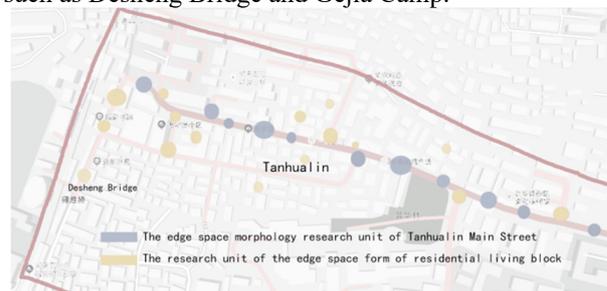


Figure 3 Distribution Map of Research Units of Edge Space Configuration

The investigation and research are conducted on sunny days, and avoid holidays to eliminate the interference of crowds. By recording the types, quantity and activity types of crowds at observation points, the author draws the spatial components and spatial diagrams of research units of the edge space. After collecting the research data, this paper analyzes the influence of the scale, configuration, as well as artificial and natural component factors of the place itself on environmental behavior and psychology.

4 Research Results

Here is a study on the edge space configuration of Tan Hualin commercial district and residential district and the environmental behaviors of the crowd.

4.1 Research Units of Edge Space Configuration of Tan Hualin Main Street Interface

The edge space units of Tan Hualin Main Street (Table 1)

are mainly linear paved roads, faceted gray space entrance platforms, shop signs, etc. The vertical elements are linear elements of trees, street buildings, indoor and outdoor linear green plants transition, etc. generally giving priority to material elements and environmental elements. From the spatial characteristics and human activities, it can be seen that the edge space of commercial districts usually presents a sense of partial stay, with clear boundary between indoor and outdoor spaces, lacking variety in spatial interfaces. Most people carry out necessary activities, which is monotonous and makes it difficult to truly form cohesive field space.

Table 1. Research Units of Edge Space Configuration of Tan Hualin Main Street Interface

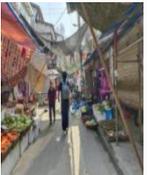
Edge space	Tan Hualin Residential District		
	Live pictures	Spatial characteristics	Crowd activities
Unit 1 Environmental Elements		Shop back to gray space and the other side of the interface relatively closed, with D/H between 1 ~ 2.	70% walking, 20% go shopping, and 10% stopping to watch.
Unit 2 Material Elements		Many cars in the street, gray space of shops, and the height-width ratio D/H of the street between 1.5 and 2.5.	80% walking and running, 15% watching pets outside the door and 5% stopping to watch.
Unit 3 Spatial Elements		The intersection between the main street and the residential district, relatively private with a sense of territoriality.	20% passing by in a hurry, 60% having a rest, and 10% taking a walk.

4.2 Research Units of Edge Space Configuration of Tan Hualin Residential District

In the research units of edge space configuration of Tan Hualin Residential District (Table 2), the horizontal elements are mainly food carriers, linear roadways, faceted gray space platforms, self-built living structures, etc.; while the vertical elements are self-built cloth-like ceilings, linear green plants transition between indoor and outdoor areas, residential houses, clothes drying rod, etc. Generally speaking, the edge space of Tan Hualin is composed mostly of spacial elements and place elements. According to the spatial characteristics and human

activities, it can be seen that the edge space of Tan Hualin Residential District presents various characteristics of residents' spontaneous construction, which makes it possible for people's multi-level spontaneous activities at different time periods.

Table 2. Research Units of Edge Space Configuration of Tan Hualin Residential District

Edge space	Tan Hualin Residential District		
	Live pictures	Spatial characteristics	Crowd activities
Unit 4 Place Elements		The shop in the front and residential houses at the back, excessive soft architecture elements of the interface, and the self-built sunshade scaffold.	20% walking by, 40% strolling and watching, and 40% stopping to talk and rest.
Unit 5 Place Elements		The "field" of culture and flavor of life is separated by one alley and at the same time presents two different worlds, with D/H between 1 and 2.	20% walking, 40% watching and drying clothes, 30% stopping to talk and rest, and 10% taking photos.
Unit 6 Spatial Elements		The intersections of Gejia Camp, the junction of residents and residential houses, and the space which is transparent and ambiguous.	20% passing by, 50% strolling and chatting with neighbors, and 30% conducting necessary activities

4.3 Comparative Analysis of “Field and Behaviors” of Tan Hualin Edge Space

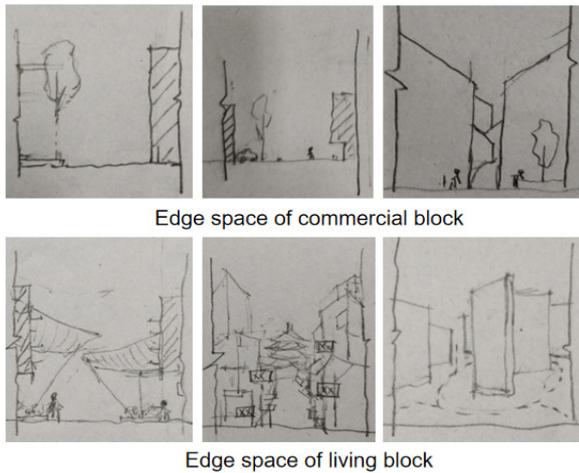


Figure 4 Comparison Diagram of Edge Space “Field”

Compared with the space configuration dominated by the side interface of the commercial district (Figure 4), the top interface spontaneously created by the residential district is the most striking aspect of Tan Hualin Residential District. Even in the hottest time of the day, it is shaded and ventilated because the top air-permeable curtain is left unlatched. As a food market in the street of Desheng Bridge, it is no longer a black or white space. Even if the space is formed by connecting buildings with the street, where the doors are open and the sight is unblocked, people do not feel crowded in it. Here, the edge of the field allows different fields to merge and differ, enhancing the sense of wholeness of residential districts.

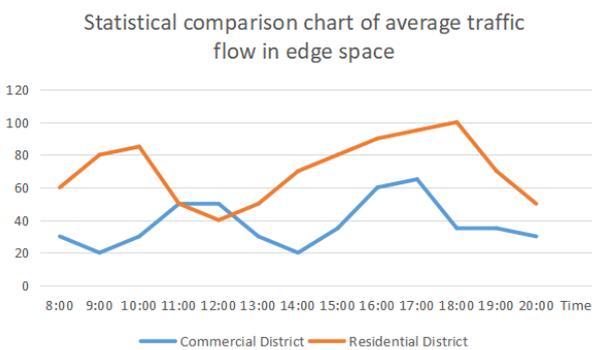


Figure 5 Statistical Comparison Chart of Average Pedestrian Volume in Edge Space

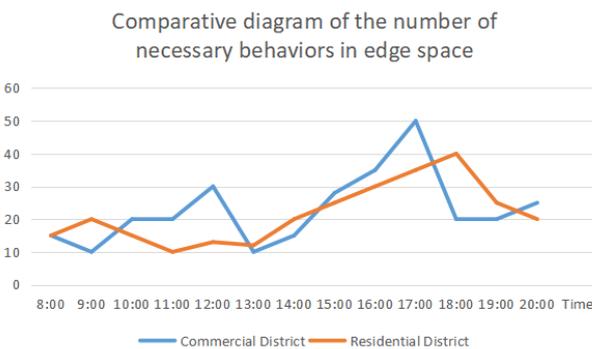


Figure 6 Quantitative Comparison Chart of Necessary Behaviors in Edge Space

Comparative diagram of the number of spontaneous behaviors in marginal space

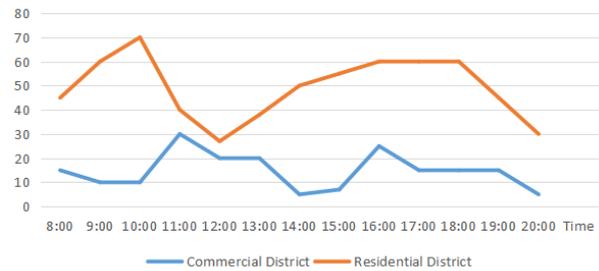


Figure 7 Quantitative Comparison Chart of Spontaneous Behaviors in Edge Space

According to the chart above, over the same period, the average pedestrian volume at each time node of the edge space interface of Tan Hualin residential district fluctuates between 40 and 100, and the average pedestrian volume of Tan Hualin commercial district fluctuates between 20 and 60 (Figure 5). The quantity of human activities in the edge space of Tan Hualin residential district is significantly higher than that in Tan Hualin commercial district. Although the number of people conducting necessary behaviors in the edge space of Tan Hualin residential district is equal to that of Tan Hualin commercial district at 8: 00, 13: 00 and 14.30 (Figure 6), the number of spontaneous behaviors fluctuates between 30 and 70, which is higher than that of Tan Hualin commercial district between 0 and 30 in almost all periods (Figure 7).

To sum up, compared with Tan Hualin commercial district, the variety and self-support characteristics of constituent unit of the edge space “field” of Tan Hualin residential district provide “intention” and “behavior and psychology” for crowd activities, and also make Tan Hualin residential district cover the vast majority of spontaneous daily behaviors of urban residents. With the subtle influence of this kind of environmental behavior, a more pleasant, desirable and dynamic space takes shape, and becomes a “vague” activity place that can meet the needs of people’s daily life.

5 Research Conclusions

5.1 Debate of “New and Old” - “Professional” Design and “Self-Construction” Design of Edge Space of Urban Blocks

Through the comparative study of the edge space components of Tan Hualin district, it is not difficult to see the reason why Tan Hualin main street and Tan Hualin residential district are two worlds separated by a corner. For Tan Hualin, most people focus on the study of various aspects of Tan Hualin main street, and ignore the exploration of the charm of Tan Hualin residential district. In fact, for Tan Hualin, what endows it with flavors of life and sense of belonging is not the markets full of goods in the main street, but the edge space of the residential district that is gradually fading from people’s memory. As the space that was supposed to be resurrected is gradually “lost”, the space that was supposed to be lost is

unexpectedly “resurrected”.

Tan Hualin main street has experienced waves of demolishing the old and building the new. Although it is “newly built”, it lacks the traces of life. Shops on both sides are closed, but in fact the edge could be seen at a glance. The “professional” design of Tan Hualin main street barely considers the real interaction between people.

The edge space of Tan Hualin residential district, the “old thing” where residents live, is already the extension of residents’ lives and the product of residents’ “self-construction” design. Life is actually about the residents themselves. Different lifestyles of the residents lead to different residential buildings. Residents let buildings have “the desire to grow” as they lead their lives which become dynamic element nodes (Figure 8), together forming a living system with history and memory, and displayed in the atmosphere of street wandering in sequence. Just like stories that the old man who lived in Tan Hualin for a lifetime told to others and remain silently in the memory of generations, we can feel real life here, with countless residents taking off their masks to show their true feelings, and showing the true desire for life after going through all the vicissitudes of life. It is the space of historical memory with flavors of life (Figure 9- Figure 10).



Figure 8 Streets



Figure 9 Roof



Figure 10 Façade

Looking back at the contrast between “New Street” and “Old Things”, Tan Hualin main street shows a strong sense of time and characteristics of homogenization, with strong personal subjective will and lack of sense of identity, forming a *gesellschaft* society that disregards tradition and emotional communication. In fact, the so-called physical renovation of Tan Hualin main street and the so-called “revitalization” of old buildings are not as good as the “revival” of urban residents. For Tan Hualin residential district, the flavor and low pace of life connect feelings, traditions and humanities with interaction and identity, forming a *gemeinschaft* society in which social forms exist in life and work.

5.2 The Vitality of Edge Space Without “Order” - A Continuous System that Grows Continuously and is Full of Emotion

The construction of the edge space of urban residential districts not only includes the space configuration, space scale and types of markers in the physical space, but more importantly is about the residents’ freedom of spontaneous construction behavior, as well as self-consistency between inner security and regional cultural identity. The type of edge space which is copied mechanically should not be advocated. Each region has its own unique style. The edge space of urban residential district that combines research

methods with local conditions is dynamic, has a sense of place, and can stimulate people’s true feelings and desire for communication. We don’t have to change ourselves in order to adapt to the living behavior of a building. Instead, the space should respond to the movement, needs, emotions and feelings of people, making people willing to live in it. This should be the real charm of edge space—a continuous system that grows continuously and is full of emotions. This also provides another way of thinking for people to analyze and understand the interaction between cities, buildings and residents, and to choose ways to shape cities, buildings and public spaces.

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