

A Study on the sustainable development of historic blocks based on urban catalyst theory

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Abstract

Through the comprehensive analysis of the renewal research on the sustainable development of historical blocks in the “City Catalyst Theory”, this paper analyzes the current situation of the old city facing the renewal and development of urban historical blocks. The “City Catalyst Theory” can play a positive possibility and a continuous linkage response. Through the adjacent and close relationship between the catalyst carriers, the whole region can be promoted to be sustainable. which finally provides a new way of thinking and method guidance for the protection and renewal of urban historical blocks.

Keywords: Urban catalysts, historical blocks, linkage response.

1, Foreword

1.1 Research Background

With the rapid advancement of urbanization, urban renewal and transformation are carried out at an unprecedented scale and speed. Historical blocks are a valuable legacy left in the historical process of the city. How to maintain the core needs of sustainable development has become the key problem and urban focus to urban construction. The city's historical districts have many excellent cultural heritages that have carried the historical changes. At the same time, they are inevitably facing conflicts with modern life. There are problems such as traffic congestion, public environmental health sanitation, and inadequate public facilities, which cannot satisfy the current state of modern lifestyle and city's rapid development.

1.2 Research purposes

How to update and renovate? The form, method, and strategy to activate are especially important for historical blocks that are on the edge of rapid urban renewal. Blind construction is not good for the protection and inheritance of urban historical blocks, and it is easy to lose the city's own characteristics.

1.2.1 The renewal pattern of protection of the historical blocks began to change from extensive to progressive.

In the process of protection and renewal of our historic district, we experienced a large-scale reconstruction from the spectral decay folk custom commercial street with a strong commercial atmosphere. However, although the protection is attached to it, the historical regions exist in isolation and lack in Sustainability and integration of protection and continuity between cities with rapid development.

1.2.2 Urban catalyst theory is becoming more and more widely used in China.

As an effective urban renewal strategy method, “City Catalyst” activates the surrounding area through point development through small-scale transformation or introduction of new elements without changing the physical space characteristics. The reaction between the original catalyst carrier and the catalyst medium is not simply a superposition of the two. The new catalyst carrier formed after the reaction has far more influence on the entire block than the two.

2, Literature discussion

2.1 Urban catalyst

Urban catalyst refers to each element in the urban environment. Because of the certain correlation between elements, it will affect or drive other elements to change. The book “Urban Urban Architecture – Catalysts for Urban Design” first mentions urban catalyst and defines urban catalyst as follows: it may be a hotel, a shopping district or a transportation hub. According to Wayne Otto and Don Logan, these are called catalyst buildings. An independent building can affect the entire area and ultimately realize the development of the entire city.

2.2 Catalytic effect

Catalytic effect refers to the process by which an active original catalyst carrier interacts with a catalytic medium. Among them, the introduced catalyst medium, like a catalyst, can stimulate the original potential vitality of the original catalyst carrier. This process is like a calm lake. When a speedboat passes by, it will naturally spread in ripples and spread gradually, which will affect the surrounding environment and require a new balance. Or, like the construction of a municipal office building, it will cause the appreciation of surrounding land. After the update, different types of catalysts can support each other and combine with each other. For example, transportation hubs can integrate catalyst carriers such as leisure business, business centers, and cultural exhibitions. Through a highly functional reorganization, it produces more active and powerful influences and actions.

3, Research Principles and discussion

3.1. Application Principles of Urban Catalyst Theory in Historic Blocks

After a long period of change and accumulation, the historical block has valuable historical protection value and also forms the unique space charm of the urban historical

block. At the same time, precisely because of the diversity and complexity of historical blocks, it is especially necessary to be cautious in protection and renewal. It is necessary to avoid blindly pushing down and reconstruction and avoid isolated protection. The involvement of urban catalyst theory through certain application principles and strategic-oriented intervention can avoid some irreparable losses in the process of urban renewal.

3.1.1.Regional principle

Historic districts are rich in cultural deposits, and because of their own complexity, they bring about regional differences. In the process of protection and renewal, attention should be paid to preservation and protection to ensure the uniqueness of the neighborhood after protection. For the protection of regional culture, it avoids in the early renewal process of historical blocks, deliberately pursuing a neat and uniform overall urban planning effect, resulting in same imagines of the city. The regional protection has also promoted and enhanced the reshaping and resource integration of the overall structure of the historical block.

3.1.2.Principle of diversity

The charm of different historical districts is derived from the rich diversity of functional formats in each historical district. The application of urban catalyst theory should be based on the characteristics, protection and continuation of these diversity, and oriented towards sustainable development. inject lasting vitality into the city.

3.1.3.Continuity principle

The continuation and protection of traditional culture is the source of the activation of historical blocks. Through the intervention of the urban catalyst theory, the construction of the site spirit in the space field of the historical block is carried out by means of the strategic method of The Times, so as to achieve the extension and inheritance of the historical context and avoid the phenomenon of cultural fault. With the help of the unique characteristics of the original historical architecture and the unique design method of designers, the city's catalytic media has created a revitalized urban space. These historical blocks have also become the catalyst source of the social vitality recovery in this region. The continuation and recovery of culture has brought about a transformation of the format, and the economic vitality has flourished, greatly enhancing the value and overall influence of the region. The overall environment of the historical block brings significant improvement.

3.1.4.Flexible control principle

With its foresight and growth, urban catalyst has become an important guiding strategy for the sustainable development of historical blocks. At the same time, unlike the previous urban planning strategies, in the renewal of urban historical blocks, there are also long timeliness, wide scope, and complex and diverse problems. If the initial and expected effects are deviated, they can be flexibly adjusted in time. The urban catalyst theory has a gradual development feature, and flexible local adjustment to ensure the development of the flexible controllable direction in the whole process. A segmented, gradual, and orderly

development model forms a virtuous circle of sustainable development of urban historical blocks.

4, Application of Urban Catalyst Theory in the Protection and Renewal of Historical block

4.1.Explicit cultural element shaping

4.1.1.Reconstruction of architectural culture

There are a large number of traditional buildings with historical value in the historical block Their style, material texture and color modeling have formed an intuitive form of existence, which has become an important embodiment of the explicit culture in historical blocks. As Wu Liangzhu said: "Culture is a sediment of history, which remains in the building and blends in life."

4.1.2.Street texture reconstruction

The texture in the historical block is generally characterized by the "garden-roadway-street". It can be achieved through the following four points: 1. The spatial texture principle of protecting the authenticity is mostly used for the district that has been divided into historical protection. 2, to strengthen the loose space texture, really many historical blocks are facing the current situation of material decay and renewal needs. 3. Repair the partially damaged area and repair it according to the original space texture. 4. Give a new spatial texture, create a new spatial order that conforms to modern life, and echo the regional features and cultural characteristics of the original blocks.

4.2.Reconstruction of steath cultural elements

The steath culture mainly exists in the ideology, and it is composed of festival activities, folk customs and so on. For example, dragon boat races, lion dances, temple fairs, lanterns, guessing riddles, etc., are represented by the natural environment, economic level, social environment, etc., and there are certain differences in different regions, which also creates colorful homestays. activities forming the regional cultures in different regions.

4.3.Characteristics of urban catalysts built in commercial block space

4.3.1.Regional characteristics

Under the torrent of the times, the emergence and prosperity of regional elements, from the perspective of urban urban culture, the observation and reflection of traditional culture and folk customs, it is a kind of cultural behavior that has accumulated profoundly. Pastoral scenery, nostalgia, and rivers and waters, these "historical genes" affect the urban construction, the layout of the neighborhood and the theme of the format. The design of public art should respect and integrate the natural and human environment formed by the long-term development and evolution of this region in the changing times. The urban landscape, natural features and vegetation of the city here closely reflect the many factors that the local people have in life and production, forming a field atmosphere with distinctive characteristics. Regionalism is like a catalyst. It reflects the high-quality spiritual culture in the overall appearance and pattern of the city with very important value and significance.

4.3.2. Ecological characteristics

From an ecological perspective, cities have complex and vast ecosystems. The city's pursuit of ecology reflects people's needs and desires for "idyllic cities". It is a breakthrough in the relationship between people and nature in ecological cognition, and it is the potential of people and nature. The ecological chain in urban blocks is especially sensitive and fragile, and the over-exploitation of business brings a boiling and noisy space, impetuous and boring. Public art works generally focus on ecology and sustainability. With a touch of green, climbing vines, flowing lawns, combined with topography, it adds natural mechanisms to urban streets, while focusing on ecological public art pieces, clever combination of functions, which not only optimizes the ecological environment, but also popularizes the public. the role of education and influence of the ecological cycle.

4.3.3. Participatory characteristics

In addition to the neighborhood environment, public art design should be a carrier and platform for mutual exchanges between citizens, and it is more participatory and continuous. In the case of the renovation of many old city blocks, it is often a grand occasion to become a government image project and face project. It has no connection with the surrounding merchants and citizens, and has become two parts of the split. Lack of participatory design does not result in spontaneous continuation and active maintenance. The topicality of the unique charm of public art works has successfully attracted people and improved the depression of the old commercial districts. While the surrounding merchants also activate and update their own business, they will spontaneously produce and improve these public works of art, and even creatively create new situations and functions.

5, conclusion and suggestion

As a gradual guiding strategy, urban catalyst theory can solve the complicated block problem in China to some extent. for example how to carry out the transformation of material space, realize the improvement of the space environment, how to reshape and activate the functional format, and realize the diversification of the function of the block function, how to carry out the restoration of the context, and realize the sustainable development of the historical block.

References

- [1] Jane Jacobs. *Death and Health in Big Cities of the United States* - 2nd Edition [M]. Yilin Press. 2006.
- [2] Thiersdel. *The Renaissance of Urban Historic District* [M]. China Building Industry Press, 2006.
- [3] Pu Yisan, Sun Meng. Research on Several Issues of Protection and Planning of Historic Streets in China[J]. *Urban Planning*, 2001,25(10): pp. 25-32.
- [4] Zhang Qibang, Ma Wuding, Space-time-degree: research on the basic problems of urban renewal [J]. *Urban Development Research*, (4): 2006.pp. 46-52.
- [5] Ren Shaobin. Conflict of interest and planning coordination in urban renewal [J]. *Modern Urban Studies*, (1):2011, pp. 12-16.
- [6] Zheng Lijun. Research on dynamic protection of historical blocks [D]. Tianjin University.2004.

