

Research on the Protection and Micro-Remodeling Practice of Historical Streets and Alleys from the Perspective of Urban Renewal

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Abstract: Historical streets and alleys not only carry the urban spatial memory and regional cultural characteristics, but also face practical problems such as building aging, weak facilities, functional decline, and insufficient living environment quality. Under the guidance of protection, micro-renovation emphasizes promoting the renewal of historical streets and alleys through small-scale, gradual, and low-intervention methods, achieving the coordinated unity of style protection, functional improvement, and community vitality reformation. This paper, from the perspective of urban renewal, analyzes the connotation characteristics, basic principles, and practical paths of historical street and alley protection and micro-renovation, and proposes that the renewal practice should be systematically advanced from aspects such as spatial texture restoration, infrastructure improvement, cultural exploration and inheritance, business optimization, and community creation. On the basis of continuing the historical cultural heritage, the livability, accessibility, and public nature of the streets and alleys should be enhanced, providing practical references for the protection and renewal of historical streets and alleys.

Keywords: Urban renewal; Historical streets and alleys; Protection and utilization; Micro-renovation; Living inheritance

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1. Introduction

As urban renewal enters a new stage that focuses on optimizing the existing stock and enhancing quality, the renewal of historical streets and alleys is no longer suitable to be carried out through simple demolition and construction or overall reconstruction. Instead, it should be realized through micro-intervention, gradual and sustainable renovation methods, respecting the original layout and historical style, and achieving functional repair and value activation. On one hand, historical streets and alleys generally have problems such as outdated infrastructure, insufficient public space, and poor environmental quality; on the other hand, their spatial layout, architectural form, and folk culture have irreplaceable protection value. Therefore, how to coordinate protection and development, inheritance and utilization, improvement of people's livelihood and

continuation of the cultural heritage has become an important issue in urban renewal.

2. Characteristics of historical street and alley protection and micro-renovation

Historical street and alley protection and micro-renovation first exhibit a distinct “priority of protection, mainly repair” feature. Historical streets and alleys are different from general urban renewal areas. Their core value not only lies in land use and spatial function, but also in carrying the urban culture, life memories, and regional style. Therefore, the renovation should not be mainly based on large-scale demolition and reconstruction, but should emphasize the continuation of the original street layout, historical building form, spatial scale, and environmental atmosphere. During the implementation process, often through small-scale means such as repair, restoration, patching, and renewal, the damaged interfaces, old facilities, and local spaces are optimized to achieve quality improvement while maintaining the authenticity of the street. Moreover, historical street and alley protection and micro-renovation have the characteristics of “small scale, low intervention, and gradualism”. Compared with traditional large-scale renovation, micro-renovation pays more attention to adapting to the current situation of the street alley, avoiding the impact on the historical environment caused by one-time, strong-intervention construction, and usually adopts a phased, regional, and node-based approach. For example, first carry out partial updates to the road paving, drainage and lighting, facade style, and public nodes, and then gradually extend to courtyard renovation, business adjustment, and cultural display. This approach is conducive to controlling construction costs and construction impacts, and also leaves space for subsequent evaluation and dynamic optimization, making the renovation process more flexible and sustainable. Furthermore, historical street and alley protection and micro-renovation have the composite feature of “prioritizing people’s livelihood improvement and cultural inheritance”. Historical streets and alleys are not static display spaces, but important places for residents’ daily life. Their renovation should not only focus on the restoration of visual appearance, but also pay attention to the improvement of basic functions such as water supply, drainage, fire protection, electricity, accessibility, and garbage collection, effectively improving the living environment and usability. Finally, historical street and alley protection and micro-renovation also have the feature of multi-party collaborative participation. Street alley renovation often involves multiple parties such as the government, residents, merchants, design teams, and social organizations. It is necessary to form a collaborative mechanism in protection control, function implantation, interest coordination, and subsequent operation to achieve the organic unity of historical street alley protection, functional improvement, and community vitality enhancement ^[1].

3. Principles for the protection and minor renovation of historical streets and alleys

3.1. Principle of authenticity and integrity protection

The protection and minor renovation of historical streets and alleys should first adhere to the principle of authenticity and integrity protection. This is the basic prerequisite for carrying out the renewal practice. Authenticity mainly refers to the preservation of the original spatial layout, architectural form, material texture, historical style and cultural information of the street and alley, so that the historical street and alley loses its original charm. Integrity emphasizes that the protection of a single building or a certain node cannot be isolated, but the spatial continuity, style coordination and cultural connection of the street and alley as a whole should be maintained, including street scale, courtyard relationship, interface characteristics and the

overall connection between the surrounding environment. Priority should be given to repair, maintenance and patching methods to carry out necessary rectification for damaged areas, preserve and present historical traces, and minimize large-scale demolition and excessive renewal, achieving “restoring as it was” rather than “restoring and transforming into something new”, so as to ensure the real continuation of the spatial form and cultural value of the historical street and alley.

3.2. Principle of people-oriented and progressive minor renovation

The renewal of historical streets and alleys is not only a process of spatial restoration, but also an important practice for improving residents’ living quality and optimizing community functions. Therefore, it is necessary to adhere to the principle of people-oriented and progressive minor renovation. Historical streets and alleys usually still undertake multiple functions such as residence, passage, interaction, and business. The renovation should not only focus on landscape improvement and facade restoration, but also pay attention to the most realistic living needs of residents, such as road accessibility, smooth drainage, safe lighting, clean environment, and convenient facilities, to effectively improve the comfort and safety of street and alley use. Minor renovation should avoid one-time, large-scale, and strong-intervention renewal, and prevent damage to the original living order, social relations, and historical environment. Based on the current situation of the street and alley and the urgency of problems, it should be advanced in stages, regions, and levels, starting with filling in the shortcomings, then improving the environment, and finally shaping the characteristics. It should be adjusted and optimized continuously in the dynamic implementation process ^[2].

3.3. Principle of dynamic inheritance and sustainable development

The protection and minor renovation of historical streets and alleys should also adhere to the principle of dynamic inheritance and sustainable development. Avoiding the simple understanding of historical streets and alleys as static display objects, the renewal practice should not only protect the physical space, but also pay attention to the continuation of intangible culture and daily life scenes, so that the historical street and alley can continue to play a role in real life. It can enhance the life atmosphere and cultural identity of the street and alley by retaining traditional residential functions, continuing local business formats, embedding cultural display and community activity spaces, etc. At the same time, sustainable development also requires considering economic affordability, social fairness and environmental coordination in the renewal process, avoiding excessive commercialization, over-tourism, which may lead to the loss of original residents and the hollowing out of the street and alley. Only by achieving a balance of protection, utilization, inheritance and development can historical streets and alleys truly regain long-term and stable vitality in urban renewal.

4. Practice paths for historical street alley protection and micro-remodeling from the perspective of urban renewal

4.1. Restoration of street alley spatial texture and appearance

In practice, one should start from the overall layout and focus on protecting the original direction, width scale, courtyard relationships, node spaces and building interfaces of the street alleys. Avoiding the random widening of streets, demolition and modification of courtyard walls or reshaping of facades just to achieve uniformity. For dilapidated buildings and street interfaces that have been neglected for a long time, the approach of “minor repairs and patchwork updates” should be adopted. For instance, classify and rectify

problems such as roof damage, wall cracking, distorted doors and windows, and aging pavement; try to retain the original materials, colors and construction methods; pay attention to restoring the order of the street alley public space. By removing illegal constructions, organizing store signs, optimizing the street interface, restoring traditional alley entrance signs and street corner nodes, and enhancing the overall visual continuity and spatial recognition. For the parts that need to be updated locally, a dialogue between new and old can be adopted by controlling the volume, material and color relationships to ensure a scale coordination with the historical environment. While preserving the unique spatial rhythm of the historical street alleys, it also enhances their recognizability and accessibility in contemporary urban life.

Taking the renewal of a certain historical and cultural district as an example, the main street of this district is approximately 420 meters long, and the width of the street alleys is mostly between 3.5 and 5.0 meters. There are 68 traditional brick and wood or brick and concrete buildings on both sides. However, there have been problems such as unauthorized construction, chaotic store signs, local facade damage and inconsistent street pavement over a long period. During the renewal process, the historical texture of the street alleys was first mapped and sorted out, and the original width and turning points of the alleys were clearly retained. 23 temporary structures that affected traffic and appearance were demolished. Then, the buildings along the street were classified for repair. For the facades with high preservation value, local brick patching, joint repair, wood component reinforcement and old door and window restoration were carried out. For the parts that were later added and had conflicting styles, hidden rectification was carried out. The ground pavement adopted a graded approach of main street stone slabs and branch street permeable bricks. At the alley entrances, the old street name signs, traditional wall paintings and small rest areas were restored. The overall spatial continuity of the street alley was significantly enhanced, the original living scale was retained, and residents and tourists could more intuitively feel the historical style of the district.

4.2. Improvement of infrastructure and enhancement of environmental quality

Improvement of infrastructure and enhancement of environmental quality are the most direct paths in the micro-renovation of historical streets and alleys that directly relate to the residents' sense of gain and the sustainable use of the streets. In practice, the principle of "prioritizing implicit renewal and focusing on filling functional gaps" should be adhered to. Infrastructure such as water supply, electricity, communication, gas, lighting, and fire protection should be included in the overall renovation plan, and key issues affecting the safety and environmental hygiene of residents' lives should be prioritized for resolution. For example, through rainwater and sewage separation, undergrounding of weak current lines, minor street renovations, supplementary lighting at nodes, reorganization of fire access routes, and embedding of micro-convenience facilities, the operational capacity of the streets can be enhanced. In terms of environmental quality, through pocket space organization, wall cleaning and repair, greening, addition of rest facilities, and optimization of garbage classification points, the comfort and tidiness of the streets can be improved.

Taking a traditional street renovation project in an old urban area as an example, this area has over 560 permanent residents. The original drainage pipes in the street were of small diameters, resulting in many water accumulation points during rainstorms. The overhead power and weak current lines were intertwined, and the average night illumination was less than 8 lx. The fire-fighting facilities were not well-equipped. The most common problems reported by residents were "difficult access, messy environment, and unsafe living conditions". The project team, based on the original road section, implemented segmented updates,

buried about 780 meters of rainwater and sewage separation pipelines, raised the main alley lighting to 20–30 lx, added wall-mounted lighting and directional signs at 6 nodes, and simultaneously reorganized the overhead cables along the street. Using a “partial undergrounding + wall-mounted concealed laying” method to reduce visual interference, 4 micro-rest areas and 2 garbage classification collection points were set up at street corners and small open spaces, and fire extinguisher boxes, fire hydrant signs, and emergency passage guidance facilities were supplemented. The drainage and night traffic conditions of the streets have significantly improved, and the environmental cleanliness and residents’ satisfaction have significantly increased. The renovation of historical streets and alleys should not only focus on “visible facades”, but also through invisible but useful infrastructure renovations, truly enhance the quality of the street life and long-term operational capabilities^[3].

4.3. Exploration and live transmission of local culture

Exploration and live transmission of local culture is an important path in the protection and micro-renovation of historical streets and alleys to “retain the cultural roots and continue the place spirit”. In urban renewal practices, systematic review of the historical evolution, local memories, and cultural symbols of the streets should be conducted, and representative cultural elements should be extracted and transformed into part of spatial display, public activities, and daily use. Specifically, through restoring old street names, setting up oral history display points, preserving traditional shop signs, showcasing local craftsmanship processes, introducing cultural experience activities and community festivals, the street culture can evolve from “textual records” to “life reproduction”. At the same time, the original residents, old merchants, folk artists, and community organizations should be encouraged to participate in cultural dissemination, allowing the street culture to naturally continue in real-life scenarios.

Taking a traditional street renovation project in an old city as an example, this street has a history of over 100 years and once long-term gathered local pastry workshops, bamboo weaving shops, and traditional festival parades. However, with population mobility and commercial relocation, these cultural contents gradually faded. In the micro-renovation, the project team first conducted oral interviews with 18 old residents and 12 old shops in the street, sorted out materials on the formation of the street, industry distribution, traditional festivals, and folk skills, and based on this, extracted three cultural themes: “Old Skills, Old Taste, and Old Street Names”. Six small cultural display nodes were set up along the main street, embedding old photos, industry stories, street names, and craftsmanship processes in simple ways on the walls and shop windows. Two traditional pastry shops and one bamboo weaving workshop were retained in their original operating positions, guiding them to open part of their production displays during daily operations. The community also revived small-scale folk processions and neighborhood market activities in conjunction with traditional festivals, preventing cultural inheritance from remaining merely in static displays. The recognition of street and alley culture has significantly improved, residents’ sense of identification with the local history has strengthened, and tourists can also experience the cultural connotations of the place in real-life scenarios. Thus, the streets and alleys have achieved an extension from “space restoration” to “cultural regeneration”^[4].

4.4. Optimization of business models and enhancement of community vitality

The optimization of business models and the creation of community vitality are the key steps in the micro-

renovation of historical streets and alleys, moving from “formal renewal” to “functional activation”. In urban renewal, the principles of prioritizing protection, moderate functionality, and life orientation should be adhered to. Selective optimization and configuration of street and alley business models should be carried out. On one hand, priority should be given to preserving basic functions such as convenience retail, small restaurants, repair services, and community activity spaces that are closely related to residents’ daily lives, maintaining the street and alley’s “livable, usable, and accessible” nature. On the other hand, in line with the historical and cultural characteristics of the street and alley, cultural experiences, creative retail, specialty bookstores, handicraft workshops, community exhibitions, and light leisure business models can be moderately implanted, but the business scale, decoration style, and operating intensity should be controlled to ensure their coordination with the street and alley’s spatial scale and community carrying capacity ^[5].

Taking a historical street and alley improvement project as an example, before the renovation, there were 41 storefronts along the street, among which 9 were vacant. Some business contents were low-end and repetitive, lacking uniqueness and unable to meet residents’ daily needs. During the renovation process, the project did not simply introduce a large number of restaurants and trendy stores. Instead, based on the street and alley’s scale, resident distribution, and cultural characteristics, the storefront functions were classified and guided. 16 convenience business models such as community breakfast shops, grocery stores, and repair points were retained to ensure basic life services for residents. 8 vacant storefronts were introduced with local handicraft stores, community reading spaces, intangible cultural experience rooms, and small tea shops, with each store area controlled at around 20–40 square meters to avoid large-scale commercial buildings squeezing the street and alley space. In an idle courtyard, a shared courtyard and residents’ discussion space were implanted, and regular activities such as handicraft markets, neighborhood festivals, and small cultural lectures were held. The daily flow of the street and alley increased significantly compared to before the renovation, but the overall life rhythm remained stable. The original residents were not marginalized. The street and alley had both a sense of warmth and certain cultural appeal. The optimization of the business models of historical streets and alleys is not about “introducing how many new businesses”, but whether it can form a street and alley vitality system that takes into account residents’ needs, cultural expression, and continuous operation on the basis of protecting the original community life ^[6].

5. Conclusion

In the context of the continuous deepening of urban renewal, the protection of historical streets and alleys and their micro-renovations have become an important path for preserving the urban cultural heritage, improving the living environment, and stimulating community vitality. Compared with large-scale demolition and reconstruction, micro-renovation places greater emphasis on protection as the premise, people’s livelihood as the foundation, and culture as the bond. While preserving the spatial texture and historical features of the streets and alleys, it also achieves functional repair, quality improvement, and dynamic inheritance. In the future, a multi-party collaborative mechanism should be improved to promote the protection and renovation of historical streets and alleys towards a more refined and long-term direction.

Disclosure statement

The authors declare no conflict of interest.

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