

The renovation of the applicability of old residential buildings under the intensional growth of urbanization

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Abstract

In the urban development context of the transfer of the completed amount of urbanization process, the authors paid attention to the old residential areas, taking the architectures in old residential areas as research objectives, and put forward some suggestions from the renovation of the applicability and 'the old fitness' of the external facades.

Key words: *old settlement architectures; applicability renovation*

1 Introduction

While the urbanization process in our country has gradually shifted from initial quantitative transfer into qualitative change and the urban development process has been diverted from extensional expansion into intensional growth, more and more urban built-up areas, the old urban areas in particular, are facing transition of planning ideas. The quantity of old residential areas possesses considerable proportion in the urban residential areas in our country¹. During the development process of urban outer expansion, original residential areas were retained in the vicinity of urban centers. These areas are generally comprised of multi-storey buildings, where the usage duration of buildings and environment are more than 20 years. The merits of such residential areas reflect in: the advanced bus lines and dynamic traffic conditions in the surroundings; the integrity of urban-level service facilities; and the convenience of residents' daily lives. Meanwhile they also face the following problems — dilapidation of housing facilities, the degradation of functions, the missing of static transportation, the insufficiency of supporting facilities and etc. As part of the city, the existence status of old residential areas has significant influence on all aspects of urban development. Exerting renovation on these areas not only preserves the value of the old residential buildings themselves or lifts the residents' living conditions, but also meets the demands of urban development to further extent.

2 The removal of illegal constructions

The general duration of the construction and usage of residential areas with old appearance in urban areas are over 20 years. Though they have superior geographic locations and are close

to all levels of urban public service facilities, the life inside the areas is disconnected with the surrounding urban environment and the comfort of living has been lowered due to the degradation of functions of the buildings themselves and the interference of the internal space caused by artificial factors.

During the long-term use, there have been illegal structures due to multiple reasons, which form various sorts of long-term or temporary houses and shacks. These illegal buildings not only encroach public space, making residential areas narrow or dark, passages narrow down, and causing potential risks on fire control and evacuation, but also create ventilation or natural lighting problems for other tenants. In the process of reconstruction, the illegal structures should be demolished to revert the public space and restore the distressed road.

After the demolition of illegal structures, such space will be opened up and integrated into the public space of the settlements in order to make 'urban darning'¹². A number of seats will be placed in sunny positions of the public space that allow residents to stay in outdoor environment, so that residents can watch others' activities as to participate in public lives; sunshade plants facilities should be placed at the seat sites. Children playgrounds and facilities missing in the old areas should also be added.

3 Transformation and renovation of the exterior facade

Because of the long period of time after construction, many buildings' surfaces in the old residential areas appear damage in outer walls, difference in rendering, weathering in local members and alteration of windows and doors without permissions. At present, the domestic facade renovation has three ways:

- a) the combination of facade renovation, energy-conservation and thermal-insulation transformation.
- b) the combination of facade renovation and auxiliary facilities transformation .
- c) the cosmetic treatment of residential facades without functional change.

The specific transformation methods are to propose concrete suggestions for facade renovation that can be based on the needs of the reconstruction of the old residential areas. The general transformation is to combine the facade renovation with the promotion of energy-saving, flat-to-sloping change as a mature method for instance that can improve water leaking, thermal insulation and other issues of the roof in different degrees.

In cosmetic treatment, how to change the facades of the old buildings into elegant visual image through convenient ways as to enhance the quality of urban design in regions where such residential areas locate is the focus of the exterior facade renovation. The completion status of the facades is determined through the harmony of composition, the confirmation of control lines, and color analysis. As for the old residential areas with street shops, attention should be paid on re-planing of the signage along the line, and the regulation of the signage is supposed to meet its special demands as the second contour of the building, but not to make business uniform and lack of identification through planning and design.

4 Infrastructure improvements for the elderly

Doing moderate exercise, communicating with each other and doing other outdoor activities are of great help to senior citizens' physical and mental health, accessibility should be achieved within the residential areas. For instance, by setting up barrier-free facilities at the entrances of residential buildings and adding elevators in multi-storey residential buildings to fully reflect 'people-oriented' care and the concept of 'sustainable development'.

In the old residential areas, there usually have only steps but no ramp at the entrances of the units. Ramps can be added along with improvement of the barrier-free facilities at the entrance of the residential buildings. In today's aging society, the construction of the ramps is not easy to be well-considered and perfect due to limited environmental conditions. In the consideration of a large number of senior citizens in the residential areas, according to principles of low risk and light physical exertion, the ramps should adopt gentle slopes and reduce height to obtain security and practical protection. In accordance to the recommended values in Residential Building Design for Aging Society, the slope of each ramp should be controlled below 1:16; the length should be below 8000mm; and the height should be below 500mm. The net width of the ramp should be no less than 900mm when arranged separately, and should be no less than 1500mm when facing the public inlet and outlet.

As the old residences were built at that time without taking the problem of additional construction of elevators into account, no room was reserved for it. According to the architecture design standards for aged people, the elevators should be set on four or higher floors, and elevators may be added in the old residential buildings in accordance to the wishes of the residents³. The installation of elevators will affect the major structures of residential buildings — if the structure is irrational after the additional construction, there may cause security risks. The installation of the elevators will also change the plane structure of the original residences, which may affect the ventilation and lighting conditions of some households. Therefore, the installation of elevators must be delivered to organizations for evaluation and design systematically to ensure the normal use of the installed dwelling units.

The additional construction of elevators is to make the trip of the residents in old residential areas more convenient and safe, so the elevators to be added should meet the demands of barrier-free design and 'old fitness' and should not occupy the original traffic space. At the same time, the installation of elevator facilities should take consideration of the demands of actual use of the old in space design, such as the necessary space for crutches or wheelchairs

5 Increase activity grounds

On the premise of not affecting the residents' resting life, increase the concentration of residents' activities, improve the public use of residential area. Clearing the occupied space of public space, removal of illegal structures and temporary structures, return the public space to the residents for public use, refusing to occupy or misappropriate public space by residents. Forming and hardening the vacant land in the residential area, providing the sports ground for

the residents to exercise, and providing the place for the residents to exchange.

6 Conclusions

The development of cities is dynamic, which is reflected not only in the remarkable traces of development in the urban built-up areas, but also in the relics of urban construction activities in the course of history. Today, with the process of urbanization having entered the 2.0 mode, developing a city, or planning a city should not only conduct development of new areas, but also pay close attention to the areas that quietly support the development of old districts and the new districts⁴. To Transform such areas, to update such areas, to give such areas vitality and ability to synchronize with the surrounding environment and to meet the pace of high-speed urban development, and not to be laggard, not to be forgotten, are the turning directions of current planning methods and planning ideas.

References:

1. *Yang Qingzhi*, The Feasibility Research of the 'Old Fitness' of Old Residences in Changsha City, J. Journal of Hunan University,01(2011)90-95.
2. *Zou Bing*, A Transition from Incremental Planning towards Inventory Planning: Theoretical Analysis and Practical Application ,J.Urban Planning. (2015)145-150.
3. *Wang Ruyuan*, Literature Review of the Renewal of Cities in Western Countries ,J. Journal of China West Normal University (Philosophy and Social Sciences Edition),03 (2004)57-61.
4. *Zhao Yanqing*, The Urbanization 2.0 and The Transition — An Interpretation of a Two-stage Model, J .Urban Planning. (2017)87-91.