

Study on the Renewal Project of Chinese Historical Industrial Settlements Built under the Soviet Union Socialist Ideological Trend in the 1950s

——taking Xiangtang housing community of mining machinery factory in Taiyuan, Shanxi province as an example

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ABSTRACT: This study discusses the significance of protecting historical industrial settlements from different aspects include culture, society and economy; furthermore, it analyzes the causes of these historical settlements, generalizes the essential characteristics of the settlements, and carefully analyzes the problems of the settlements under current situation. Focus on those problems, this study takes the Theory of Four Dimensional City as reference and presents principals and strategies for the renewal protection of the historical settlements. It describes the process of planning practice in detail through a specific example built under the soviet model in the initial post-liberation period.

KEYWORD: historical industrial settlement; the soviet model; renewal research

1 THE SIGNIFICANCE OF CONSERVATION AND RENEWAL

Supported by the Soviet Union, Chinese historical industrial settlements were built along with the industrialization in the early days of New China. Through unified planning and construction, these settlements were built under both China and Soviet Union ideological trend of planning and architecture. With the changes of urban functions as well as relocation of industrial zones, these settlements are being dilapidated and may eventually be demolished. In order to maintain the cultural characteristics and the special memory of the city, it is of great significance to study on the renewal and conservation work.

(1) From the aspect of culture, these typical historical settlements can be regarded as the carrier of the people's memories of city's development. Lewis Mumford compared the urban space to a container in his work <The City in History>: "The city is a special kind of structure from its beginning, which is designed to store and spread the achievements of human civilization." Undoubtedly, to protect and renew this container is to keep the city context, increase the sense of history and enrich the city culture[1]

(2) From the aspect of society, residents living there are low-income families with sharp living contradiction, it is urgent to improve their housing conditions. To reconstruct the residential district is

an efficient way to relieve the living pressure and improve their housing conditions at the same time; it can also embody social equality to the greatest extent.

(3) From the aspect of economy, conservation and reuse of the existing buildings have several advantages: it can extend the building service life and avoid the waste of resources caused by demolition and reconstruction; it can solve the living problems for the residents within a short time at low expenses, which conform to the general plan of city's sustainable development; these buildings can be made into a new growth point in city's cultural tourism.

2 ANALYSIS OF CHARACTERISTICS AND PROBLEMS

After New China was founded in 1949, according to the world situation then, the Chinese government decided to choose the "Only on One Side" national strategy: take the Soviet Union as the example to develop New China and learn from its successful experience on socialist construction. China introduced a large variety of another country's theories on politics, economy and the culture thoroughly in a short time (ZOU Denong, 2001) [2]. As with other fields of the society, the field of Urban Planning was also involved in the road of imitating "the Soviet Union planning mode".

2.1 Study on the Characteristics

2.1.1 Profound Influence of the Soviet Union Planning Ideological Trend

2.1.1.1 The Soviet Union Classicism

The Soviet Union changed its construction policy in a conference in the early 1930s, and classicism became its construction flavor again. City development of the Soviet Union had been put off because of World War II, after the war, classicism became the mainstream ideology in urban construction. The essence of classicism was to take well-ordered magnificent landscape as the symbol of unshakable centralization. It was the characteristics of classicism that emphasized on overall planning, clear master-slave relationship, harmonious and well-arranged style. It would guide the transition by a towering marker and establish a strong visual system for the whole city[3].

The industrial residential districts in China at that time were influenced deeply by the Soviet Union planning mode. Large-sized public construction was built along the road axis in the center, huge and grand, which symbolized the superiority of socialism. Along with the square in front it, the club in distinctive Soviet Union style of Xiangtang housing community is the largest public building there, which becomes the central junction. The public service facilities around the club are an important carrier of community activities; it is the center for residents to play and community interaction.

2.1.1.2 Theory on Neighborhood Unit Planning

The theory on neighborhood unit planning was the mainstream ideology[4] of urban construction in the Soviet Union in the 1950s. Those communities of mining factory which involved experts from the Soviet Union in the construction would always adopt their drawings of planning and construction design, and sometimes they would even directly adopt the package of designs of workers communities in their own country. In this way, the theory on neighborhood unit planning was copied into China. According to the theory on neighborhood unit planning, Xiangtang community was built with store, cafeteria, primary school, hospital and club. There are large green and rest areas among the buildings, and commercial accessorial buildings usually can be found on both sides of the green area which are close to the cross roads; the peripheral urban arterial roads surround the community into an independent area.(Figure. 1)



图例 保护建筑 保留建筑 保留统一建筑 新建居住建筑 新建公共建筑

Fig.1 Community comprehensive plan. This drawing is painted by the author

2.1.2 Inner Courtyard of the Residential Group Surrounded by Building

The overall arrangement of Xiangtang community imitates the Soviet Union community in the same period which is in pursuit of “the inner courtyard”. All the entrances and exits of the buildings are open to the inner courtyard. There are washrooms, kitchens, even stairwells facing south, which lose part of their practical functions. Buildings are located along with the road and most of them are facing east or west. Although the buildings can stop the cold wind from the inner courtyard, this kind of layout missed the fact that building orientation should avoid the coldness in certain regions. In order to avoid western exposure to the sunshine, there are a number of units located at the corner of the buildings, which also lead to many problems of layout and structure design. The concentric inner courtyard can create the atmosphere of a harmonious socialist large family, and it enlarges the green and rest area of the community. The community would be filled with happiness which fit people’s desire for the socialist life very well. (Figure.2 and Figure.3)

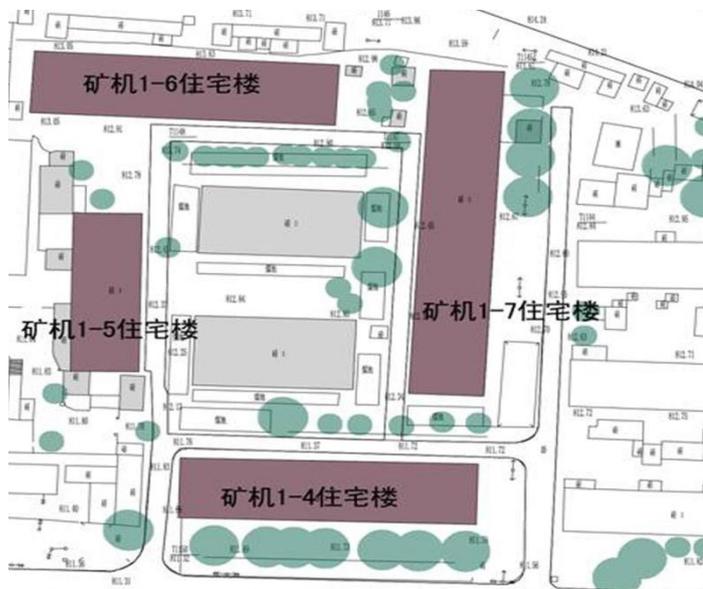


Fig.2 Mill housing group general layout. This drawing is painted by the author



Fig.3 Mill community historic building Indoor floor plan. This drawing is painted by the author

2.1.3 Public Space under Collective Intervention

Among the communities of mining factories built in the early days of New China, people's activities in spare time were organized by collective. Regular activities for the residents included sports meeting, singing contest and Spring Festival Gala. The residents were the factory workers whose ideas could be highly uniformed through these social activities, and their enthusiasm of production could also be lighted. Therefore, the club, cinema and playground became the public space for social activities under collective intervention; these places were highest ranking area in the community at that time. Nowadays, because of the reform of the factory, activities are no longer organized by collective, group activities become less and even stop. That's why many public spaces are dilapidated, such as the club and the lighted court in Xiangtang community.

2.1.4 Classicism Architectural Style in the Soviet Union

Xiangtang community was a housing group built in the 1950s; most buildings adopted the classicism architectural style in the Soviet Union or added some traditional Chinese architectural decorative details based on Soviet style. Generally speaking, the roofs were pitched ones with dormant windows built of grey tiles while the walls were plain brick walls. Eaves, windows, doors are cement plaster moulding. Most of the units have coupon pillar openings, the walls above which are in white relief. The windows have moulding, and the balcony railings are made of metal, while the lower cantilever beam has a spiral-shaped ends which is exquisite. As for the layout design, the Soviet Union accumulated experience from the construction of affordable housing, they increase the depth and decrease the span in order to lower the price and make best use of land. They take different measures: turn dining room into corridor, make smaller windows, establish thicker walls and build brick structure to avoid the waste of steel and cement. (Figure.3 and Figure.4)



Fig.4 the Soviet Union building style in mill community. The source of the picture: Xinhua News Agency

2.1.5 Function-Oriented Community Landscape

Influenced by the Soviet Ideological Trend, landscape construction is function-oriented. These industrial residential districts have decorations focused on the central parts and housing groups, while only normal and fast-growing trees such as poplar and sycamore are planted along both sides of the road. As for the construction of landscape facilities, each node of the landscape has its own facilities built to meet the demand, such as rest-chairs and entertainment equipment for children, and those facilities have little decoration. Nor complicated decoration or special building materials can be found in the floor covering, practical function

are taken into consideration in the design and materials of floor covering, which also reflect the fact that community landscape is function-oriented.

2.2 Study on Current Problems

2.2.1 Think about the Existing Problems of the Community from the Perspective of Historical Block

(1) The problems of construction quality: the historical block of mill dormitory was built in the 1950s, after about sixty years, they have approached its service life. Being long neglected and in disrepair, problems emerged in some buildings, for example, cracks in the wall, roof crush and leaks, foundation subsidence.

(2) The problems in environmental features: with expansion of the factory and the increasing population, temporary buildings have been gradually built since the 1970s. Those five buildings stood among the historical housing group caused a serious damage of the design structure of the community. In addition, some six-storey slab-type apartment houses which were built in the 1980s and 1990s, in large scale with humble appearance, they didn't coordinate with the landscape of the historical block.

(3) The problems of cultural landscape: The loss of community activities under collective intervention and the situation of resident diversification lead to the disappearance of the characteristic humanities developed under the influence of Soviet Union Ideology Trend. If the community was compared to a man, it now has already lost its soul.

2.2.2 Study the Problems from the Perspective of Modern Community

2.2.2.1 The problems on infrastructure

The development of some infrastructure of the community is in serious lag, pipelines aging, back-flushed waste disposal happened in some buildings, and there is a marked lack of kitchen and toilet facilities.

2.2.2.2 The problems on living environment

So far, there are 353 families living in 14 temporary buildings of poor quality and small size, of which the communal kitchen and toilet facilities are dilapidated.

2.2.2.3 The problems on transport facilities

With the reform of the community system, the closed inner environment has been changed, and inner public service facilities have been open to the outside world, which increases the stress of traffic to the north street of Xiangtang community; what's

more, it results in a severe shortage of the parking facilities.

(4) The problems emerged when commercial space encroach on the space for social exchanges: the existing infrastructure was built in the period of planned economy, of which the commercial space isn't enough to meet the demand of the residents. Therefore, many houses close to the north street of Xiangtang community were transformed into shops, and many temporary commercial buildings were built, which caused a serious damage to the landscape of the community. However, commercial space is a necessity in daily life, thus the contradiction is becoming sharper.

3 PRINCIPLES AND STRATEGIES ON PLANNING

3.1 Principles for the Conservation and Renewal of the Community

3.1.1.1 Take the Theory of Four Dimensional City as Reference, Pay Attention to the City Context

The renewal and protection of the material space should adhere to the forming factors of these settlements; include historical events and construction background of the settlement as well as the social activities of the residents. These factors are the "nutrients" which help the formation of the characteristics of the "container"

3.1.1.2 Principle of Style Coordination

For buildings and environment in different period, community can be reconstructed into a harmonious one with distinctive features if they are coordinated by environmental design methods. In order to rebuild the community landscape, the design structure should be combed; the buildings of the housing group should be repaired; buildings in different period should be reconstructed to coordinate with each other.

3.1.1.3 Principle of Spatial Pattern Coordination

To reconstruct the housing groups in different periods as a whole through unified planning. The recognition and reconstruction of the historical center, axis and boundary can be helpful to make the community an integrated one through integrating and replenishing the facilities for transportation and public service.

3.1.1.4 Principle of Livability

Jane Jacobs wrote in her book: "The main reason why slums come into existence is that too many people move too fast with the idea to move far away." People begin to realize that if there are "stay-

at-home residents” it means the place is livable. Livability is the key of the conservation and renewal work; only by keeping its livability can it be a community of vitality. Focus on the problems under current situation, in order to keep the community livable, it is necessary to make it a place meets the needs of the residents and renew its historical features.

3.2 *Strategies on Renewal of the Historical Settlements*

3.2.1 *Reconstruction of Three Controlling Factors in Historical Settlement*

The conserving factors are central node, axis and boundary[5] in the historical settlement, which constitute the spatial structure. Central node is the identification marking of the settlement, which highlights the context of the historical settlement; axis shows the traffic hierarchical structure, it is the structural framework as well as the planning thought of the settlement, protect which can have the maximum reflection of the settlement’s original planning structure; boundary means the borders of the historical settlement, it makes clear the protected area for better coordination among different structural area, which makes conservation scope clear as to protect the settlement from the outside to the inside. Protection of the three factors can keep the style and features as well as the cultural and historical tracks of the settlement.

3.2.2 *Rational Transfer of the Historical Elements*

Transfer of the historical elements are inevitable in the development of the historical settlement, as HE Yi(2011) put forwards in the work: “When it comes to the end, building will lose its original function and become a pure structure, then its cultural elements will be highlighted.” [6] Transfer of the historical elements means transfer functional morphology of the three factors mentioned above rational. For example, functional shift of the buildings; changes in the transportation function of the axis; the functional morphology transfer of boundary such as transfer the wall all around into an annular greenway or shops. The rational transfer of the historical elements will meet the demand of development for community in new era.

3.2.3 *Reconstruction for Livability*

Reconstruction for community livability includes improvement and repair of traffic system, renewal and construction for public facilities, reconstruction for historical apartment layout. A sustainable developed community can satisfy the needs of

people living there, enhance its livability and broaden its appeal.

3.2.4 *Reconstruction for the Community Landscape*

Reconstruction for the community landscape has contents both of material and spiritual. Concrete measure are listed as followings: establish new management system of the community; pay attention to the original landscape, repair and build public space; ease the contradiction between the landscape and modern living needs of residents by environmental design method.

4 PLANNING PRACTICE

4.1 *Identify the Scope of Protection and Conserve Every Subarea*

Historical block of mill community in Taiyuan is located in No.75 on Jiefang North Street of the city. With the borders in four directions, Xiangtang Road in the west, Guihua Road in the east, Jianhe Road in the north and the other side of Guihua Road in the south, there are about 21.1 hectares of the protection scope in total. The scope includes the buildings built with the help of Soviet Union experts, the temporary apartment houses built in the 1970s and the modern apartments built around the year of 2000. The land use and ownership of those buildings are the same, most people live there witness their development. This study identifies the scope of protection according to what have been mentioned above.

The core subareas of the protection scope consists of clubs, hospitals, shops, middle school dormitories, courtyard as well as Xiangtang North Street which connects all the housing groups. In order to protect it, 20 meters square south of the Xiangtang North Street will be included in the core protection area which covers 7.23 hectares; build a controlling area to coordinate rest part of the community with the core subareas in style and landscape. (Figure.5)

4.2 *Reconstruction of the Community Axis*

This study is based on the research on traffic convention for residents, the original planning layout and historical social context to estimate that the Xiangtang North Road is the central axis of the community. This street divides the community into the south part and the north part; it connects the two major entrances both in the east and west; it also connects the three historical groups, the club and other public facilities. It is the axis of transportation, landscape and social activities. (Figure. 6)



Fig.5 Community protection zoning maps. The drawing is painted by the author



Fig.6 Distribution factors of history. The drawing is painted by the author



Fig.7 transportation plan. The drawing is painted by the author

In order to solve the problems, for example, intersecting flows of pedestrians and vehicles,

roadside parking as well as residents social interaction, measures to reconstruct the axis are listed as followings : ease the traffic by building entrances in the south and the north open for outside vehicles; build new codes for social interaction on both sides of the road; reconstruct the central square of the club improve the rate of green coverage among No.4, No.6 and No.9 housing groups, evacuate residents who used to rest in the Xiangtang North Street. (Figure.7)

4.2.1 Vehicles Traffic

The main vehicles channel in the Xiangtang North Road will be kept while the vehicles channel in the eastern part of the kindergarten will be cancelled. Broaden the roads into six meters wide in the No.9

Building's east, No.6 Building's west and Mill Dormitory's south, build a new road with width of six meters in the east of the No.6 Building, these four roads will ease the traffic in the Xiangtang North Street. In order to meet the demand of traffic, all the roads around No.9 Building, the kindergarten and the market should be repaired or broadened..In case of an emergence such as fire or ambulance, there is a need to fix the roads of the housing groups, improve the transportation and set up turn-around for cars.

4.2.2 Pedestrians Traffic

This panning aims to establish a systematically network for pedestrian traffic by the combination of pedestrian zone, belt-shaped pedestrian zone, walkway and landscape node: pedestrian zone, three main pedestrian zones located in No.4 Building, No.6 Building and No.9 Building; belt-shaped pedestrian zone, integrate green area and open space on both sides of the Xiangtang North Street into a continuous central commercial belt-shaped pedestrian zone; Walkway, the entry channels in the south and the north, the Xiangtang North Street and the inner roads of N0.4 Building, N0.6 Building, N0.9 Building should be planned into the main walkways. Sideways should be built on both sides of the roads of the Xiangtang North Street and the entry channels in the south and the north, the inner roads of N0.4 Building, N0.6 Building, N0.9 Building are built for both vehicles and pedestrians, pedestrians are prioritized over vehicles.

4.3 Reconstruction of the Community Center

The Club is the central node of the community; it is a large-sized public building built to satisfy social activities such as entertainment and gathering of the residents. It should be topped in the protection list

for it can become the symbolic node of community culture, it can also be built into a big central square connected with outside space of the building.

4.3.1 Repair of the Community Club

The Club is the core of the community center, which should be repaired focusing on the following parts: building facades inside decoration of the building the color of the building materials interior function. (Figure.8)



Fig.8 Community walking system plan. The drawing is painted by the author.

4.3.2 Design of the Central Square of the Community Club

The central square, a core part of the community, is the outdoor extension part of the community's social activities. It has several important functions such as serviced as the place for leisure activities and social interaction. The following details should be involved in its design: expand the square, the Xiangtang North Street should be accessible for pedestrians, idle land along the street should be planned into the square; facilities for outdoor activities, for example, fitness equipment, rest-chairs, tables and chairs for chess or cards and children's entertainment facilities; for the design of the landscape, there should be shade trees, floodlights, pavement with symbolic picture of the early days of New China.

4.4 Reconstruct Social Context by Landscape

Based on the research of the community culture and its context, it is easy to find the fact that housing groups in the south and north lose their functions as landscapes, only the Xiangtang North Street has its function for transportation. The reconstruction of landscape should take the cultural context into consideration, and connect the central square, the three housing groups as well as the newly-built smaller landscapes to expand the public space. In

this way, the living space, the commercial space and the social space can be combined organically through the landscape axis. (Figure.9, Figure.10)

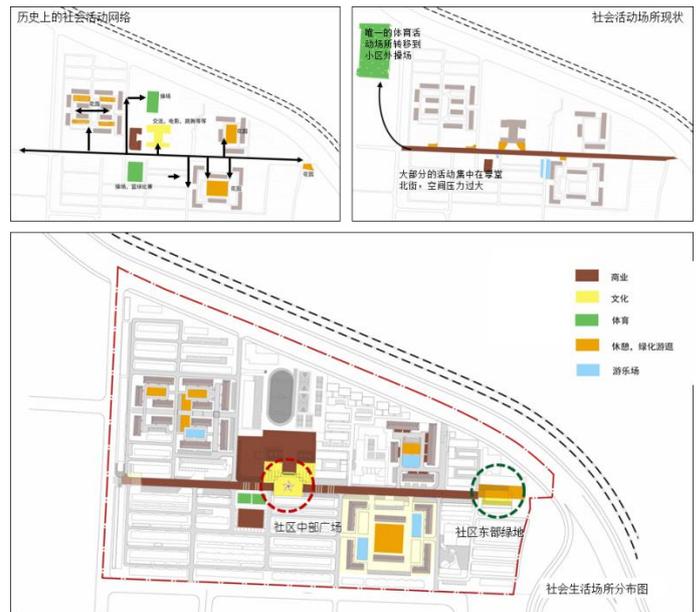


Fig.9 Social activity history analysis diagram. The drawing is painted by the author



Fig.10 Community landscape axis. The drawing is painted by the author.

4.5 Improve the Public Service Facilities

The core value of the planning of the community is the planning on public service facilities. According to the current situation of the community, the resident-oriented planning should be involved:

(1) Cultural service facilities: the club in good architectural style is still in use, it is the center for public activities with chess and card room, and it can thrive the development of community culture; the function of the main building can be shifted while its cultural function should be kept; the court now has already been abandoned, it will be turned into a market, the sports of the retired can be organized in a small court kept in the Xiangtang North Street ; for

the community is an aging one with many children, space of outdoor activities of the elder can be found among the club and the Xiangtang North Street while the children's play equipment can be built within the housing group. The problem that there is limited space for outdoor activities can be solved through the establishment of new square, gate-ball court and green areas.

(2) Sanitary facilities expand part of the existing hospital, the management of the beds and facilities should be improved.

(3) Educational institutions, enlarge the size and improve the quality of existing kindergarten and the primary school, and at the same time, increase the enrollment by being accessible to the outside world.

(4) Commercial service establishment, the club should be transformed into a supermarket and the existing groceries should also be maintained, both of which will become the commercial center of the community. Shops will be set up along the Xiangtang North Street and the entry channels of the south and north to satisfy the residents' needs.

5 CONCLUSION

This study focuses on the renewal and reconstruction of the historical industrial settlement built under the Soviet Union Ideology trend through a real case. It is

hoped that this study can inspire ideas for the sustainable development of this kind of settlement. The conservation of the historical settlement may not only be limited on the protection of physical form but also extended to the analysis of the influential ideology trend, thus we can protect and renew the carrier of social through—settlement in many ways.

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