

## STUDY ON UPDATING STRATEGIES OF TRANSFORMING FROM AN OLD INDUSTRIAL ESTATE TO AN INDUSTRIAL HERITAGE COMMUNITY

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### ABSTRACT

The decline of industrial communities is a common phenomenon worldwide. In China, state owned enterprises influenced by state capital developed rapidly soon after the foundation of the People's Republic of China. Many living communities centred on enterprises and factories have been built and equipped with advanced facilities and effective management systems. However, many workers have become unemployed and laid off due to the privatisation of state-owned enterprises. In such cases, the industrial communities dependent on factories cannot develop and the system may collapse. This can cause communities to decline gradually, with old communities becoming seriously disconnected from urban life, which can generate a series of serious urban problems, such as the ageing of material space and the breakdown of social relationships. Therefore, how to make marginalised and closed industrial communities actively integrate into re-urbanization development and become an organic part of the urban community through the renewal and development of industrial communities will become a new issue for future urban renewal.

This study aims to formulate research-based designs for typical old industrial communities. The community affiliated with the Yujiao Lianxin Industrial Estate in Jingzhou City, and the research design was conducted by obtaining relevant information through research on relevant social sectors and resident groups, and considering social and economic capital issues. Finally, three renewal strategies for industrial communities are proposed: overall community restructuring, residential reconstruction and expansion, and revitalization of the community's industrial heritage and public space, which provide samples with certain reference value for the renewal of old industrial communities.

KEYWORDS \_ *Industrial community, Eco-museology, Community renewal, Urban design*

## INTRODUCTION

### Research Background

The decay of industrial communities is a global phenomenon, and decaying industrial communities suffer from both the aging of physical space and the breakdown of social relationships. Industrial communities are residential areas for workers that are planned to meet the housing needs of workers and their families, integrating production, living, recreation and education, and are often attached to the construction of large industrial facilities. In the field of practice of industrial heritage conservation and reuse and industrial park development and construction in China, the existence of industrial communities as living areas is often neglected, and the attention is mainly placed on the industrial remains in production areas.

After more than two decades of explosive “incremental development” construction, Chinese cities are now gradually shifting to the development mode of “inventory renewal”. In early 2021, China’s Ministry of Housing and Urban Development issued a notice on further strengthening the protection of historical and cultural districts and historical buildings, proposing that “old factories, old harbor areas, old school districts and old residential areas that meet the criteria should be designated as historical and cultural districts, and innovative restoration and renovation of historical and cultural districts and old neighborhoods should be increased to give contemporary functions to historical buildings”.

Under this premise, the preservation and renewal of industrial communities should not be neglected, and a reasonable and perfect preservation and renewal mechanism should be established. The article takes the “Urban Design Project of Old Industrial Estate of the Jingzhou Economic Development Zone” as an opportunity to explore a road of renovation and development of old industrial communities suitable for China’s national conditions by studying the history and culture, current problems and renewal strategies of this heritage industrial community.

### Synthesis of relevant studies

In China, the protection of industrial heritage research started late, but in recent years the national industrial heritage census is steadily progressing, the relevant departments have formulated industrial heritage determination standards, the establishment of the corresponding approval of the management mechanism, the preliminary formulation of the protection of China’s industrial heritage; academics on the renewal of the industrial heritage community at all levels of the problem of the research is also more and more attention.

In the interpretation of the importance and significance of industrial community protection and renewal, Shan Jixiang comprehensive analysis of China’s industrial heritage in the process of protection of the problems that exist in order to put forward the future protection of the industrial heritage of the policy direction, a clear way to protect the industrial heritage and the task; Yu Kungjian, Fang Wanli according to the history of industrial development of the potential industrial heritage is divided into the modern era, the modern two phases of the inventory, a clear value of industrial heritage Liu Boying pointed out that the protection of industrial heritage should not neglect the workers’ community, revealing the importance of industrial community as industrial heritage.

In terms of forming strategies applicable to industrial heritage community renewal, Li Ping researches and summarizes the existing common methods and models of industrial heritage conservation and utilization at home and abroad. Bai Mei, Zhu Yongqiang and Lian Haitao start from the theory of place memory, systematically categorize the medium of place memory in the community, and explore the ideas and strategies of community renewal of units with industrial heritage characteristics. Hu Ruohan reflects on the phenomenon of “amnesia” in the renewal of industrial heritage communities in China, and puts forward the renewal strategy of “aboriginal authenticity as the core, cultural revitalization as the foundation, and spatial authenticity as the carrier”.

By studying the existing literature, it can be found that the current research on industrial communities focuses more on the urban center rather than the urban fringe, and the renewal process lacks the balanced consideration of the interests of all parties in the community renewal. These are also issues that we need to pay special attention to in our research.

### **Research Significance**

The project as I mentioning through in whole passage is a commercial program investing by government of development area and real estate investment company. With the change of national policies and the needs of urban economic development, Jingzhou City has changed the focus of land planning from "increment" to "inventory", and is committed to activating the original inventory land and increasing the economic benefits of land. At the level of land space protection, development and utilization, strict control of increment, revitalization of inventory, and increase of flow have become the new orientation, and the importance of urban renewal has been highlighted. This project is a practice of new utilization of inventory land.

In this plot, the transformation from the old industrial estate to the industrial community can not only achieve immediate results on the material level, but also actively promote the industrial upgrading of the area, stimulate the employment population, and provide a steady stream of development momentum for the city. Therefore, I believe that this project can be used as an exploratory practice of urban organic renewal and can improve the application of the theory of community renewal under different conditions, as well as the development of a knowledge framework for community renewal.

## **COMMUNITY STATUS ASSESSMENT AND ANALYSIS**

### **Research and assessment of the current situation of the community**

The planning site of the project is located in Jingzhou City, a famous industrial city located in the south-central part of Hubei Province, China. Today, it is an important pivot point for the eastward development of Jingzhou City from traditional heavy industry to high-tech industry, and an important part of the economic development zone.

The project is planned to cover an area of approximately 5.99 square kilometers and is divided into two parts: an area where production and living activities still take place, and an area of abandoned industrial land. According to statistics, there are about 3,903 corporate employees and 5,537 residents in the area. The age group is dominated by young and middle-aged people aged 25-45, mostly migrant workers; the population is aging, with a high proportion of people over 65 years old, accounting for 9.81%, exceeding the 7% threshold set by the United Nations.

The predecessor of the project base can be traced back to the Yuqiao Industrial Estate in the early stage of China's reform and opening up. The factory mainly manufactures parts for automobiles and small electrical appliances. It is the earliest and most concentrated representative area of industrial development in Jingzhou City and even central China. The Lianxin community in the north of the planning area is the initial fulcrum of the development of the industrial zone. Although it has undergone several reconstructions, it has basically followed the modern spatial distribution pattern and still retains some modern industrial relics.

In the interviews with the residents, we got the following information (Table 1). The residents now living in the old residential buildings attached to the original factory are basically the first generation of old factory workers, and their children have basically left the community to seek other development. Besides, a large number of migrant workers are living in real estate developments built in the area in recent years.

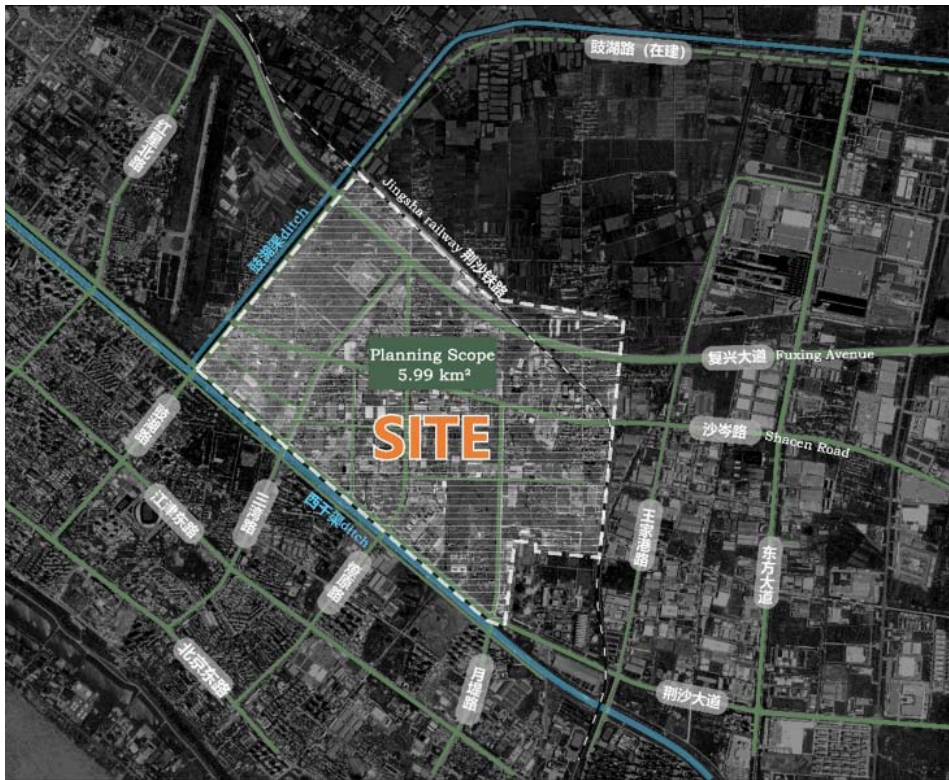


Figure 1: Existing floor plan of the site - Source: self-made.

Table 1: Results of interviews with some residents

	Enthusiastic Lady #1	A worker of factory waiting for the bus	Elderly people sitting around chatting	Enthusiastic Lady #2
<b>Family Status</b>	Retired, children have left the community, living in a three-story home with a sloped roof	Age 30+, foreign workers from surrounding cities and live alone	Retired, son and daughter working abroad	Age 60+, lives on the same floor as her children but in a different household
<b>Residential Issues</b>	No school in the community, no public transportation, only drive to and from grandchildren daily	Less green neighborhoods and lack of space for exercise	Housing was built in the 1960s, the area is small, now it is dangerous and leaking	Built in 1960's, small size
<b>Difficulties in daily life</b>	Daily travel by bus, only one bus stop in the community	Public transportation between the factory area and the residence is very infrequent.	No daily group activities, community occasionally organizes	There are courier points but they are far from home
<b>Comments and Suggestions</b>	No	hope the transportation can be improved between factory area and housing area	Wants to arrange sports exercise facilities and activity venues	Willingness to bear part of the cost of improving the community environment

### Collation and analysis of existing problems in the community

Based on the information obtained from the residents' research and combined with the feelings of the field survey, we summarized and organized the problems existing in the community into the following categories. The problems in the community can be attributed to two main aspects, one is the low quality of living environment and the other is the lack of community history and culture heritage; among them, the problems of living environment quality can be reflected in the quality of housing, quality of supporting buildings, quality of public space, etc.;

while the loss of community population, the lack of public life and the forgotten community heritage reflect that the culture and history of the community are gradually disappearing. Some of these issues involve the overall structure of the community, some involve local transformation, some involve history and culture, and some involve physical space. Based on the discussion and analysis, my team and I finally formed a four-part overall solution strategy, namely, industrial upgrading and optimization of the estate, overall restructuring of the community, residential renovation and expansion, and revitalization and utilization of the community's industrial heritage and public space, which will be integrated for practical interpretation.

### UPDATED STRATEGY FOR THE INDUSTRIAL COMMUNITY

#### Overall community restructuring

##### *New space layout*

Taking into account the existing functions of the industrial park and the diversified needs for future service development, the project area needs to be considered for the improvement of an integrated community service system and place environment for different human needs. We have designed the project site into five types of distinctive communities, each with a distinctive spatial pattern and taking into account the functions of leisure, commerce, education, socialization and recreation.



Figure 2: Space layout - Source: self-made

### ***Transportation strategies***

In the current situation survey, about half of the interviewed employees reflected the lack of public service facilities. Due to the expansion of the scale of the park and the increase in commuting needs, the phenomenon of mixed passengers and goods has become a problem. At the same time, due to insufficient attention to urban public transportation, the accessibility of the estate to the urban area is very weak, which further reduces the attractiveness of the population.

Defining the type of road can improve the adaptability of the road to different use modes, help support the functional positioning of buildings along the street, form a rich street landscape, and highlight the characteristics of different style areas.

## **Community Unit and Residential Design**

### ***Community Unit Design***

After considering the existing community as a whole, we plan to divide the whole community into three different types of residential units for different groups of users, namely, eco-living community units, creator-service community units, and smart-sharing community units.

### ***Building Alterations and New Construction***

The current state of the building is graded and evaluated, and the renewal strategy is implemented according to the evaluation level. According to the intensity of renovation from weak to strong, community renewal projects can be categorized into three types: comprehensive remediation, organic renewal and demolition and reconstruction.

For new buildings, considering the future development of the community as well as the surrounding business district and the overall appearance, the new residences uphold the concept of eco-green, with fifth-generation residential buildings as the main object of consideration.

## **Revitalization of the community's industrial heritage and public space**

### ***Public Space Creation***

From the perspectives of regions, blocks, nodes, landmarks, boundaries, network connections, etc., enhance the overall landscape value, maintain the original spatial scale, street texture and spatial form as much as possible, and delimit the regional space network according to the traditional pattern, building type and style of the community. The overall characteristics and traditions take precedence over materials and patterns, highlighting the maintenance of traditional features, setting building volume and features, and adopting unit transformation to realize the organic combination of points and surfaces.

Integrate the cultural demands and new lifestyles of multiple subjects. Through the adaptive reuse of heritage, a new "living-work balance body" will be constructed, and new functions such as cultural museum display and heritage preservation will be implanted with the core of maintaining cultural characteristics, so as to convey historical information and strengthen the sense of place. On this basis, through the integration of diversified new lifestyles, combining industrial history with diversified contemporary needs such as economy, technology, art, tourism, etc., to build a mixed-use community, it is necessary to make community residents feel nostalgic through new jobs. The life of the emotional area can be continued, and the diverse lifestyles that meet the needs of modern people must be integrated, so that cultural characteristics can be formed during the process of space regeneration, enriching urban life forms, and building a dynamic community.



**Figure 3:** Different type and theme parks - Source: self-made.

### **Community Life Circle**

To adjust the spatial structure of the reuse of the old industrial area, it is necessary to pay more attention to the “people” in the area. Including the perception and identification of the “insiders” represented by the community residents in the industrial site area, so that the industrial heritage can adapt to the social and spiritual needs of people under the changing urban living conditions, and the community residents are regarded as an organic component of the industrial heritage. To arouse their “nostalgia”, the reuse of heritage should improve their quality of life. Highlight the historical value of “Lianxin Community” as a protection object, so that “the same people live in the same place” among enterprise employees, continue the characteristics of specific groups of people and classes, and reverse the process of regional transformation and heritage reuse. Indigenous residents of long-established businesses lose their jobs and the legacy of a familiar way of life repurposing reality.

Considering the original residents and the new talents to be introduced after the future industrial transformation, the author and the team envision an all-ages open community that provides multi-time and diversified activity spaces for people of all ages, where mutual actions between people break the boundaries of time and space. Shared vehicles, shared offices, shared hotels, shared parking lots, etc. Develop a shared application service platform to create a new low-carbon and efficient smart community.

### **CONCLUSIONS**

In our study of industrial communities, we found that such industrial communities on the edge of the city need to face very different problems from ordinary communities in the process of renovation and renewal. As factory-affiliated communities, these communities are characterized by their remote location, small scale, simple functions, and relative isolation from the outside world. These communities are the legacy of an era, but are facing the problem of being “socially marginalized”. At the same time, the social network of residents in factory communities is relatively tighter, and residents have particularly deep memories of the places where they live, which needs to be taken into

account in the renovation and renewal.

In view of the characteristics and problems of the community, this paper proposes strategies for the renewal of the community, such as overall structural adjustment, reconstruction and addition of residential buildings, and revitalization of industrial heritage and public space in the community. and public space revitalization, industrial heritage and public space revitalization. The overall scheme involves the adjustment of transportation and business functions of the whole community, the alteration and expansion of existing residential buildings, as well as the consideration of the lagging of the overall layout of the community, the basic life of the residents and the protection and utilization of the historical heritage of the community.

From the applicability point of view, industrial heritage communities, as a special type of community, need to give full consideration to the environmental constraints and historical and cultural background of the community when considering its renovation and renewal, and propose practical renewal strategies for the types of residential and public cultural heritage of specific communities and their spatial distribution characteristics.

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