

# Organization and Reconstruction of Modern Industrial Heritage Building Space

Taking Xi'an Dahua Cotton Mill as an Example

Tianhang Wang

School of Historical Culture and Tourism  
Xi'an University  
Xi'an, China 710065

**Abstract**—Dahua Cotton Mill is the earliest modern textile enterprise in Northwest China, and has now become the most representative industrial heritage in Shaanxi Province. The protection and utilization of urban industrial heritage is related to regional social development, residents' production and life, and how to correctly treat urban industrial heritage and use these resources from the perspective of sustainable development is an urgent problem to be solved. Taking the protection transformation of industrial heritage of Xi'an Dahua Cotton Mill as an example, this paper analyzes the specific changes in space production during the transformation of Dahua Cotton Mill from "endogenous renewal space" - traditional industrial space, to "exogenous development space"- heritage space, from the perspective of space production theory, and has found an effective path for the protection and utilization of urban industrial heritage, and revealed the inner motive of space transfer.

**Keywords**—*industrial heritage; architectural space; space production; protection and utilization*

## I. INTRODUCTION

Nowadays China is in the historical process of rapid urbanization, and the cities are actively seeking a more distinctive way to revitalize. Cities make life better, and high-quality life has changed from simple industrial demand to diverse tertiary industry. Urban development faces the transition from functional cities to cultural cities. Traditional industrial enterprises that used to be located on the edge of cities or along the roads and railways have now become the heartlands of cities, or have gone bankrupt, facing the dilemma of external migration and demolition. However, these traditional industries represent the urban civilization of the time, witness a history of urban development, and are the homesickness of the city that reposes urban emotions, reshapes urban spirit, and highlights urban characteristics. How to correctly treat urban industrial heritage and use these urban building resources from the perspective of sustainable development is an urgent problem to be solved.

Established in 1935, Dahua Cotton Mill is the earliest modern textile enterprise in Northwest China, and has now become the most representative industrial heritage in Shaanxi Province. In the practice of exploring the protection and utilization of urban industrial heritage, a unique

"comprehensive urban development" model, namely "Dahua·1935" industrial heritage transformation project, has gradually formed. In the process of urban industrial heritage transformation, the transformation of production mode has promoted the production of new space and triggered a series of space problems. Therefore, it is necessary to re-examine the protection and utilization of industrial heritage from the perspective of space production. Based on this, this paper analyzes the multi-dimensional space of the industrial heritage of Dahua Cotton Mill from the perspective of "space production theory", theoretically deepens the research of industrial heritage space production, and provides reference for Dahua Cotton Mill's sustainable development of industrial heritage from practice.

## II. CHARACTERISTICS OF SPATIAL ELEMENTS OF DAHUA COTTON MILL

Dahua Cotton Mill was founded in 1935 by famous textile technology expert and educator Shi Fengxiang. The cotton mill is located on the north side of Xi'an Railway Station and east side of Tang Daming Palace Site Protection Area. The production area covers an area of 81,700 square meters. It is the earliest national machine textile enterprise with the largest scale in the northwest region. From the perspective of space production, the spatial elements of Dahua Cotton Mill have the following characteristics.

### A. Uniqueness of Historical and Cultural Space

Daming Palace on the west side of Dahua Cotton Mill Industrial Site is one of the three major palaces in Chang'an of Tang Dynasty. Since the Emperor Gaozong of Tang Dynasty, the emperors of the dynasty held court here, and it became the political center of Tang Dynasty. Daming Palace site was among the first batch of key cultural relics protection units announced by the State Council in 1961. It was opened to the world as a national heritage park in 2010. In June 2014, Daming Palace site was successfully included in the World Heritage List as a site on the "Silk Road: Chang'an - Tianshan Corridor Road Network", a world heritage jointly applied by China, Kazakhstan and Kyrgyzstan. Dahua Cotton Mill is not only close to Daming Palace as a world cultural heritage, but also nearly half of its production plant is built on the site of the East Court in Daming Palace due to historical reasons,

becoming a complex section with superposition of industrial site and Tang Daming Palace site, and constituting a unique historical and cultural space of Dahua Cotton Mill. "Fig. 1", "Fig.2"

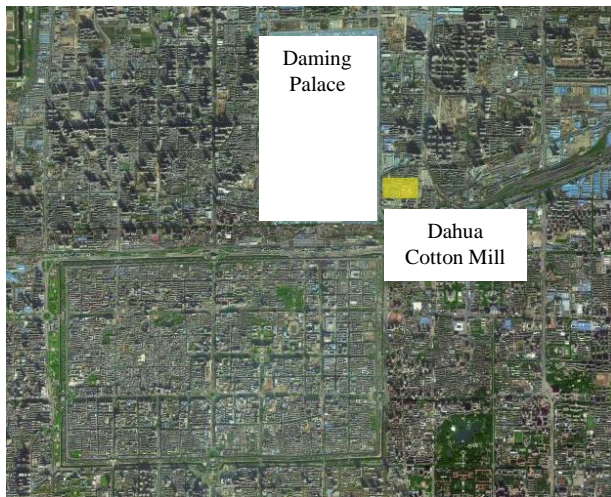


Fig. 1. Location map of Dahua Cotton Mill.



Fig. 2. Location map of Dahua Cotton Mill, Daming Palace and East Court.

### B. Complexity of External Social Space

Dahua Cotton Mill Industrial Site is located in the south of Xi'an Railway Station, "Daobei Area" in Xi'an. It is a problem area in Xi'an where urban development is seriously lagging behind, urban infrastructure is backward, social security is not good, residents' life is inconvenient, the overall image of the area is not coordinated with the image of Xi'an as ancient capital of civilization, and the economic and social development of the area is not adapted to the modernization process of Xi'an.

### C. Monotony of Internal Spatial Form

Dahua Cotton Mill's components are relatively simple, mainly production buildings such as plant, warehouse, boiler house and office building. Among them, the gate, Nanyuan (office space), old cloth factory, cotton warehouse and hospital were preserved from the Republican period, building after the 1950s and 1960s include organic material warehouse, boiler room, new cloth factory and the first phase and second phase of the plant, etc. in "Fig. 3". The entire mill presents a traditional endogenous self-renewal model driven by industrial production. After entering the 21st century, the enterprise has been in a difficult situation due to various reasons, and the production and management have got worse and worse. It declared bankruptcy in 2008, and the traditional renewal process also stopped.

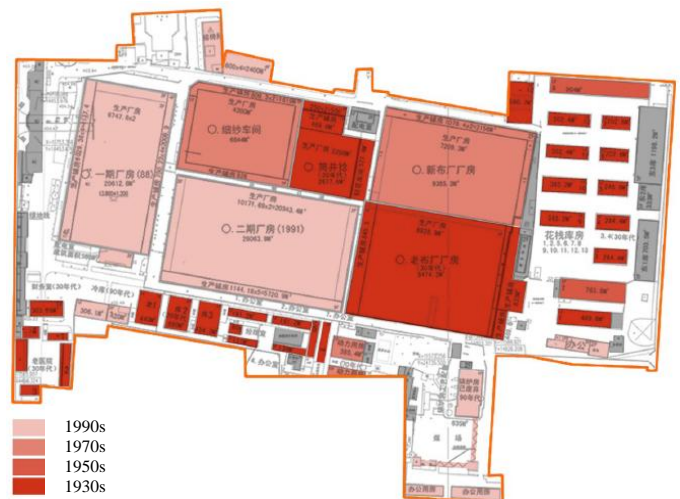


Fig. 3. Building distribution of Dahua Cotton Mill in each period.

### D. Reflection Based on the Space Production Theory

The historical space, social space and internal space of Dahua Cotton Mill carries the special brand of Xi'an, a thousand-year-old ancient capital, and it is also very representative among many industrial heritages in Shaanxi. As an important dimension of the existence of things, space is the carrier of human life and activities, and has always been an important object of urban sociology research. In the past, people thought that space was only a static "container" or "platform" for the evolution of social relations<sup>1</sup>, however, with the rapid development of cities, regional urban space such as Dahua Cotton Mill faces the problem of spatial change and reconstruction. In order to achieve development, tourism, as a strategic choice, has been followed by more and more managers, and traditional industrial production modes have disappeared. Each production mode has its own unique space. From one production mode to another, it is bound to be accompanied by the creation of new space<sup>2</sup>. At the same time, infinitely diverse or innumerable social spaces are overlapping and infiltrating each other in contradiction, and

<sup>1</sup> Lefebvre: *Reflection of Spatial Politics*, chief edited: Bao Yaming: *Modernity and Production of Space*, Shanghai Education Publishing House, 2003, p. 8.

<sup>2</sup> The Production of Space, Henri Lefebvre, Blackwell, 1991, p.46.

re-structuring and transforming with the evolution of history<sup>3</sup>. Great French thinker Lefebvre believes that space has three properties of material, behavior and society. Space production is the process of space being developed and used. Different practical activities make the space social and reflect social relations through the possession and use of space. Therefore, when the urban industrial heritage space is reproduced as a cultural space carrying urban memories and emotions, the originally closed production space is transformed into an open tourism space. The production behavior and spatial reconstruction in this process not only reflect the effective ways of protecting and using urban heritage, but also reflects the important changes in the current urban renewal mode in China.

### III. TOURISM SPACE PRODUCTION OF DAHUA COTTON MILL

#### A. *Formation of Tourism Space*

The choice of Dahua Cotton Mill Industrial Heritage Tourism Space is a historical necessity. The bankruptcy of the mill declared the end of more than 70 years of traditional industrial space in this area. Although the industrial workers who depended on the mill lost their livelihoods, from the perspective of local realities and long-term economic and social development, the withdrawal of a “sunset industry” will certainly revitalize the region. With the completion of Daming Palace National Heritage Park, the cultural tourism industry has promoted the overall image of the region and greatly enhanced the value of land. At the same time, it has also promoted the formation of the industrial heritage tourism space of Dahua Cotton Mill, and created more favorable conditions in line with the space production and reproduction of Dahua with the concept of comprehensive tourism. The government's decision on the future development of the region, the citizens and mill workers' desire to improve their living space and living quality, the investors' pursuit of commercial profits, the tourists' demand for cultural experience and cultural consumption, etc., act together on this space, which have formed a place for groups and their capital to compete, compare and transform, and promoted the space reproduction of the industrial heritage site of Dahua Cotton Mill: Dahua Cotton Mill has transformed from a relatively independent “endogenous renewal space” - traditional industrial space, to an “exogenous development space” - heritage tourism space, on which multiple forces act together. This transformation is undoubtedly one of the effective ways to protect and utilize urban industrial heritage.

#### B. *Multi-Dimensional Space Production of Tourism*

The multiple dimensions covered by the tourism space mainly refer to material space, spiritual space, cultural space and social space. Among them, the material space is a visible physical space, which is often landscaped in the tourism space and becomes the first impression perceived by tourists; the spiritual space exists relative to the material space, and is the support of the material space, also the internal motive for the existence and development of tourism space; the cultural space is an intangible cultural heritage type, which is an

important part to enrich the existence of tourism space; the social space is the perception and participation of various groups of society, together constituting a complete tourist space with material space, spiritual space and cultural space.

1) *Material space*: The material space has a clear spatial form and spatial carrier. Due to the constraints of politics, economy, culture and environment, the material space form of Dahua Cotton Mill mainly focuses on “highlighting functions” before the formation of tourism space. Around the formation of industrial production, the spatial structure is relatively simple and belongs to static space. The production of tourism space has turned the landscape of material space into reality. The industrial production space originally composed of cloth factory, cotton warehouse and warehouse has become a bearing material for the tourism elements of industrial heritage.

In the process of re-production of the industrial heritage space of Dahua Cotton Mill, the original factory layout and historical buildings such as factory building, warehouse and office building were preserved, and the material space was continued, forming the most recognizable and perceptible space in the new tourism space. As the core attraction of tourism, the landscape of the entire mill is re-designed. On the basis of following the original features of the mill, the historical buildings are strengthened and beautified; some industrial production facilities are transformed and utilized, and the functions are changed, to form landscapes that meet the needs of modern life and tourism; some roads in the mill are re-paved to facilitate the circulation of tourists and goods and the design of tour route. The reproduction of the material space of Dahua Cotton Mill not only meets the needs of industrial heritage protection, but also satisfies the urban memory and emotional needs, forms a new tourist landscape, and reflects the historical and artistic values of the heritage.

2) *Spiritual space*: As a kind of non-physical invisible space, spiritual space produces a kind of inclusive space that is recognized and perceived, including the memory comparison of the participants in the old space, such as citizens, mill workers and family members, as well as the imagination comparisons of reconstructive space participants such as foreign tourists. In addition to its witness of the history of industrial development, the most important value of urban industrial heritage also lies in the fact that it is an important and unique display window of urban history, urban characteristics and urban characters. Transforming Dahua Cotton Mill, a declining factory site, into an important place to display the history of modern Xi'an city, can let people understand the revival and enterprising national spirit and mission contained in Dahua more truly and comprehensively. In the production process of spiritual space, it is not only necessary to inherit the spirit formed by Dahua Cotton Mill over more than 70 years, but also to integrate the characteristics of the times, meet the needs of the times, and promote the production and reproduction of the spiritual space of the industrial heritage of Dahua Cotton Mill.

<sup>3</sup> Same as 1, p.86.



3) *Cultural space*: The cultural space is defined as follows in the Declaration of the Masterpieces of Human Oral and Intangible Cultural Heritage issued by UNESCO: Cultural space is a “concentrated expression of intangible cultural heritage with special value. It is a concentrated place for holding popular and traditional cultural activities, and can also be defined as a period of time when a specific event is usually held regularly. This time and natural space exist because of the existence of traditional cultural expressions in space.” During the reproduction of the industrial heritage space of Dahua Cotton Mill, the functions of the plant and warehouse were changed to form a place for displaying the textile process, inheriting the history of the mill, and holding various cultural activities.

Under the framework of tourism space production, more emphasis is placed on cultural diversity and cultural reproduction. Cultural reproduction is a process of cultural renewal. It does not emphasize the vitality of its own, but rather the fluidity, circulation and dynamics of cultural development. Dahua Cotton Mill itself is a traditional industrial space, and it displays textile machinery, textile technology, textile stories, historical legends, etc. via the production plant after transformation. It has become a textile industry heritage museum, satisfying Dahua people's demand to recall the history and tourists' demand to learn. At the same time, the complexity of tourism products and the diversity of tourism demands require a large number of cultural performances. The small theater transformed from a plant has become a place for displaying traditional culture and pioneering culture.

4) *Social space*: During the production of industrial heritage tourism space of Dahua Cotton Mill, the government's active advocacy guides the transformation of the concept of the mill workers and community residents; the active participation of tourism developers promotes the continuous enrichment of tourism and accelerates the production of tourism space. After the transformation of Dahua Cotton Mill, a number of laid-off workers are attracted to participate in the new tourism space production, the lifestyle of the community residents also changes to varying degrees, whose living environment and living quality have been improved. At the same time, the production of tourism space results in good effects, such as protecting the original architectural style of Dahua Cotton Mill, making cohesive the inner spirit of Dahua's textile industry culture, maintaining the balance of regional society, and enhancing the pride of community residents, which is widely recognized by various groups in society.

#### IV. CONCLUSION

Taking the industrial heritage protection and transformation of Xi'an Dahua Cotton Mill as an example, this paper analyzes the specific changes in space production during the transformation of Dahua Cotton Mill from “endogenous renewal space”- traditional industrial space, to “exogenous development space” - heritage space under the guidance of Lefebvre's theory of “space production”, finds an

effective path for the protection and utilization of urban industrial heritage, and reveals the inner motive of space transfer. Studies have shown that the traditional industrial space has lost the soil for survival in the rapid development of cities. However, after reproducing traditional space into multi-dimensional space such as material space, spiritual space, cultural space and social space, it will form an industrial heritage tourism space, which will definitely promote the region from material, spiritual, cultural and social aspects, and form a new situation in which traditional civilization and modern civilization coexist in harmony.

#### REFERENCES

- [1] Bao Yaming. Modernity and space production [M]. Shanghai: Shanghai Education Press, 2003: 8.
- [2] Huang Yi, Wu Changfu, Xie Zhenyu. Activation of local cultural capital in urban renewal: A case study of the renovation and reconstruction planning of the Guanguan alley historic district in Tengzhou city, Shandong province[J]. Urban Planning Journal, 2015(02): 110 —118.
- [3] Zhang Yingxiang, Cai He. A review of new marxist urban theory [J]. Academic Research, 2006(03): 85-89.
- [4] Liu Shan, Lv Lachang, Huang Ru, Lin Kangzi. The evolution of urban space production——From space production to relational production [J]. Urban Development Research, 2013(09): 42-46
- [5] Pu Songai, Fan Youmeng. Cultural space theory and protection and development of tourism resources in large sites——Taking the grand site of Qufu area as an Example [J]. Journal of Tourism, 2012(4): 39-47.
- [6] Henri Lefebvre. The production of space[M]. Oxford: Blackwell, 1991.