Research on Industrial Landscape Reconstruction Design of Baoji Shenxin Yarn Factory

Zhi Qiao, Dan Hui, Jingfan Huang

School of Art and Design, Xi’an University of Technology, Xi’an, China;

Abstract. This paper is devoted to the study of industrial heritage landscape reconstruction from the perspective of cultural memory. Taking the industrial landscape reconstruction design of Baoji Shenxin Yarn Factory as an example, the historical value will be excavated and extended in all directions. Combining the traditional concept of industrial heritage, historical and cultural status, site composition and development trend, the stage industrial heritage will be presented. The problems existing in the landscape renovation, and systematic analysis, elaboration and summary of the overall environmental characteristics of Shenxin Yarn Factory. This research combines the heritage itself with landscape planning and design, comprehensively utilizes the advantages of industrial heritage resources in combination with the design principles of protection, harmony and utilization, and combines with the development of sustainable tourism to protect the construction and art of China's industry and achieve industrialization. The value of the heritage is maximized, and the trinity of heritage landscape, economy and environment is coordinated towards the diversification of ecological, functional, practical, economic, cultural and aesthetic.

1. Introduction
In recent years. People's tourism content is not limited to natural scenery, cultural monuments, etc. Industrial heritage tourism has become a hot spot for people to travel. Based on industrial resources and guided by market demand, industrial tourism meets the tourism needs of science education, tourism, leisure and entertainment through the integrated development of industry and tourism, and obtains economic and social benefits for the government and enterprises. Environmental benefits. It is characterized by the combination of industrial resources and human resources, attracting tourists through cultures such as process manufacturing processes and architectural appearance.

2. Research background and content
The industrial heritage landscape is a brand new landscape culture category after the city’s “metabolism”. It has great value for the research of industrial landscape transformation. It reflects different historical stages, industrial culture and regional industrial characteristics, and can visually display industrial landscape and historical culture. After the reform and opening up, China's industrial structure has accelerated its transformation, the speed of urbanization has accelerated, and the traditional industries within the city have gradually migrated out of the city, resulting in more industrial wasteland, and industrial heritage has also emerged[1]. In 2006, the “China Industrial
Heritage Protection Forum” released the “Wuxi Proposal”, and China began to explore and research in the field of industrial heritage transformation. The research mainly includes the protection and reuse of industrial heritage and the cultural and historical value, and the combination of the two has gradually established the theoretical system of industrial property value evaluation and protection evaluation [2].

Currently, Baoji Shenxin Yarn Factory is listed among the first list of national industrial heritage announced by the Ministry of Industry and Information Technology. The industry of Baoji originated from the World War II period. At that time, due to avoiding the war, Shenxin Yarn moved to Baoji, explored the development path of national industry in Baoji, and successfully promoted the development of local modern industry, which became the prelude of Baoji’s industrial development. This paper takes Baoji Shenxin Yarn Factory as the entry point, systematically collects and analyzes the historical evolution of its history, summarizes and summarizes it in horizontal time sequence and vertical space order, and uses cultural memory reshaping and protection and utilization strategies to transform its industry. Carry out spatial integration, make full use of the existing industrial resources in the site to reflect its industrial culture spirit, and propose a landscape reconstruction design methodology applicable to industrial heritage from the perspective of cultural memory, for the protection and utilization of industrial heritage in China, commercial development and Baoji Shenxin yarn mill industry The tourism exploration of heritage provides a certain theoretical basis and empirical support.

3. Summary of research on Baoji Shenxin Yarn Factory
Baoji is located in the west of the Guanzhong Plain, with the northern Hebei Plateau in the north and the main Qinling Mountains in the south. Shenxin Yarn Factory is located in the old industrial base of Baole Changle, covering an area of nearly 400 acres. The site is adjacent to Changleyu in the north, with beautiful scenery and obvious advantages in tourism development. The spinning industry tourism resources and the anti-war heritage cultural tourism resources are abundant. There are 24 cave dwellings, which are built to avoid the Japanese bombing and have a very high red color, historical meaning. The country's largest existing cave factory, Shenxin yarn factory office building, Leong villa and thin shell workshop are located in Shenxin Yarn Factory, which is the most complete anti-war industrial heritage in China.

3.1. History
As a national capital industry in China, Baoji Shenxin Yarn Factory has a typical significance in the history of Chinese industry. The yarn mill insisted on production during the War of Resistance Against Japanese Aggression and directly served the warrior and civilians. It can achieve such replenishment
during the War of Resistance. Only Shenxin No.4 and its joint factory, and the history of Shenxin Yarn Factory is the prelude of Baoji City's industrial development. The operation of Shenxin 3000 kW generator has driven the economic transformation of the entire region, which is the historical value of Baoji Shenxin Yarn Factory [3]. (Example: Table 1).

Table 1. History of Shenxin Yarn Factory

| Year | Event |
|------|-------|
| 1938 | In August, Hankou Shenxin No. 4 Textile Factory moved in and built a factory in Baoji, Shaanxi. |
| 1939 | In August, Shenxin started its production for the first time since the move to Baoji. |
| 1940 | In January, Shenxin started construction of a cave shop; in July, Shenxin used a locomotive to drive the looms; In August, the Japanese plane bombed Baoji and the Shenxin yarn factory was bombed. |
| 1941 | In January, Shenxin 3000 kW turbine generator was officially put into operation; in April, the cavern workshop was completed and used; In May, the enemy plane bombed the Shenxin Yarn Factory again; in November, the Fuwu Flour Mill began production; |
| 1942 | In March, the weaving factory began production; in August, Shenxin Iron Factory successfully produced 8 spinning machines; in December, 23,000 spindles were opened, and the number of workers reached 3,300; |
| 1943 | Cotton yarn production reached the highest level since the factory was opened. |
| 1944 | In March, Hongwen Paper Mill was completed and put into production. |
| 1945 | Japan surrendered, the control of the yarn was over, and Shenxin resumed the production of gauze. |
| 1946 | In January, Shenxin workers went on strike due to dissatisfaction with the factory's deduction of the year-end award. |
| 1947 | Shenxin's annual yarn production reached 16,800 pieces, which is the highest annual constant after Shenxin opened the factory, and created the best record of no-thread yarn with 122 kilograms of cotton, 23.9 workers, and 0.86 pounds per day. |
| 1948 | Shen Xin’s “4·22” incident occurred, and the factory police opened fire and wounded workers. |
| 1949 | In July, Baoji was liberated, cotton yarn prices were low, sales were sluggish, Shenxin products were backlogged, and funds were short. |
| 1950 | Shenxin’s business is difficult, and layoffs and pay cuts are implemented to reduce wages. |
| 1951 | Shenxin management is extremely difficult. In November, Shenxin public-private partnership. |
| 1966 | In December, it became the state-owned Shabu Cotton No. 12 Plant. |

3.2. Problems
Since the public-private partnership of Shenxin Yarn Factory, it has faced long-term social and economic challenges and has a lot of problems.

Single functional attribute: The factory buildings and building structures of Shenxin Yarn Factory were originally dedicated to manufacturing and manufacturing, which led to the functional limitations of the buildings in the site, and the functions were relatively simple.

The lack of vitality of the venue: Shen Xin from the public-private partnership until after becoming the Shaanxi No.12 factory, the site is located in the remote Changle, away from the city's economic
center, and gradually lost its role in the increasingly rapid industrialization and gradually ruined, lacking vitality.

Loss of public space: After the site was abandoned, most of the buildings were idle, rubble ruins were everywhere, and the public space between the buildings and the roads was basically covered by ruins. There was no place for people to rest and rest.

The spirit of the venue is lost: the venue is idle, the original spirit of the anti-war and the spirit of the industrial production of the venue slowly fade in people's consciousness and slowly lose over time.

In view of the above problems and combined with the analysis of the site status, the planning and transformation design focuses on the re-construction of the site space, uniform appearance, refinement of functional division, landscape renewal, and enrich the diversity of the park on the basis of protection.

3.3. Field value

The former site of Shenxin Yarn Factory was built in 1941. It is the first batch of industrial heritage in the country and the seventh batch of cultural relics protection units in Shaanxi Province. The value of the site mainly lies in the industrial buildings such as the cavern workshop, the thin shell workshop and the Shenxinfu office building. In terms of cultural resources, there are mentality culture, behavioral culture, physical culture, architecture and landscape. It includes national spirit, storytelling, manufacturing techniques, technological processes, equipment and materials, etc. In terms of artistic value, the main heritage buildings of Shenxin Yarn Factory were built in different historical periods due to different needs. The cavern workshop was built to avoid enemy bombing and has the aesthetic value of shape and volume.

The thin shell workshop is designed with a seamless design due to material shortage and material saving, and has certain technical value. The value of the site is presented in the cultural mode at the middle, inner and outer layers of the site. In the site planning, the core areas and buffer zones of several core heritage buildings are mainly considered, and the seamless connection between the road and the landscape is realized. The value of the venue, inheriting the spirit of the industrial culture of the war of resistance.

4. Reconstruction design of industrial heritage landscape of Shenxin Yarn Factory

4.1. Design Concepts and Principles

In the transformation of industrial heritage, the site is researched from the perspective of people, and its shape, characteristics, color, material, texture, emotional experience, etc. are analyzed and analyzed, and through functions, structures, processes, shapes, colors and materials, . grain decoration, texture and other specific performance. In addition, due to the large footprint of Shenxin Yarn Factory and the internal space of the building itself, and the scattered distribution between buildings, the applicability of space function is the first element of design consideration.

4.2. landscape planning function zoning

Four functional partitions are mainly set in the campus planning and design:

Industrial landscape tour area: The landscape tour area mainly reflects the modern landscape of Taiwan and Taiwan. The design combines the hard line corners of industrial elements with the industrial atmosphere to create an industrial landscape, giving visitors a sense of landscape, communication and entertainment.

Industrial Education Experience Zone: The Education Experience Zone mainly includes the aging community and the Anti-Japanese Warfare Education Base. The reservation of the Shenxinfu Office can serve as a link between residents and tourists, enabling Shenxin Industrial Culture to be better transmitted.

Cultural and Creative Experience Zone: The Creative Experience Zone consists mainly of cave-themed museums and commercial districts. The cave workshop in the absolute core area creates a new
museum and gives the cave a new historical heritage. The shoulders of the cave are perfectly combined with the activity area, and the height difference is designed to achieve maximum use of the limited space.

Public event experience area: The activity experience area includes the spinning art experience area and the industrial performance center. The public event experience area brings together the traditional spinning art experience area and the performing arts center to experience the traditional spinning process. The horizontal differentiation of the thin-shell workshop and the history of the locomotive-driven spinning machine reproduce the waterscape, presenting the industrial culture of the venue perfectly and demonstrating its industrial spirit.

4.3. Landscape Design

4.3.1. Core area design and buffer design. There are the core area of great conservation significance, it is for the protection of industrial history, built environment and cultural sites of the original style of the region and control them, and the prohibition of all commercial exploitation behavior may endanger or harm the core area of cultural heritage and landscape character of the building. The buffer zone is set up for the protection of the core zone. The reserved space of the buffer zone can play a key role in responding to emergencies, enabling the core landscape to be displayed under the premise of protection. Commercial development can be moderately carried out in the buffer zone, and its influence can be enhanced through the development of tourism. Thereby achieving regional sustainable development.

4.3.2. Cultural memory-oriented landscape reshaping. Cultural memory-oriented landscape reshaping usually occurs in cities in the post-industrial era. The remaining industrial heritage needs to be protected. In addition to protecting some scattered equipment, warehouses, and factory buildings, it is also possible to build a variety of Industrial-style sculptures and architectural pieces are used as industrial and cultural monuments to reproduce the past glory.

4.3.3. Ecological restoration-oriented landscape reshaping. Shenxin Yarn Factory relies on the Qianling Mountain in the north. Due to the unique defects of the yellow soil and the destruction of the mountain by industrial development, it has laid the foundation for the geological disaster and the ecological damage. Therefore, in the design, it is necessary to enhance the ornamental value of vegetation through a series of aesthetic landscape design, and give meaning to ecological restoration, thereby attracting tourists and creating economic profits.

4.3.4. Landscape remodeling oriented to the entertainment and leisure industry. When culture is closely integrated with tourism and leisure, the entertainment facilities are used in the landscape design of industrial heritage. The facilities are based on the original industrial landscape and incorporate modern elements, making the original industrial area an innovative and modern style. A new type of tourism product that enhances the vibrancy of industrial heritage and attracts more popularity.
5. Conclusion
Baoji Shenxin Yarn Factory is the first batch of industrial heritage in the country. Its historical significance is very important. The industrial spirit of the war of resistance is particularly prominent. However, the site itself has many problems, such as loss of venue spirit, lack of public space, single functional attributes, and lack of vitality. Compared with other developed industrial heritage cases in Shaanxi Province, such as Dahua Yarn Factory and Banpo International Art District, Shenxin’s advantage lies in its relatively intact preservation of the original architectural form and small site damage. The case hopes to be a cultural tourism-oriented, experiential, leisure-tourism and other multi-themed cultural tourism destinations [6], and strive to promote the promotion of cultural tourism and increase the visibility of the scenic spot, making it a Chinese industrial heritage tourism. The anti-war Wenchuang education base, industrial culture learning base, and special tourist destinations.

Acknowledgments
This research is supported by the National Social Science Fund of China (Grant No.19CSH042).

References
[1] Chao Zhang. “Research on Landscape Renewal of Urban Industrial Wasteland” [C]. Nanjing Forestry University, China Excellent Master’s Thesis, 2008.6.12. p12.
[2] Wanzhen Sun. Research on Industrial Tourism Development Model [D]. Master's thesis of Shandong University, 2008.3.18. p35.
[3] Hou Juan. “Industrial Tourism Development Based on the Perspective of Urban Characteristic Culture”-Taking Shaanxi Dahua 1935 as an example[J]. Urban Tourism Planning, March 2016, second half of the month. p185.
[4] Yin Xiao. History of Baoji Shenxin Textile Factory [M]. Shaanxi People's Publishing House, 1992.8.
[5] Qinghua Tao. “Analysis of the Model of Developing Industrial Heritage Tourism in Baoji City” [J]. Value Engineering, 2011-29.
[6] Ruili Han. Summary of Research on Industrial Heritage Tourism at Home and Abroad[J]. Modern Business & Trade, 2016-17.p27.