

Reconstruction and Protection of Industrial Building Area: A Case Study of Beijing Shougang Park

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Abstract. In the current era, the reconstruction and protection of industrial heritage has gradually attracted people's attention. Shougang Park, as an important representative of Beijing industrial base, has great research value. Therefore, this study focuses on the history and present of Shougang and explores the road to revival of Shougang from both material and cultural perspectives. From the cultural point of view, Shougang culture has the characteristics of fragmentation and stratification. In the upper planning, Shougang bears the dual responsibilities of building a new landmark for urban rejuvenation, serving the Winter Olympics, and transforming and upgrading into a new landmark for the vitality of West Beijing city. Shougang this big IP not only has an industrial culture but also has the Winter Olympics, Yongding River, and a series of multicultural cores. A large number of industrial production and living buildings have created a strong historical atmosphere for the base, which has been rebuilt and reused to bloom new vitality. To the investigation, Shougang still has many problems such as incomplete reconstruction, inadequate management, and so on. Through the field investigation and data analysis, the improvement plan of optimizing the visiting flow, tracing the history, and improving the service quality is obtained. Work on both physical and cultural ends to create a diverse, vibrant, green, and sustainable post-industrial site.

Keywords: Shougang Park, industry building, culture history.

1. Introduction

This study focuses on the reconstruction and protection of the old site of Shougang, a representative industrial base that has made outstanding contributions to the development of Beijing and even the whole of China [1]. As an industrial area covering a large area in the western suburbs of Beijing, this issue is of great significance to the overall urban construction and cultural protection of Beijing. This study mainly analyzes Shougang's history, development, and the specific characteristics of its heritage. Literature analysis is used to search and read the literature, and the existing problems are summarized and analyzed in combination with field investigation. The ultimate goal of this study is to solve these problems and propose solutions with Shougang cultural characteristics. Not only can fully protect the diverse and rich cultural types in Shougang, but also adapt to the development of The Times, with Shougang as the center to drive the construction of the surrounding area and radiate the new vitality of the old industrial zone.

2. Backgrounds

As one of the most representative industrial bases in Beijing, Shougang is an important representative of national industry and has made great contributions to the iron and steel industry. Its history can be traced back to the Shijingshan ironmaking Plant in 1919. After the founding of the People's Republic of China, Shougang became the first state-owned steel enterprise in Beijing. After nearly two decades of struggle, the Shijingshan Iron and Steel plant has achieved a leading level of production technology in China and was renamed Capital Iron and Steel Company with the approval of the government. The 1980s and 1990s were the heyday of Shougang. At that time, Shougang became a huge industrial enterprise with more than 200,000 employees in Shijingshan District as the center of focus. Shijingshan District also took the lead in completing urbanization under the drive of Shougang and built a series of urban infrastructures such as the Shijingshan Amusement Park and Shijingshan sports stadium, becoming a more developed area in the suburbs of Beijing. However, due

to the environmental pollution problem that cannot be ignored, after Beijing's successful bid for the 2001 Olympic Games, with the increasing social awareness and demand for environmental protection, the call to move the Shougang factory from Beijing began to appear. In June 2005, the No. 5 blast furnace in service for 47 years was discontinued, which opened the prelude to the relocation of Shougang. At the end of 2010, the relocation of Shougang was completed, and the Beijing Park of Shougang was completely shut down, officially entering a new era of industrial transformation. Historically, every functional transformation and adjustment of Shougang has been completed in the context of the functional and spatial adjustment of the capital. As the largest joint development land in the current urban renewal of Beijing, the transformation of Shougang also reflects the new stage of Beijing's urbanization from the side [1].

After the founding of New China, there is still room to explore the collective culture produced in the socialist production period, and the Shougang culture is its representative. At the same time, the revival of Shougang has gradually become a cultural business card of Shijingshan District and even Beijing, attracting more tourists in the process of growing development, and contributing to a virtuous circle. In order to continue to play its location advantages and attract tourists, Shougang constantly launches activities based on history and culture, and the new cultural possibilities contained in these ongoing or upcoming activities also need to rely on a further in-depth interpretation of history.

3. Analysis

On the historical level, Shougang is important historical data for the study of the relationship between industrial modernization and urban spatial development in Beijing. With the material and cultural characteristics of the industrial landscape of Shougang, the transformation process of the historical spatial relationship between city, industry, and nature on the land of west Beijing can be more clearly observed [2]. On the design level, among the numerous industrial heritage and landscape renewal practices in contemporary China, the Shougang Renaissance is typical and representative, with very distinctive Chinese characteristics and inclusiveness. Its industrial landscape reflects the real appearance of China's steel industrial production in the 20th century. Many structures in Shougang have strong industrial characteristics and unique landscapes, such as three blast furnaces, cooling towers, coal bins, and other industrial heritage have iconic roles in the city. Through renovation and redesign, these buildings will be given a new-age function, appearing in front of people's eyes with a new landscape concept, telling the story of the past. The cultural value of its design is an important embodiment of the richness of Shougang's heritage value. Early on, China's industrial enterprises were almost all state-owned, and workers invested everything they had in the enterprise [3]. Taking Shougang as an example, the factory not only has workshops but also schools, canteens, hospitals, auditoriums, and other infrastructure, which is a "small world" for workers to live in. The restoration of the living landscape of the workers helps people to understand the history of the country and society, such as a memoir of the city and inspires future generations to better face the future. To continue to play the economic and cultural functions of Shougang resources is the embodiment of the importance of the protection and reconstruction of Shougang Park.

3.1. Characteristics of Industrial Heritage

Shougang's industrial heritage presents two remarkable characteristics: First, the distribution is fragmented, among which the representative industrial facilities and cultural heritage are scattered, and the development degree is different. Secondly, the content is hierarchical, which contains a variety of cultures, and the span of time is large. From West Beijing village culture to national industrial culture, from Yongding River culture to Winter Olympics culture, especially in the ironworks area, there are different historical relics after the founding of the People's Republic of China.

At present, the north district of Shougang has completed the reconstruction of industrial facilities, and most of the projects have been opened to the public. Compared with the southern district, the

North District of Shougang is the birthplace of Shougang, which has a stronger industrial atmosphere and a more representative industrial infrastructure and industrial landscape. In the process of reconstruction, the selection of industrial elements and the focus on native plants are an important part of the design. A large number of waste transport vehicles and waste production raw materials in the park highlight the sense of history. Such as locomotives, and tipper machines to form architectural sculpture pieces. In the upper planning, the transformation and redesign of this area are mainly based on park green space, cultural and entertainment land, and urban multi-functional land. Under the guidance of the policy, New Shougang has gradually transformed into a cultural and commercial complex in the western suburbs of Beijing, carrying many cultural connotations such as Olympic culture and steel industry culture. At present, in combination with its characteristics, the original industrial facilities have been rebuilt, the Olympic venues have been opened, and the greening of the park has been enriched, creating a complex suitable for urban residents to relax and visit in daily life. For example, the three blast furnaces, the Winter Olympic jump platform, etc., have become an excellent example of the new landmarks of Beijing's rejuvenation. In the future, more experience Spaces will be opened, allowing people to further interact with industrial culture [2].

3.2. Case Analysis

Shougang Liugong Hui is a very typical successful case of transformation, its base is located in the center of Shougang, which was originally a self-provided coal farm, water plant, and other production and living facilities. These original facilities lay the foundation for reshaping urban Spaces and inheriting cultural memories. After the renovation, Liugong Hui becomes a modern building complex, bringing together a variety of functional areas such as creative office space, green space, complex business, and event center. Reproduce the vitality of the site while maintaining the industrial texture. As the core business district of Shougang, Liugong Hui continues to play its central location advantages, centralize commercial functions, strengthen three-dimensional cooperation with surrounding business districts and characteristic streets, and provide basic supporting guarantees for various activities in Shougang [4].

The three-blast furnace has gradually opened in recent years. As the most representative industrial building in the park, its shape has become a representative of Shougang culture and a totem of Shougang spirit. People can not only climb the top of the three blast furnaces to stop and look at the distance, those exposed pipes and building components are full of power, are industrial symbols, reflect the spirit of The Times of industrialization, and are frequently used in literary paintings and sculptures. The interior of the third blast furnace has gradually opened up the experience space. After modernization, it has been given many new functions such as a bookstore, an exhibition hall, etc. The most unique one is a sci-fi experience space transformed by the whole blast furnace. It takes the original industrial building as the base point, with the help of interactive space and narrative space, so that the original steel structure and science fiction style perfectly fit, and then assisted by holographic projection, greatly improve the tourists' sense of immersive experience, open a new world of industrial cultural resources reuse, but also a new field of cultural and technological innovation [5].

Another very successful renovation case is Shougang West 10 Winter Olympics Square. The project is the first project launched in the North district of Shougang, which was originally the raw material warehouse and transfer station of Shougang Group. After Beijing successfully bid for the Winter Olympic Games, the area was strongly pulled by the Olympic IP as the site of the Winter Olympic Organizing Committee [6]. In terms of design strategy, the design concept of paying attention to the preservation of original facilities and careful construction of new buildings was adopted, and the original steel frame structures were fully utilized. As a result, the small water tower and many concrete blocks are preserved as landscape elements, actively participating in the industrial atmosphere of the site, reflecting the new vitality of the industrial heritage. The combined pumping station and silo in the base have been rebuilt as the main office buildings, and a new Olympic theme exhibition hall has been built beside the water tower on the west side. This kind of reconstruction and

protection method combining traditional industry and modern sports culture has formed a set of comprehensive office park with high level and rich cultural connotation.

4. Suggestion

4.1. Existing Problems

Although the current Beijing Shougang Park has been partially opened to the city, its popularity is also rising year by year, but the development of Shougang Park still has a long way to go. First of all, at present, most industrial sites and cultural relics have not been properly utilized, and many resources are abandoned and idle. There is still plenty of room for exploration in these legacies, but the sheer size of the task presents considerable challenges for designers and researchers. [7]

Secondly, each landscape point cannot form a connection and has a strong sense of independence, which is inseparable from the fragmentation of cultural heritage distribution and the hierarchy of content. Due to the large area of the site, people need to travel a long distance from one node to another node. In the site, there is no well-organized tour traffic flow line and indication signs, and the guidance is not strong, so it is difficult for tourists to intuitively understand the basic information of important nodes of the site at first glance after entering the site. In the absence of a complete tour flow, it is difficult for people to form a complete tour experience, and scattered scenic spots cannot allow users of each space to form a complete emotional resonance.

Through the Internet and field research, tourists also reported a large number of problems of management confusion and tour costs. Due to the relative independence of the scenic spots, each visit to a scenic spot will generate a consumption, if want to carry out a comprehensive tour of the park is a small ticket expense. Moreover, through field investigation, it is found that many industrial heritage nodes have not been fully introduced and designed, and tourists often visit them in the clouds without feeling the true cultural spirit and connotation. The Shougang Park is now packed with multiple modes of transportation, including cars, shared bikes, shuttle buses and motorcycles, and passing buses. There is also room for improvement in how to organize the connections between different modes of transportation. At present, some places in the park have the problem of indiscriminate parking of cars and bicycles, which has a great impact on the overall environment and traffic fluency in the park.

4.2. Optimization Scheme

Given the existing cultural heritage protection: under the background of Shougang's fragmented and hierarchical base, different color signs can be used to connect different visitor flow lines such as the Winter Olympics visit flow line, the steel culture visit flow line, and the ecological landscape visit flow line. At each node, a visitor service center is set up with a guide, focusing on the publicity and introduction of the cultural connotation of Shougang. The visitor center can also solve the problems encountered by tourists during the tour and improve the satisfaction of the tour. According to the needs of tourists, internal shared bicycles are set up in the park and the frequency of ferry vehicles is increased to better communicate with each node. And set a one-time charge at the entrance to appropriately reduce the ticket price.

For the cultural heritage that has not yet been fully developed, the protection principle of "faithful preservation and careful addition" should be continued. When exploring the transformation of old and new space, it is the primary task to grasp the original context of the base and sort out the logic of the site [8]. However, in the design itself, the principle of creativity should still be followed. Only when the hidden history is reproduced in a modern perspective can people better understand the connotation behind it? The addition of appropriate new elements can change the original space order and realize the symbiosis between the old and the new. Moreover, in the design, one should pay attention to historical and cultural continuity and site identity. From the perspective of sustainability, new concepts and functions are integrated into the old space of Shougang to reactivate the vitality of the site [9].

With the change of time, the functions of Shougang will be constantly updated, and old industrial equipment will be re-injected with new vitality. In addition to being the city's landmark cultural landscape and suburban business, Shougang has also introduced a number of high-tech enterprises to promote the development of the park with innovation as the driving force. China's first "zero-carbon" McDonald's restaurant was also located in Shougang, where users can power the restaurant through movement. In terms of detail design, many small buildings such as garbage cans and restaurants have also been designed with industrial wind, fully echoing the attributes of the site and giving tourists an immersive experience of the industrial park [10].

5. Conclusion

This study draws the following conclusions about the improvement and protection of the Shougang industrial building area. Shougang Park, as a successful transformation case of the old industrial zone, owes its success to the correct use of industrial culture, Winter Olympics culture, and other cultures as well as the ingenious balance of sustainable urban development. This provides a good model for the reconstruction and protection of other industrial areas. Although there are still problems of unbalanced development, inadequate management, and poor publicity at present, Shougang has been on the road of continuous exploration and self-improvement. It is necessary to find a balance point between the heritage of Shougang Park and the development of the city to achieve positive interaction.

People's enthusiasm for Shougang is growing year by year, and the increase in passenger traffic has gradually aroused the government's attention to the renovation project of this area. Subway, shared bicycles, and other transportation supporting services are gradually improved, and people can visit more conveniently. In the future, Shougang will implement four major revitalizations: urban ecological revitalization, cultural revitalization, spatial revitalization, and industrial revitalization. Combined with its characteristics of steel culture and Winter Olympics culture, it will promote the construction of new landmarks for urban rejuvenation under the guidance of policies and continue to contribute new forces to urban development. As a western suburb of the city, Yongding River is a culturally fertile soil, that gives full play to its advantages, builds cultural IPs such as the Winter Olympics and industry, and grasps the needs of the era of ecology and innovation. Make use of its unique location advantage to continuously contribute to urban construction.

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