

Study on Landscape Remodeling In Negative Space of Mine Park in China

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Abstract: Through the three cases of Tangshan Nanhu Park, Liaoning Fuxin Haizhou Open Pit Mine and Hubei Huangshi National Mining Geopark, the success of mine development experience is analyzed from the aspects of mine landscape reconstruction and artistic development of mineral resources, starting from the method and concept that mine development must pay attention to history, adapt to local conditions and combine their own regional environment characteristics. To have a deep understanding of the urban ecological environment and ecological landscape, it is clear that multiple factors should be considered to solve the problems caused by a series of mining activities, such as the surrounding environment and residents' living conditions, so that social development can move forward in a coordinated manner.

Keywords: Negative Space; Landscape Design; Ecological Protection

1. Tangshan Nanhu Park

1.1 Project Profile

China's heavy industry cities are concentrated in the northeast and North China and other northern regions, among which Tangshan City in Hebei is located in North China and is one of the heavy industry cities with a century-long coal mining history ^[1]. Tangshan Nanhu City Central Ecological Park, referred to as Tangshan Nanhu Park, is located in Tangshan City, Hebei Province, about one kilometer away from the city center, the southern direction, with unique geographical advantages, the overall planning area of about 30 square kilometers, is a large ecological park, as shown in Figure 1. Before the reconstruction, Nanhu

Park in Tangshan was a mining subsidence area, formerly known as Kailuan Coal Mine ^[1]. After more than 140 years of mining and excavation, a large number of coal fields have been mined, resulting in surface collapse, and many coal mining subsidence areas have been formed. In addition, on July 28, 1976, an earthquake with a magnitude of 7.8 on the Richter scale (7.5 on the moment magnitude scale) occurred in Tangshan, which aggravated the surface collapse ^[1].

1.2 The Existing Problems of the Site before Landscape Transformation

Before the transformation, the terrain and landform of Kailuan Coal mine were damaged, the subsidence area had mountains, muddy water, Lanzhi Xiaoi, urban features rarely visited and a large number of negative Spaces. Before the transformation, the vegetation damage in the area was serious, which was already very scarce, and the features of the whole area were exhausted. The city appearance of Tangshan city, the stability of the urban ecological environment, the prospect of social development, and the life of the surrounding residents have been affected to a certain extent, not only the impact on life, but also the formation of a large-scale waste of land resources. There are the following problems existing in the current situation of the site before landscape transformation.

2. Haizhou Open Pit National Mine Park, Fuxin, Liaoning

2.1 Project Profile

The only mine park in Liaoning Province is the Haizhou Open Pit National Mine Park, located about 3 km outside the city center of Fuxin. On the day of the founding of the Party in 1953,

Haizhou open-pit mine began 60 years of mining work, where there is a large mechanized equipment, which is a large mechanized coal mine, which can be seen that the development of China's productivity is rapidly advancing, as well as the progress of mining services and technical upgrading. The Haizhou open-pit coal mine is 2 kilometers wide from north to south and 4 kilometers long from east to west, with a total area of 28 square kilometers, of which the pit covers an area of about a quarter of the total area, and the vertical depth of the pit is about 350 meters, equivalent to the height of a 75-story high-rise building. There are 28 boundary plates and 8 operating plates in the area. The exposed section at the edge of each flat panel reflects the characteristics of the geological structure incisively and vividly, and the vast scale creates a strong impact and shock to people's vision and psychology [2]. Liaoning Fuxin Haizhou Open Pit National Mining Park is divided into four plate areas, including the core area of industrial heritage, which is mainly used to express and explain the traces of industrial heritage, as well as the steam locomotive museum and sightseeing line to comprehensively display the history and culture of the mine. In addition, there are Sunjiawan International Mining Tourism Area and National Mining Mountain Sports Park. The combination of the four plate regions and their connections express the evolution of the mining history in various aspects, fully combining leisure, entertainment, culture, education and popular science to show the unique charm of industrial elements [3].

2.2 Analysis of the Present Situation of Haizhou Open-pit Mine National Mine Park in Fuxin

The predecessor of Haizhou open-pit Mine National Mine Park is Haizhou open-pit Coal Mine. On the basis of this site, an industrial landscape park is established and reformed. After the mining is stopped, huge waste pits and a large amount of coal gangue and other wastes are produced. Due to the wide mining range, deep pit depth and terrain conditions, landslide, collapse, ground cracks and other phenomena occur, which pose a certain threat to the living environment and living status of surrounding residents. Therefore, the renovation design is carried out. Disaster problems caused by topographic structure

should be dealt with first, ecosystem restoration should be carried out secondly, and various problems before transformation should be solved by the principle of secondary utilization, so as to repair geological hidden dangers and build a civilized and green mine ecological park [4]. At present, these problems have been solved one by one, the urban safety has been effectively guaranteed, the urban ecological environment has greatly reduced the degree of pollution compared with the past, while avoiding the threat of geological hazards caused by mining, and the development of industrial civilization and culture has been effectively preserved, and it is an all-dimensional integrated mine park. It is a multi-functional mine park integrating tourism, practical research, industrial nostalgia and cultural publicity [5]. The picture of Haizhou open-pit Mine National Mine Park can be seen, as shown in Figure 12 below. The landscape area of visual focus is the theme square, which is established on the basis of the mine. The north-south road has a long scale, and the theme cultural square connects its external environment and internal environment as the carrier.

The Haizhou Open Pit National Mine Park covers a total area of less than 30 square kilometers, and the design of this site is divided into five areas. The first spatial area is the core area of the National Mining Park, the second spatial area is the industrial site area in the north, the third spatial area is the cultural and creative industry area in the east, the fourth spatial area is the comprehensive functional area in the south, and the fifth spatial area is the ecological green area in the west [6]. Environmental management, ecological restoration and vegetation restoration are carried out in the five regions, so as to restore the original style of the mine, and create a national mine park integrating recreation, geological heritage protection, regional culture inheritance, economic development and science popularization education. Part of the existing monomer and structure of the site is sorted out, as shown in Table 1.

3. Hubei Huangshi National Mine Geopark

3.1 Project Profile

Hubei Huangshi National Mining Park, formerly known as the Wuhan Iron and Steel

Daye Iron Ore Plant, mainly adopts local materials to transform and design on this site. Under the state of satellite map, it is like an upside down gourd, more than 2,000 meters long from east to west, more than 500 meters wide from north to south, and the overall area of the pit diameter is about 1 million square meters. The title of the first sinkhole in Asia

comes from this. It is located in No.8 Zhangzhidong, Tieshan District, Huangshi City, Hubei Province, as shown in Figure 13 below. Huangshi National Mining Park covers an area of 23.2 square kilometers, divided into Daye Iron Mine Main Park and Tonglushan ancient mine site area [7].

Table 1. Current Monomer Analysis Source: Self-drawn by the Author

name	origin/model	use	introduce
electric locomotive	hunanxiangtan locomotive factory in 1972 for the production of zg*150-1500 type	one of the large equipment of haitian open pit mine, mainly used for mining and stripping production and transportation tasks	maximum working height 6.5m, weight 150t, maximum speed 65km/h
dozer plough	liaoningdalian industrial and mining car factory in 1959, for the 3d type	one of the large equipment of haitian open-pit mine, mainly used for the task of cleaning the palm surface on both sides of the railway roadbed in the dump	the earth moving capacity is 3000m ³ /h, the wind pressure is 8kg/cm ² , and the main wing development angle is 120°
hole drilling machine	haizhou mine self-manufactured, factory date 1983, kz-170 type	one of the large equipment in the haitian open-pit mine, it is mainly used for blasting and perforating tasks in mining and stripping production	the height of the drilling rig is 4.8m, the length is 6.1m, the maximum depth of the drilling hole is 17m, the aperture is 17cm, and the dust is removed by pneumatic pulse cloth bag dry dust collector

3.2 Analysis of Current Situation of Huangshi Mine Geopark

The Daye Iron mine was put into production in 189 years. After more than 100 years of large-scale mining, resources are often depleted. The rational utilization of abandoned mines, the pursuit of green development of ecological environment and the creation of geological theme parks are key priorities. The waste ore storage area generated by iron mining began to be afforestation and reclamation in the 1980s. With the influx of a large amount of investment, environmental governance work has become increasingly effective. Ecological miracles have been created in greening, large-scale planting

and cultivation have allowed the air environment of the mining area to be fully circulated, and construction was completed in 2015. Attracting tourists from all over the country, the rapid growth of the local economy, popularity ranks at the forefront, the first design of the light show in 2011, the content is to dredge the development history of human mining and metallurgy, into the regional cultural characteristics, to vigorously promote this, shortly thereafter, and the expansion, so that the park in the function of the above more comprehensive. The internal scenic spots of Huangshi Mine Geopark after design are sorted out, as shown in Table 2.

Table 2. The Internal Scenic Spots of Huangshi Mine Geopark after Design

name	title/function	introduce
mining and metallurgy canyon	the first pit in asia	the maximum vertical height is 444 meters, the east-west length is 2.2 kilometers, the width is 900 meters, and the cross-section is 1.08 million square meters
mining and metallurgy expo park	show visitors the role of mining and metallurgy development process	more than 10 different types of mining and transportation equipment are displayed in the park

museum of mining and metallurgy	china's first iron ore museum	on display are 483 objects, 635 pictures and more than 100,000 words of literature, history and written materials
big oasis of stone sea	asia's largest hard rock reclamation forest	over the past 18 years, 2.47 million square meters of acacia trees have been planted on waste rock sites

4. Conclusion

Under the background of industrial transformation in China's society, the development mode of mineral industry should also be updated and developed. Through the study of traditional mine development mode and domestic mine landscape remodeling case, the traditional mine mining mode should be reconsidered to maximize economic benefits and pursue high efficiency and speed. Through the three cases of Tangshan Nanhu Park, Liaoning Fuxin Haizhou Open pit mine and Hubei Huangshi National Mining Geopark, the reference of successful mine development experience is summarized from the aspects of mine landscape reconstruction and artistic development of mineral resources. The mine development must pay attention to history, adapt to local conditions and combine their own regional environment characteristics, so as to provide reference for future practical application. In the process of ecological restoration of the mine, human behavior may reproduce the traditional mining mode, or it may discover and explore a new development mode. In this process, the relationship between human and nature is discussed, and the new mode is closer to the relationship between human society and nature.

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